

Michael Windzio *Editor*

Integration and Inequality in Educational Institutions

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Foreword

The social sciences are a dynamic area at the University of Bremen. Researchers work in a highly ambitious environment and research is stimulated by many discussions with brilliant minds from different fields. Nonetheless, some persons still stand out. One such person is Stephan Leibfried who, early in 2010, came to me with the idea to conduct a workshop on the current research about educational institutions. He left it to me to define the main focus and the substantial details of this workshop. Stephan also arranged the contact to the TH Marshall Fellowship Programme, which is a collaborative exchange programme of the Wissenschaftszentrum Berlin (WZB, Social Science Research Center Berlin), the London School of Economics and Political Science (LSE), and the Center for Social Policy Research (CeS) at the University of Bremen. The Volkswagen Stiftung (Hanover, Germany) provided the funds.

In September 2010, we met up in an intimate circle at the Teerhof in Bremen and discussed our papers. This volume is the result of this meeting and—at least for me—the highly inspiring presentations and discussions. Special thanks to Stephan for initiating the workshop. Thanks to the WZB, the LSE, and the CeS, as well as to their TH Marshall Fellowship Programme, and to the Volkswagen Stiftung for their generous financial support. Also thanks to Alice Hohn (WZB).

Some others also provided crucial contributions to this volume: In the first place, Sarah Oldenburg did a great job of checking the orthography and language of all manuscripts. Without her help, this volume would not exist. Simon Töpfer did the typesetting and Jolanda Voogd supported the volume from the publisher's side.

Bremen, Autumn 2012

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Part I
Introduction

Chapter 1

Integration and Inequality in Educational Institutions: An Institutional Perspective

Michael Windzio

1.1 Introduction

In modern societies educational institutions play a crucial role in the formation of state and society (Weymann 2010). Education has become an issue of increasing importance not only in public debates, but also in the social sciences, especially in fields related to social inequality. During the last 30 years we witnessed tendencies of re-commodification in Western welfare states as well as an increasing importance of education and human capital formation. In some European countries, but also in Japan, the PISA study fuelled a debate on the efficiency of educational institutions and on what pupils should learn at the secondary level. PISA was not the first—but in some countries the most publicly visible—international comparison of school and pupil performance. Built on the basis of the emergence of knowledge societies in the 1960s and their dynamic development since the 1990s, there exists now a common understanding of the value and importance of education. The PISA study provided a comprehensive data base which contributed to the understanding of the institutional environment of schools and learning. Moreover, PISA triggered fundamental policy reforms in countries such as Switzerland and Germany (Martens et al. 2010) because it showed that these countries did not perform as well as expected (Switzerland) or performed badly (Germany), and that they are also characterised by striking educational inequalities.

As Meyer (2001) argues, there already was a strong commitment to educational equality in democratic countries; now it is becoming more and more accepted almost all over the world. However, research on educational performance and status achievement showed that educational institutions do not generally help to dissolve

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social inequalities, especially when these inequalities are based on ascribed characteristics such as gender and ethnic background (Levels and Dronkers 2008; Woessmann et al. 2009; Teltemann and Windzio 2011). It is not yet clearly understood which processes at the institutional level correspond with different outcomes in educational achievement. Among others, relevant processes in educational institutions are patterns of teacher–pupil interaction, but also peer-relations in schools and classrooms (Hanushek et al. 2003), with special focus on inter-ethnic friendships and integration. Needless to say that the differences in performance levels between ethnic groups and social classes (Dronkers and Levels 2007) are not the only problem in today’s educational institutions. But as diversity in social background and ethnic origin increases, we may expect diversity to have an impact on social interactions among pupils. In diverse settings, peer relations can provide social support and social integration by friendship formation, but they can also cause social discrimination, conflict and dispute, which can in turn affect motivation, school attachment and increase the risk of behavioural disorders. All of these factors have in common that they are closely related to the wider society outside of educational institutions. Schools are focus points in which the social problems of the wider society are concentrated. Thereby, schools themselves create or at least reinforce these social problems, such as discrimination and delinquency. On the other hand, they socialize young people and are supposed to be places where social problems can be efficiently handled.

Institutions exist in order to structure human behaviour in a desired way, and this holds for educational institutions in particular. What kind of behaviour is desired or not depends on dominant values and norms and, thus, on the wider society that forms the environment in which educational institutions are established and educational organisations operate.

Following different theoretical approaches, it will be argued in this chapter that educational institutions are a special case in society because it is common to consider them as an ideal place for the tackling of social problems. Moreover, even if education can be regarded as a closed system which operates only on the basis of its own code (see below), it can always be adapted to dominant values and ideologies. As a result, educational institutions will always be subject to permanent reform as long as new social problems are defined in periods of dynamic social change. However, if educational institutions are regarded as establishments where social problems can be solved and since they permanently adapt to dominant values and ideologies, their organisations tend to work inefficiently. At least, this is what we can expect according to current sociological theories that will be highlighted in this chapter.

1.2 The Multiplicity of Social Problems in Modern Educational Institutions

A basic characteristic of modern society is functional differentiation, which means that specific functions meet basic requirements for the continuance of society as a whole, and these functions are assigned to specialised subsystems. In Luhmann’s

(2009) systems theory this specialisation corresponds with subsystem-specific binary codes which determine what is relevant for the respective subsystem and what is not. Since all elements of *social* systems are communicative units, the subsystem of e.g. science consists only of communication by applying the code “true/untrue”, whereas the subsystem of economy applies the code “paying/not paying”. Although it is not trivial to identify the code of the system of education, its basic scheme of communication refers to *selection of individuals into careers* (Luhmann 2005a): the subsystem operates by drawing distinctions between pupils and students, which is done by giving good and bad grades, by awarding or refusing certificates, by accepting them into a special *programme* or not and so forth. In contrast to the classical, normative view of education, the code does not have any preference about what people should learn, what they should know or how they should behave in a moral sense. A subsystem’s code cannot be changed since the subsystem gains its essentiality from it. For instance, in a society where the selection into careers is governed by the code “paying/not paying”, no specialised subsystem of education would be identifiable. As we certainly know from the sociology of education, a family’s socio-economic background is not without influence on degrees and on the probability of selection into certain academic programmes. In this sense, the subsystems of education and economy are *structurally coupled* with each other. Nevertheless, the system of education attaches the values of its code (“selected/not selected”, “good” or “bad” grade) according to its own logic. Some people can buy good private teachers, but they cannot buy good grades—otherwise, this would indicate a severe problem of de-differentiation.

Whereas the code remains fixed in each subsystem, *programmes* can be changed. During a communicative act, the system decides on the attachment of a code’s value according to its *programme*. In order to make the system adaptable to changing requirements, or just to open it to changing ideologies, programmes often respond to changes in the concept of what is regarded as “good” education. Should pupils learn abstract and generalised skills that enable them to solve problems? Or should they acquire a maximum amount of factual knowledge? Should it be Humboldt or employability on labour markets, or both? Should pupils become civilised in the sense of Norbert Elias (1991)? Should they be trained in a certain ideology and should their loyalty be graded?

One of the many insights we can get from Luhmann’s theory is that modern societies as a whole depend on an appropriate output that is produced by each subsystem. In general, the *social* aspect of human existence is communication, but modern societies need a very *specific form of communication*—which would be very unlikely to occur if there were no subsystem of education. There would not be any modern sciences, no economy or law without education—and vice versa. Modern societies are based on (“autopoietic” and self-referential) subsystems which co-evolved over time and became successively distinct from each other. These subsystems are shut off from their environments, but are highly interdependent at the same time.

We can learn from Luhmann that subsystems in complex modern societies show a high degree of separation from each other. At the level of the codes, the discriminatory

power of communication is very high—the code of scientific communication is different from that of political communication, and scientific truth cannot be established simply by legal definition. Below, however, it will be argued that the basic problem of the subsystem of education exists at the level of the *programme*: here, we find an overload with a multiplicity of tasks which the system is expected to accomplish simultaneously. This task overload is not a new phenomenon. It basically results from the fact that educational organisations, especially schools, are places where intervention according to a specific *programme* occurs in the early stages of the life-course, at a time when pupils and students are still in their formative years.¹ Even during the period of the “golden age nation state” (Hurrelmann et al. 2008), which was often also a golden age *welfare* state, educational institutions were not able to carry the burden of the multiplicity of tasks: in Germany, for instance, Georg Picht already declared the “educational disaster” in 1964 (Picht 1964; Der Spiegel 1964). After World War II, most western societies witnessed an enormous increase in wealth, and social barriers became more penetrable. Despite a considerable degree of reproduction in educational and economic inequalities, many children of working class origin took the opportunities of access to higher education, and the overall trend of an “escalator effect” (Beck 1986) suggested a smooth operation of the system as a whole.

Yet during the last 30 years the situation has changed. What is new in modern globalised societies is that all subsystems have to cope with the follow-on consequences of the end of the golden age *welfare* state. In addition to the “old” poverty risks, which are still high in the traditional German working class (Groh-Samberg 2004), there are the “new” social risks of post-industrial societies. First and foremost, exposure to these new risks depends on membership in social groups that are more or less vulnerable to these trends. Among others, these trends are the de-industrialisation, the increasing importance of education for success in labour markets and the marketisation of educational institutions. Though the question remains whether social inequality has actually increased in most western countries or not (Mau and Verwiebe 2010, p. 205), inequality in educational institutions has increasingly become an issue of scientific and public debate. Recall that democratic societies have been committed to educational equality for a long time (Meyer 2001): for countries such as Germany, Switzerland and Belgium, where the impact of socio-economic background and children’s immigrant status on PISA 2000 tests-scores turned out to be comparatively high (Teltemann 2010; Stanat et al. 2003), there is now a collective agreement that educational institutions should solve the issue of inequality and the integration of immigrants.

In addition, there is a debate on the supposed rise in juvenile delinquency during the last 20 years (Junger-Tas et al. 2010). In Germany, official statistics indeed indicate an increase in violent behaviour, and the mass media reported extensively on several dramatic events. However, in contrast to the public view,

¹ Here it becomes obvious how important ideologies are in the educational system because its *programme* is, by definition, based on normative concepts of what people should learn in the current society.

the so-called dark figure of self-report studies and some other more reliable data sources indicate rather a decline and definitely no dramatic increase (Baier and Windzio 2008).

Regardless of the objective state of these issues, they are declared problems in public communication. Once this communication follows a certain direction it defines whether measures have to be taken or not. Educational institutions are expected to deal with this multiplicity of social problems. They have to follow a very complex and multifaceted normative concept of how to socialise young individuals so that they fit into society. Since social intervention is directed towards the future, educational institutions are assumed to be places where social problems should be solved or at least addressed. In order to accomplish the task of socialisation, educational institutions now fulfil several tasks simultaneously: they train pupils' cognitive abilities, they function as places of social integration in general, they integrate and structurally assimilate immigrants, they maintain the option of social mobility, they select persons into careers and legitimise social inequality, they teach democracy and proper behaviour and they work to prevent delinquency.

1.3 New Social Problems, New Tasks: Reforming Reforms

As argued in the preceding section, educational institutions are expected to fulfil a multitude of tasks. Yet the definition of tasks and functions is by no means static but depends on the public and scientific debate in which new social problems are permanently identified. Since people's capacity for personal change is limited, social change is regarded as being brought about by new cohorts (Ryder 1965). It seems obvious that these new problems could be efficiently solved in educational institutions. Unlike most other institutions, schools provide easy access to young people in the formative years of their life-course. Consequently, in order to facilitate social intervention, educational institutions must be appropriately reformed.

For instance, in many European countries there is currently a debate on the integration of immigrants and the question of whether teaching the immigrants' native language at school has a facilitating or impeding effect on integration (Wieviorka 1998). Multiculturalists argue that the language of the country of origin is a resource and that teaching this language at school would strengthen immigrants' self-esteem, which in turn is a precondition for integration. Even though this issue is highly controversial (Esser 2009), the integration of immigrants is regarded as an important task of educational institutions and teaching pupils mother tongue is also suggested to policy makers with reference to normative reasons (Karakasoglu 2011). This is a good example of how the subsystem of education can apply nothing but its specific binary code, but a *programme* can always be adapted if this is regarded as necessary. The debate on the grading of courses that teach the language of immigrant pupils' countries of origin illustrates how subsystems can be flexibly adapted to a new requirement.

Another example is the effect of the PISA study. The educational reforms in Germany after the PISA-shock in 2000 were an ideal-type of reform activity in the wake of a new problem. It was not only German policy makers who were shocked at the result that 15-year-old German pupils ranked in the lower third of all tested countries, but other countries also responded to the PISA results by introducing education reforms. The PISA results triggered many reforms in Germany (Niemann 2010), but also in Switzerland (Bieber and Martens 2011; Bieber 2010) and in Spain.

However, reforms in educational institutions can be highly problematic, especially if these reforms affect basic organisational routines. We know from the sociology of organisation that fundamental changes in organisational routines can increase the risk of dysfunctions (Amburgey et al. 1993; Barnett and Carroll 1995; Larsen and Lomi 1999). Numerous studies in organisation science have highlighted that reforms can have detrimental effects. According to organisational-ecology theory and research (Hannan and Freeman 1989), newly founded organisations have the highest rates of failure and dissolution because the establishment and institutionalisation of routines in the minds of their members take some time. The longer an organisation exists, the lower becomes its overall dissolution rate. As a result, the short-term effect of reforms is often a “re-setting the clock” back to zero, that is, to a situation similar to the organisation’s founding period, when severe problems arise due to underdeveloped routines. “Re-setting the clock” is especially dangerous when the organisation becomes older (Amburgey et al. 1993, p. 64). Despite the fact that public organisations such as schools do not necessarily dissolve when they rebuild their routines, it is very likely that the short-term effect of reforms often decreases efficiency. Of course, if positive long-term effects of reforms outweigh a temporary decrease in efficiency, reforms should be implemented. However, if reforms are permanent characteristics of educational institutions, and when routines are changed right after they have been established in the minds of the actors, they sustainably undermine the efficiency of the organisation. This is an important issue, especially in the subsystem of education: since the *programme* of the system can be changed according to current ideologies about the content of “good education”, there is a danger of permanent reform if policy makers regard educational institutions as the primary foci for solving social problems.

The question of how educational institutions shape patterns of inequality and social integration has been investigated from an explicitly institutional perspective (Woessmann et al. 2009; Angrist and Lavy 1999). Obviously, educational institutions are social artefacts. They are purposely created and evolve over time. In the field of education policy, most reforms are targeted at so-called *primary* effects of institutions on inequality and integration. These primary institutional effects result from the manipulation of parameters commonly regarded as basic determinants of academic performance, such as school autonomy, teachers’ salaries and class size. In addition to these primary institutional effects, *secondary* institutional effects result from at least three sources: firstly, from issues that people bring *into the institution from the outside*, secondly from *unintended consequences* of the actions of *members* of the organisation, especially teachers and pupils, and finally from the

unintended consequences of these policies themselves. Hence *primary effects* refer to what can probably be purposely structured by actors, *secondary effects* are mostly unintended consequences, either of reforms or e.g. of social problems, networks and ideologies, which are prevalent in everyday life and are carried into the institution.

1.4 Organised Inefficiency in Educational Institutions: Garbage Cans, Organisational Myths and Ambiguous Criteria of Rationality

In the preceding section it has been argued that the definition of new social problems can be a heavy burden for educational institutions. Educational institutions include the vast majority of children, adolescents and young adults who are still in their formative years. Therefore, educational institutions are often regarded as foci where social problems could be handled efficiently, especially when it comes to issues of integration and inequality. On the one hand, the subsystem of education is self-contained and closed against its environment (which includes other subsystems), operates on the basis of decisions on selection into careers and facilitates a specific kind of communication. But on the other hand, programmes can be easily changed according to prevailing ideologies, so the criteria of selection can change. According to the arguments presented in the preceding sections this is probably the main reason of why there is a steady flow of reforms.

By implementing reforms, policy makers aim for *primary* institutional effects, meaning that they apply appropriate means and achieve their goals rather directly. However, these effects often also have unintended consequences, even if the intended effect occurs as well. Moreover, the implementation of reforms often suffers from “garbage can” characteristics of organisations which were prominently described by Cohen, March and Olsen (Cohen et al. 1972). In sharp contrast to Max Weber’s model of bureaucracy (see Swedberg 2003, p. 92), Cohen et al. (1972) apply the term “organised anarchy”: in their model, organisations exist by making decisions in order to solve problems, but rather than being rationally planned from the top of the hierarchy, actors attach their issues, individual desires and feelings to decision situations in which their concerns may be aired. Problems originate not only inside but also outside of the organisation: “They might arise over issues of lifestyle; family; frustrations of work; careers; group relations within the organization; distribution of status, jobs, and money; ideology; or current crises of mankind as interpreted by the mass media or the next-door neighbour. All of these require attention” (Cohen et al. 1972, p. 3). In order to illustrate their arguments, Cohen et al. (1972) use computer simulation models and apply them to different types of universities (Cohen et al. 1972, p. 13). Even though schools do not have the same level of “organised anarchy” as universities, schools consist at least of some “anarchic” elements due to the fact that their members’ concerns

and requests are also influenced by the everyday life outside the organisation: teachers grade pupils not just according to pupils' achievements, but sometimes also according to their beliefs and ideologies about integration and inequality—be it either in favour or to the disadvantage of ethnic minorities and pupils from lower-class backgrounds. Pupils, in turn, carry their experiences into the school. As a result, the learning process can be affected by social problems which originated outside a given school, such as ethnic and social boundaries in the wider society, increasing rates of family dissolution or high poverty rates and high levels of social inequality. Unintended consequences of reforms and garbage can processes in organisations lead to *secondary* institutional effects on integration and inequality in educational institutions.

The overall process of problem solving in the garbage can model is rather inefficient. Many problems remain unsolved and resources are directed towards tasks which are not part of the organisation's technical core. But organisations are still capable of making decisions, even if they are burdened with conflicts and goal ambiguity (Cohen et al. 1972, p. 16). In any case, it is hard to imagine that reforms in garbage can organisations result only in primary institutional effects on integration and inequality. Precisely because programmes can easily be changed according to prevailing needs and ideologies and, in addition, because educational institutions and organisations are regarded as foci where social problems can be solved, reforms seem to be an integral part of educational institutions. But according to the garbage can model, a straightforward implementation of reforms seems to be rather an exception, and secondary effects are by no means unusual, because the basic operation of the organisation is permanently challenged by the externalities of processes occurring outside of it.

It is interesting to note that institutional theories of social differentiation, as well as ecological theories, made us aware of the fact that task overload often impedes the performance of organisations within an institutional field. This is especially important with regard to the complex set of highly demanding tasks educational institutions have to deal with. This assumption can be justified by two arguments from the theory of institutions: the first approach is M. R. Lepsius' perspective on conflicts between institutions; the second is Meyer and Rowan's (1977) analysis of formal structure as a myth and ceremony.

Lepsius applies Max Weber's concept of social and religious *carrier groups* (Turner 1993, p. 59; Kalberg 2009, p. 119) to the institutionalisation of criteria of rationality in specific "validity contexts" (see Wendt 1998 for an overview), that is, to contexts of social activity where specific criteria of rationality are socially effective. According to Weber, the rationalisation of society depends on a process of differentiation of ideas, interests and objectives and the establishment of rules in specific activity contexts. No institutions would have emerged in modern societies without differentiation because each institution tries to steer people's behaviour in a specific direction. There cannot be only one institution for "everything".

Institutions are established in three steps: first, social and religious carrier groups have to define their guiding ideas as precisely as possible in order to transform them into basic behavioural principles. Following these principles is considered to be

“rational”, even if these principles are in conflict with individual motives and needs. The first stage in the process of institution building is the emergence of specific *criteria of rationality*. Secondly, an *action context* must be separated from other contexts. A certain criteria of rationality can be valid only within a specific context, but not in all other contexts at the same time. Otherwise there would be no institutional differentiation and, in the end, no institutionalisation. From a specific context, in turn, other criteria should be excluded. A social norm can be relevant only if the social situation in which it claims to be valid is clearly defined and other norms are excluded. However, criteria of rationality can only prescribe action and determine it—in a probabilistic sense (Weber 1972, p. 17)—if it is supported by an appropriate *sanctioning mechanism* (Lepsius 1995a). If these conditions are met, an institution is established. Obviously, part of these conditions is also the legitimacy of the institution and the actor’s trust (Lepsius 1997b).

Accordingly, successful institutionalisation means that a criterion of rationality can be established in an action context (which then becomes a *validity context*) and that it actually determines an actor’s behaviour. But it is important to note that successful institutionalisation can create negative externalities which cannot be handled within the same validity context. One prominent example is the externalities of economic profitability. A crucial aspect of profitability is low labour cost, and firms reduce these costs by dismissing people or moving their production units to regions where labour costs are low. In modern capitalistic societies, a specialised institution, namely the *welfare* state, has been established in order to deal with these externalities. Here, the guiding ideas are solidarity and one of the most important carrier groups was the labour movement.

Lepsius applied his arguments to several processes of institution building. Among others, he described the emergence of modern capitalism and social policy (Lepsius 1995b), institutions in the EU (Lepsius 1994), institutional de-differentiation in socialist societies such as the former GDR (Lepsius 1995a, Lepsius 1996), but also the tension between science, teaching and other interests in modern universities (Lepsius 1995a, p. 395). He argues that universities are organisations which serve several institutions at the same time. During the 1960s and 1970s, some scientific disciplines were strongly influenced by political and normative issues—for instance by political Marxism. As Luhmann would argue (Luhmann 2009), in these disciplines the programmes of the subsystem of science introduced elements of a political ideology, but education still operated by using the code true/untrue and students were still graded and certified. De-differentiation in Luhmann’s sense would mean that e.g. political or religious authorities would be able to forbid certain research or teaching content. For instance, if religious authorities defined what is true or untrue according to religious norms, the subsystem could hardly operate efficiently, although this would not automatically mean that scientific communication would not exist at all (Luhmann 2005b). For instance, it is currently debated whether stem-cell research should be allowed or not. In autumn 2011 the European Court outlawed patents on stem-cell techniques (Sample 2011), which will surely have an impact on the future level of financial resources available in this field.

The core argument in Lepsius' theory is that institutions often have to defend the validity of their own criteria of rationality within their validity contexts (Lepsius 1995a). As Lepsius wrote, in Weber's view history is rather a history of the "struggle of institutions" than a history of class struggles.² The operation of an institution will be impeded if it either cannot externalise contingencies or if it has to deal with contingencies created by other institutions. But what has this institutional theory to do with educational institutions? Among other things, today's educational institutions have to deal with two essential externalities: one is an economic externality, namely the need of foreign labour in many European countries after World War II; another externality is a perceived change in youth crime in modern societies.

In the 1950s it became obvious that the rapidly developing European economies needed a greater labour force than available in the domestic population. In some European countries the shortage in labour supply was compensated by the recruitment of guest workers (Castles 1986). Many of these guest workers, however, did not return to their home countries, but their families followed them and they settled down in the receiving countries. In this situation, specialised institutions should have been created to establish criteria for the guiding idea of the *integration of immigrants*. But in Germany, for instance, until the early 1990s, there was no clear integration policy at all (Luft 2007). From today's perspective it seems that institutions of primary education were defined as appropriate action contexts for dealing with the integration of immigrants. Indeed, education is still regarded as the most important mechanism of integration (Britz 2005). In countries with compulsory education, nearly all immigrant children and adolescents participate in schooling, so why not delegating the task of integration to schools? But when the results of the PISA study were published, at the latest, it became apparent that integration could not be brought about in schools alone. Rather, research has shown that—all other things being equal—a very high concentration of immigrants lowered the overall performance of a class (Stanat 2006).

The second externality is the public perception of youth crime. Since the early 1990s the public has become highly sensitised for issues of violence among children and adolescents in schools and for measures of crime prevention. Whether youth crime has actually increased or not is difficult to answer because official statistics, insurance data, as well as self-reports on offences and victimisation present different pictures (Baier and Windzio 2008). In any case, German education scientists argued that "... there is no better place for the prevention of violence than the school" (Melzer and Ehninger 2002).³ In an earlier work, Holtappels and Tillmann (1999) presented five potential measures of crime prevention in schools. These are only two examples of a rather common view that

² "Marx und Engels hätten auch schreiben können: Die Geschichte aller bisherigen Gesellschaft ist die Geschichte von Institutionenkämpfen" (Lepsius 1995a, p. 391).

³ The German quote is: "In diesem Beitrag soll gezeigt werden, dass es kaum einen besseren Ort für Gewaltprävention gibt als die Schule, die pflichtgemäß von fast allen Kindern besucht wird" (Melzer and Ehninger 2002, p. 38).

schools are institutions of crime prevention or even of “corrections”. According to the theory of institutions, the multiplicity of functions in educational institutions leads to a “syncretism” of guiding ideas (Lepsius 1997a, p. 59)—which means in Weber’s sociology of religion that people serve different gods at the same time. Such a syncretism makes institutions inefficient since organisations cannot devote their resources to the main task—which is the formation of skills and competences. But can we expect intervention measures to be efficient?

In their groundbreaking paper, Meyer and Rowan (1977) argue that there is a tendency in modern societies to decouple an organisation’s formal structure and its technical activities. The formal structure reflects myths institutionalised in the organisation’s environment, and conformity to these myths (“isomorphism”, p. 346) increases the legitimacy and thus the survival probability of the organisation. In order to gain legitimacy, organisations employ assessment criteria from the environment, which results in the drawback of being controlled by external forces. As Meyer and Rowan (1977, p. 354) argue, schools strategically redefine the nature of their output in order to meet the criteria of assessment. For instance, universities employ Nobel Prize winners. The activity of schools can be legitimated by good results in the PISA study (or similar comparative tests). This does not necessarily mean that organisations become inefficient by adopting these external criteria. However, if the survival of an organisation depends mainly on conformity with institutionalised rules, then conflicts between institutional isomorphism and efficiency become likely: “Organizations often face the dilemma that activities celebrating institutionalized rules, although they count as virtuous ceremonial expenditures, are pure costs from the point of view of efficiency” (Meyer and Rowan 1977, p. 355). According to Meyer and Rowan, organisations spent a lot of resources on adapting their formal structure to the requirements of the institutional environment. Hence institutions and their organisation are not only exposed to social problems, as was argued in the preceding section. In addition, the institutional environment imposes institutional rules which prescribe how to deal with these problems, often regardless of actual efficiency.

1.5 Conclusion

So how do educational institutions and organisations operate? All three theoretical arguments—the garbage can model, the theory of institutional differentiation and the neo-institutional thesis of isomorphism—point to the complexity of organisational processes and to the danger of inefficiency for organisations. This is a result of resources being absorbed by “ceremonial” activities, garbage can processes and externalities caused by other institutions. Just like any other subsystem, education operates on the basis of its own *code* and in doing so it is self-contained and closed against its environment and against other subsystems (Luhmann 2009). At the same time, it is open at the level of the *programme* and susceptible to prevailing ideologies. Strictly speaking, the problem of task overload is as old as institutionalised

education itself. However, since the public has defined “new social risks” and new problems in the post-industrial and globalised society, and regards educational institutions as appropriate places for solving these problems, it is not surprising that educational institutions sometimes do not work efficiently.

It is important to note that the pessimistic view in the theories presented in this chapter does not describe exclusively education, but applies to almost all kinds of institutions and organisations. Nevertheless, it should have become clear that, at the level of its *programme*, the system of education must remain adaptable to the changing needs of the overall society. In dynamic societies the flip side of this coin is that especially in periods of limited resources, educational institutions are regarded as laboratories for ideologies and normative conceptions of society and social change. In line with the theoretical arguments presented in this chapter, this can result in declining efficiency due to task overload. From an institutional perspective this would be regarded as a tendency towards de-differentiation of educational institutions.

Moreover, in modern societies all subsystems face a multitude of tasks and problems, which are to be solved by their institutionalised rationalities and by applying their intrinsic logics. The results are externalities to be handled in other subsystems. In light of Lepsius’ reasoning, these externalities are particularly the long-range effects of the institutional conflict between the economy, which supplied its demand for labour force by attracting immigrant workers, and the educational system, which had to cope with the consequences. We can find varieties of this conflict in several western industrial countries, but other countries’ educational institutions have to deal with integration as an additional task as well.

The conflict occurs not only in the institution of basic education, but also in the vocational training system. At least in Germany, the transition from secondary education to vocational training is attended by ethnic inequalities—independent of the grade and the parental socio-economic background. These transitions are the starting point for occupational careers, and delayed transitions often result in scarring effects (Schmelzer 2011). In a sense, this is an example that educational institutions do not only fail in providing equal opportunities for both native and immigrant adolescents, but that they even stimulate the emergence of ethnic stratification. Remarkably, social problems are not only dealt with, they are even produced by or at least facilitated in educational institutions.

It will also be shown in this book that, in addition to the challenges of the integration of immigrants, the task of crime prevention is another externality, in this case not only of concrete economic requirements, but also of new social risks and changes in family structures. For instance, violent behaviour and learning processes depend also on the social and ethnic composition of networks in school classes. Furthermore, violent behaviour increases the prestige of male adolescents, which could encourage them to behave even more violently.

The fundamental question of whether there is a general trend towards task overload in educational institutions, or an encroachment of externalities, or even de-differentiation, cannot be investigated in all contributions of the present volume. Nevertheless, each study provides empirical insights into the tasks and problems that educational institutions have to deal with. Most of these insights are not surprising in

light of the theoretical considerations given in this introduction: it will be analysed how educational institutions were changed in order to facilitate social integration, but now seem to generate ethnic inequalities as an unintended effect. Moreover, comprehensive *welfare* states can reduce the risks of educational poverty for immigrants. But another result points to highly stratified educational systems in which the effect of high ethnic diversity has a negative impact on the performance of native students. In addition, specific institutional characteristics affect high- and low-SES pupils in a different way. Of course, policy makers would hardly admit that they deliberately aimed to increase inequality. Therefore, the possibility of *secondary institutional effects* should always be taken into account. If educational systems are open to current ideas and ideologies about new social problems at the level of the *programme*, they are always at risk of a “twisted understanding” of the educational *programme*: this means that the system of education is not able to consistently pursue a meaningful *programme* that clearly defines the criteria on which students are graded and selected, but oscillates between different learning content and criteria for good grades and selection into careers. It will be shown for the case of Japan that the new issue of globalised labour markets raised the question of which competencies should be developed: those meeting traditional domestic requirements or competencies for the global labour market. Obviously, an undetermined oscillation between different programmes can result in task overload as well.

The volume consists of five parts. Thirteen studies analyse the effects of the wider institutional and social embeddedness on the formation of competences, skills and behavioural conduct: it starts with a theoretical and historical analysis of the basic functions of educational institutions in the first part (*Education and Society*)—social integration, skill formation and appropriately selecting individuals into functional careers; the focus of the second part (*Institutions and Educational Outcomes in a Comparative Perspective*) is on the macro level of the wider institutional embeddedness of educational institutions. It analyses the effects of education policy with regard to the choice opportunities of schools, features of the *welfare* state and the results of socially and ethnically selective immigration. With a special focus on social capital and networks, the third part (*Social Networks and Social Capital in Schools and Classrooms*) provides a detailed view of the processes taking place within schools and classes. Depending on the social and ethnic class composition, we will highlight pupils’ learning progress as well as the access to support networks in classes. Social capital and ties to social networks are closely related to the socio-demographic composition of, but also to practices of social discrimination in classrooms. In this part it will also be investigated whether ethnic inequalities contribute to violence in schools, and how deviant behaviour develops in the social networks of school classes.

The fourth part focuses on *Institutionalised Transitions Into and Out of Vocational Training*. It will be analysed how institutional regulations affect the timing of the transition from school to vocational training systems in Germany. Furthermore, from an internationally comparative perspective, it will be investigated how institutional regulations that address the permeability between dual vocational training and higher education shape different trajectories of education and employment.

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Part II
Education and Society

Chapter 2

Integration and the Education State. Institutional History and Public Discourse in England, France, Germany, and the US

Ansgar Weymann

2.1 Social Integration and the Education State

In 1656, almost half a millennium ago, the proposition of the new German constitution¹ ruled that *primary schools should be available everywhere* and should be entered at the age of 5 years. High schools should encourage parents and children, especially the ones of *lower class descent*, to enrol and to stay there as long as possible. At the university level, the number of graduates should be increased greatly to serve the *rising demand for academics* in modern society. Stipends and scholarships, funded by state tax revenues, should be available to cover the expenditures of *needy students*. Furthermore, in times of European unity, students should be encouraged to *study abroad*. At that time, degrees were recognized across Europe.

The basic idea of education policy outlined in this constitution remains similar in contemporary Europe where educational goals are to achieve social integration at the national and European level by providing merit based credentials and financial aid to overcome social inequality; by stimulating economic growth, wealth and welfare through education; and by the promotion of understanding and exchange across borders. These integration goals of education policy are similar to those of activating social policy. Thus I use the term “Education State” here analogous to the widely used “welfare state” (Weymann 2010).

The chapter argues that the rise of the Education State began centuries ago, expedited by the assumed potential of education to improve human and economic

¹ Seckendorff, Veit Ludwig von (1656). Teutscher Fuersten-Stat. In, Notger Hammerstein (1991) Staatslehre der frühen Neuzeit (237–481). Frankfurt: Deutscher Klassiker Verlag.

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development, political loyalty, and cultural integration of the population. The Education State reached its climax during the heyday of the nation-state in about 1900. Since then, social integration by means of education policy has remained a key political topic. But at the same time the public's interest in education policy in general and in international aspects of education in particular has decreased. This can be seen from the analysis of leading newspapers in England (Times), France (Le Figaro), Germany (Frankfurter Zeitung) and the US (New York Times).

This chapter first outlines the economic, political and cultural purposes of education policy in modern states (Sect. 2.2), then takes a look at the historical *rise of the Education State* throughout the last five centuries (3). It continues with the study of 20th century national press discourses on aims and limits of social integration by means of education policy (4); and presents data on the retrogression of national and international education policy coverage in the 20th century (5). It concludes that integration in educational institutions is not a task of short-term social engineering but involves profound social change of very *longue durée* and requires a large window of longitudinal comparative observation (6).

2.2 Economic, Political and Cultural Integration Through Education

Over the course of half a millennium, the assumed potential of education to improve social integration through human development made education policy increasingly important within the spectrum of national policy fields. Economic, political and cultural purposes expedited the expansion of the Education State.

From the perspective of economic integration, education policy is driven by the options and sanctions of markets and capitalism. The modern state is fully dependent on the levying of taxes and fees from civil society (Schumpeter 1918; Skocpol 1979; Tilly 1992). This is the reason why investments in capital and human capital turned into central elements of state policy. National human capital policy and individual economising on human capital became a rationale perceived as natural (Goldin and Katz 2008; Heckman and Krueger 2003; Schultz 1981).

From the perspective of political integration, education is a well-esteemed instrument to achieve loyalty within mass societies. More than the market, meritocracy through credentials is widely accepted as a legitimate basis for the distribution of goods and commodities throughout the population. The fight for educational credentials mirrors the fight for social position and reflects the balance of power in society. As a consequence, the struggle with credential inflation is a serious problem for the Education State. State policies to consolidate the value of educational credits range from credential capitalism to credential Keynesianism to credential socialism (Collins 1979, 2000).

From the perspective of cultural integration, education policy is well-suited to shape large populations homogeneously (Hechter 2000, pp. 24–25, 64–66; Mann 1986, 1993). As a result of urbanisation and mass migration, the illiterate rural

populations, often still organised in religious communities, clans, tribes or extended families, are transformed into an alienated urban proletariat. Conflicts between the old residents and the newcomers, between the rich and the poor and between classes and ethnicities threaten the integration of state and society (Guibernau and Hutchinson 2001; Smith 1998, p. 215). Education policy is one of the best means for constructing a unified national public; and in particular, elementary schools and preparatory schools are praised above all as useful institutions to achieve cultural homogeneity (Gellner and Breuilly 1983, 2006).

2.3 The Rise of the Education State in History

In the 15th century, German municipalities of 1,000 inhabitants or more had already established vernacular schools for children of the lower classes as well as Latin schools for children of higher social standing. But the first effective steps towards the education policy of states were not taken before the formation of *secular and centralised states* in the 16–17th centuries. In this period of European history, education was used by the emerging central state which was confronted with religious wars, conflicts and clashes, to integrate the multi-centred and multi-cultural populations by means of literacy, homogenising religious lectures, basic arithmetic and a common language and narrative. Step by step, education turned into a public, collective and normative good of statehood, transcending the boundaries of Christendom, self-governing cities and clerical and feudal authorities.

A *second step* in the development of the Education State was made with the formation of the *nation-state*. Starting in England and France in the second half of the 18th century, the nation-state became the most important ‘container’ of society. The nation-state was taken as a stronghold of civilisation, progress, and protection and as a key instrument of rational economic organisation and political decision-making. The state became a prime tool of the rising bourgeois professional and economic elites and the most important social construction of community. The nation-state subordinated religion, gender, class, ethnicity and the family as primordial and perennial institutions of community to its rules of law and governance. Education was used as a mercantilist instrument to improve the industrialism, professionalism and human capital of the monarch’s or sovereign’s subjects. These goals could only be achieved through the mandatory and comprehensive education of the lower classes. In Germany, mandatory primary schooling was introduced in 1721, but it took more than 100 years to accomplish the policy of mandatory schooling for all citizens. For a long time, school avoidance was widespread among the poor, peasant families, migrants and the growing industrial proletariat.

In the 19th century, *nation-building reached its climax all over Europe*, which benefited large national economies and central administrations. More and more, society was based on universal rights of citizenship, a national economy, inclusive

communication and a national curriculum of education. The inclusion of the lower classes of the agrarian population and the industrial proletariat in primary and lower secondary education became a primary instrument of the Education State to achieve social integration through economic prosperity, political loyalty and cultural homogeneity (Smith 1998). At the end of 19th century, education turned into a social right of the constitutional state, the foundation of democratic self-determination and a means of providing wealth and security. The most developed Western European states accomplished a level of more than 90 % of schooling whereas Italy and Russia lagged far behind (Table 2.1).

The 20th century is what we may call the *human capital century* of the democratic polymorphous state. At this point in history the United States has become the leading nation. The US opened senior secondary school education earlier and more consistently to all citizens than European nations did and it turned the European university education into a much less selective and principally open system of higher education. Looking back at the development of education in the 20th century, the progressive expansion of education to include increasing shares of the population in secondary and higher education is striking (Table 2.2).

2.4 Aims and Limits of the Educational Integration Policy in the 20th Century Press

It took centuries before education policy turned into the unquestioned prerogative of the modern state. As a means of integrating the nation-state through culture and ideology, as a key tool for improving political power and legitimacy and for fuelling and stimulating economic growth via human capital investment, education policy denotes a core element of the state's sovereignty and autonomy. The rise of the Education State, expedited by the assumed potential of education to improve human development and social integration made education policy increasingly important within the spectrum of national policy fields.

Table 2.1 Percent of male children aged 6–14 enrolled in schools in Europe 1820–1900

Country	1820	1850	1870	1900
Germany-Prussia	59	81	93	97
Germany-Bavaria		83	84	94
France		60	88	94
England and Wales		66	88	90
Scotland			80	99
Sweden		59		90
Italy			34	57
Russia				29
Austria			57	97

Source (Grendler 2001, p. 339; cf. Maynes 1985, p. 134)

Table 2.2 University attendance (share of students in the number of 20–24-year-olds)

Country	1910	1950	1960	1970	1980	1990	1995
Albania			5	8	8	10	10
Belgium	1	3	9	18	26	40	54
Bulgaria	1	5	11	15	16	31	39
Germany (FRG)	1	4	6	14	26	34	44
Denmark	(1)	6	9	18	28	37	45
GDR		2	10	14	23	22	–
Finland	1	4	7	13	32	49	70
France	1	4	7	16	25	40	51
Greece	0	3	4	13	17	25	43
Great Britain	1	3	9	14	19	30	50
Ireland		4	9	14	18	29	39
Italy	1	4	7	17	27	31	41
Yugoslavia		4	9	16	28	16	18
Netherlands	1	8	13	20	29	40	49
Norway	1	3	7	16	26	42	59
Austria	4	5	8	12	22	35	47
Poland		6	9	11	18	22	25
Portugal	0	2	3	8	11	23	37
Romania	1	3	5	10	12	10	23
Sweden	1	4	9	21	31	32	46
Switzerland	2	4	6	8	18	26	33
Spain	1	2	4	9	23	37	49
Czechoslovakia		4	10	10	18	16	22
Hungary	2	3	7	10	14	14	24
<i>Europe</i>	<i>1</i>	<i>4</i>	<i>8</i>	<i>14</i>	<i>22</i>	<i>30</i>	<i>42</i>
Variation coefficient Europe	65	34	31	26	27	33	30
<i>Western Europe</i>	<i>1</i>	<i>4</i>	<i>7</i>	<i>15</i>	<i>22</i>	<i>34</i>	<i>48</i>
Variation coefficient Western Europe	66	36	33	27	26	21	20
USSR/Russia			11	25	52	52	43
Turkey			3	6	5	13	18
USA	3	17	21	31	56	75	81
Japan			9	17	31	30	–

Source (Kaelble 2007, p. 392)

How is the Education State reflected in the public sphere of the 20th century? Which aims and limits of social integration through education policy are debated? We assume that education is a prominent issue continuously and increasingly displayed in the press. We will investigate the front pages of leading national newspapers which cover the most important, breaking news of the day from the perspective of the well-educated middle and upper classes. Within the entire education coverage articles should pay great attention to the political, economic and cultural aspects of education and social integration, whereas other aspects of education should be of minor interest. Furthermore, there should be an increase in international aspects of education coverage in the wake of the continuing

internationalisation and globalisation of education in the second half of the 20th century (Martens and Weymann 2007; Weymann et al. 2007; McEneaney and Meyer 2000; Rizvi and Lingard 2010).

The analysis of the front-page coverage of education is restricted to historical periods of peace. We begin with the first decade of the 20th century, the years from 1900 to 1910. This is the decade of the victorious European empires England, France and Germany and that of the rise of the American empire. This period best represents the heyday of the fully developed Education State before Europe's transformation and decay in the 30 years from 1914 to 1945. We will continue to study front page coverage of education in the post war period, beginning with 1950 and ending in 2004.² In this second period, the Education State opened secondary and higher education to ever larger shares of the population. At the same time, the former European empires turned into semi-sovereign and polymorphous states and even the U.S. hegemonic power in the end became challenged increasingly by the rise of new non-Western world powers.

The sample of articles consists of the front pages of the first Saturday³ edition of each quarter (January, April, July and October) from four leading national newspapers in four leading Western nations: the Frankfurter Zeitung⁴ (Germany), Le Figaro (France), the New York Times (U.S.) and the Times⁵ (England). The sample size is 260 front pages per newspaper totalling 880 front pages for all four newspapers.

2.4.1 England (The Times): Colonial Empire, Industrial Decay and Class Conflicts

1900–1909: On January 6th, 1900, The Times celebrates national pride via the English Education Exhibition in London. The exhibition "...brings about that the role to be filled by England in the great international exhibitions of 1900 shall be worthy of the marvellous progress and development in all branches alike industry, arts, and commerce that this country has achieved throughout the long and beneficent reign of her Most Gracious Majesty". The first impression "...will be that whether education in England is organized or not and whether it is better or worse than in foreign countries". At the dawn of the 20th century, England's economy faces growing competition in a global world and is losing its former top

² Depending on the accessibility of the particular newspaper's archive, the qualitative analysis (Sect. 2.4) ends in the years 2004 (New York Times), 2006 (Le Figaro) or 2007 (Frankfurter and Times). For comparative quantitative analysis (Sect. 2.5), the data are right-censored in 2004.

³ The Saturday editions are the largest and most comprehensive editions of the week.

⁴ After the Second World War Frankfurter Allgemeine Zeitung.

⁵ The Times did not have a front page in the usual sense until 1966. The first page of the paper previously contained advertising, family news and the like. We have selected the first page of the home and foreign sections instead of the first page of the paper for this period.

rank. Enthusiastic hope is put in a policy of improving the technical education in primary and secondary schools as well as in higher education. The path to success is through better industrial training (January 4, 1902). Another means of raising England's international competitiveness is seen in introducing compulsory modern language classes in school (January 5, 1901; January 2, 1904; October 2, 1909). Also, village libraries are established to support village industry. Every village can receive a parcel of books and keep them for a certain length of time before returning them (April 7, 1900).

In the first decade of the 20th century, there is a smell of nationalism and militarism in the education coverage of *The Times* (April 6, 1901; October 10, 1901). The aim of national training and national defence in school is to initiate the first stages in the development of a healthy, vigorous population of young people sufficiently patriotic to care for their country and so adequately accustomed to drill and discipline as not to shrink from personal service in its defence (April 5, 1902). "Military education in England from a National and an Imperial Point of View" is a critical point of the nation's education policy (July 5, 1902).

The United States of America and Germany are seen as major rivals challenging England in the field of education. On July 3, 1909, the *Times* raises the question: "why does our Government not support the Hong-Kong university scheme in the same way as the German Government is supporting a similar scheme at Kiao-chau?" The other rival, the USA, is looked at with a bit more sympathy. The Mosely Educational Commission leaves Southampton this morning, *The Times* reports. A majority of its members are especially interested in technical and commercial education. "It is here, we suspect, that the United States, as well as Germany, have an advantage over us" (October 3, 1903). The final will of Mr Cecil Rhodes, reprinted in *The Times* in full length (April 5, 1902), combines the sense of the looming threats of war stemming from the national rivalries of the leading powers of that time with his intention to preserve peace in the world under English hegemony by offering stipends to English-speaking students in all colonies. Also, American and German scholarships are explicitly included in the will. The financial resources of this testament are taken from Cecil Rhodes' colony, Rhodesia. South Africa, a colony just recently conquered from the Dutch, also receives a lot of interest. "The question of education in the new colonies in South Africa is of such paramount importance in the ultimate consolidation of our South African Empire" (January 2, 1904). *The Times* argues that in dealing with "uncivilized races", the most important thing is to teach them what they ought to do (October 1, 1904; October 7, 1905).

Ireland, located between colonial and domestic education policy, is also of great interest to *The Times*. There is an embittered open conflict over Irish home rule in general and Irish education in particular (April 4, 1903). As in the case of other colonies, the national language policy of teaching Gaelic in national schools is seen as an impending threat (April 2, 1910). This state of affairs launches a fervent response from the Roman Catholic Bishop of Limerick; "The Bishop insists that the only way in which Mr. Birrell and his Cromwellian colleagues can be brought to terms is by an open declaration of war against the Government" (October 5, 1907).

Generally, the integration of religious groups by means of education policy is seen as a major task to be fulfilled. At home, the term “education crisis” applies to the conflict over Christian or secular education (January 5, 1907). In the eyes of liberals, the bill sought to place the moulding of the minds and characters of the country’s children under clerical control. Seen from the conservative side, the nation as a whole is set on providing Christian education for all of its children (April 2, 1904).

Other problems relate to issues of class, gender, professions and regions. The four Scottish universities appeal for funds to enable them to compete on equal terms with the universities in England, Germany and America (April 6, 1901; April 2, 1904). In terms of gender equality, it is argued that the effect of the Acts of 1902 and 1903 is the establishment of education policy bodies which consist only of men (July 7, 1906). In terms of the representation of professional interests, the improvement of teacher training is seen as urgent (January 4, 1902). In 1900, there was only one certified teacher for every 73 children in school. “The rest of the work was done by non-certified teachers—a kind of teacher known as ‘article 68’, which meant a young woman of good character and 18 years of age” (July 4, 1903).

1950–2007: After World War II, most articles either deal with cuts or budget shortages, the miserable state of buildings and facility deterioration, or they deal with strikes, the poor salaries and low living standards of teachers’. The balance of power is reflected in battles over primary versus comprehensive schools and universities. Furthermore, it is argued that individual human development and the prosperity of the nation are endangered by the poor quality and low competence of graduates and by the undersupply of the technical skills that industry demands.

For the first two decades after World War II, a central topic in *The Times*’ coverage of domestic education policy is the “intolerable conditions of sweated labour of members of a depressed class who never will get the financial rewards their services deserve until public opinion had indignantly demanded it for them” (October 7, 1950). Also, the condition of school premises, the number and condition of class rooms and the availability of technical facilities for education in the sciences are heavily criticised (January 5, 1951). The plea for higher pay is perpetually made (April 4, 1959) and teachers are on strike on a yearly basis (April 4, 1961; January 3, 1970; April 1, 1973; October 2, 1976; April 7, 1984; April 6, 1985).

Another topic of education coverage is the profound reform needed for the professional training of school teachers. Recruitment is at fault as well (January 2, 1954). Female teachers mainly want safeguards against the possible consequences of the reorganisation of secondary schools (January 1, 1966). A better grants system for pupils is thought to be important as well. Instead, parents’ expenditures in school fees increase (July 7, 1957). In 2007, *The Times* reports the highest fee level for private schools since 1963 (January 6).

In general, education needs a fundamental shift from a segregated system towards comprehensive secondary schools (October 4, 1952). The separation of liberal and technical education is out-of-date (July 4, 1953). Joint secondary schools are urged to end a baleful dichotomy of grammar schools and schools for technical skills (April 6, 1957; January 4, 1958). In the field of higher education,

the opening of new universities and less selective rules of university admission, more interdisciplinary communication and the curbing of over-specialisation are debated and condoned in *The Times* (July 3, 1954). As the British system of education is not supplying the industry and civil service with sufficient sets of skills and competences, the paper expresses the drastic point of view that personnel in the National Service are nearly illiterate (July 6, 1957). The industry wastes the talent and good spiritual values of young personnel (January 6, 1951). 26 years later, *The Times* refers to a study stating that “educational standards dropped between 1968 and 1973 and general certificate of education examination boards awarded higher marks to pupils of lower calibre in 1973 than they did in 1968” (July 3, 1976). In the 80s, *The Times* writes: “The spelling, punctuation, syntax and, in particular, handwriting of O- and A-level candidates seem to be getting worse” (April 4, 1987). In the 90s, national tests for 11-year-olds spark the return to traditional teaching methods in state primary schools, including multiplication tables, spelling bees, public gold stars rewarding children’s progress and dividing classes by ability for some subjects (January 4, 1992; April 1, 1995).

The *Times* primarily reports on economic problems of education policy in terms of strikes, costs, shortages, cuts and deterioration of facilities (43 %). Another main topic is the political struggle over the transition from a class-based tracking system of schools and universities to comprehensive education (32 %). The interest in cultural aspects (11 %) and in foreign nations (11 %) is small (Other aspects 3 %).

2.4.2 France (Le Figaro): National Grandeur, Cultural and Ideological Clashes

1900–1909: The front page of *Le Figaro* on January 5, 1901, gives major attention to the reform of senior secondary schools (*enseignement secondaire*) in France within the explicit context of comparing, in some detail, the old and the new French systems with the American and the German secondary school systems of the time.

A key conflict within national education policy concerns the strained relations between the state and the Catholic Church. Through its constitution, the French state is obliged to be neutral, secular and laicist. In reality, the impact of the Catholic Church on institutions and education policy is strong and an object of embittered arguments. On the occasion of the dismissal of two professors by the minister of education, *Le Figaro* (January 4, 1902) argues that the enforcement of a state monopoly in the field of education limits the pluralism of institutions and the freedom of choice for teachers, parents and pupils with regard of where to work and study. In parliament, the freedom and liberty of education is radically attacked by delegates with the intention of completely suppressing competition in the field of education. *Le Figaro* states that it is not the alleged threat of clericalism that is the main problem of the French system of education, but rather the lack of patriotism among the 141 radical and socialist members of parliament who favour

a tyrannical state monopoly on education (July 6, 1901). On the one hand, the leftist delegates strictly defend the right of professors to politically mobilise students towards privately held political preferences by turning classes into political tribunes. On the other hand, these groups act to eliminate any presence of religion in institutions of education. Senator Clemenceau represents this bigoted education policy best. He takes a liberal position, arguing that he is in favour of a system of “loyal battles” among the various groups that have an interest in the field of education policy. But hitherto, he supported a policy of submissiveness, ostracism and prosecution in education (October 1, 1904). As contrasting, good examples of real freedom and liberty in the field of education policy, *Le Figaro* celebrates the institutions of vocational and adult education maintained by the Catholic unions and Catholic citizens (April 3 and July 3, 1909).

Two articles argue in favour of military elements in education policy. In an article on October 6, 1906, *Le Figaro* supports the new draft regulations. The length of army service has been extended, and the possibility of enrolment at the *École Polytechnique* and at Saint Cyr is dependent on participation in the new two-year minimum army service. Another article, published on October 2, 1909, is written on the occasion of a “peaceful invasion” of 6,000 visiting English boy scouts in France. *Le Figaro* applauds the fact that 350,000 boy scouts are trained in England each year to become officers or corporals later in life. The writer argues that the boy scouts represent a perfect, modern way of training young men of school age for prospective military service as cadets. The author sees the pre-military organisation of the boy scouts as a shining example that the French school battalions cannot match on equal terms. “There is no doubt that this is the lesson they wanted to teach us” (October 2, 1909).

Three articles are dedicated to the representation of French civilisation in the educational institutions of foreign countries. On July 7, 1900, *Le Figaro* states that the eminent French compatriot professors affiliated with the *Collège Européen* in China are very popular with their Chinese pupils. On April 1, 1905, *Le Figaro* reports on 14 conferences the Duke of Monaco organised to address French education. Finally, the *Ecole d’Athènes* is seen as a true monument to French philhellenism and a preeminent piece of France’s great history (April 4, 1903).

1950–2006: *Le Figaro* in the post-war period is filled with reports and heated debates of the strong pressure towards the centralisation of education policy in all respects. Additionally there are reports of clashes between religious denominations and the secular state. These clashes particularly include conflicts over the abolishment of private schools maintained by the Catholic Church as well as—in the last decades—clashes with Islamic actors and organisations about Islamic offences against French laicism.

Many articles of *Le Figaro* deal with the educational budget shortage. The fiscal problems are seen as one of the basic evils of education policy and as a major cause of professors’ strikes (October 6 and 7, 1951); the reason for rotten buildings (April 3 and 4, 1954); and responsible for overcrowded classes in primary schools with up to 50 pupils per class and the undersupply of places—with only 600,000 places for 800,000 school pupils (October 5 and 6, 1957). In January 1950 (7 and 8), *Le Figaro*

laments the fact that since 1935 France has not earned a single Nobel Prize. At the top of the ranking list of nations is Germany with 38 awards, followed by England with 28 and the USA with 23. In the end, the nation will fall behind in the high-speed race for research achievements at technical universities for scientists and engineers in the world's leading countries. Benchmarking, screening and evaluating the country against its competitors might be of some help (July 4 and 5, 1970), but the main problem is that the French elite, a product of the *grandes écoles*, has turned into an oligarchy herding the nation and exercising guardianship over the electorate (July 1 and 2, 1978).

In the wake of the 1968 campus revolt, “the Revolutionary University” in France is dominated by Stalinism, Trotskyism, Castroism, Maoism and Anarchism and the state has lost control over education and education policy (October 5 and 6, 1969). Formerly, secondary schools were institutions that taught their pupils classical and modern languages, mathematics and philosophy. Now, the schools are in permanent turmoil, plagued by both pupil and teacher strikes (April 7 and 8, 1979). “An entire generation of pedagogues ... turned imbecile” (January 6 and 7, 1973). From 1985 to the present, the turmoil is an outcome of the rapid growth of universities and schools, of overcrowded institutions of education and of unregulated mass immigration. In Saint Denise, 45 % of pupils are immigrants from 40 nations (April 4 and 5, 1998). The new graduate cohorts can no longer cope with the standards formerly required for graduation (July 2 and 3, 1988). Pupils armed with sticks and stones attack schools in Paris and in provincial cities (April 4 and 5, 1998). Even school authority buildings in Paris are blockaded (April 2 and 3, 2005). This is an “internal war” according to the minister of education (October 3 and 4, 1998).

In the 80s, 10,000 private schools are at stake because the government intends to nationalise and assimilate all institutions of the educational system, aiming for a perfect levelling of all pupils' minds (January 7 and 8, 1984). The fruits of these labours will be incompetence, imbecility and humiliation on the part of the pupils, the deaths of young souls and the decay of civilisation, *Le Figaro* complains. This brave new world will be a boring vegetative universe—“être legume” (October 1 and 2, 1983).

Primarily, *Le Figaro* deals with cultural and ideological clashes throughout the entire second half of the 20th century (35 %). This is unique among the group of four newspapers. Aspects of political power (30 %) rank second in the hierarchy of education coverage of *Le Figaro*. Economic aspects (13 %) and international aspects (11 %) receive less interest (Other aspects 11 %).

2.4.3 Germany (Frankfurter Zeitung): Federalist Quarrels, a Standstill and Modern Times

1900–1909: In Germany, the states (*Länder*) are in charge of education policy. The government of the Reich (*Reichsregierung*), the parliament (*Reichstag*) and the second chamber (*Reichsrat*) do not play a prominent role in the front-page coverage of education policy. In 1902, after 10 years of parliamentary and public

debates, the Prussian parliament had not yet passed the Prussian primary school act (Volksschulgesetz) (January 6, 1906; October 10, 1907). The *Frankfurter Zeitung* argues that pivotal points in this perpetual political and legal conflict concern constitutional law, the importance of education for the prospects of the national economy, the impact of education on the style of culture and civilisation and the effects of education on individual conduct. The main appeal is to improve school education in the face of rising demands from business, trade and industry, in what is called “modern times” (January 4, 1902). After 14 years (July 7, 1906), the front page finally celebrates victory in the parliamentary fight for a secular, modern Prussian School Law (Preußisches Schulgesetz). The primary school is praised as a basis of the democratic constitution, and the newspaper contrasts democratic countries with a well-educated electorate (Germany) with such illiterate autocracies as, for example, Turkey (October 3, 1908).

A series of articles argues for the improvement of education under the auspices of a modern, global economy. The argument is that the civil service needs better training in the wake of ever more complicated international customs and tariff regulations (April 2, 1904). The paper demands more schooling in mathematics, biology, technology and geography (the MINT or STEM) sciences—mathematics, engineering, natural sciences, and technology in contemporary debates (April 3, 1909). Enhanced practical studies in industry should be made compulsory in the teacher training curriculum of higher secondary vocational schools (October 5, 1902). Also, in times of globalisation and progress, stenography should be included in the curriculum of vocational secondary schools (October 3, 1903).

A burning problem at the turn of the century, just like today, is the risky transition from school to work. Schools and the national and local offices of labour are in charge of delivering statistics, recommendations, prospects and counselling while fully respecting the pupils and students to self-determination (“Selbstbestimmung”) (April 6, 1901). On this point, the German tracking system is vigorously attacked: the successful graduation from primary school as a prerequisite for enrolling at a Gymnasium should be abolished in favour of better education in primary schools. This is supposedly in the interest of good social policy which aims for less selection upon entry into the Gymnasium (October 5, 1901).

International education coverage refers to international and comparative statistics, standards and benchmarking. The *Frankfurter Zeitung* looks eagerly at international solutions to local problems (April 5, 1903). The international orientation of the *Frankfurter Zeitung* is captured in a phrase stating that the “modern European citizen” is assumed to be in “sympathetic accordance” with the general intention of the progressive new Prussian school law (January 4, 1902).

1950–2007: Key topics include the selectivity and inequality of the tracking system versus comprehensive schooling, the defeat of humanist traditions and religious education, migration and education, the quality of teaching, the competences achieved by graduates, over- and under-supply of graduates, budgets and financial shortages, the problems of integration of classes and social groups and finally the persistent rivalries of the states and the Federation over education.

On July 5, 1969, an article reports on the implementation of pre-school classes in Rhineland-Palatinate with the intention of launching a voluntary head-start programme for five-year-old children. Admissions and accreditation of comprehensive schools permanently stimulate bitter conflicts between the more conservative and the more social-democratic states over the equivalence of curricula and exam standards. “Disagreement between the ministers of education of the German states about mutually recognising comprehensive school diplomas as equivalent to the traditional grammar school/Gymnasium diplomas of the tracking system after Hamburg declared comprehensive schools the standard school form” (October 6, 1979). 12 years later, there is no agreement between the states and the nation on education policy in general and on this issue in particular (January 5, 1991).

Because pupils try to avoid German, mathematics and foreign language classes, these subjects are imposed as mandatory throughout middle and high school. On this issue, the ministers of education reach a consensus following long disputes (October 3, 1987). The headline reads: “Increasingly more mistakes. Spelling deficiencies are becoming commonplace among pupils and students” (October 1, 1983). Students clearly prefer the humanities and social sciences over the STEM (“MINT”) disciplines. This problem will have severe consequences for the competitiveness of the German industry in a global world the newspaper argues (January 6, 2007). In later years, the dispute over quality, skills and standards focuses on delayed or failed junior secondary school exams (July 1, 1972), especially among the growing group of children from immigrant families (July 7, 2007). The level of open violence in schools rises. “After the urgent letter from the teaching staff due to increasing violence” at a secondary school with an immigrant population of roughly 80 %, a new debate erupted about integration in Germany and the lower secondary school (April 1, 2006). Successes and failures of integration policy and politics become pertinent issues in the press.

Political power is the predominant topic of education articles in the *Frankfurter Allgemeine Zeitung* (50 %). Federalist quarrels in general and in particular over tracking versus comprehensive schooling are the main subject matters in education press coverage. Economic aspects, especially interests in the costs of and returns on education at the individual and national levels, rank second in the hierarchy of the newspapers’ reports on education (20 %). Culture ranks third, predominantly related to clashes of the campus revolts and immigration (15 %) along with international aspects of education (15 %).

2.4.4 USA (New York Times): Racial (De-) Segregation, Finance and Screening

Racial segregation and de-segregation in schools and higher education, the problems of federative financing of education and the screening of quantity and quality

of the outcomes of education are the main topics of the New York Times throughout the century.

1900–1909: Beth Low, nominated for mayor, released a letter to the supporting political associations and the public that centred on primary education in New York City schools. All the children of New York are given a fair chance to grow into God-loving and God-fearing men and women. “Most of all, it means that the City Government shall wage relentless war on every one who shall make one of these little ones to stumble” (October 5, 1901). Frequently, reports about public education policy focus on matters of racial segregation and desegregation. On October 6, 1900, a front-page headline of *The New York Times* reads “Protest by Negro Clergy”, and the article says that church and education have failed in their efforts to solve the “negro problem”, and that “the race” is confronted by a menacing growth of prejudice and violence. “President J.H. Jones of Wilberforce University asserted that the negro is being made the victim of a National conspiracy and that his only hope is an immediate moral and intellectual education” (October 6, 1900). 10 years later, a small success in terms of desegregation is announced: “Negro a Columbia orator” (April 2, 1910).

Reports about bequests and funds donated by wealthy citizens also receive a lot of interest. “Large public bequest. Bowdoin College and Worcester Polytechnic receive funds” (April 7, 1900). A Rockefeller gift of \$10,000,000 is dedicated to create an endowment fund for higher education. Only the small colleges will receive aid. The administration of the fund is put in the hands of the General Education Board (July 1, 1905). “6,000,000 Carnegie gift. The present endowment of the Carnegie Institute is doubled. Funds go to Technical Schools, Librarian Schools, Art Department, Museum and Music Hall. The gallery is for the masses of the people primarily, not for the educated few” (April 6, 1907). Carnegie adds another \$5,000,000 to the Teachers’ Fund. Carnegie creates a foundation of \$15,000,000 to include State University Professors in his programme. The interesting aspect of the last news is that the pensions of professors were so small that aid from private sources was necessary and accepted. One hundred colleges are now on Carnegie’s list, denominational and parochial institutions are excluded (April 4, 1908).

The coverage of foreign education policy reflects the international race for excellent professors and the exchange of teachers. “Osler May not Go Back”, there is a belief in Baltimore that he will resume his old post at Johns Hopkins Hospital and resign from the Regius Professorship of Medicine at Oxford (January 6, 1906). With respect to the exchange of teachers, a *New York Times* headline claims, “American Teachers Wanted” (July 4, 1903). Japan is about to hire 650 instructors of English and prefers American teachers. Furthermore, *The New York Times* reports the “French Religious Exodus” (October 5, 1901). The Jesuit schools in Paris and the provinces are to reopen under new ecclesiastical teachers. At Ottawa, French professors are dismissed from Ottawa University. “Pope heeds Irish Protest” (January 1, 1907).

A number of articles report fatal accidents of pupils and students or comment on incidents of crime and violence at schools and universities. Special attention is

given to ritually repeated events of “hazing”, i.e. the bullying of new students enrolled at a college or university. “Don’t haze, says Schurman”, the President of Cornell University (October 1, 1904). At the University of Illinois, a police Mayor fired his gun at students during a fight between sophomores and the local police. “I will shoot to kill the next time... the militia ought to be called out”. Furthermore: “President James of the university asked the authorities to arrest all students misconducting themselves” (October 3, 1908).

1950–2004: For the decades after the War, the bulk of articles on education deal with racial segregation and de-segregation. In the early 50s, delegated educators from all American states back the courts’ segregation bans (July 3, 1954). In addition to school segregation bans, the university bias is banned as well. “Judge orders University of Alabama to admit qualified Negroes” (July 2, 1955). 6 years later, on January 7, 1961, Georgia University too was ordered to admit “Negroes”. The period of court bans against segregation is followed by social movements and more radical actions. In New York, an anti-racism sit-in blocks the main headquarters of the Education Board in Brooklyn (July 6, 1963). On the Lower East Side, demonstrators clash with police outside a school (October 5, 1968). The President plans a teacher corps for needy areas (July 3, 1965; July 5, 1969). In the Senate, the pros and cons of busing are dealt with in heated debates (October 7, 1972). The City University of New York establishes a new Harlem branch. More black people than ever take their children out of public schools and place them in private black charter schools (April 5, 1980; July 7, 2001). On the higher education level, the enrolment rate at black colleges grows far more quickly than the national average (January 2, 1993). Also, there is increasing poverty in the 90s, and The New York Times worries that it is crippling students’ health and learning. “Nearly 40 % of black women, and nearly one-fourth of all women in the United States get no prenatal care in the first trimester” of their pregnancy (October 5, 1991).

A second permanent focus of education coverage in The New York Times is the availability of and conflict over financing and funds at the federal, state and city levels. In 1956, a U.S. report asks the nation to double education funds (April 7, 1956). One year later, against strong resistance from the states, the President still hopes for the ratification of a school bill (July 7, 1956). “The task force stipulated that the states should be required to maintain or increase their present support of education, not use the federal aid to reduce their own share of school expenditures.” (January 7, 1961). In accordance with the expectations of the federal task force, the mayor of New York says that New York State will cut New York City school aid by \$48.6 million (April 7, 1962).

A third category of articles argues over the alleged affiliation or sympathy of teachers and professors with the Communist party or with communist groups inside and outside the USA. This “McCarthy” issue ranks third in the front-page coverage of education policy. It is most frequent in the 50s and 60s. On April 1, 1950, The New York Times reports that McCarthy suspects the Secretary of State and a number of university professors of being communists. The University of California is ordered to rehire 18 faculty members previously accused of being communists (April 7, 1951). One year later, three professors are suspended because they refused

to answer questions about alleged Communist Party membership (October 4, 1952). A decade later, McCarthyism sporadically has a brief revival in the education policy coverage of *The New York Times* (October 1, 1966).

The leading topic of the last two decades is the screening, evaluation and rating of education. In 2001 (April 7), the front page reports the alarming news that between 1992 and 2000, the gap between the best and the worst pupils widened in the nationwide fourth-grade reading test of the National Assessment of Educational Progress. “Two thirds of students fell below the level the federal government considers proficient, and 37 % fell below even basic knowledge of reading” (April 4, 2001). They could read little beyond simple words and sentences and could not draw conclusions from what they read (April 7, 2001).

The political problem of how the federalist state can fight the segregation of pupils and students by race is the subject that raises the most interest (46 %). Also, federal financing of schools, colleges, universities and special aid programmes is an aggressively contested battlefield. The leading topic of the last two decades is the screening, evaluation and rating of the quantity and quality of education, of the standards of skills and competences (22 %). Cultural and ideological clashes, mainly McCarthyism, are confined to the 50s and 60s (13 %). International education issues are covered relatively rarely in *The New York Times* (6 %) (Other aspects 13 %).

2.5 The Cure-All Panacea of Education Policy in Times of Globalisation

Throughout the 20th century, education policy is considered a classic prerogative of the modern nation-state in the western world (and virtually worldwide). As a means to integrate society, as a key tool to improve economic growth and as a social right it constitutes a core element of the nation—state’s sovereignty and autonomy. Mass education is employed to foster national unity, capitalising on the resources of a national language, literacy and arithmetic skills. Mass education is based on public- or state-financed and -supervised institutions and on standardised curricula. Education enforces discipline in the personal conduct of all citizens according to the municipal middle class archetype. Education supports the construction of cultural homogeneity and identification with a national community. Education improves the smooth exchange of goods, persons and services on expanding markets. Education is seen as the key resource of nations to successfully compete for wealth and power and as fundamental for national achievements in science and technology. Education is used to integrate migrants and minorities into society. Education serves as an instrument to fight anomie by re-socialisation, correction and rehabilitation. Moreover, improvements in education are also supposed to promote democratic participation. And last, but not least, education legitimizes the unequal distribution of status among citizens by means of providing

standardised and publicly acknowledged merit-based credentials that counterbalance opportunities otherwise allocated for example via inheritance, employment or marriage. It goes without saying that social integration by means of education and education policy serves as a panacea against the multifaceted social ills of modern society. The belief in education and in the Education State’s policy to provide a good society resembles a civil religion (Bellah 1975; Beiner 2010).

At the beginning of the century, the four newspapers see education policy as an appropriate means to improve the welfare of the people at home and to increase the international competitiveness of the nation in terms of power and industry. Furthermore, education policy is debated as a means of appeasing conflicts and clashes in domestic politics. Figure 2.1 shows the leading newspaper’s front-page coverage of education for the first period of the century. Education is covered frequently and continuously at an average rate of more than 40 articles per year and newspaper. In the second half of the century, unexpectedly, the coverage of education on the front pages has not increased but decreased (Fig. 2.2). The average rate of education front-page coverage published per year and newspaper dropped from over 40 to less than 20 articles. This may indicate that the newspapers’ and the readers’ interest in education declined throughout the century.

A second unexpected result is that the coverage of global and international aspects of education policy also has not increased but decreased, is erratic and shows ebb and flow (Figs. 2.3, 2.4). We can observe a strong retrogression of the papers’ and the readers’ interest in international education. The challenge of internationalisation and globalisation is not consistently met.

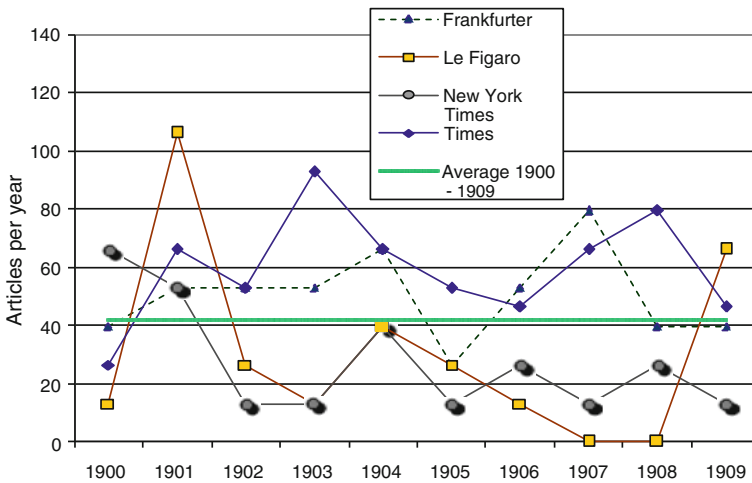


Fig. 2.1 Annual front page coverage of education—1900–1909 (calculated from 160 front pages between 1900 and 1909) (articles per year)

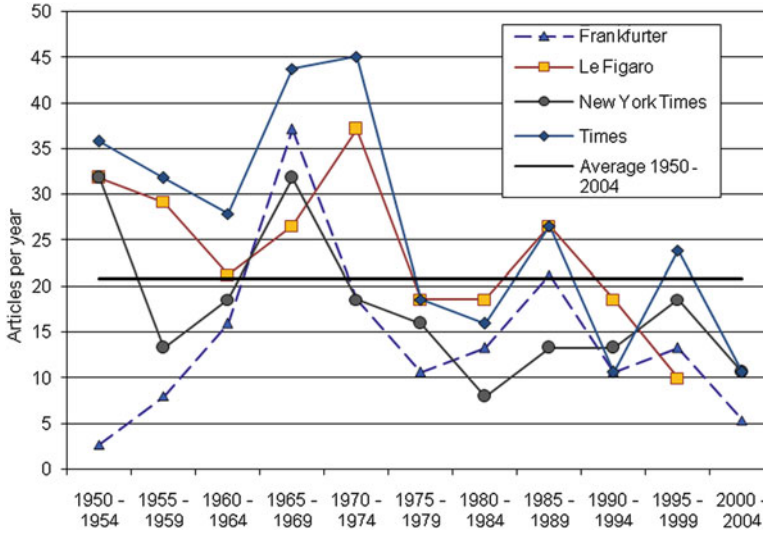


Fig. 2.2 Annual front page coverage of education—1950–2004 (calculated from 880 front pages between 1950 and 2004) (articles per year)

2.6 Final Considerations

This chapter has shown that the economic, political and cultural integration of the population by means of the Education State’s policy has taken centuries and has never been fully accomplished. Very slowly and gradually only, the pride in education and the insight into the usefulness of education transcended from the

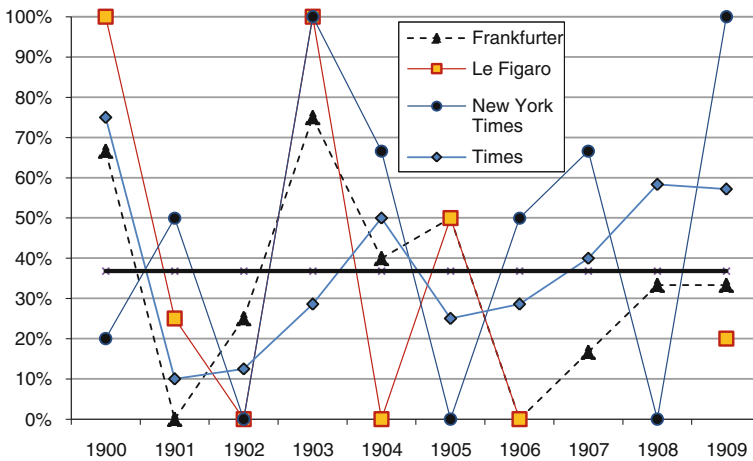


Fig. 2.3 Front page coverage of international education—1900–1909 (in percent of all education coverage)

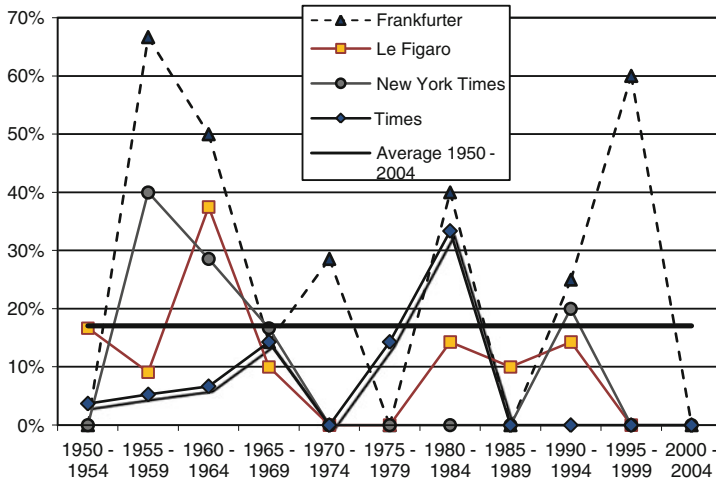


Fig. 2.4 Front page coverage of international Education—1950–2004 (in percent of all education coverage)

upper and middle classes to the lower ones. The well-educated classes permanently added newly erected wings, floors and annexes to their institutions of education to maintain advantages for their offspring under the growth of mass higher education. Today, in times of continued economic and financial globalisation and mass migration, it will take more generations to replicate the European Education State and its policy of social integration worldwide.

Seen from this historical context, it is surprising to observe the decrease of national and international education coverage in the leading papers of the well-educated classes of the hitherto leading Western nations. This finding raises new questions. Is the strong interest in education bound to ascending (bourgeois) classes of ascending nations and empires? And does the interest in national and international education stagnate with the stagnation of state and empires? Do the topics, aims and limits of integration through education policy reflect the dynamics of rise, stagnation and fall? Does the trust in the Education State and its policy of development and integration in our days transcend from the West (Goldin and Katz 2008; Heckman and Krueger 2003) to the rising Non-Western world, for example China (Davis and Wang 2009; Hannum and Park 2007; Postiglione 2006), India (Ferguson 2003), Bangladesh (Baulch 2010), and other developing countries (Ravallion and Wodon 2000; Taras 2005)?

However, in *terms of social research*, the analysis and understanding of the conditions of *Integration and Inequality in Educational Institutions* needs a large window of longitudinal comparative observation. In *terms of politics*, integration in educational institutions is not a task of short-term social engineering but involves profound social change of very longue durée. And the outcome is open-ended.

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Part III
Institutions and Educational Outcomes in a
Comparative Perspective

Chapter 3

The School Performance of the Russian-Speaking Minority in Linguistically Divided Educational Systems: A Comparison of Estonia and Latvia

Kristina Lindemann

3.1 Introduction

Ethnic inequalities in education are characteristics of many European societies (Heath and Brinbaum 2007; Heath et al. 2008). Several studies have reported that the school performance differs significantly between the native and the immigrant population (Marks 2005; Schnepf 2007; Levels and Dronkers 2008). In a comparison of different Western European countries, Heath et al. (2008) conclude that the ethnic disadvantage in education is particularly visible in school performance, even though the educational choices of ethnic minorities might be even more ambitious compared to the majority. The different educational achievements of ethnic groups are often attributed to social background and aspirations. However, the school context may also account for the lower achievement of ethnic minority pupils (e.g. Portes and Hao 2004).

Although many studies have explored the ethnic differences in educational performance in Western European countries, this is a much less researched topic in Eastern European societies. This chapter focuses on the educational achievement of the Russian-speaking minority in Estonia and Latvia. In these countries, the inflow of Russian-speaking immigrants was large during entire Soviet period (1944–1991). Since that time, schools in Estonia and Latvia have been divided on the basis of the language of instruction. Therefore, Russian-speaking pupils have the opportunity to study in their native language, although currently teaching is also partly conducted in the majority language at these schools. In the literature, the effect of bilingual education on the educational success has received little attention thus far (Esser 2006). Some previous studies have focused on the

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influence of multilingual teaching on the academic success of ethnic minority children (e.g. Greene 1998). However, the scope of the aforementioned research rather comprises language immersion programs at schools than educational systems divided on the basis of language. It is thus an important question whether the specific institutional arrangement of dividing the educational system according language of instruction has an impact on ethnic inequality in performance.

This chapter explores the performance of pupils studying at schools in Estonia and Latvia with the majority language or Russian as language of instruction. The central research questions are (1) whether the opportunity to study in own mother tongue promotes the achievement of minority students and (2) how math performance is related to the individual social background, achievement motivation and the school context in linguistically divided educational systems. These questions are important from the theoretical perspective since previous literature on the integration of ethnic groups has predominantly overlooked the effects of linguistically divided educational systems.

The ambition is also to explore how specific societal contexts shape the achievement of minorities in schools with a different language of instruction. The immigration history of Russian-speakers was rather alike in Estonia and Latvia. However, compared to Latvia, the intermarriage rate between ethnic groups is lower in Estonia and communities are more separated socially. The Russian-speaking minority in Estonia is less dispersed geographically than in Latvia. In addition, the socio-economic differences between the ethnic communities are larger in Estonia than in Latvia (Hazans 2010; Rozenvalds 2010). Nevertheless, in both countries, issues related to minority schools were one of the most debated aspects of the educational reforms. In particular, the recent transition to bilingual teaching in Russian-medium schools has raised the questions about the quality of education in these schools.

In this study, data from OECD's PISA 2006 study is used which enables researchers to compare pupils' mathematical performance while taking into account the language spoken at home and the language of instruction at school. The analysis is conducted using multi-level techniques.

3.2 Background

3.2.1 *Ethnic Minorities in Estonia and Latvia*

Estonia and Latvia became hosts to a sizeable Russian-speaking minority after World War II. The inflow of Soviet military persons started immediately after the incorporation into the Soviet Union. In addition, the inflow of labour migrants was high during entire Soviet period as a result of a specific industrialisation policy. Mostly, Russian-speakers were arriving from Russia, Ukraine and Belarus. The ethnic composition of the populations of Estonia and Latvia changed significantly.

The share of people identifying themselves as ethnic Estonians in Estonia decreased from 88 % in 1934 to 62 % in 1989. In Latvia, the number of ethnic Latvians dropped from 77 % in 1935 to 52 % in 1989. However, the proportions of natives have increased during last decades to 59 % in Latvia and to 69 % in Estonia (Central Statistical Bureau of Latvia 2010; Statistics Estonia 2010).

In both countries, the differences between the ethnic majority and the Russian-speaking minority are not very large in terms of age and gender distribution, average household size and education level. However, it has been argued that the differences between the native and the Russian-speaking communities are larger in Estonia than in Latvia (Aasland and Fløtten 2001). In Estonia, the residential location, division of labour and institutional ties overlapped with ethnic and language boundaries during the Soviet period (Hallik 2002). Although, a policy of segregation was also practised in Latvia (Priedīte 2005), there was more social interaction between the ethnic groups both at work and outside of work. Higher numbers of Russian-speakers in Latvia could speak the local language, and there were more interethnic marriages compared to Estonia (Aasland and Fløtten 2001). Mixed-ethnic marriages are still more common in Latvia. In 2009, about 21 % of Latvians had a spouse from a different ethnicity than Latvian (Central Statistical Bureau of Latvia 2010). In contrast, only 4 % of marriages were between Estonians and Russians in 2000 (Statistics Estonia 2010).

According to the 1989 USSR Census, 15 % of Russians in Estonia and 22 % of Russians in Latvia were fluent in the titular language (Pavlenko 2008). However, since the late 1980s the language situation has changed. The official language is Estonian in Estonia and Latvian in Latvia, while Russian is defined as a foreign language. The knowledge of the official language is rising, especially among the younger generation. Between 1989 and 2000, the percentage of the population able to speak majority language rose from 62 to 82 % in Latvia and from 67 to 80 % in Estonia (Hogan-Brun 2007).

The ethnic segmentation was a characteristic of the work sphere during Soviet times and is also present in the contemporary Estonian and Latvian labour market. In general, the labour market position of Russian-speaking minority became more vulnerable after regaining the independence. In both countries, the unemployment rate is higher among non-natives than among ethnic Latvians or Estonians. In addition, returns on education in terms of high wages are significantly higher for natives compared to minority members (Leping and Toomet 2008; Lindemann and Saar 2009; Hazans 2010). One important reason for such a tendency is insufficient skills in the official language. However, the ethnic pay gap in Latvia is modest compared to Estonia and the gap between the majority and minority unemployment rates is smaller in Latvia (Hazans 2010).

In addition, about 16 % of the Latvian and 8 % of the Estonian population were without any citizenship in 2009 (Central Statistical Bureau of Latvia 2010; Statistics Estonia 2010). However, there are no legal restrictions for children without citizenship to participate in educational system.

3.2.2 Estonian and Latvian Educational Systems

In both Estonia and Latvia, primary and lower secondary schools constitute one uniform basic school. Basic education begins at the age of seven and lasts nine years. There are no tuition fees in public basic schools. According to the OECD (2010) Estonian and Latvian school systems are characterised by rather low levels of differentiation in selecting and grouping pupils. Thus, the learning environment in classrooms tends to be heterogeneous. However, some basic schools select pupils based on their ability in Estonia. In Latvia, it is generally not permitted to organise any admission tests for public schools, except for gymnasiums. After completion of basic education (lower secondary), pupils can choose to continue in a general secondary track or acquire some type of vocational education. This decision is typically made at the age of 15 or 16. In both countries, many pupils prefer to continue in the general secondary track as it offers the best opportunities for access to higher education (Trapenciere 2008; Saar and Lindemann 2008). In 2008/2009 about 64 % of pupils studying at upper secondary level were enrolled in general secondary schools in Latvia and about 66 % in Estonia (Central Statistical Bureau of Latvia 2010; Statistics Estonia 2010).

The division of schools on the basis of the language of instruction is a system that was inherited from the Soviet period, when Estonian and Latvian educational systems were part of the Soviet educational system. Studying in Russian was also an option at the level of higher education. Currently, the language of instruction at public higher education institutions is mainly the official language of the country, while it is also possible to study at Russian-language private universities.

3.2.3 Linguistically Divided Basic and Secondary Schools

During the last decades, there were substantial changes regarding Russian-medium basic and secondary schools in Estonia and Latvia. In general, basic schools are divided into (1) Estonian/Latvian-medium schools, (2) Russian-medium schools and (3) mixed schools (two-stream). Mixed or two-stream schools mean that some pupils study in classes with the majority language as the language of instruction and others in Russian as the language of instruction. In Estonia, Estonian-medium schools constituted 83 % of all schools in 2006, and 4 % of schools were mixed (Statistics Estonia 2010). At the same time in Latvia, 67 % of all pupils were enrolled in Latvian-medium schools, 24 % in Russian-medium schools and about 9 % of pupils attended mixed schools. A small share of pupils is enrolled at other ethnic minority schools (Kehris and Landes 2007).

The importance of the official language in Russian-medium schools has increased. In Latvia, all Russian-medium basic schools had introduced one of five possible models of bilingual education curricula by the year 2002. At the upper secondary level, all Russian-medium schools are supposed to have at least 60 % of

studies in Latvia since the school year of 2006/2007. The implementation of this reform became the subject of heated debate in Latvia, with a resultant growth in inter-ethnic tension (Hogan-Brun 2007). In Estonia, the transition to bilingual teaching in upper secondary school is still ongoing. Pupils who started 10th grade in 2011 have to study 60 % of their school subjects in Estonian. In recent years, the special programmes for language immersion have become ever more widespread in Russian-medium basic schools. Nevertheless, the influence of language immersion should be minor for PISA 2006 participants.

In both countries, the proportion of pupils enrolled at Russian-medium schools has decreased over the last 20 years. The general number of Russian-speaking pupils has dropped and several Russian-medium schools have closed (Hogan-Brun et al. 2007). Some Russian-speaking pupils prefer majority schools. In Latvia, for instance, about 16 % of pupils in Latvian-medium schools are ethnic minority children (Kehris and Landes 2007). Schools with Estonian or Latvian as the language of instruction are particularly valued among Russian-speaking parents who seek opportunities to help their children to become bilingual because the quality of teaching the national language in Russian-medium schools is considered insufficient (Hogan-Brun et al. 2007; Zepa et al. 2008). In Latvia, studies show that an important factor that influences school choice is the language proficiency of parents. The higher a parent's proficiency in Latvian, the greater is the possibility to choose a Latvian-medium school (Priedīte 2005).

Standardised state exams are conducted at the end of upper secondary education in both countries. The results of exams have been somewhat better for majority schools (Zepa 2010; NEQS 2010).

3.3 Theoretical Considerations

The situation of ethnic minorities in Estonia and Latvia differs in many respects from that of ethnic minorities in Western European countries and the U.S. However, theoretical approaches developed in these countries also contribute to the explanation of the educational performance of ethnic groups in the Baltic States.

Boudon (1974) uses the concept of primary and secondary effects to explain the influence of social background on educational performance and choices. While secondary effects indicate the influence of social background on educational choices, primary effects show the influence of social background on the academic performance of pupils. Primary effects could result from, for example, cultural, genetic or economic factors that differ between social classes (Van de Werfhorst and Van Tubergen 2007). It is widely accepted that performance differences are related to socialisation and parental involvement during childhood and as well to the opportunity to invest in good schools (Erikson and Jonsson 1996; Jonsson and Rudolphi 2011). In many countries, socio-economic background is an important reason for the overall weaker performance of immigrant pupils, but still

disadvantages remain for several ethnic groups after parental characteristics are controlled for (Levels and Dronkers 2008).

Heath and Brinbaum (2007) argue that a parental lack of fluency in the majority language may make it difficult for children to succeed in their schoolwork. This may lead to lower achievements in test scores than would be expected on the basis of the parents' socio-economic position. There is some evidence that language difficulties of students might contribute to second generation educational achievement (e.g. Schnepf 2007). However, the extent to which language difficulties affect the educational outcomes of the second generation is a rather unresolved issue (Heath et al. 2008).

Literature often points out that ethnic groups differ in terms of orientation toward schooling and achievement motivation (Kao and Thompson 2003). Immigrant parents' optimism about the prospects of their children is crucial (Kao and Tienda 1998). In addition, the migration experience might have an effect on aspirations. Parents who experienced downward mobility due to migration may expect the next generation to regain the lost social position through education (Platt 2005). On the other hand, Jonsson and Rudolphi (2011) argue that one plausible reason for some ethnic minorities' lower school performance in Sweden are low educational aspirations, which become visible in irregular school attendance and little focus on learning. In addition, attitudes toward schooling might be shaped by the ethnic community, and this effect might depend on how minorities are treated in the society and how they perceive their treatment. If minorities do not trust the educational system and feel that it threatens their minority identity, they may develop an oppositional culture to mainstream schooling as the most extreme response (Ogbu and Simons 1998).

Sørensen and Hallinan (1977) call attention to the organisational characteristics of schools that create differences in learning opportunities. As examples, these organisational characteristics include curriculum, instruction materials, teaching techniques, interaction style and pupil involvement. Ability and effort can be modified by those contextual factors (Sørensen and Hallinan 1977; Hallinan 2005). In addition, the social and ethnic composition of schools may influence the achievement of pupils. Pupils create the school's social environment from the advantages and disadvantages they bring from home to school. Several studies show that school composition—in terms of the average socio-economic status of the parents and the segmentation into ethnic groups—has an effect on educational achievement, in spite of pupils' individual characteristics (Bankston and Caldas 1996; Portes and Hao 2004).

These theoretical considerations are also helpful for explaining the situation of ethnic minorities in Estonia and Latvia. One explanation for the lower school performance of ethnic minorities is their language skills. Pupils who speak a minority language in home can have difficulties to understand the linguistic contexts of school tasks (Esser 2006). Unfortunately, the PISA 2006 survey does not directly measure language proficiency. Thus, it is not possible to draw definitive conclusions about the importance of language skills. However, these skills may lower the educational performance if the language of instruction at school differs

from the language spoken at home. *Therefore, it is supposed that Russian-speaking pupils who attend Estonian-medium or Latvian-medium schools are likely to achieve lower test scores in mathematics in both countries. In contrast, Russian-speaking pupils who are enrolled in schools where Russian is the language of instruction should not experience any difficulties due to their language skills.*

Several individual characteristics may contribute to the differences in the educational achievement of ethnic minorities and the majority. Due to the specificity of immigration history during Soviet period, it is likely that native and Russian-speaking pupils do not differ significantly in terms of parental education level or cultural resources. Thus, minority pupils should not get less support in their schoolwork from parents. However, since the beginning of the 1990s, the Russian-speaking minority has been in a more disadvantaged position in the labour market. Thus, Russian-speaking families may have lesser financial resources to support their children in their educational career. Although the vast majority of 15 year-old pupils are studying at public school in Estonia and Latvia, Russian-speaking families may have fewer resources for covering other learning-related costs (e.g. books). *Therefore, social background may have some negative effects on the achievement of Russian-speaking pupils, but it is unlikely that social background is the reason for the achievement gap between majority and minority pupils.*

There is not much research about ethnic differences in educational aspirations and learning motivation in Estonia and Latvia. The Russian-speaking population of Estonia indicates a bit more often than Estonian-speakers that they want their children to go on to higher education (Saar 2008). Russian-speakers with higher education who have experienced downward mobility due to a lack in language skills may especially encourage their children to achieve academically if the distribution of opportunity in the educational system is perceived as equal. *However, occupational aspirations and the motivation to learn are not expected to be the reasons for the achievement gap between majority and Russian-speaking pupils.*

Characteristics of schools might also contribute to differences in the achievement of ethnic groups. In general, it seems that the opportunity to learn does not differ significantly in schools with the majority language and Russian as the language of instruction. In both countries, there is a unified national curriculum (Golubeva 2010). However, in Estonia, the transition to the new curriculum in mathematics in the second half of the 1990s was difficult for Russian-medium schools. In the years 1963 to 1991, the practice of teaching mathematics differed between schools with Estonian and Russian as their language of instruction, as the latter relied on Soviet textbooks and methods (there was no such difference in Latvia). Therefore, Russian teachers had difficulties in getting used to the new ways of teaching and textbooks (Monakov and Ševtšenko 2003). In both countries, the replacement of textbooks was slower in Russian-medium schools than in other schools due to time-consuming translation. *Thus, it is expected that there may be some achievement differences between schools that have Russian and schools that have the majority language as their language of instruction, especially in Estonia.*

The selection of pupils into schools influences the learning environment and also the resources available at school. According to PISA 2006 data, Russian-medium schools are not significantly less selective than majority schools regarding the importance of pupils' academic performance (analysis not presented here). *Thus, it is supposed that the selectivity of the school influences the achievement of pupils, but that it is not the reason for achievement differences between schools that have Russian and schools that have the majority language as their language of instruction.*

The ethnic-linguistic composition of schools is not very heterogeneous in Estonia and Latvia. In Russian-medium schools most pupils are ethnic Russians or Russian-speakers from other ethnic groups. There is somewhat more heterogeneity in majority schools. The socio-economic composition of schools might be a bit lower in Russian-medium schools, especially in Estonia, where the labour market position between minority and majority groups differs more compared to Latvia (Hazans 2010). In addition, Russian-speaking parents with more resources seem to prefer schools with the majority language as the language of instruction in Estonia.¹ *Therefore, it is supposed that the socio-economic composition of schools explains the differences in achievement between pupils in Russian-medium and pupils in majority schools, especially in Estonia.*

3.4 Data and Variables

The OECD Programme for International Student Assessment (PISA) focuses on pupils' competencies in reading, mathematics and science. PISA examines pupils' ability to use their knowledge and skills to meet real-life challenges. The third PISA survey (2006) includes 30 OECD countries and 27 partner countries, including Estonia and Latvia. The average age of the participating pupils was 15. PISA samples students randomly in two stages: schools are first sampled from the country-level and then pupils are sampled in the participating schools (OECD 2009). The PISA survey also includes a school questionnaire.

The sample size in Estonia was 4865 pupils (127 Estonian-medium, 38 Russian-medium and 4 mixed schools). The Latvian sample included 4719 pupils (114 Latvian-medium, 46 Russian-medium and 16 mixed schools). The majority of sampled pupils were studying at basic school.

Almost all Russian-speaking pupils in the sample were born in the host country. About 40 % of Russian-speaking pupils in Estonia and 20 % in Latvia are second-generation immigrants. Due to this specific context, integration into the host society was not necessary prior to 1991, and the differences between young second

¹ PISA 2006 data show that in Estonia, parental occupational position is higher for Russian-speakers in Estonian-medium schools than in Russian-medium schools, whereas no such difference is found in Latvia (analysis not presented here).

and third-generation Russian-speakers should be rather irrelevant in these countries.

The dependent variable is mathematical performance. Since assessing each student with the whole item battery in the PISA test would be time-consuming, only certain subsamples of pupils responded to each item. In order to compare the ability of pupils, the cognitive data in the PISA study are scaled on the basis of Item Response Theory. Such modeling estimates the ability of each pupil by using the number of correct answers and the difficulty of the items. The PISA data-set contains five plausible values that represent the ability in mathematics for each pupil. These scores are standardised to an international mean of 500 and a standard deviation of 100 (OECD 2009).

Independent variables include pupil and school-level variables. At the pupil level, *gender* and *grade* are included as control variables. The following variables describing family background are used in analysis:

- *Language spoken at home* specifies whether the pupil speaks the majority language (Estonian or Latvian), Russian or another language at home.²
- *Highest parental educational level* is measured according to the ISCED scale which is divided into 4 levels: (1) ISCED 2 or lower, (2) ISCED 3 and 4, (3) ISCED 5b, and (4) ISCED 5a and 6.³
- *Highest parental occupational status* is measured according to the ISEI scale (the International Socio-Economic Index of Occupational Status)
- *Number of books at home*, which refers to cultural resources available at home.

Pupils' *occupational aspirations* are measured by an open-ended question which recorded their expected occupational status at age 30. For analysis, occupational aspirations are divided into five groups: (1) managers or professionals, (2) lower white-collar, (3) skilled worker, (4) unskilled worker and (5) missing. The relationship between occupational aspirations and educational performance may be bi-directional. *Motivation* was measured by the question: "In general, how important do you think it is for you to do well in mathematics?" Four categories are separated: (1) very important, (2) important, (3) of little importance or none at all, and (4) missing.

At the school level, the following variables describing school context were included:

- *Language of instruction* is defined on the basis of the test language. Schools are divided into Estonian-medium/Latvian-medium, Russian-medium and mixed schools.
- *School location* specifies whether the school is located in a village (up to 3,000 inhabitants), in a town or in the city (more than 100,000 inhabitants).

² Pupils were asked what language they speak at home most of the time, with the option to select only one language. Thus, it is impossible to identify bilingual families.

³ PISA coding of parental education does not allow separation into the vocational and the general track of secondary education in Estonia and Latvia.

- *Selectivity of pupils*: (1) high—a pupil's good academic record (including placement tests) is a prerequisite or high priority for admission, (2) low—academic records or placement tests are not a high priority. This question is about general practice and evaluated by the schools' headmasters/headmistresses.
- *Socio-economic composition of school* is specified as the average highest occupational status (ISEI) of the parents of the school's pupils.

3.5 Method

At first, there is an overview given of the average mathematical performance in schools with different language of instruction. Means, standard errors and standard deviations are computed using then mean of five plausible values (OECD 2009). For multilevel analysis, all missing data was deleted. The variable describing the highest parental occupational status had the most missing values (1.7 % in Estonia and 4.5 % in Latvia). The final sample size for Estonia is 4709 pupils and 169 schools and for Latvia 4385 pupils and 172 schools. All continuous variables were centred on the grand mean. The multilevel analysis was carried out using the HLM program.

As a first step of multilevel analysis, we analyse a model without explanatory variables. This intercept-only model is useful because it gives an estimate of intra-class correlation, which is defined as the population variance between level 2 units divided by the total variance (Hox 2002). In the next step, pupil-level variables describing social background, the language spoken at home, motivation and occupational aspirations are added to the model (Model 1). This model is compared with the intercept-only model and the amount of variance explained by introducing explanatory variables is calculated. Then the language of instruction is included (Model 2). Next, location and selectivity are controlled for (Model 3). In the last model we also add the socio-economic composition of the school (Model 4). In these four models the regression intercept is assumed to vary across the groups, but regression slopes are fixed. Nevertheless, models with school-level characteristics were also estimated with varying slopes, which basically yielded the same results. Therefore, we prefer the simpler model. The improvement of the models is tested with the likelihood-ratio test, which is based on the difference between deviance statistics of two models (Raudenbush and Bryk 2002). In addition, an interaction term of the language of instruction at school and the language spoken at home is tested. Separate models are estimated for Estonian-medium and Latvian-medium schools.

3.6 Results

3.6.1 Descriptive Overview

In Estonia, the overall mean score for mathematics is 515 points, which is a result above OECD average (OECD 2007a). Despite this good overall result there are large differences between pupils who speak Estonian at home and those who speak Russian at home (Table 3.1). Pupils who speak another language at home (only a few cases) also achieve lower scores compared to Estonian-speakers. There are significant achievement differences between pupils studying at schools with Estonian as the language of instruction and those studying at schools with Russian as the language of instruction, resulting in respectively 523 and 486 points. In Estonia, only 2 % of the pupils in our sample are studying at mixed schools. The achievement in these mixed schools is lower compared to Estonian-medium schools.

A number of Russian-speaking children also study at schools with Estonian as the language of instruction. This seems to pay off in terms of performance, even

Table 3.1 Average mathematical performance in Estonia

	Mean	Standard error of mean	Standard deviation
Overall mean	515	2.7	80
<i>Language spoken at home:</i>			
Estonian	524	3.1	78
Russian	491 ^a	5.4	80
Other	451 ^a	20.5	90
<i>Language of instruction at school:</i>			
Estonian	523	3.0	79
Russian	486 ^a	6.2	80
Mixed	491 ^a	6.8	68
<i>Different groups according the language in school and home:</i>			
Estonian-speakers at Estonian schools	524	3.1	79
Russian-speakers at Estonian schools	513 ^b	6.1	77
Russian-speakers at Russian schools	488 ^a	6.3	80
<i>Immigrant generation:</i>			
Russian-speakers, at least 3rd generation and natives	491	5.7	
Russian-speakers, 2nd generation	497	5.8	
Russian-speakers, 1st generation	475	17.1	

^a Average test score of the group differs significantly compared to Estonian-speakers and/or pupils studying at Estonian schools

^b Russian-speakers perform significantly better at Estonian schools than at Russian schools

Source Own calculations based on PISA 2006, replicate weights have been taken into account (OECD 2009)

though Russian-speakers in Estonian-medium schools achieve scores that are, on average, a bit lower than the scores of Estonian-speakers (Table 3.1). Table 3.1 also indicates that the academic performance of Russian-speakers does not differ depending on which generation of immigrants they are.

The average mathematical performance in Latvia is 486 points, which is below OECD average (OECD 2007a). Table 3.2 indicates that the average performance of pupils who speak Russian at home does not differ from pupils who speak Latvian at home. In addition, pupils at schools with Latvian and Russian as the language of instruction have almost the same average score. Pupils who attend mixed schools have significantly lower average scores in mathematics, but mixed schools are more common in rural areas.

There are significant performance differences between pupils within Latvian-medium schools (Table 3.2). Russian-speakers achieve lower scores at these schools than Latvian-speakers. Russian-speakers attending mixed schools have the lowest performance, while Latvian-speakers at the same schools perform somewhat better. Table 3.2 also shows that in Latvia, similar to Estonia, immigration generation does not differentiate the achievements of pupils.

Table 3.2 Average mathematical performance in Latvia

	Mean	Standard error of mean	Standard deviation
Overall mean	486	3.0	83
<i>Language spoken at home:</i>			
Latvian	489	3.3	80
Russian	485	6.1	85
Other	477	23.0	96
<i>Language of instruction at school:</i>			
Latvian	488	3.3	81
Russian	492 ^a	7.4	85
Mixed	452 ^b	10.9	83
<i>Different groups according the language at school and home:</i>			
Latvian-speakers at Latvian schools	491	3.4	80
Russian-speakers at Latvian schools	471 ^b	6.8	84
Russian-speakers at Russian schools	494	7.5	84
Latvian-speakers at mixed schools	463	12.6	80
Russian-speakers at mixed schools	442 ^{bc}	10.7	81
<i>Immigrant generation:</i>			
Russian-speakers, at least 3rd immigrant generation and natives	485	6.8	
Russian-speakers, 2nd generation	492	5.6	
Russian-speakers, 1st generation	486	17.2	

^a Pupils who study at Russian schools perform significantly better than pupils at mixed schools

^b Average test score of the group differs significantly compared to Latvian-speakers and/or pupils studying at Latvian schools

^c Russian-speakers perform significantly better at Russian schools than at mixed schools

Source Own calculations based on PISA 2006, replicate weights have been taken into account (OECD 2009)

3.6.2 *Multilevel Models*

In a first step of multilevel modelling, the intercept-only models were estimated. The intra-class correlation indicates that about 25.7 % of variance in mathematical performance is at the school level in Estonia and 22.2 % in Latvia. Therefore pupils from different schools achieve somewhat different scores. However, the variance between schools in Estonia and Latvia is much lower compared with Hungary, the Czech Republic and Slovakia (OECD 2007b), where selection into different educational tracks takes place at an earlier age than 15 (e.g. Kogan 2008). In contrast, compared to Sweden, Finland and Denmark, the between-school variance is a bit higher in Estonia and Latvia (OECD 2007b).

The Case of Estonia

Table 3.3 presents further multilevel models for Estonia. The difference in deviance statistics between the intercept-only model and Model 1 indicates that adding pupil-level variables improves model fit significantly. It appears that almost 29 % of variance is explained at the pupil level by social background and measures of motivation and aspirations. Not surprisingly, these variables also explain almost 53 % of variance at the school level. For example, the language spoken at home varies significantly across schools. In other words, this shows that individual-level, explanatory variables are divided rather selectively across the groups, i.e. the composition of groups is rather unequal (Hox 2002). Similarly with descriptive analysis, Model 1 shows that Russian-speaking pupils achieve lower test scores compared to Estonian-speakers, even if they share a similar social background. In addition, motivation and occupational aspirations do not explain the disadvantage of Russian-speakers.

School-level variables are added in further steps of the analysis (each step improved model fit). First, the language of instruction at school is included in Model 2. It appears that pupils at Russian-medium schools and mixed schools achieve significantly lower test scores compared to pupils at Estonian-medium schools. Therefore, the language of instruction at school has an effect on achievement, despite similar social background, motivation or occupational aspirations.

The selectivity of the school and school location are added into Model 3. The negative effect of studying at a Russian-medium school does not decrease. Thus, the way schools select their pupils is not the reason for the lower achievement of pupils at these schools. However, the measure of selectivity captures only school practices without taking into account that the school can only choose from among the pupils who apply. Although the OECD (2010) claims that classrooms in Estonia are heterogeneous, the difference between more and less selective schools is apparent in analysis, even in cases of similar parental background. Thus, the

Table 3.3 The influence of pupil and school-level variables on mathematical performance in Estonia, coefficients and standard errors of multilevel models

	Model 1		Model 2		Model 3		Model 4	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Intercept	555	4.4	558	4.4	555	4.4	550	7.7
<i>Pupil-level variables</i>								
Language spoken at home (ref. Estonian)								
Russian	-21.9***	4.8	-11.1**	5.1	-13.0**	5.3	-13.2**	5.2
Other	-78.5**	18.0	-66.7***	17.7	-67.9***	18.0	-67.5***	18.1
Highest parental education level (ref. ISCED 5a or 6)								
ISCED 2 or lower	-6.4	8.7	-7.0	8.7	-6.3	8.7	-5.0	8.7
ISCED 3 or 4	2.6	2.4	2.3	2.4	2.3	2.4	2.3	2.4
ISCED 5b	-7.2**	2.9	-7.4**	3.0	-7.6**	3.0	-7.7**	3.0
Highest parental occupational status	0.73***	0.1	0.72***	0.1	0.71***	0.1	0.68***	0.1
Number of books at home (levels)	10.6***	1.1	10.7***	1.1	10.6***	1.1	10.5***	1.1
Motivation (ref. very important)								
Important	-12.5***	1.9	-12.2***	2.0	-12.3***	1.9	-12.3***	2.0
Little importance or none at all	-25.7***	3.9	-25.5***	3.9	-25.8***	3.9	-26.0***	3.9
Missing	-22.9**	10.6	-22.3**	10.5	-22.4**	10.6	-22.3**	10.6
Expected occupational status at age 30 (ref. manager or professional)								
Lower white-collar	-24.2***	3.3	-24.2***	3.3	-24.1***	3.3	-24.2***	3.3
Skilled worker	-36.2***	4.2	-36.1***	4.1	-35.9***	4.1	-35.7***	4.2
Unskilled worker	-21.0***	3.6	-21.1***	3.6	-21.0***	3.6	-21.2***	3.6
Missing	-28.0***	3.6	-27.9***	3.5	-27.9***	3.5	-27.9***	3.6
<i>School-level variables</i>								
Language of instruction at school (ref. Estonian)								
Russian								
Mixed								
School location (ref. city)								

(continued)

Table 3.3 (continued)

	Model 1		Model 2		Model 3		Model 4	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Town								
Village								
Selectivity (ref. low)								
High								
School composition (average parental occupational status)								
Deviance	51982		51968		51953		51939	
Variance explained at								
Pupil level	28.8 %		28.8 %		28.8 %		28.8 %	
School level	52.7 %		55.7 %		61.3 %		66.7 %	

Note: controlling for gender and grade, *p < 0.10, **p < 0.05, ***p < 0.01

Source: Own calculations based on PISA 2006

advantage of more selective schools could be related to learning environments and teaching practices.

Finally, the school composition in terms of the average highest occupational status of parents is added in Model 4. School composition has a strong influence on mathematical performance and significantly reduces the negative effect of studying at a Russian-medium school. Therefore, the low achievement of pupils at these schools can be at least partly explained by the socio-economic composition of schools, which influences the achievement of pupils despite their individual social backgrounds.

The Case of Latvia

Table 3.4 presents multilevel models with pupil and school-level variables for Latvia. Model 1 includes all pupil-level characteristics, which explain about 26 % of variance at pupil level and about 38 % of variance at school level. Therefore in Latvia, similarly to Estonia, schools differ significantly regarding pupils' social background, the language spoken at home, motivations and aspirations. However, contrary to descriptive analysis, multilevel analysis indicates that pupils who speak Latvian at home achieve somewhat better test scores in mathematics compared to pupils whose language at home is Russian (Model 1).

Further models also include school-level variables (each of the following models has a significantly better fit compared to earlier models). The language of instruction at school is added to Model 2. It appears that pupils at Russian-medium schools perform similarly to pupils at Latvian-medium schools. Descriptive statistics already indicated that academic achievement at Latvian-medium and Russian-medium schools is similar, and taking into account social background, aspirations and motivations does not change this outcome. In contrast, pupils attending mixed schools achieve somewhat lower test scores compared to those who attend Latvian-medium schools.

These effects do not change after school location and selectivity are included into Model 3. School location accounts significantly for pupils' performance differences. Pupils studying in villages or towns perform lower than pupils studying in larger cities.⁴ Selection does not have any effect. In general, the selection of pupils is less common practice in Latvia than in Estonia.

The measure of school composition in terms of the average highest occupational status of the parents is added in Model 4. It does not have significant influence on mathematical performance, but it reduces the negative effect of studying at mixed schools. Thus, the lower test scores of mixed schools are partly explained by the lower socio-economic composition of these schools.

⁴ Latvian PISA data indicates that the average test score of pupils in Riga and other urban areas is much higher compared to the test scores of pupils from rural areas. However, these regional disparities are largely conditioned by family background (Geske et al. 2006).

Table 3.4 The influence of pupil and school-level variables on mathematical performance in Latvia, coefficients and standard errors of multilevel models

	Model 1		Model 2		Model 3		Model 4	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Intercept	528	4.7	528	4.7	542	7.7	539	7.9
<i>Pupil-level variables</i>								
Language spoken at home (ref. Latvian)								
Russian	-9.2**	4.4	-10.8**	5.1	-11.3**	5.1	-11.3**	5.1
Other	-2.6	19.2	-2.4	19.1	-2.3	19.1	-2.4	19.1
Highest parental education level (ref. ISCED 5a or 6)								
ISCED 2 or lower	-35.3***	13.4	-35.2***	13.4	-34.7***	13.4	-34.3**	13.3
ISCED 3 or 4	-5.2*	3.0	-5.2*	3.0	-4.9	3.0	-4.8	3.1
ISCED 5b	-6.7**	2.9	-6.7**	2.9	-6.6**	2.9	-6.6**	2.9
Highest parental occupational status	0.44***	0.1	0.44***	0.1	0.42***	0.1	0.41***	0.1
Number of books at home (levels)	11.8***	1.2	11.8***	1.2	11.7***	1.2	11.7***	1.2
Motivation (ref. very important)								
Important	-9.1***	2.7	-9.1***	2.7	-9.2***	2.7	-9.2***	2.7
Little importance or none at all	-25.2***	4.8	-25.3***	4.8	-25.3***	4.8	-25.5***	4.8
Missing	-35.4***	10.3	-35.4***	10.3	-35.5***	10.2	-35.6***	10.2
Expected occupational status at age 30 (ref. manager or professional)								
Lower white-collar	-27.8***	3.2	-27.8***	3.2	-27.6***	3.2	-27.5***	3.3
Skilled worker	-35.0***	5.7	-35.0***	5.7	-34.3***	5.6	-34.1***	5.6
Unskilled worker	-21.4***	3.9	-21.4***	3.9	-21.4***	3.9	-21.3***	4.0
Missing	-34.0***	3.8	-34.0***	3.8	-33.8***	3.8	-33.6***	3.8
<i>School-level variables</i>								
Language of instruction at school (ref. Latvian)								
Russian			6.7	9.4	-2.8	10.2	-0.22	10.0
Mixed			-16.2**	8.1	-17.2*	9.5	-13.1	8.6
School location (ref. city)								

(continued)

Table 3.4 (continued)

	Model 1		Model 2		Model 3		Model 4	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Town								
Village					-13.6*	7.4	-12.2	8.4
Selectivity (ref. low)					-20.5**	8.7	-13.5	10.6
High								
School composition (average parental occupational status)					6.7	6.9	4.8	8.4
Deviance	49010		49005		48994		0.73	0.9
Variance explained at								
Pupil level			26.4 %		26.4 %		26.4 %	
School level			38.3 %		40.5 %		46.1 %	

Note: Controlling for gender and grade, *p < 0.10, **p < 0.05, ***p < 0.01

Source: Own calculations based on PISA 2006

Table 3.5 Mathematical performance at majority-language schools in Estonia and Latvia, coefficients and standard errors of multilevel models

	Estonian-medium schools in Estonia		Latvian-medium schools in Latvia	
	Coef.	S.E.	Coef.	S.E.
Intercept	555	8.3	540	8.9
<i>Pupil-level variables</i>				
Language spoken at home (ref. Estonian/Latvian)				
Russian	-14.1***	5.6	-6.2	6.8
Other	-1.8	16.9	-9.3	26.2
Highest parental education level (ref. ISCED 5a or 6)				
ISCED 2 or lower	-5.7	9.1	-40.1**	16.7
ISCED 3 or 4	2.5	2.8	-6.5*	3.8
ISCED 5b	-7.5**	3.5	-10.6**	4.4
Highest parental occupational status	0.68***	0.1	0.38***	0.1
Number of books at home (levels)	10.6***	1.2	11.7***	1.4
Motivation (ref. very important)				
Important	-12.5***	2.3	-7.2**	3.2
Little importance or none				
At all	-25.2***	4.4	-20.4***	6.3
Missing	-11.4	16.2	-39.2***	12.5
Expected occupational status at age 30 (ref. manager or professional)				
Lower white-collar	-25.6***	3.7	-30.4***	4.2
Skilled worker	-32.1***	4.8	-34.8***	5.9
Unskilled worker	-24.6***	3.7	-21.2***	5.0
Missing	-36.6***	3.8	-34.9***	4.7
<i>School-level variables</i>				
School location (ref. city)				
Town	0.6	7.2	-11.3	10.9
Village	-1.4	10.6	-15.9	13.9
Selectivity (ref. low)				
High	10.4	5.2	4.1	10.4
School composition (average parental occupational status)				
	1.0	0.7	0.14	1.1

Note Controlling for gender and grade, *p < 0.10, **p < 0.05, ***p < 0.01

Source Own calculations based on PISA 2006

3.6.3 Russian-Speakers at Majority Language Schools

In both countries, pupils who speak Russian at home achieve lower test scores than native speakers of the national language—despite similar individual-level characteristics and school contexts (Tables 3.3 and 3.4). The interaction between the language spoken at home and the language of instruction at school was added to Model 4 for the purpose of testing how Russian-speakers manage at majority-language

schools. The results were significant for Estonia, but not for Latvia (models not presented here). In Latvia it also seems that Russian-speakers at mixed schools perform worse than Latvian-speakers, but the number of mixed schools in the sample is too small to calculate reliable estimates.

Table 3.5 presents separate models for Estonian-medium and Latvian-medium schools. It appears that Russian-speakers achieve significantly lower test scores at Estonian-medium schools compared to Estonian-speakers, even in case of similar parental background, motivations, aspirations and school characteristics. The gap between groups is about 14 points. The reason for this difference could be language difficulties, but unfortunately the PISA 2006 study does not include a measure for language skills. In Latvia, there is no significant difference between the performance of Russian-speakers and Latvian-speakers. Compared to Estonia, Russian-speaking pupils in Latvia are more likely to have one parent who is a speaker of the majority language due to a higher (ethnic) intermarriage rate.

3.7 Conclusion

This chapter compared two post-socialist countries—Estonia and Latvia. In general, societal developments and the educational systems in Estonia and Latvia have many similar characteristics. There are large Russian-speaking minority groups in both countries. Many of them are post-war immigrants or their descendants. During Soviet times, these ethnic communities were separated by clear lines in these societies, demarcating labour market segmentation and the division of the educational system on the basis of language. After Estonia and Latvia regained their independence, uncertainty increased—especially for the Russian-speaking community, due to difficulties related to citizenship status and lack of proficiency in the official language. The need for a stronger integration of society was one incentive for the school reforms in Estonia and Latvia, which aimed to render Russian-medium schools more bilingual.

Ethnic differences in the educational performance and academic outcomes are apparent in various societies. It is often emphasized that educational achievement is connected to language skills. Esser (2006) points out that immigrant children usually have to cope with tasks that are embedded in a linguistic context or related to a cultural context that is closely associated with the local language and local cultural knowledge. In contrast, the influence of language skills should be relatively minor in linguistically divided educational systems, where ethnic minority pupils have an opportunity to study at least partly in their native language. The results of this chapter show that the linguistically divided educational systems in Estonia and Latvia produce rather different outcomes. In Latvia, pupils at Russian-medium and Latvian-medium schools achieve similar test scores in mathematics. In contrast, pupils at Russian-medium schools in Estonia achieve lower results in mathematics than pupils at majority-language schools.

In Estonia and Latvia, immigrants were not negatively selected in terms of education. Analysis indicates that, contrary to findings in several Western European countries, individual parental background is not the reason for the minority group's disadvantage in Estonia. In addition, their motivations and aspirations do not cause Russian-speakers' lower achievement in Estonia, although these characteristics have significant influence on the educational performance. In Latvia, similarly, parental background, motivations and aspirations seem not to be the factors that would especially promote Russian-speakers performance, but rather are important for all pupils. In line with this argument, according to cross-tabulations (not shown here) there is no difference in motivation between ethnic groups.

The question remains of how to explain the achievement gap between pupils studying at schools with a different language of instruction in Estonia, while there is no such trend in Latvia. Moreover, cross-sectional PISA data include the measurement of performance only at one time point, which complicates conclusions regarding whether and how learning at Russian-medium schools directly causes lower educational performance. However, Russian-speaking pupils who were enrolled at Russian-medium schools in 2006 should not have experienced difficulties due to a lack of language skills. In addition, results show that the gap between Estonian-medium and Russian-medium schools is not directly conditioned by how schools select pupils on the basis of academic ability. Pupils in more selective schools still achieve better results, especially in Estonia. Unfortunately, this measure captures the selection process only partially, since parents and pupils also select schools.

Findings indicate that the lower performance of pupils in Russian-medium schools is to some extent explained by the socio-economic composition of these schools in Estonia. This has an effect on achievement irrespective of individual social background. It has been argued that the socio-economic composition of schools aggregates the influence of school peers on pupils' school experience and their academic gains (Portes and Hao 2004). Therefore, it seems that the downward mobility of the Russian-speaking community in Estonia has had some influence also on the social environment of Russian-medium schools. We thus predict a *secondary effect*, in terms of an unintended consequence, of dividing the educational system on the basis of language. In Latvia, in contrast, the socio-economic composition of schools and their selection practices do not have direct influence on pupils' educational achievement, even if the school is similar in type and location.

Besides the composition of schools, differences in academic performance may be conditioned by organisational characteristics that influence learning opportunities in schools. The curricula differences in mathematics are expected to be minor between Russian-medium and majority language schools in both countries. For Estonia, however, Monakov and Ševtšenko (2003) mention difficulties in Russian-medium schools that are related to the transition to a new curriculum in mathematics. An additional explanation could be the teaching methods or focus. The international OECD's TALIS study in Estonia shows that teachers at schools with Russian as the language of instruction believe more strongly in providing

correct solutions to pupils and they put more emphasis on the necessity of studying facts than teachers in Estonian-medium schools (Loogma et al. 2009). In addition, the international TIMSS study of 2003 shows that the gap in the academic performance between 8th graders in Russian-medium and Estonian-medium schools is wider in reasoning and analytical skills, whereas there are no significant differences in terms of factual knowledge and conceptual understanding (Mere et al. 2006). Unfortunately, no such comparative evidence is available for Latvia.

An additional question is how educational reforms have influenced the trust in schools in both countries. In Latvia, the transition to bilingual teaching in Russian-medium basic schools already started in 2002, while it is still ongoing in Estonia. It has been argued that the way a minority community perceives its members' treatment by society influences their trust in the educational system and their certainty about maintaining their minority group identity (Ogbu and Simons 1998). Community forces may also influence the certainty of Russian-speaking pupils in Estonia and Latvia. For example, the Russian community has pointed out that the transition to bilingual teaching in Russian-medium schools may be a threat to their identity (Hogan-Brun 2007). However, recent educational reforms mean that schools in Estonia and Latvia are changing and it is crucial to see whether ethnic differences in educational performance persist over longer periods of time.

The number of Russian-speaking pupils in Estonian-medium and Latvian-medium schools is growing (Hogan-Brun et al. 2007; Kehris and Landes 2007). Results indicate that Russian-speakers who study in the majority language in Estonia perform significantly lower than native pupils, while no such clear disadvantage is visible in Latvia. One reason may be the lack of pupils' or even parents' language skills, which means that parents are able to offer only limited help with schoolwork. However, in Latvia, minority parents who opt for Latvian-medium schools often have some proficiency in Latvian (Priedīte 2005). Unfortunately, not much is known about the language skills of Russian-speaking parents in Estonia.

The comparison of Estonia and Latvia reveals that pupils' opportunity to study in their native language does not reduce ethnic differences in the educational performance in these countries. The Latvian case shows that minority pupils manage well both at Latvian-medium and Russian-medium schools. In Estonia, however, Russian-speaking pupils who study at Russian-medium or Estonian-medium schools achieve lower test scores than their Estonian-speaking peers. The integration context of the country might be an important factor that influences academic performance. Compared to Estonia, the distance between the majority and the Russian-speaking minority is smaller in Latvia in terms of socio-economic position, social interaction, geographical distribution and interethnic marriages (Aasland and Fløtten 2001; Hazans 2010; Rozenvalds 2010). This could account for the similar academic performance of pupils at Latvian-medium and Russian-medium schools, whereas clear differences emerge in Estonia.

Two important limitations of this study were the lack of a measurement to ascertain language skills and the absence of the possibility to identify bilingual families. Such data would help to explain the situation of Russian-speaking pupils

at schools where the majority language is the language of instruction. In addition, more research is needed to find out whether the language of instruction determines the educational choices of different ethnic groups in Estonia and Latvia, which would make it possible to estimate more precisely the outcomes of these linguistically divided educational systems.

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Chapter 4

Positive but also Negative Effects of Ethnic Diversity in Schools on Educational Performance? An Empirical Test Using PISA Data

Jaap Dronkers and Rolf van der Velden

4.1 Average/Share and Diversity of School Populations as Different Concepts

This chapter focuses on two characteristics of educational institutions: sociocultural average or share of school populations on the one hand and sociocultural diversity on the other. Average/share and diversity are important characteristics of students' learning contexts and are thus supposed to influence their educational performance.

The *sociocultural average* of the school population is the single most influential school characteristic in all Organization for Economic Cooperation and Development (OECD) countries, more important than either a shortage of qualified teachers or class size (Scheerens and Bosker 1997). In the context of this chapter, “sociocultural average of a school population” is defined as the average social status of the students' parents. The higher the average social status of these parents, the better the students perform compared with similar students in schools in which the parents have a lower average social status. Sometimes, researchers also use the *share* of high- or low-status parents instead of the *average*. Both have the same meaning. Since the Coleman report (1966), this has been one of the controversial insights in

This chapter is an improved version of the inaugural lecture of the first author as professor of *international comparative research on educational performance and social inequality* at Maastricht University, held on June 17, 2010 (Dronkers, 2010b). The improvements are based on the introduction of a more valid measurement of schools and curriculum (Dronkers et al. 2011).

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education science. Note, however, that the effects of a school's sociocultural average are smaller than the effects of an individual parent's social status on the performance of the student.

The *sociocultural diversity of a school population* concerns the variety of students in that school in terms of sociocultural status. The sociocultural diversity of a school is great if the parents of its students include parents from both high, middle and low social classes. A school with parents from only either high, middle or low social classes is classified as a school with a slight diversity.

Diversity and average/share are related concepts, but they are conceptually quite different. Schools can be low in diversity (e.g., with only high- or low-educated parents), but their averages may differ greatly (the former has a high average educational level, the latter a low average educational level). The opposite is also possible. Schools in which the students' parents are of the same average sociocultural status may differ considerably as to diversity: one school may have only parents with the same social class, while another school has parents from quite diverse social classes, but the average of those levels may still correspond to that of the first school.

The concepts of diversity and average/share of schools are often confused, not only in everyday conversation but also in policy documents. In addition, almost all studies on the effects of school populations (Driessen 2007; van Ewijk and Slegers 2010) restrict themselves to measuring the average/share, while the diversity of the school populations is not addressed separately.¹ However, it is necessary here to make a clear distinction between average/share and diversity, because they are intrinsically different concepts, even if they are strongly related in real situations. In this chapter, we will measure the average/share and diversity separately, and determine their individual effects on educational performance.

4.2 Ethnic and Sociocultural Dimensions as Distinctive Phenomena

We have already used the example of sociocultural average and diversity, in which the parents' social status is used to measure both. Another dimension whereby school populations differ is the country of origin of the students' parents, which—for the sake of brevity—we will here refer to as *ethnic share* and *diversity*. These two dimensions are also often confused, and in this chapter, we will measure both dimensions separately. The sociocultural dimension is based a composite measure that indicates parent's social status.² For the ethnic dimension, we distinguish

¹ An exception is Van Houtte and Stevens (2009), but they used interethnic friendships and feeling at home in school as dependent variables.

² The parental social class is measured using the index of economic, social, and cultural status of the parents (ESCS). This is a composite index in the PISA dataset based on the occupational

students with an immigrant background based on their country of origin. A series of cross-national studies, starting with Tubergen (2005), has shown that it is necessary to look simultaneously at the country of origin and the destination country of immigrants and their children.³ Failing to do so leads to distorted results, with regard to the interpretation of school characteristics (such as average/share and diversity) and educational systems, because the nature of the immigration process, results in immigrants being unevenly distributed across schools and educational systems.

4.3 The Research Questions

In this chapter, we will try to answer two research questions:

1. Does greater ethnic and sociocultural diversity of schools promote the educational performance of students with an immigrant background, while hampering the performance of native students, if we take into account the ethnic and sociocultural average/share of the school population?
2. To what extent does the degree of differentiation in secondary education influence the effects of ethnic and sociocultural diversity, and the ethnic and sociocultural average/share of school populations?

We will try to test these two questions empirically using data from the PISA 2006 survey. This large-scale cross-national dataset allows us to compare the language skills of 15-year-old students in OECD countries. The advantage of using international PISA data for this analysis is that a large group of countries is involved, which prevents conclusions based on some idiosyncratic groups of immigrants in particular destination countries.

4.4 Mechanisms that may Create a Positive Effect of Diversity

Greater diversity of school populations means that diverse schools have more students whose capabilities and potential differ from one another. The following mechanisms could therefore create a positive effect of diversity on individual educational performances: (1) in more diverse schools, good students may help weaker fellow students, either by giving actual help or by setting an example;

(Footnote 2 continued)

status of the parents measured with the ISEI scale (Ganzeboom et al. 1992), the educational level of the parents measured with the ISCED classification (UNESCO 2006), and the presence of any material or cultural resources at the students' homes.

³ Examples of such studies with both the country of origin and the destination country include Levels et al. (2008), Dronkers and Fleischmann (2010), De Heus and Dronkers (forthcoming).

(2) in more diverse schools, weaker students have a greater chance of encountering a challenging curriculum, because the teachers teach such subject matter to the better students; (3) more capable students in more diverse schools also learn better themselves, because they explain the subject matter to weaker students.

Accordingly, if these mechanisms are powerful enough, promoting ethnic and sociocultural diversity is a policy instrument for increasing the quality of schools, and we found clear evidence of the ways educational institutions' social structures can have positive effects on educational performance. However, the institutional effects of diversity can also be negative.

4.5 Mechanisms that may Cause a Negative Diversity Effect

The mechanisms that are supposed to cause a negative diversity effect include: (1) a more homogeneous student population increases the possibility that teachers specialize in teaching their specific students, thus increasing school effectiveness; (2) In a more homogeneous population, less time needs to be spent on bridging ethnic and sociocultural differences between students, leaving more time for teaching and learning, and hence school effectiveness is higher; (3) in more homogeneous schools, the mutual trust among students, parents, and teachers is assumed to be higher, resulting in greater involvement of students, parents, and teachers, and hence greater effectiveness of such schools.⁴

The limitations of PISA data do not allow measuring all these mechanisms separately, so for the purpose of this chapter, we are only able to measure the sum total of positive and negative mechanisms.

4.6 Mechanisms that may Cause the Average Effect of School Populations

The sociocultural average of student populations affects educational performance through five mechanisms (for a detailed discussion of these mechanisms, see Dronkers 2010a): (1) the curriculum level at which teachers in a school with a particular student population are able to teach; (2) the benchmark with which students assess their own performance, given the level of their fellow students; (3) the amount or real teaching time for teachers and real learning time for students, which

⁴ Putnam (2007) has shown that greater ethnic diversity in neighborhoods may lead to a lower general feeling of trust in neighborhood and neighbors. Lancee and Dronkers (2011) found the same negative relationship between ethnic neighborhood diversity and trust for the Netherlands. It seems reasonable to assume that the same phenomenon occurs in schools as well.

decreases by the loss of time that needs to be spent on repetition of insufficiently understood subject matter or addressing topics other than teaching; (4) the total volume of financial, cultural, and social resources that the parents of the students from specific populations may provide in order to allow the teaching and learning process to run as well as possible; (5) the average quality of teachers at schools.

Partly because of the limitations of PISA data, we cannot measure all these mechanisms separately for this chapter, but the total outcome of these mechanisms can be measured. Only the last two mechanisms (resources and teacher quality) to some extent can be separately included in the analysis.

4.7 Educational Systems and Diversity of School Populations

The degree of stratification in secondary education may have an influence on the effects of diversity and average/share of school populations, because the more differentiated an educational system is, the greater the chance of large differences between schools, and hence school populations, and low differences within schools (and hence low diversity). Not taking into account the educational system within which schools operate therefore leads to misspecification of school populations' effects (Dunne 2010). In addition, both Heus and Dronkers (2010) and Fossati (2010) suggest that stratification of educational systems among students with an immigrant background has a different effect than among native students. Immigrants from different countries of origin are also unequally distributed across destination countries, and hence across educational systems.

4.8 Prior Research

Strangely enough, no empirical studies have been done that simultaneously measure the effects of average/share and diversity of school populations on educational performance. Most studies restrict themselves to measuring the effects of the average/share of school populations (see Driessen 2007) and, depending on the quality of the measurement of ethnic and sociocultural average/shares (van Ewijk and Slegers 2010), find significant effects, even though—as usual—these are small compared with individual effects of social and ethnic background (Scheerens and Bosker 1997). Westerbeek's dissertation (1999) comes closest to the approach used here, but her data for the Netherlands were too restricted to be able to analyze average/share and diversity simultaneously.

4.9 Data

For this chapter, we have used the 2006 version of the PISA. Since 2000, 15-year-old students living in a large number of OECD member-states have been taking this test every three years. The purpose of this test is to map competencies in the fields of mathematics, physics, and reading at the end of the compulsory education period (at the age of 16 or 17 in most Western countries). Although the focus of PISA 2006 is on physics, the test also measured the students' reading skills (OECD 2007), and it is these reading skills that have been used for this chapter.⁵ The PISA data for each participating country constitute a representative sample of the schools that teach 15-year-old students. Each school that has been selected tests a sample of all 15-year-olds, irrespective of their level or grade. In addition to educational performance, PISA also supplies information on a large number of characteristics pertaining to individual background and school. The school principals provide details on a variety of school characteristics, such as student-teacher ratio, teacher shortages, and the location of the school. In the student questionnaires, students are asked for information on such things as the sociocultural status of their parents, the availability of resources at home, the language spoken at home, and the country in which their parents were born. Considering that the information on the country of origin of both parents is crucial for the two research questions, we can only include countries that provide sufficient specific information on these countries of birth. Although no fewer than 57 countries took part in PISA 2006, only the following 15 Western countries provided this information: Australia, Austria, Belgium, Denmark, Finland, Germany, Greece, Latvia, Liechtenstein, Luxembourg, New Zealand, Norway, Portugal, Scotland, and Switzerland.⁶ In order to determine students' country of origin, several decision rules have been used based on their own birth country and the birth countries of their parents. Next to the students' country of birth, we identified his/her immigrant status, derived from the birth countries of both parents. Students of whom at least one of the parents was born in a country outside the country of the test were identified as immigrants.

PISA data contain two cross-national indicators of the track the students are attending. The student is asked whether he or she is currently enrolled in a certain track of a certain level. This was later recoded in the international format, distinguishing between general and vocational tracks on the one hand, and between lower and higher tracks on the other (see Dronkers et al 2011).

⁵ The results for mathematics and physics basically are not different, but in the case of language skills, they are more pronounced for students with an immigrant background (for obvious reasons).

⁶ The relevant question was not asked in a similar way in all countries. The question was to indicate a limited number of countries of birth, based on the main immigrant groups in the country concerned (e.g., in the German questionnaires, possible countries of birth were: Russia, the former Yugoslavia, Greece, Italy, Poland, and Turkey, while the Scottish questionnaire listed the options as China, India, the Middle East, Africa, the Caribbean, and Europe).

Schools are the sampling unit in the PISA survey. These schools, however, often contain both general and vocational education, and both levels within secondary education. The school level therefore reflects more the administrative unit of the educational institution, while the combined two-track characteristics reflect more the daily reality of the teaching and learning environment, as well as the social interactions between students and teachers. This daily life unit is a better indicator of the actual school environment of teaching and learning than is the administrative unit. We call this the track-within-school level and compute this level per country for each student by combining his or her school identification number, the kind of track he or she is following (vocational or general), and the track level (lower or higher). Dronkers et al. (2011) offer a detailed description of the result of this redefinition of school environment from an administrative unit into the daily life unit of teaching and learning. In order to avoid extreme results for combinations with few cases, we deleted all combinations of school identification number, vocational or general education, and the track level, which had less than six students (natives and immigrants) per school.

The analysis was based on 8,521 immigrant students from 35 different countries of origin, living in 15 Western destination countries, attending 1,756 schools, 1,960 track-within-schools, and all 72,329 native students in these 15 Western countries, attending 2,861 schools and 3,311 track-within-schools. We refer to previous publications for a detailed description of the data and the coding of all variables (Heus and Dronkers 2010; Dronkers et al. 2011).

4.10 Variables

The variables used are shown in Table 4.1, separated for native students and students with an immigrant background. The variables were coded similarly for both categories of students, with the immigrant characteristics (such as the country of origin) being irrelevant for native students.

4.10.1 *Dependent Variable: Linguistic Performance*

The dependent variable in this study is linguistic performance. To measure linguistic skills accurately would make the test too long to be feasible. Hence, we created a large number of very similar but shorter tests. Because such different tests can never offer exactly the same degree of difficulty, *Item Response Modeling* (IRM) was used to achieve comparable results between students who took different tests. In this analysis, we averaged the five plausible values that were obtained from the IRM and used that result as the dependent variable. The linguistic skills scores were standardized for the OECD countries using an average of 500 and a

standard deviation of 100. The mean scores of the students with an immigrant background per country of origin and destination are given in Table 4.2, along with the mean scores of the native student per test country (last row, Table 4.2).

Table 4.1 Maxima, minima, means, and standard deviations, separated for both native students and students with a migrant background

	Native students				Immigrant students			
	Min.	Max.	Mean	Std. deviation	Min.	Max.	Mean	Std. deviation
Science	107.74	825.65	517.47	91.43	130.30	841.04	468.65	103.36
Math	81.55	804.63	516.27	87.44	154.92	790.07	479.81	94.65
Reading	81.02	800.16	505.76	91.75	67.34	775.21	463.00	102.81
Average ESCS school	-2.19	1.69	0.15	0.50	-2.07	1.64	0.03	0.50
Diversity ESCS	0.00	0.80	0.65	0.08	0.00	0.79	0.66	0.07
Diversity ethnic	0.00	0.84	0.13	0.16	0.03	0.84	0.41	0.20
% Western OECD	0.00	91.80	3.61	7.63	0.00	100.00	14.75	18.62
% Eastern Europe	0.00	66.67	2.29	5.70	0.00	66.67	7.99	12.81
% Islamic countries	0.00	92.31	1.20	4.25	0.00	92.31	5.97	13.46
% non-Islamic Asia	0.00	83.33	0.77	3.35	0.00	87.50	2.53	8.11
% Sub-Saharan Africa	0.00	33.33	0.28	1.38	0.00	33.33	1.13	3.10
Vocational orientation of school	0.00	1.00	0.07	0.25	0.00	1.00	0.08	0.27
Level of track	0.00	1.00	0.39	0.49	0.00	1.00	0.34	0.48
School size	9.00	4,468	682.67	447.17	23	4,468	845.77	629.17
Teacher-student ratio	0.89	36.59	11.79	3.74	0.89	36.59	11.69	3.94
Teacher shortage	-1.06	3.62	0.09	0.95	-1.06	3.62	0.29	0.98
School in rural area	0.00	1.00	0.39	0.49	0.00	1.00	0.29	0.46
School in city	0.00	1.00	0.26	0.44	0.00	1.00	0.37	0.48
Female	0.00	1.00	0.50	0.50	0.00	1.00	0.50	0.50
ECSC	-4.39	3.35	0.18	0.89	-4.44	2.97	-0.23	1.02
Immigrant. first generation					0.00	1.00	0.46	0.50
Immigrant. second generation					0.00	1.00	0.50	0.50
Mixed marriage					0.00	1.00	0.06	0.23
Eastern Europe					0.00	1.00	0.27	0.45
Western OECD					0.00	1.00	0.45	0.50
Islamic country					0.00	1.00	0.16	0.37
Non-Islamic Asia					0.00	1.00	0.09	0.29
Sub-Saharan Africa					0.00	1.00	0.04	0.18
Language of destination					0.00	1.00	0.50	0.50
Grade (destination country centered)	-2.00	3.00	0.5924	0.80	-2.00	3.00	0.37	0.87
Strongly stratified system	0.00	1.00	0.3493	0.48	0.00	1.00	0.56	0.50
Moderately stratified system	0.00	1.00	0.2237	0.42	0.00	1.00	0.14	0.35
Valid <i>N</i>	72,329				8,521			

Source PISA 2006; own computations

Table 4.2 Average reading scores of immigrant students per country of destination and country of origin, and of native students per country of test

Destination countries		AU	AT	BE	CH	DE	DK	EL	FI	LI	LU	LV	NO	NZ	PT	SC	Mean
Origin countries																	
Albania		422			353			433		312							399
Australia														551			551
Austria					478				534							453	501
Bangladesh												486					453
Belarus																	486
Belgium			457			459	445				521						521
Bosnia Herzegovina															466		454
Brazil											368						466
Cape Verde															456	461	368
China		544												538			539
Congo			574	437													437
Croatia			469			432											459
Czech Republic			560														560
Denmark													394				394
Estonia									485								485
France				452	504					439	493						485
Germany			525	502	530					529	520						519
Greece						412											412
Hungary			567														567
India		539															538
Italy					451	410				447	432			512		494	443
Korea		499															506
Liechtenstein					464												464
Macedonia						413											403
Morocco				442													442
Netherlands				489													489
New Zealand		498															498
Pakistan							408										423
Philippines		512														446	512
Poland			532	430		488											469
Portugal					460					450	416						426
Romania			444														444

(continued)

Table 4.2 (continued)

Destination countries									
Russia					462	562	463		472
Samoa							443		443
Serbia Montenegro	430	427			397	413			426
Slovakia	515								515
Slovenia	428				447				432
South Africa	527								527
Spain		467							469
Sweden						497		451	462
Switzerland									501
Turkey	386	411	433		400	398			408
Ukraine							447		447
United Kingdom	523								532
United States	559								559
Vietnam	505								505
Mean immigrants	523	445	451	444	430	412	440	429	465
Mean natives	508	503	521	511	512	499	504	489	480
						466	485	531	502
						548	504	480	506

Source: PISA 2006; own computations

4.10.2 *Characteristics of Individuals*

In line with Rumbaut (2004), we have distinguished generations based on the countries of origin of both parents and child, and the age at which the child immigrated. *Second-generation immigrant students* are students with at least one parent who was born abroad, while the student was born in the destination country. Students who belong to the first generation were themselves born abroad.

Having *one native parent* is a dummy variable indicating whether students had one native and one immigrant parent (1) or two immigrant parents (0; reference category).

Home language is a dummy variable indicating whether the child speaks the country's official language at home (yes 1; no 0).

Regional origin of students with an immigrant background: Based on earlier analyses of PISA 2003 data (Levels and Dronkers 2008; Levels et al. 2008), we combined the countries of origin in five regions of origin to simplify the presentation of the analysis: Eastern Europe (Albania, Belarus, Bosnia, Croatia, Czech Republic, Estonia, Hungary, Macedonia, Poland, Rumania, Russia, Serbia, and Montenegro, Slovakia, Slovenia, Ukraine); non-Islamic Asia (China, India, Korea, Philippines, Vietnam); Islamic countries (Albania, Bangladesh, Bosnia, Morocco, Pakistan, Turkey); Western OECD countries (Australia, Austria, Belgium, Denmark, France, Germany, Greece, Italy, Netherlands, New Zealand, Portugal, Spain, Sweden, Switzerland, United Kingdom, United States); Sub-Sahara Africa (Cape Verde, Congo, South Africa).

The *parental sociocultural status* is based on the index of economic, social, and cultural status of the parents (ESCS). It is a composite measure created by the OECD based on the occupational status of the parents (ISEI scale; International Socio-economic Index for Occupational Status; Ganzeboom et al. 1992), the educational level of the parents (ISCED; International Standard Classification of Education, UNESCO 2006), and the presence of any material or cultural resources at the students' homes.⁷ This combination of the parents' occupational status and educational level, together with the resources at home, produces the strongest indicator of the parental environment. We set the average of this index of ESCS of the parents for all destination countries and all students to zero, to ensure that the comparisons for this variable show the result for the average student in a destination country.

Grade. Considering that not all students were at the same level or in the same grade at the time of the PISA survey, we have used the "grade" variable to account for this. The average of this grade variable was set to zero for all destination

⁷ The measure consists of the presence of a desk, a private room, a quiet place to study, a computer, educational software, Internet access, literature or poetry, art, books that may be of use when doing schoolwork, a dictionary, a dishwasher, and the presence of more than 100 books in the house.

countries and all students to ensure that the comparisons for this variable show the result for the student at the average level of 15-year-olds.

Female. Dummy for gender (female 1; male 0).

4.10.3 Curriculum at the Track-Within-Schools Level

Vocational. A dummy variable indicates whether a student is currently enrolled in a (pre-) vocational (1) or general (0) type of education (ISCED classification).

Higher secondary. This dummy distinguishes the current track level within secondary education as higher secondary (1) or lower secondary (0).

4.10.4 Ethnic and Sociocultural Diversity of Schools

Using the numbers of students from all countries of origin in the track-within-school involved, we calculated one minus the Herfindahl index as a measure of ethnic diversity (varying between 0 and 1).⁸ Every country of origin here represented a separate ethnic group, including the native students. The index should be interpreted as follows: the value 0 means that there was no ethnic diversity at all in the track, because all students came from the same country of origin. Values that approach 1 represent a very high degree of diversity: all students at that school come from different countries of origin. The Herfindahl index has been criticized for being “color-blind” (Stolle et al. 2008; Voas et al. 2002), which means, for example, that a school with 20 % Turkish students and 80 % native students obtains the same diversity score as a school with 20 % native students and 80 % Turkish students. The specific ethnic share of the track-within-school is therefore also important, and hence we used appropriate indicators (see below).

In a similar way, we calculated the sociocultural diversity of the tracks-within-schools. Using the social class index (ESCS scores) of the parents we divided these parental scores into five categories: the group with the lowest 10 % scores, the 10–30 % group, the 30–70 % group, the 70–90 % group, and the group with the highest 10 % scores.⁹ Based on these five categories, we calculated the Herfindahl index of sociocultural diversity (varying between 0 and 1).¹⁰ The index should be interpreted as follows: a value of 0 means that there is no diversity,

⁸ The Herfindahl index of ethnic diversity was calculated as follows: $1 - [(\text{percentage of ethnic group 1})^2 + (\text{percentage of ethnic group 2})^2 + \dots + (\text{percentage of ethnic group } n)^2]$.

⁹ The groups are defined as follows: 1) Less than 10 %: $\text{ESCS} \leq -1.1$; 2) 10–30 %: $-1.0 < \text{ESCS} \leq -0.4$; 3) 30–70 %: $-0.3 < \text{ESCS} \leq 0.6$; 4) 70–90 %: $0.7 < \text{ESCS} \leq 1.2$; 5) more than 90 %: $\text{ESCS} \geq 1.3$.

¹⁰ The Herfindahl index of sociocultural diversity was calculated as follows: $1 - [(\text{percentage of parents from ESCS group 1})^2 + (\text{percentage of parents from ESCS group 2})^2 + \dots + (\text{percentage of parents from ESCS group } 5)^2]$.

because all parents of all students at that particular track-within-school are in the same ESCS category. A value approaching 1 indicates a very high level of diversity, indicating that the students are equally recruited from the five ESCS categories. As this Herfindahl index of sociocultural diversity is “level-blind” and therefore insensitive to the average parental educational level, we have also added the average ESCS of a school to the analysis (see below).

4.10.5 Ethnic and Sociocultural Average/Share of Track-Within-Schools

Present students originating from different immigrant regions. As indicated above, the countries of origin were combined into five categories in order to simplify the presentation of the analysis. For each track-within-school, we calculated five indexes: the percentage of students from Eastern Europe, the percentage of students from non-Islamic Asia, the percentage of students from Islamic countries, the percentage of students from Western OECD countries, and the percentage of students from Sub-Sahara Africa. These indexes are the necessary counterparts of the Herfindahl index of ethnic diversity, which after all is “color-blind”. Together, these indexes measure the combined effect of ethnic diversity and ethnic share.

Average sociocultural status of the parents. We also calculated the average parental ESCS per track-within-school. This index is the necessary counterpart of the Herfindahl index of sociocultural diversity, which is “level-blind”. Together, these indexes measure the combined effect of sociocultural diversity and socio-cultural average.

4.10.6 Characteristics of Schools

The degree to which schools suffer a *shortage of teachers* is an index, which indicates to what extent education is hampered by a lack of the following factors: qualified physics teachers, qualified mathematics teachers, qualified language teachers, and qualified teachers for the other subjects. This index is based on answers given by school principals. The average of this index for teacher shortage was set to zero for all destination countries and all students to ensure that the comparisons for this item show the result for the student in a school exhibiting an average shortage of teachers.

Student-staff ratio: the number of students per staff member per school. This index is based on the answers given by the school principals. The average for this ratio was set to zero for all destination countries and all students to ensure that the comparisons for this item show the result for the students in schools with an average student-staff ratio.

School located in (large) *city or the countryside.*

4.10.7 Characteristics of Educational Systems

Degree of stratification: the educational systems are divided into “highly stratified”, “moderately stratified”, and “hardly stratified”. We define Austria, Germany, Liechtenstein, and Switzerland as countries with highly stratified systems; Belgium, Greece, Luxembourg, and Portugal are countries with moderately stratified systems; and Australia, Latvia, New Zealand, and Scotland are countries with hardly stratified systems. This classification is based on the age when students first must make a choice between different types of education, the number of types of education from which students can choose, and the presence of a more hidden clustering of students based on performance (internal stratification). Although PISA provides this information for all destination countries, in addition we have used information provided by country experts (Schneider 2008; Shavit and Müller 1998; UNESCO 2006). In general, these different sources show a similar pattern. In the highly stratified educational systems, students can choose from at least three types of education at the age of 10 (Austria and Germany), at the age of 11 (Liechtenstein), or at the age of 12 (Switzerland). In the moderately or hardly stratified systems, students cannot choose between different types of education until the age of 15. We have used two dummy variables to show the degree of stratification. Hardly stratified systems (Australia, Latvia, New Zealand, and Scotland) constitute the reference category.

4.11 Analysis

Native students and students with an immigrant background have been analyzed separately, using a multilevel analysis with four levels: students, track-within-schools, schools, and countries. The countries of origin of the students with an immigrant background are treated as individual characteristics at the student level to keep the analysis as comparable as possible.

Tables 4.3 and 4.4 show the results for students with an immigrant background and native students, respectively. The structure of the analysis is identical for both populations. The first model shows the effect of both ethnic and sociocultural diversity, and average/share on the students’ language skills. In the second model, the individual characteristics of students (including their immigration characteristics) are added, so that the effects of ethnic and sociocultural diversity, and average/share can no longer be distorted by the unequal distribution of students across schools with different populations. In the third model, we add the curriculum that the students are attending. In the fourth model, we added other school characteristics. In both Models 3 and 4, we want to ensure that the effects of ethnic and sociocultural diversity, and average/share have not been caused by the curriculum attended by the students and the schools’ resources.

Table 4.3 The effects of school diversity on reading scores of 15-year-old students with a migrant background

	M1	M2	M3	M4	M5	M6	M7
Constant	453.96 (15.17)	415.26 (13.71)	433.24 (13.69)	426.60 (14.43)	426.06 (14.46)	419.42 (16.88)	416.11(16.70)
School-composition at track- within-school							
Average ESCS	98.23** (3.35)	73.21** (3.21)	63.47** (3.32)	62.22** (3.46)	62.78** (3.47)	59.19** (3.51)	50.44** (5.73)
% students Eastern Europe (ref = % native)	0.16 (0.22)	0.55** (0.20)	0.52** (0.19)	0.51** (0.19)	0.43** (0.23)	0.41* (0.22)	0.67** (0.24)
% students non-Islamic Asia (ref = % native)	1.18** (0.28)	1.35** (0.26)	1.33** (0.25)	1.30** (0.26)	0.71** (0.34)	0.73** (0.34)	0.72** (0.35)
% students Islamic countries (ref = % native)	-0.03 (0.18)	0.26 (0.17)	0.16 (0.16)	0.17 (0.16)	0.12 (0.22)	0.07 (0.22)	0.01 (0.23)
% students Western OECD countries (ref = % native)	0.35* (0.18)	-0.06 (0.16)	-0.00 (0.16)	0.01 (0.16)	-0.04 (0.16)	-0.01 (0.16)	0.05 (0.16)
% students Sub-Saharan Africa (ref = % native)	-0.74 (0.59)	0.07 (0.55)	0.12 (0.53)	0.13 (0.53)	0.11 (0.56)	0.05 (0.56)	-0.25 (0.57)
ESCS diversity	20.14 (18.65)	50.64** (16.83)	27.28 (16.60)	27.91 (16.57)	28.19 (16.61)	28.95 (16.57)	30.77 (16.53)
Ethnic diversity	-50.32** (15.40)	-51.78** (13.88)	-53.36** (13.46)	-50.93** (13.70)	-46.38** (13.98)	-46.91** (14.06)	-42.59** (17.63)
Individual characteristics							
Parental ESCS	13.13** (0.95)	13.10** (0.95)	13.10** (0.95)	13.08** (0.95)	13.03** (0.95)	24.18** (1.89)	25.22** (1.97)
Eastern Europe origin (ref = W. OECD)	-13.59** (2.90)	-13.53** (2.89)	-13.53** (2.89)	-13.65** (2.89)	-14.72** (3.89)	-15.27** (3.88)	-14.74** (3.87)
Non-Islamic Asia origin (ref = W. OECD)	6.17 (3.99)	6.53 (3.97)	6.53 (3.97)	6.55 (3.97)	-2.89 (5.35)	-0.39 (5.36)	0.65 (5.37)
Islamic countries origin (ref = W. OECD)	-28.15** (3.21)	-28.13** (3.20)	-28.23** (3.19)	-28.23** (3.19)	-28.68** (4.03)	-30.01** (4.03)	-28.12** (1.62)
Sub-Saharan Africa origin (ref = W. OECD)	-18.20** (4.70)	-18.71** (4.69)	-18.88** (4.69)	-18.88** (4.69)	-18.23** (7.12)	-19.36** (7.10)	-16.85** (7.13)
Female	29.62** (1.63)	29.01** (1.62)	28.90** (1.63)	28.90** (1.63)	28.96 (1.63)	28.58** (1.62)	28.68** (1.62)
Home language same as in destination country	22.68** (2.00)	22.56** (1.99)	22.51** (1.99)	22.51** (1.99)	22.55** (1.99)	23.02** (1.99)	23.05** (1.99)

(continued)

Table 4.3 (continued)

	M1	M2	M3	M4	M5	M6	M7
One parent migrant, other parent native		7.33* (3.68)	6.96 (3.67)	7.03 (3.67)	7.11* (3.67)	7.44** (3.66)	7.77** (3.65)
Second-generation migrant		7.89** (1.79)	7.51** (1.78)	7.49** (1.78)	7.46** (1.78)	7.65** (1.78)	7.79** (1.78)
Grade (destinationcentered)		32.69** (1.63)	33.07** (1.85)	32.87** (1.86)	32.83** (1.86)	32.67** (1.85)	32.43** (1.85)
Curriculum at track-within-school							
Vocational (ref = general)			-49.07** (4.94)	-50.09** (4.94)	-49.83** (4.95)	-55.42** (5.06)	-57.91** (5.25)
Higher secondary (ref = lower)			8.50** (4.25)	8.87** (4.25)	8.40* (4.26)	-0.67 (5.77)	-0.27 (5.76)
School characteristics							
Teacher shortage				-2.41 (1.42)	-2.46 (1.42)	-1.90 (1.41)	-2.24 (1.41)
Student/staff ratio				0.70* (0.36)	0.69* (0.36)	0.75** (0.36)	0.85** (0.36)
School in city (ref = towns)				-2.90 (3.39)	-2.50 (3.39)	-2.48 (3.37)	-1.16 (3.37)
School in rural (ref = towns)				-3.17 (3.38)	-3.04 (3.37)	-2.36 (3.36)	-1.65 (3.36)
Interaction % students & analogous origin							
% Eastern Europe					0.07 (0.19)	0.08 (0.18)	0.01 (0.19)
* Eastern Europe					0.87** (0.33)	0.86** (0.33)	0.83** (0.33)
% non-Islamic Asia					0.03 (0.20)	0.01 (0.20)	-0.11 (0.20)
* non-Islamic Asia					-0.09 (0.80)	0.06 (0.80)	-0.18 (0.80)
% Islamic countries							
* Islamic countries							
% Sub-Saharan Afr.							
* Sub-Saharan Afr.							

(continued)

Table 4.3 (continued)

	M1	M2	M3	M4	M5	M6	M7
Educational system characteristics							
Strongly stratified (ref = Comprehensive)						9.34 (16.28)	13.74 (16.10)
Moderately stratified(ref = Comprehensive)						4.53 (20.58)	-10.75 (20.52)
ESCS and curriculum with educational systems							
Parental ESCS						-13.61** (2.18)	-15.55** (2.28)
* strongly stratified							
Parental ESCS						-18.16** (2.99)	-16.75** (3.15)
* moderately stratified							
Higher secondary						21.36** (7.73)	16.54** (7.82)
* strongly stratified							
Higher secondary						15.10 (11.30)	30.25** (11.67)
* moderately stratified							
School-composition with educational systems							
Average ESCS							20.10** (7.37)
* strongly stratified							
Average ESCS							-12.14 (9.68)
* moderately stratified							
Ethnic diversity							-17.14 (19.25)
* strongly stratified							
Variation							
Individual level	5,318 (91)	4,591 (78)	4,584 (78)	4,583 (80)	4,579 (78)	4,558 (78)	4,559 (77)
Track-within-school level	1,244 (223)	671 (160)	534 (144)	534 (144)	539 (145)	535 (143)	527 (142)
School level	429 (214)	632 (162)	648 (149)	639 (149)	632 (149)	607 (147)	576 (145)
Test-country level	1,065 (419)	791 (310)	769 (304)	752 (296)	760 (299)	688 (272)	608 (243)
Log likelihood	98,725	97,369	97,272	97,264	97,257	97,201	97,174

W. OECD = Western OECD

Source PISA 2006 data for selected destination countries; own computations

Table 4.4 The effects of school diversity on reading scores of 15-year-old native students

	M1	M2	M3	M4	M6	M7
Constant	484.43 (8.15)	471.82 (7.40)	489.22 (6.97)	477.00 (7.39)	473.61 (9.25)	471.89 (9.28)
School-composition at track-within-school						
Average ESCS	87.63** (1.76)	57.58** (1.65)	48.24** (1.64)	47.56** (1.73)	47.76** (1.75)	48.25** (2.99)
% students Eastern Europe (ref = % native)	-0.32 (0.20)	-0.09 (0.18)	-0.15 (0.17)	-0.17 (0.17)	-0.12 (0.17)	-0.08 (0.17)
% students non-Islamic Asia (ref = % native)	0.69** (0.29)	0.88** (0.26)	0.86** (0.24)	0.74** (0.24)	0.71** (0.24)	0.53** (0.26)
% students Islamic countries (ref = % native)	-0.16 (0.18)	0.05 (0.17)	-0.08 (0.16)	-0.03 (0.16)	0.02 (0.16)	0.10 (0.18)
% students Western OECD countries (ref = % native)	-0.58** (0.18)	-0.49** (0.17)	-0.44** (0.16)	-0.44** (0.16)	-0.37** (0.16)	-0.33** (0.16)
% students Sub-Saharan Africa (ref = % native)	-1.23** (0.51)	-0.70 (0.45)	-0.65 (0.41)	-0.65 (0.41)	-0.57 (0.41)	-0.60 (0.43)
ESCS diversity	16.48 (8.77)	12.84 (7.85)	-7.94 (7.23)	-7.20 (7.19)	-5.11 (7.20)	-3.10 (7.30)
Ethnic diversity	-7.80 (12.72)	-16.80 (11.55)	-12.84 (10.84)	-8.71 (10.95)	-13.32 (11.01)	-1.30 (12.71)
Individual characteristics						
Parental ESCS		17.38** (0.34)	17.33** (0.34)	17.34** (0.34)	27.27** (0.54)	27.24** (0.55)
Female		31.02** (0.54)	30.82** (0.54)	30.79** (0.54)	30.55** (0.53)	30.55** (0.53)
Grade (destination centered)		40.12** (0.66)	41.09** (0.70)	40.96** (0.70)	41.09** (0.70)	41.08** (0.70)
Curriculum at track-within-school						
Vocational (ref = general)			-50.98** (2.29)	-51.19** (2.30)	-54.29** (2.34)	-53.99** (2.43)
Higher secondary (ref = lower)			2.43 (2.12)	2.99 (2.12)	-3.50 (2.91)	-3.74 (2.91)
School characteristics						
Teacher shortage				-5.17** (0.80)	-4.86** (0.91)	-4.79** (0.80)
Student/staff ratio				0.90** (0.21)	0.91** (0.21)	0.87** (0.21)
School in city (ref = towns)				-1.13 (1.96)	-1.64 (1.95)	-2.04 (1.96)
School in rural (ref = towns)				2.93 (1.71)	2.91 (1.70)	2.75 (1.70)
Educational system characteristics						
Strongly stratified (ref = comprehensive)					8.39 (10.74)	11.16 (10.81)
Moderately stratified (ref = comprehensive)					-18.21 (13.70)	-17.08 (13.76)

(continued)

Table 4.4 (continued)

	M1	M2	M3	M4	M6	M7
ESCS and curriculum with educational systems						
Parental ESCS					-16.28** (0.75)	-16.13** (0.77)
* strongly stratified						
Parental ESCS					-15.75** (0.86)	-15.82** (0.88)
* moderately stratified						
Higher secondary					12.94** (7.94)	13.68** (4.02)
* strongly stratified						
Higher secondary					26.94** (7.96)	26.25** (8.22)
* moderately stratified						
School-composition with educational systems						
Average ESCS						-2.52 (3.74)
* strongly stratified						
Average ESCS						1.84 (4.37)
* moderately stratified						
Ethnic diversity						-22.77* (11.63)
* strongly stratified						
Ethnic diversity						-15.99 (15.90)
* moderately stratified						
Variation						
Individual level	5,094 (27)	4,481 (24)	4,483 (24)	4,483 (24)	4,448 (24)	4,448 (24)
Track-within-school level	949 (84)	601 (61)	335 (44)	334 (44)	339 (44)	336 (44)
School level	700 (87)	746 (67)	812 (53)	789 (53)	772 (52)	774 (52)
Test-country level	500 (190)	422 (160)	379 (144)	357 (136)	317 (121)	315 (119)
Log likelihood	82,9218	81,9686	81,9223	81,9162	81,8588	81,8583

* p < .01

** p < .05

Source PISA 2006 data for selected destination countries; own computations

The fifth model (which is only relevant for students with an immigration background) determines whether a particular ethnic share of schools affects the language skills of students with the same ethnic origin. The last two models, 6 and 7, include the effect of stratification of educational systems in relation to parental ESCS and the curriculum that the students attend (Model 6), and ethnic diversity¹¹ and sociocultural average/share of schools (Model 7). The purpose of the last two models is to analyze whether the degree of stratification of educational systems affects the relations between ethnic and sociocultural diversity, and average/share and the language skills. The included effects of stratification of educational systems in relation to parental ESCS and the curriculum in these two models are based on other analyses (Dunne 2010; Dronkers et al. 2011), and are not further discussed here.

4.12 Research Results

The main results in relation to the two research questions on diversity and composition are based on Tables 4.3 and 4.4, and in particular on Models 4 and 7. We will not discuss interesting results outside these two research questions (for instance, the effect of parental ESCS on performance in different educational systems) due to a lack of space, but refer to the relevant publications (Dunne 2010; Dronkers et al. 2011).

1. A higher ethnic diversity of schools has a *considerably negative effect* on the language skills of students with an immigrant background, regardless of the degree of stratification of the educational system in the countries of destination. For native students, a greater ethnic diversity of schools has only a *negative effect* in highly stratified educational systems. Moreover, on average, students with an immigrant background attend schools with, on average, a more than three times larger ethnic diversity than do native students (Table 4.1) and thus are more hampered by ethnic diversity of school than are native students. These negative effects of ethnic diversity cannot be explained by the other characteristics included in the model.
2. A higher parental ESCS diversity of schools has *no significant positive or negative effect* on the learning performance of either students with an immigrant background or native students. This nonsignificant effect cannot be explained by the other characteristics included in the model.
3. A higher percentage of *students originating from non-Islamic Asian countries* increases the learning performance of both *native* students (5 points more on the language-skills test per 10 % more students from non-Islamic Asian

¹¹ We also run models with the interaction between stratification level of educational system and ESCS diversity. The parameters of these interactions were never significant. Given the emphasis of this chapter, we did not include them in the equation of Model 7.

countries) and for *immigrant students origination outside non-Islamic Asian countries* (7 points more on the language-skills test per 10 % more students from non-Islamic Asian countries). The positive effect of a higher percentage of students from non-Islamic Asian countries is even stronger for students from non-Islamic Asian countries: they score 16 points higher on the language-skills test for each 10 % more students from non-Islamic Asian countries. This means that these students from non-Islamic Asian countries can quickly convert their nonsignificant advantage in the language-skills test (0.65 points)¹² into a significant advantage in educational performance in schools with a high share of students from the same non-Islamic Asian countries, in particular compared with other students with an immigrant background. Analogous positive effects of a higher percentage of students from the same region do not apply to students coming from other regions of origin (see interaction effects). This effect of the percentage of students from non-Islamic Asian countries cannot be explained by the other characteristics included in the model.

4. The language skills of *students with an immigrant background* are positively affected by the percentage of *students from Eastern Europe* at their school (7 points for each 10 % more students from Eastern Europe). This effect of the percentage of students from Eastern Europe cannot be explained by the other characteristics included in the model.
5. A higher percentage of *students from Western OECD countries* decreases the language skills of the *native* students (3 points less on the language-skills test for each 10 % more students from Western OECD countries). The percentages of students from other regions (except that of the non-Islamic Asian countries) have no positive or negative effects on the language skill of the native students. These effects of percentages of various regions cannot be explained by the other characteristics included in the model.
6. The *average sociocultural status (ESCS) of the parents* has a strong effect on language skills, for both students with an immigrant background (50.4) and native students (48.3). This effect, for native students, is the same across all educational systems, regardless of their level of stratification, and only after controlling for the level of the curriculum (see Dronkers et al. 2011). The effect of average ESCS is even stronger for students with an immigrant background in highly stratified educational systems ($50.44 + 20.10 = 70.54$). Moreover, students with an immigrant background are enrolled primarily in schools in which the average ESCS is 1/5 of a standard deviation lower than for native students (Table 4.1).
7. The substantially lower language skills of *students from Islamic countries* (28 points = one-third of the standard deviation) cannot be explained based on their individual backgrounds, the attended curriculum, or the characteristics of the school or educational system. None of the other comparable students originating from other regions has such low scores compared with the reference

¹² Compared with students from Western OECD countries.

group of students from Western OECD countries. Students from Sub-Saharan Africa score only 17 points lower, and students originating from Eastern Europe, 15 points lower than students from Western OECD countries, while students originating from non-Islamic Asian countries have the same language skill scores as students from Western OECD countries.

4.13 Conclusions

“Diversity in education” is much too wide and inclusive a term to be applied in a meaningful manner. We need a clear conceptual and policy-oriented distinction between diversity and average/share of schools. In addition, ethnic and sociocultural diversity, and average/share should be regarded conceptually as two different dimensions, despite the high correlations between diversity and average/share within countries. Current research and policies on ethnic and sociocultural diversity, and average/share of schools fails to provide this conceptual and policy-oriented clarity.

The analyses confirm the strong impact of the average parental sociocultural status on school performance. There are relatively few differences in the effect of the average parental sociocultural status in the different educational systems.

The main contribution of the current analysis is in introducing the diversity concept in this kind of research. The results show that high ethnic diversity of schools hampers to a similar degree the educational performance of students with an immigrant background in all destination countries, regardless of the level of stratification of their educational systems. A high ethnic diversity of schools also hampers the educational performance of native students but only in educational systems with a high degree of stratification. One possible explanation of ethnic diversity’s stronger effects for students with an immigrant background is that such students may have fewer resources at home. Therefore, they are in general more vulnerable to experience a decreased effectiveness of learning and teaching resulting from larger ethnic diversity. There is an analogy with the effect of the summer holiday, in which the educational performance of children with few parental resources declines, whereas children with abundant parental resources can maintain the level of their educational performance during the summer holiday (Cooper et al. 1996; Entwisle et al. 1997).

We do not find a similar effect for sociocultural diversity. Higher or lower sociocultural diversity of school neither hampers nor promotes the educational performance of students with an immigrant background or that of native students. For immigrant students, this is only true after controlling for the level of the attended curriculum.

From these findings, we can conclude two things. First, the main characteristic of school populations in the sociocultural dimension is sociocultural average and not sociocultural diversity. Second, a large difference is observed between the effects of ethnic and sociocultural diversity. Ethnic diversity of schools has a

negative effect on educational performance, but this does not apply to sociocultural diversity at schools. Why not? Is ethnic diversity more difficult to bridge than sociocultural diversity? Does ethnic diversity require more and more costly social capital (more bridging than bonding) than sociocultural diversity (less bridging than bonding)? Does greater ethnic diversity in schools therefore demand more time to bridge the differences, resulting in diminished time for teaching and learning in ethnically diverse schools? If this is the case, is less time required to bridge the differences in socioculturally diverse schools, so that the amount of teaching and learning time is not less in socioculturally diverse schools?

This analysis shows again that making a distinction between the countries of origin is necessary to understand more fully the effects of immigration in education. Our results show that it is very important to include *all* origin countries in the analyses, not just the problematic ones. Singling out only the problematic groups (e.g. Islam countries), means to close one's eyes to the achievements of successful immigrants from other regions (e.g., non-Islamic Asia), to underestimate the positive effects of certain types of immigration, and to demonstrate less understanding of the causes of integration and assimilation of immigrants in the destination countries. Our results also show that the usual distinction between Western and non-Western immigrants, made by EUROSTAT and other European agencies, fails to do justice to the differences within these broad categories.

For a *correct estimation of the effect of ethnic share*, the percentage of immigrant students is misleading, because it does not take into account the origin of the immigrant population. As almost all analyses of the effects of school populations only use the percentage of immigrant students (Driessen 2007) and fail to measure diversity, most results are distorted and therefore unreliable (a favorable exception is Westerbeek 1999).

Students from *non-Islamic Asia* have an advantage when it comes to educational performance, also compared with native students. Other groups profit as well from the presence of this group of immigrant students in schools. The standard explanations for this advantage (working harder for education; authoritarian educational system; the "ideal immigrant") do not stand up empirically from a cross-national perspective (see Dronkers and Heus 2010b). Understanding the case of Asian immigrants is therefore a much greater challenge for European educational research than the traditional European-USA comparison of their educational systems (see also Dronkers 2010a).

Students from *Islamic countries* have a substantial disadvantage in language scores compared with other immigrant students from other countries of origin, which cannot be explained based on individual socioeconomic backgrounds, school characteristics, or the educational system's characteristics. Multiple explanations may be proposed: discrimination directed towards immigrant children from Islamic countries; negative selection of guest worker programs, in which most guest workers in Europe came from Islamic countries; or values and standards of the current Islam that are less suitable for success in modern societies (honor, unequal gender roles). André et al. (2009) have used data from the *European Social Survey* (ESS) to show that the degree of subjective feelings of

discrimination for immigrants in the EU is not greater than for Greek Orthodox or Jewish believers. Dronkers and Heus (2010a) have shown that the negative selection of immigrants from Turkey is not larger than that from non-Islamic guest worker countries (Yugoslavia, Italy, Portugal). Dronkers and Fleischmann (2010) have shown, based on the same ESS data, that second-generation male Muslims in Europe obtain a lower educational level than comparable immigrants espousing different religious beliefs. Moreover, they have shown it is the Islamic faith of individual immigrants that leads to a lower educational level, not the fact of originating from a country with an Islamic majority. These latter results make it important to look for explanations other than discrimination or negative selection to understand the low scores of students from Islamic countries.

Studies and discussions concerning the *advantages and disadvantages of educational systems* for the level of the educational performance and, for educational inequality, should always include the related school characteristics, because the effects of educational systems manifest themselves mainly through changes in school characteristics and school average/share (Dunne 2010). The risk of perverse effects of well-meant changes in educational systems is therefore great. On the other hand, it is also wrong to state that educational systems have no effect on the level of educational performance and educational inequality.

4.14 Policy Implications

Ethnic and sociocultural diversity, and average/share are two conceptually distinct terms, and it is empirically possible to measure their effects separately. Lumping ethnic and sociocultural average/share and diversity of schools together is therefore wrong and misleading, as is the use of the term black school as an excuse by principals for the poor performance of their schools.

There is insufficient empirical support for a *forced increase of the ethnic diversity* in schools. Bussing ethnic minorities across schools, as has been applied in the USA as a result of civil rights legislation, is therefore counterproductive. In fact, we find strong evidence of the opposite: *ethnically homogeneous schools* are in a better position to decrease the educational disadvantages of immigrant students from certain countries or origin than ethnically diverse schools. The ethnic homogeneity of Hindu schools or Islamic schools is therefore not a valid argument for closing them with a view to the educational performance of their students (Driessen and Merry 2010; Driessen 2008).

There is also no evidence supporting the *forced increase of the sociocultural diversity* in schools of secondary education. We find no effect at all of sociocultural diversity. Distributing students from high social status background across all schools is a zero-sum game at best. It simply means that the average performance of schools will become more similar, but the gains of the former low-status schools will be offset by the losses of the former high-status schools.

Students from *Islamic countries* have substantially lower educational outcomes that cannot be explained based on their individual socioeconomic backgrounds, school characteristics, or characteristics of the educational system. Suggesting that these differences are all due to the students' socioeconomic backgrounds or the school characteristics or the educational systems in which they are placed does not contribute to improving these students' situation.

It is important to bear in mind educational systems' differing effects on both the level of educational performance and educational inequality among native students and students with an immigrant background. Some groups fare better in highly stratified systems, while others are better off in largely unstratified systems (see Dronkers et al. 2011).

4.15 Epilogue

In spite of these research results, one may still advocate for increasing ethnic and sociocultural diversity in schools. However, better educational performance can no longer be used as an argument to support this view. One may feel that ethnically and socioculturally more diverse schools reduce the social distance between ethnic groups and social classes and decrease discrimination, in accordance with intergroup contact theory. Intergroup contact theory was first drawn up by Allport (1954), and later extended by Pettigrew (1998) and others. It states that interpersonal contact between members of the majority group and the minority group contributes to the prevention of negative views on the other group, but only if this interpersonal contact meets certain conditions. The positive result of contact between groups is greatest if five conditions have been met: equal status between groups, shared objectives, cooperation between groups, support by legislation and customs, and the possibility of emerging friendships. Many studies support this prediction (see Pettigrew 1998). In many cases, however, not all conditions have been met. When this occurs, the positive effect of interpersonal contacts is less certain, and forced intergroup contact may even widen the social distance between ethnic groups and increase mutual discrimination. Houtte and Stevens (2009), for example, have found for Flanders that native students in schools with a larger share of students with an immigrant background have a greater number of friends with an immigrant background. Yet Houtte and Stevens did not find this effect for students with an immigrant background: the ethnic share and diversity of school populations did not affect their number of native friends. Neither did they find a relationship between the ethnic share and diversity of Flemish schools, and the students' sense of feeling at home in school.

Nevertheless, even if the policy of increasing ethnic diversity in schools were to reduce the social distance between ethnic groups, this need not automatically be a reason to continue this policy. In that case, a political choice must be made, which is the following: What is more important for our society: less social distance between ethnic groups or better educational performance of immigrant students?

This is a political question, one that cannot be decided by scientific research, as the answer depends on the standards and values of the citizens. Before they answer this question, though, citizens should know that ethnic diversity brings with it both positive and negative effects. In their choice for better educational performance, the citizen who makes a choice should also remember that the “real and existing” discrimination of highly educated immigrants in the European labor markets (Heath and Cheung 2007; Fleischmann and Dronkers 2008) should be tackled as well. Because education cannot solve the problems of societies; at best, it can merely create the conditions that promote a reduction of those problems.

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Chapter 5

Socio-Structural Effects on Educational Poverty of Young Immigrants: An International Comparative Perspective

Janna Teltemann and Michael Windzio

5.1 Introduction

International migration movements are a constituent part of human history. However, since the end of the twentieth century, border-crossing migration reached a new dimension. This is not only a consequence of a new political world order but also a side effect of ongoing internationalisation processes. At the same time, many industrialised countries face the growing challenges of demographic changes. In order to maintain sustainable social security systems and economic prosperity, these countries will have to rely on immigration—and the successful social integration of immigrants. As an unintended consequence of policies that permit or even increase immigration, the social and ethnic composition of schools has changed fundamentally in most receiving countries, and thereby, ethnic inequalities became a new challenge for educational institutions. Social integration can be conceived of as a process of inclusion into the functional systems of the host society, most importantly the labour market. A precondition of economic integration is the availability or acquisition of educational credentials. Hence the successful educational attainment of immigrants and their offspring in the educational systems of their host countries serves as a long-term indicator of integration. However, research on ethnic educational inequality has repeatedly shown that immigrants in most countries lag behind their native peers. The degree of inequality is quite pronounced in a number of countries: for example, the OECD PISA study 2009 has shown that one third of young immigrants in Germany do not score higher than the first proficiency level in reading,

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which is defined as *educational poverty* (Solga 2009).¹ By comparison, only 12 % of native Germans fall into this category. Being educationally poor at age 15 decreases the odds of following a higher education track and increases the risk of being unemployed in the future. From a societal point of view, educational poverty entails substantial follow-up costs.

International comparative studies have shown that learning gaps between natives and immigrants vary across countries—even if relevant factors such as social status and language use are controlled for. Immigrants in Germany whose parents had completed lower secondary education reached 411 points on the reading scale in PISA 2009, whereas immigrants in Canada with the same level of parental education scored more than 70 points higher. Hence it is assumed that institutional factors at the country level shape learning and integration processes. Due to substantial differences regarding the educational integration of young immigrants across countries, we assume that individual educational poverty corresponds with specific features of national institutions and social structures. If we find institutional effects despite controlling for parental socio-economic status and immigrants' origin-contexts, we believe that educational poverty is an individual but institutionally shaped, feature (Hinz et al. 2004). In our chapter we aim at answering the question which institutions and structural features of host countries influence the educational success or failure of young immigrants.

Our analysis links to sociological research devoted to the causes of internationally varying integration outcomes and to hypotheses and findings of comparative welfare state research. We analyse the contextual factors at the country level in two different dimensions: *equality* and *diversity*. *Equality* refers to the degree of redistribution and income equality in a country, *diversity* comprises heterogeneity and size of the immigrant population. We argue that these societal dimensions influence the educational investment decisions of immigrant families. In the following section we summarise previous research of institutional effects on education. Subsequently, we describe our theoretical model based on the subjective expected utility theory. In a next step we describe our database and methods and present some descriptive results. We apply multilevel regressions in order to estimate the influence of equality and diversity in the host countries on the risk of being educationally poor, controlling for relevant factors at the household and school level.

5.2 Why do Integration Outcomes Vary Cross-Nationally? Theory and Research

Our analysis builds on two interdisciplinary fields of research. First, we draw on research approaches and findings from the field of rather micro-oriented sociological research on the educational attainment of immigrants. Second, we refer to

¹ This and the following figures are results of our own computations with PISA 2009 data.

comparative political economy approaches that examine the interaction between immigration and welfare state institutions. Research in the first field has become more elaborate with the availability of large-scale educational assessments such as TIMSS/PIRLS and PISA. The results of these studies as well as further scientific research have shown that there are significant differences between countries with regard to the educational achievement of immigrants (Buchmann and Parrado 2006; Stanat and Christensen 2006). Empirical findings suggest that these differences are not only due to a more favourable composition of immigrant populations (Marks 2005; Schnepf 2007). In many countries, for example France, the Netherlands and Switzerland, immigrants perform significantly worse than natives, even when language use and socioeconomic status are controlled for (Schnepf 2007, p. 544). Furthermore, different studies suggest the existence of distinct patterns: immigrants in English-speaking countries perform better in relation to their native peers than in most continental European countries (Entorf and Minoiu 2004). A first approach to explaining the residual effects of immigrant status on educational achievement has linked patterns of ethnic educational inequality with existing typologies of immigration or integration regimes. It has been assumed that traditions of immigration and incorporation are likely to shape ethnic inequality. Some studies were able to show that “exclusionary regimes” produce the most pronounced learning gaps between immigrants and natives, whereas “inclusionary regimes” seem to be most successful in integrating immigrants at school (Buchmann and Parrado 2006, p. 347). Although these findings contribute to our understanding of interactions between institutions and integration processes, they could not clarify which institutions actually play what kind of role in immigrant integration. Since most of the former empirical models measured institutional structures by including dummy variables that indicated specific countries or groups of countries, these studies did not explain the mechanisms that create the differences observed between countries. A solution for this shortcoming are multilevel models that include measured characteristics of countries as independent variables. Levels et al. (2008) applied such a multilevel regression design and were able to show that traditional immigration countries do not have a significant effect on the mathematical achievement of immigrants if individual characteristics and features of the immigrant community and their countries of origin were controlled for—thereby contradicting findings of previous studies. They revealed that the average socioeconomic capital and the size of the ethnic community have positive effects on the educational achievement of immigrants. However, the independent variable “traditional immigration country” still remains a proxy variable that does not capture the relevant institutional characteristics of the respective country.

We build upon these findings, but enhance our perspective by referring to existing research on the complex interplay between processes of immigration, integration and welfare state institutions. The repercussions of ongoing immigration for the sustainability of social security systems have been intensively discussed since the 1990s (Bommes and Geddes 2000; Boeri et al. 2002; Banting and Kymlicka 2006). This field of research can be broadly divided into two positions: one that treats the welfare states as an independent variable shaping immigration and integration

processes, and another one that sees the welfare state and its sustainability as dependent on immigration and integration. The first perspective is focused on the influence of welfare states on *immigration* processes and became prominent with the “welfare magnets” hypothesis (Borjas 1990). Based on human capital theory, this approach states that strong welfare states tend to attract less qualified immigrants who are more likely to depend on welfare. This model thus assumes that migration decisions are mainly determined by expectations of the potential income in the destination country. Immigrants are positively selected if the degree of income inequality in the destination country is higher than in the country of origin (Borjas 1994, p. 1689). This assumption neglects the impact of institutional constraints such as immigration regulations as well as considerations about the meaning of networks for migration decisions (Nannestad 2007, p. 516). Empirical evidence regarding the welfare magnets hypothesis is mixed so far (ibid. 519).

Building upon the welfare magnets hypothesis, the relation between welfare state institutions and *integration* processes has mainly been discussed from a moral hazard perspective. Welfare states with a high degree of redistribution always encourage free riders, among immigrants as well as among natives. However, the prospects of generous social security might reduce incentives for immigrants to invest into their integration. Koopmans (2010) points out that immigrants in welfare states with strong de-commodification have lower incentives to invest in their human capital (e.g. through language learning) as the coercion to participate in the labour market is lower. Furthermore, the relative deprivation that results from being on welfare might be lesser for immigrants than for natives since immigrants refer to the situation in their countries of origin whereas natives compare themselves with other natives. According to this assumption one would expect bigger problems of structural integration in strong welfare states. Indeed, empirical research has shown that the labour market participation of immigrants is higher in liberal welfare regimes with flexible labour market regulation (Kogan 2006). On the other hand there is evidence that labour market integration does not protect immigrants from poverty and deprivation. According to the above-mentioned evidence, immigrants are better-off in strong welfare states if one considers poverty rates and (the availability of) social rights (Morissens and Sainsbury 2005).

Most liberal welfare regimes have a long tradition of immigration, and as such they have efficient institutions that regulate immigration at their disposal, but they also often pursue a policy of *laissez-faire* when it comes to integration. As a consequence, they encourage segregation and compel immigrants to rely on family structures, thereby increasing the risk of segmented assimilation outcomes.

It thus remains an unanswered question which form of welfare state fosters the structural assimilation of immigrants and maintains societal integration in the long run. In addition, there is not yet enough empirical evidence regarding the effect of institutions on different dimensions of individual integration. Previous empirical research focusing on the relation between welfare states and immigration and integration mainly relied on aggregated data (Morissens and Sainsbury 2005). With this kind of research design it is not possible to distinguish the effects of

single institutions. It is thus impossible to tell whether high unemployment rates in strong de-commodifying welfare states were a result of negative selection at immigration (*welfare magnets*) or of unfavourable incentives for assimilation (*moral hazard*).

In addition, previous research neglected the experiences of the second generation, which would allow for a long-term perspective on integration. Lastly, most of the studies that have been conducted so far did not explicate the individual mechanisms that lead to measured integration outcomes at the macro level. Therefore, we aim to develop a macro–micro model by arguing that egalitarian welfare regimes provide better opportunities for immigrant families to invest in their children’s education, as the prospects of intergenerational social mobility are perceived as relatively high. We will elaborate on this argument in the next section as it serves as the basis for our empirical analyses.

5.3 An Explanation of Integration Processes and Educational Decisions

Educational poverty of immigrants can be conceived of as a special case of individual social integration. In order to explain immigrant integration we draw on the model of intergenerational integration as developed by Hartmut Esser (2006, 2008). This approach provides a synthesis of the most important theoretical accounts of immigrant integration, namely classical assimilation (Park 1950), segmented assimilation (Portes and Zhou 1993; Portes and Rumbaut 2001) and new assimilation (Alba and Nee 1997, 2003).

The model takes a subjective expected utility (SEU) perspective and assumes that immigrants decide whether to orient their action towards the receiving context (rc-option) or towards the ethnic community (ec-option). These (rc- or ec-oriented) actions can be conceived of as investments in the production of desirable goals and goods (Esser 2008, p. 88). As opposed to natives, first- and second-generation immigrants often face the situation that relevant strategic resources for the production of their goals are devaluated as a result of the migration process. As a consequence, these resources (e.g. host country language ability or educational credentials) have to be reconstituted (e.g. through language learning) before they can be used in the investment process. As empirical analyses show (Esser 2006), these re-investments in host country specific resources do not occur necessarily, i.e. under certain (contextual) circumstances immigrants remain oriented towards their ethnic community. The retention of the ec-option is especially likely in countries that exhibit pronounced ethnic seclusion. Ethnic seclusions can be conceived of as limited opportunities such as restricted access to housing or the labour market for immigrants.

Theories on assimilation and ethnic stratification thus have to explain why immigrants chose either the rc- or the ec-option, thereby creating different

structural integration outcomes at the macro level. The model of intergenerational integration assumes that immigrants will tend towards the receiving context (e.g. invest in language learning) if the subjective evaluation of the utility that arises from the benefit of the investment (e.g. income) weighted with the probability of success, outweighs the costs and the utility of the status quo (ethnic retention). The focus on investment decisions at the micro-level has the advantage that it is very comprehensive. For instance, also the investment in gathering information on the host-countries' educational system can be regarded as a matter of investigation.

The benefits of both alternatives (ec- and rc-option), the probabilities of their success and the costs depend on the respective empirical conditions in the receiving country, the ethnic community and on the available individual resources (Esser 2008, p. 89). These *marginal conditions* that structure individual expectations and evaluations have been neglected in many empirical accounts as the main focus was directed towards individual resources and ambitions. The segmented assimilation theory was among the first to recognise the importance of the receiving context for the production of different integration outcomes.² Esser's model of intergenerational integration builds upon this approach. In particular, ethnic diversity in the host county and the size of the immigrant population are considered to serve as crucial marginal conditions for integration. Countries with a traditionally low ethnic diversity, which means that ethnic minorities are rather homogeneous, are expected to produce ethnic seclusion, since homogeneous immigrant groups enable political mobilisation and institutional completeness (Breton 1964). Additionally, bigger ethnic groups make contact with natives less likely and might be an impediment to language learning or labour market access (Esser 2008, p. 89).

The educational success—or in the case of educational poverty—the educational failure of immigrants can now be considered as a result of individual assimilative decisions. For this reason, we have to explain the individual investment decisions in education. The sociology of education developed formal models that allow an analytic reconstruction of these investment decisions (Boudon 1974, p. 29f; Becker 1993; Breen and Goldthorpe 1997; Esser 1999, pp. 266–275; Becker 2000; Esser 2008). These models take into account the expected probability of an amortisation of the costs and the expected benefit of education. Recently, institutional and socio-structural characteristics of the destination countries were also integrated into the analyses of immigrants' educational attainment (Levels et al. 2008, p. 883). It is assumed that the expected benefits and probabilities of amortisation for immigrants and their offspring depend on the institutions and social structures of the host countries. The social security system is

² The theory of segmented assimilation considers social, political and societal conditions (“contexts of reception”) in relation with individual immigration experiences as decisive for the respective mode of incorporation and the chosen path of assimilation. For instance, government policy towards an immigrant group can be receptive, indifferent or hostile. Likewise, the attitudes of the host society can be free of prejudice or shaped by social distance (Portes and Böröcz 1989; Portes and Rumbaut 1990, p. 91).

one part of this relevant host country structure. It is not yet clear how welfare state institutions influence educational investment decisions. The chance of getting welfare benefits without labour market participation may influence the immigrants' evaluation of the free and secure status quo (ethnic retention). Strong welfare states are likely to foster external social closure if labour market regulation (e.g. protection from dismissal) or high non-wage labour costs decrease incentives for employers to hire "risky" employees such as immigrants.

But what is the situation for first-generation immigrants facing decisions about investing into their children's education? Building upon the model of intergenerational integration, we look at two alternatives: "*sq*" represents the decision of non-investment into receiving-context resources, e.g. a retention of the status quo. "*In*" stands for the decision for educational investments, for example the aim to obtain a certain degree (Esser 2006, p. 40). The selection of one of these alternatives can be formally expressed in the logic of the subjective expected utility theory. We divide the expected probability of success (e.g. the amortisation of the investment decision) into two parts: on the one hand there is a subjective probability of acquiring the desired degree [$p(\textit{degree})$], on the other hand there is a subjective probability to employ this degree in order to reach a certain status (e.g. upward social mobility [$p(\textit{mobility})$]). This differentiation has not been considered so far.

$$EU(sq) = U(sq) \quad (5.1)$$

$$EU(in) = p(in)U(in) + (1 - p(in))U(sq) - C(in) \quad (5.2)$$

whereby:

$$p(in) = p(\textit{degree})p(\textit{mobility}) \quad (5.3)$$

From an immigrant's perspective, the expected utility of the status quo in Eq. (5.1) is known and secure.³ The expected utility of the investment decision in Eq. (5.2) is insecure, since the individual does not know with certainty if the educational investment will be amortised through the acquisition of the desired degree [$p(\textit{degree})$] and through the achievement of an adequate social position [$p(\textit{mobility})$]. Thus, we assume that the probability weight of the benefit in Eq. (5.2) consists of two components that are multiplicatively combined. According to this, $p(in) = 0$ if either $p(\textit{degree})$ or $p(\textit{mobility})$ equals zero. Thus, the subjective expected probability of the investment's amortisation is low if either the chances for the acquisition of the desired degree [$p(\textit{degree})$] are low or if the likelihood of upward mobility through educational credentials [$p(\textit{mobility})$] is low.

Drawing on this assumption we can derive hypotheses about the impact of welfare state institutions on the production of educational poverty. These hypotheses are mainly directed towards the parameter $p(in)$: liberal welfare states with an unequal

³ As a simplification we also assume full information for the utility of the status quo in the future.

social structure provide attractive positions at the upper end of the income distribution scale. However, the likelihood of acquiring these positions is relatively low, especially if they are occupied by natives. By contrast, the probability of being upwardly mobile is higher in welfare regimes with a more equal social structure and a high degree of redistribution where insecurity regarding the amortisation of educational investment is lower. In other words: the likelihood of a maximised benefit by reaching a top-position may be reduced in egalitarian regimes, but the chances of upward mobility for the second generation are expected to be markedly higher. If the investment fails, immigrants in strong welfare states are less dependent on the solidarity of the ethnic community; thus the likelihood of ethnic closure and self-segregation is lower. If immigrants in liberal welfare states neglect their ethnic ties by focusing on the acquisition of receiving-context capital they are threatened by marginalisation if the investment carries a high risk of failure. Furthermore, it can be assumed that the comprehensive public education systems in strong welfare states along with the prospects of being secured by welfare institutions will increase the likelihood that immigrants choose the educational investment, especially for lower-status groups. This assumption goes back to findings of educational research that have shown that families with lower social status overestimate the cost parameter while underestimating the possible benefits of education (Boudon 1974; Erikson and Jonsson 1996; Becker 2000). By contrast, the chances of the amortisation of the receiving context investment is lower in weak welfare states with strong inequality since $p(\textit{degree})$ as well as $p(\textit{mobility})$ are lower under these conditions. Why should a costly investment be undertaken if the chances of educational success and the likelihood of reaching a higher-status position are low? Under these circumstances, immigrants are likely to prefer the alternative that has a lesser benefit but is secure and inexpensive—which is the retention of the ethnic option (sq). Since this orientation towards the ethnic community inhibits cultural assimilation, the risk of educational poverty is higher. In contrast to moral hazard assumptions we thus assume a lower risk of educational poverty for second-generation immigrants in countries with high redistribution (*egality*) and diversified ethnic communities (*diversity*).

5.4 Data and Methods

In order to test our hypotheses empirically we draw on data from the OECD PISA 2009⁴ study. This survey is especially suitable for our research question since it comprises about 47,000 immigrants in more than 60 countries. PISA seeks to measure the competencies of 15-year-old pupils in order to assess their abilities to face the challenges of contemporary knowledge-based economies. The assessment focuses

⁴ Programme for International Student Assessment.

on three dimensions: reading, mathematics and science. Competence is measured using continuous scales⁵ and so-called “proficiency levels”. Even though these levels have been computed from the continuous distribution of the test scores, they are not completely arbitrary: Performing at a given proficiency level corresponds to the ability of solving tasks of a certain difficulty level. If a pupil reaches a certain level, s/he is able to solve more than 50 % of the tasks at this level as well as tasks of lower levels. Reading competence is divided into five proficiency levels in PISA. Pupils who do not reach the first proficiency level in reading are not able to develop the most basic reading competencies—they are “functionally illiterate”. Students who reach the first proficiency level are capable of completing only the least complex reading tasks in PISA, such as locating a single piece of information, identifying the main theme of a text or making a simple connection with everyday knowledge. They only acquired the most basic reading competencies and thus have to be considered as “educationally poor” if one considers the requirements for successful labour market participation in modern societies (Solga 2009, p. 400). Thus, our dependent variable “educational poverty” is a dummy variable for pupils who do not reach the second proficiency level (1 = educational poor).

We measure the *diversity* of host countries with two variables: the share of immigrants⁶ as well as the degree of homogeneity within the immigrant population regarding size and quantity of different ethnic communities.⁷ We calculated the Herfindahl-Index of concentration which measures the sum of the squared proportions of immigrant groups. In order to capture the impact of welfare state institutions and social structure (*equality*) we draw on the Gini-Index of income inequality and on the amount of social contributions as a measure of redistribution.⁸ We further include a dummy variable that indicates whether a country pursues a policy that promotes immigration since we expect that these countries provide advantageous integration conditions (UN World Population Policies 2010). As a means to control for general “level effects” of an education system we ran further models that included the share of educationally poor natives, the mean reading score of natives as well as the range of reading achievement⁹ and the gross domestic product (GDP) of a country.

⁵ The competence scales are standardised to a mean of 500 points (OECD average), the standard deviation is 100.

⁶ United Populations Division, International Migrant Stock 2008, <http://esa.un.org/migration/index.asp?panel=1> accessed November 2011.

⁷ The database comprised the proportional values for the ten biggest immigrant groups in a country. Source: Global Migrant Origin Database: http://www.migrationdrc.org/research/typesofmigration/global_migrant_origin_database.html, accessed November 2011.

⁸ Both indicators from World Bank World Development Indicators: http://databank.worldbank.org/ddp/home.do?Step=2&id=4&DisplayAggregation=N&SdmxSupported=Y&CNO=2&SET_BRANDING=YES, accessed November 2011.

⁹ The range of reading achievement is defined as the difference between the 95th and 5th percentile of the reading score distribution. .

In order to isolate the context effects at the country level we control for a number of relevant characteristics of the household and school level. These are: a dummy variable to distinguish second-generation from first-generation immigrants (1 = second), a dummy variable for gender (1 = girl), the PISA index of economic, social and cultural status (ESCS)¹⁰ and a dummy variable indicating foreign language use at home. We expect better outcomes (e.g. lower odds of being educationally poor) for the second generation, lower risks of educational poverty for higher-status pupils and a higher risk of being educationally poor for those who mainly speak a foreign language at home.

At the school level we control for private schools (1 = private), the autonomy of the schools regarding the recruitment of teaching staff (1 = autonomous), the location of the school (1 = large city), the share of immigrants at school, the average socioeconomic status of the school and the range of reading scores at the school, measured as the difference between the fifth and ninety-fifth percentile (the latter three were gathered from pupil data). We expect better outcomes for private and autonomous schools since these features are supposed to lead to better teaching conditions due to more competition and higher flexibility and more funding. The share of immigrants at school should not have a significant effect as long as the average socioeconomic status and the average achievement level are controlled for—otherwise this would indicate discrimination or other impeding factors.

Our research question is directed towards the effect of country characteristics on pupil performance, controlling for characteristics of the pupils' families and schools. This entails examining nested data: pupils are nested in schools that are nested in countries. This data structure requires techniques that account for the fact that pupils in schools and schools in countries may resemble each other, meaning that the individual or school-related error terms of a regression model may be correlated. Multilevel regression techniques are able to rule out this circumstance, thereby allowing for an account of contextual effects (Snijders and Bosker 1999; Luke 2004; Goldstein 2003). Since our dependent variable is dichotomous, we apply logistic multilevel regressions using the software package MLwiN.

All variables are grand mean-centred and cases with missing values on any of our variables were excluded from the analyses. The PISA design entails varying case numbers at the country level, which involves a standardisation of the final pupil weight.¹¹ The models were set up for all five plausible values.¹² The model can be depicted as follows:

¹⁰ <http://stats.oecd.org/glossary/detail.asp?ID=5401>, accessed November 2011.

¹¹ See <http://www.oecd.org/dataoecd/59/32/39730315.pdf> for the derivation of the adjusted individual weighting variable, accessed November 2011.

¹² The threshold for the second proficiency level in reading corresponds to 407.47 points on the reading scale (PV1READ to PV5READ). Thus, our dependent variables are five dummy variables that indicate if the pupil's plausible values are below this threshold.

$$\text{logit}(\text{Educational_poverty}_{1-5})_{ijk} = \beta_{0jk} + \beta X_i \quad (5.4)$$

$$\beta_{0jk} = \beta_0 + \gamma W_{jk} + \gamma Z_k + v_{0k} + u_{0jk}$$

X represents the independent variables at the pupil level, W the independent variables at the school level and Z the independent variables at the country level. The subscript i denotes pupils, j schools and k countries.

In logistic models, the residual variance at the lowest level is fixed to $\pi^2/3$. Including a further covariate x_k will influence the vector of coefficients \mathbf{x} , even if x_k and \mathbf{x} are uncorrelated (Mood 2010). This impedes the comparability of effects between nested models. Therefore, we will restrict the interpretation of the effects to their significance instead of explicitly comparing their change across different models. Table 5.1 gives an overview of the variables and their distributions. We restrict our analyses to first and second generation immigrants.

It is striking that almost one third of all immigrants have to be considered educationally poor. It is only in one quarter of all countries that less than 20 % of immigrants fall into this category (see Fig. 5.1). The share of educationally poor immigrants varies between 11 % in Canada and 90 % in Colombia. About one half of our sample belongs to the second immigrant generation (born in the test country to foreign-born parents). Almost 50 % of all immigrants in our sample mainly speak a foreign language and 50 % are girls. 14 % of all respondents in our sample attend private schools and 73 % are enrolled in a school with autonomy in staffing. The average share of immigrants at schools is 32 %.

At the country level, the Gini-Index varies from 25 in Sweden to 58 in Colombia. Social contributions vary from 0.3 % to 57 % in Germany. The share of immigrants is smallest in Colombia (0.2 %) and largest in Jordan with almost 50 %. Norway has the immigrant population that is the most diverse whereas Bulgaria has an almost homogeneous immigrant community. Argentina, Canada, Finland, Israel and Sweden seek to increase immigration. Argentina is the country where natives perform worst, whereas Finland is the highest-performing country in our sample. Jordan is the country with the smallest GDP; by contrast Luxembourg has the highest productivity per head.

5.5 Results

As a descriptive approach we plotted the relationship between the dependent variable “educational poverty” (aggregated at the country level) and the macro indicators of equality and diversity. We see that our hypotheses on *equality* can be confirmed in this bivariate approach. The higher the income inequality in a country, the higher the degree of educational inequality seems to be (measured as the share of educationally poor immigrants, Pearson's $r = 0.65$). By contrast, the higher the social contributions, the lower is the degree of educational poverty among immigrants ($r = -0.36$). If we look at the *diversity dimension* we see that a bigger immigrant community seems to correspond with lower educational poverty

Table 5.1 Variables and distributions, immigrants in PISA 2009

	Minimum	Maximum	Mean ¹	Standard deviation	Frequency ¹ (dummy = 1)
<i>Student and household, N = 23,968</i>					
Educationally poor	0	1	0.288		6,905
Second generation	0	1	0.530		12,704
Index of economic, social and cultural status (ESCS)	-6.036	3.534	-0.267	1.064	
Foreign language use	0	1	0.473		11,349
Girl	0	1	0.505		12,107
<i>Origin 7,454</i>					
Western Europe	0	1	0.086		643
Middle East and Maghreb	0	1	0.180		1,342
India, Pakistan, Afghanistan	0	1	0.015		117
Eastern Europe	0	1	0.018		138
Caribbean	0	1	0.001		13
USA	0	1	0.004		35
Africa (Sub-Sahara)	0	1	0.055		416
Former Sovjet Union	0	1	0.193		1,440
Former Yugoslavia	0	1	0.212		1,587
South America	0	1	0.032		241
South-East Asia, China	0	1	0.008		63
Southern Europe	0	1	0.190		1,419
<i>School, N = 6,138</i>					
Private school	0	1	0.141		3,383
Staff autonomy	0	1	0.739		17,713
Location: large city	0	1	0.462		11,075
Share of immigrants	0	1	0.322	0.239	
Range of reading scores	25.588	477.19	246.998	53.206	
Mean ESCS	-3.738	1.745	-0.042	0.624	
<i>Country, N = 38</i>					
Gini-Index	25	58.273	34.13	4.932	
Social contributions	0.187	57.23	27.925	14.023	
Share of immigrants	0.2	45.9	17.837	10.608	
Homogeneity of immigrant community	0.026	0.840	0.111	0.135	
Immigration policy: raise	0	1	0.251		6,030
Mean of reading score (natives)	402.172	538.814	496.469	29.797	
Share of educationally poor natives	0.072	0.501	0.176	0.094	
Range of reading scores	262.22	368.356	307.092	22.203	
GDP per capita(in 1,000 US\$)	4.216	105.043	40.173	22.704	

¹ Mean values and frequencies for the school and country level are based on the absolute (e.g. pupil) N. Example: 3,383 pupils out of 23, 968 pupils go to private schools, NOT 3,383 out of 6,138 schools are private schools. Mean values for origin variables are based on the smaller sample of pupils with information on origin. Example: 8.6 % of all pupils with origin information are from Western Europe

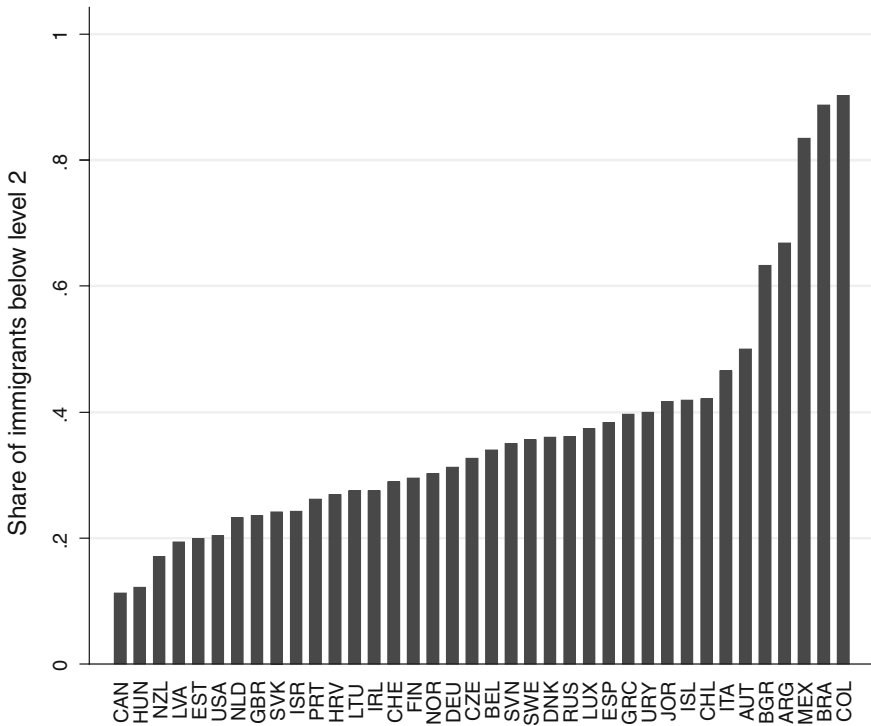


Fig. 5.1 Educationally poor immigrants in PISA 2009

among immigrants ($r = -0.34$). However, the relationship between homogeneity in the immigrant population and immigrant’s educational poverty is not so clear.

How does this picture change if we analyse educational poverty at the individual level, thereby controlling for composition effects? By estimating the hierarchical logistic model we test whether our hypotheses hold in a multivariate approach.

According to the empty model (not shown here), we see that a multilevel model is appropriate since 20 % of the overall variance can be explained by characteristics of the respective higher levels (country and school) (Figs. 5.2, 5.3, and Table 5.2).

The first five models M 1–5 depicted in the first column include one predictor of the country level at a time. If the Gini-Index is the only independent variable, the model estimates a highly significant positive effect, i.e. the higher a country’s Gini-Index, the higher is the individual risk of educational poverty. Among the other factors at the country level, only the social contributions have a significant impact on the risk of educational poverty; both of these indicators of equality show effects that confirm our hypothesis, i.e. more income equality and more redistribution are associated with less income inequality.

The next model (6) now includes all country-level predictors that depict aggregated “gross” effects; this means that possible composition or selection effects are not

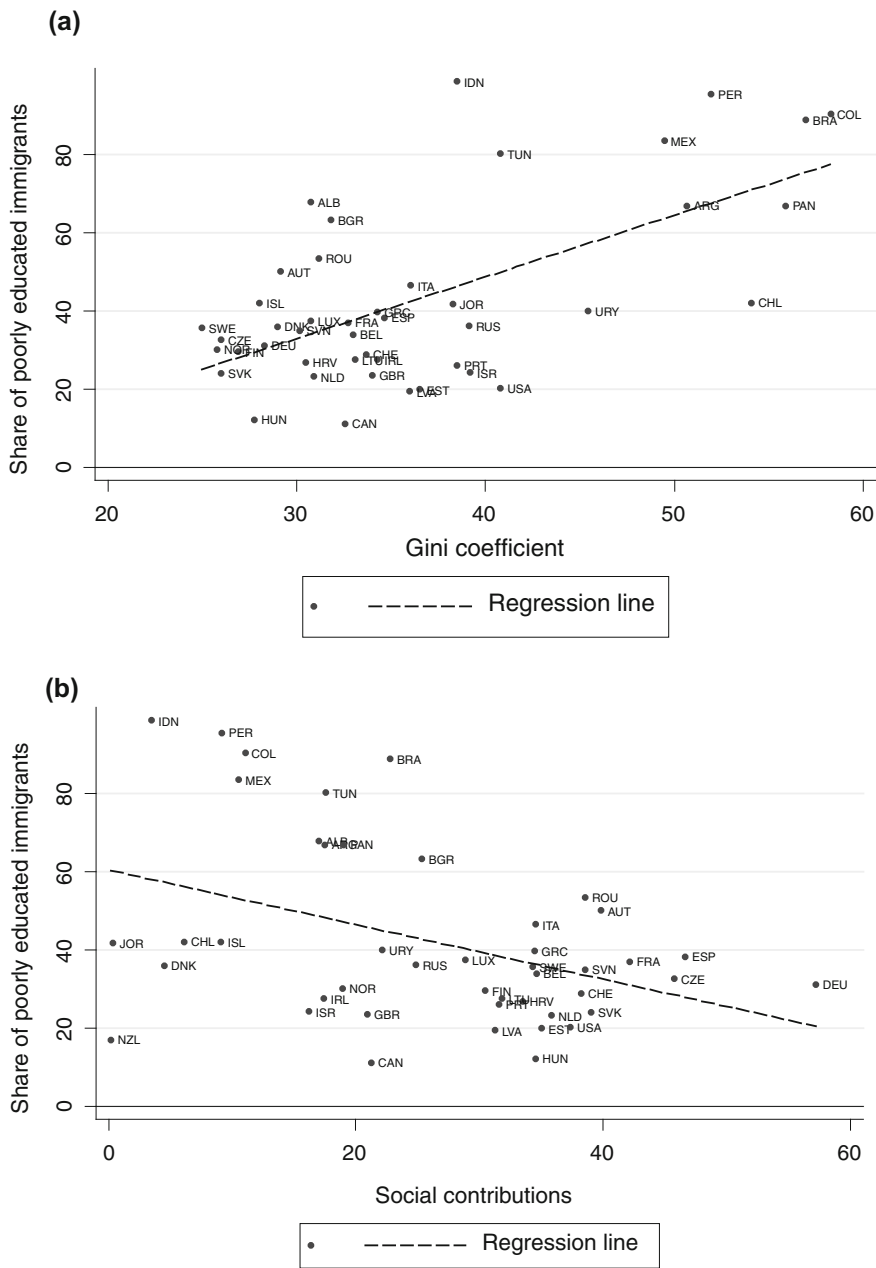


Fig. 5.2 a-b Relationship between educational poverty and *equality*, Source: PISA 2009, own computations

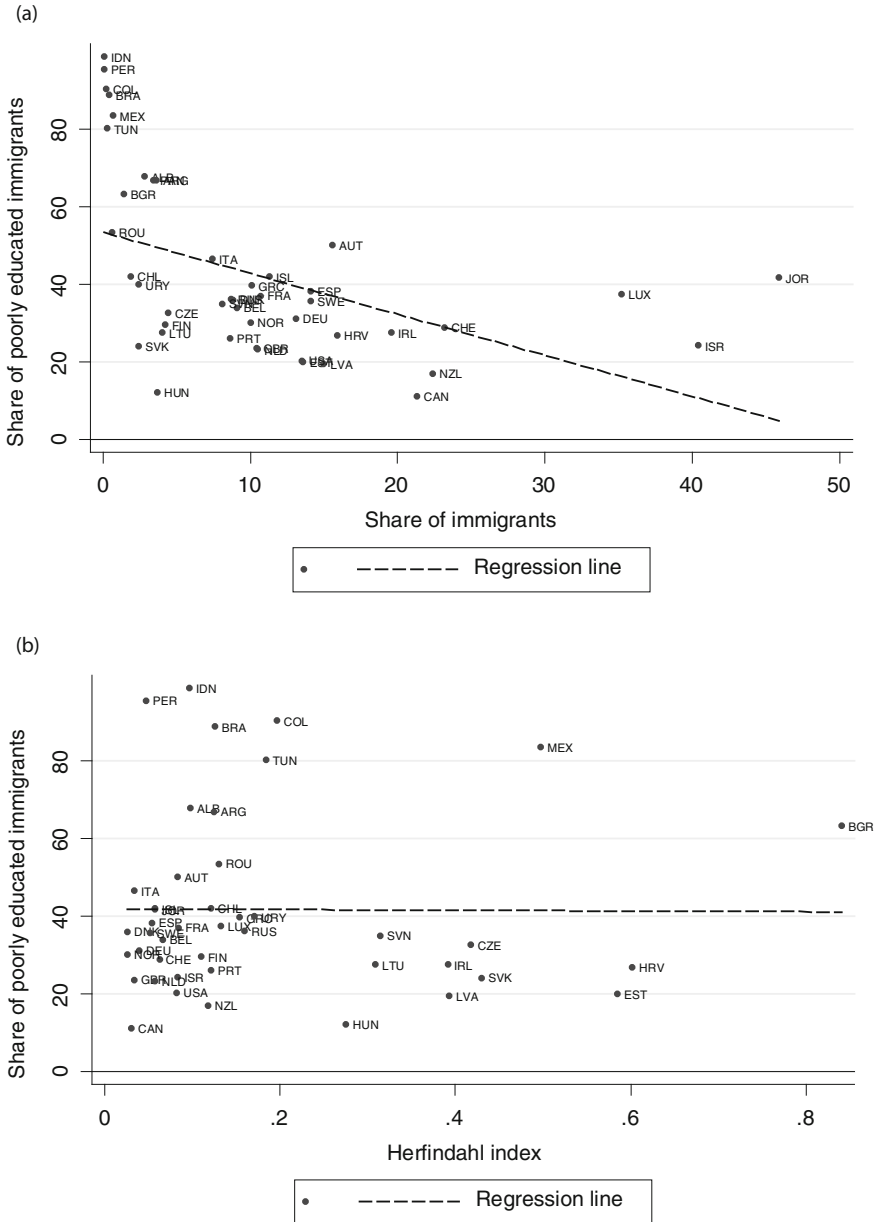


Fig. 5.3 a-b Relationship between immigrant’s educational poverty and *diversity*, Source: PISA 2009, own computations

Table 5.2 Determinants of educational poverty of immigrants, Odds Ratios

<i>Country</i>	M 1-5	M6	M 7	M8	M9	M 10	M 11	M 12
Gini-Index	1.086 ^{***}	1.068 ^{**}	0.993	1.006	0.984	0.977	1.004	1.011
Social contributions	0.969 [*]	0.986	0.984 ^o	0.983 [*]	0.988	0.989	0.982 [*]	0.983 ^o
Share of immigrants	0.970	0.978 ^{**}	0.976 ^{**}	0.979 [*]	0.977 ^{**}	0.976 [*]	0.976 ^{**}	0.978 ^{**}
Homogeneity of immig. comm.	2.346	1.402	0.837	1.143	0.803	0.816	1.182	1.358
Policy: increase immigration	0.740	0.803	0.855	0.894	0.935	0.887	0.812	0.917
<i>School</i>								
Private school			1.160	1.221 ^o	1.217	1.213	1.219 ^o	1.219 ^o
Autonomy (staffing)			0.912	0.881	0.889	0.892	0.882	0.882
Large city			1.011	1.023	1.019	1.018	1.024	1.025
Share of immigrants			0.899	0.874	0.891	0.898	0.873	0.872
Range reading achievement			1.007 ^{***}	1.007 ^{***}	1.007 ^{***}	1.007 ^{***}	1.007 ^{***}	1.007 ^{***}
Average SES			0.168 ^{***}	0.217 ^{***}	0.218 ^{***}	0.218 ^{***}	0.217 ^{***}	0.218 ^{***}
<i>Student</i>								
First generation				Ref.	Ref.	Ref.	Ref.	Ref.
Second generation				0.727 ^{***}	0.727 ^{***}	0.727 ^{***}	0.728 ^{***}	0.728 ^{***}
Socio-econ. and cultural status				0.730 ^{***}	0.730 ^{***}	0.729 ^{***}	0.730 ^{***}	0.731 ^{***}
Girl				0.428 ^{***}	0.427 ^{***}	0.427 ^{***}	0.428 ^{***}	0.429 ^{***}
Foreign language				1.449 ^{***}	1.454 ^{***}	1.455 ^{***}	1.448 ^{***}	1.448 ^{***}
Reading score natives					0.992 [*]			

(continued)

Table 5.2 (continued)

	M 1-5	M 6	M 7	M 8	M 9	M 10	M 11	M 12
Educationally poor natives						1.031 ^{***}		
Range of reading score							1.004	
GDP per capita	0.12-0.19	0.103 ^{***}	0.071 ^{***}	0.068 ^{***}	0.059 ^{***}	0.054 ^{***}	0.066 ^{***}	1.003 ^{***}
VPCcountry								0.068 ^{***}
$\sigma_{i0}^2 / (\sigma_{v0}^2 + \sigma_{u0}^2 + \Pi^2/3)$	0.19-0.23	0.215 ^{***}	0.143 ^{***}	0.137 ^{***}	0.139 ^{***}	0.140 ^{***}	0.137 ^{***}	0.136 ^{***}
VPCschool								
$\sigma_{i0} / (\sigma_{v0} + \sigma_{u0} + \Pi/\sqrt{3})$								
McK. and Zav. R ²		0.045	0.267	0.325	0.341	0.344	0.328	0.323

° $p < 0.10$ * $p < 0.05$ *** $p < 0.001$

Source PISA 2009, own computations

ruled out in this model. There are only two significant effects: the higher the Gini-Index, the higher is the risk of educational poverty. If the Gini-Index is controlled for, the effect of redistribution is no longer significant. By contrast, the size of the immigrant population in a country now becomes significant: the larger a country's immigrant population, the lower is the individual risk of poor education. The variance partition coefficient shows that the variance at the country level is reduced by one half after the independent variables at the country level are controlled for. Model 7 additionally includes school level predictors. Strikingly, the effect of income inequality is no longer significant if the average socioeconomic status of schools and the range of achievement at schools are controlled for. This suggests that countries with a higher average SES of schools are countries with lower income inequality. On the other hand, the risk-reducing effect of redistributions gains significance.

Model 8 now controls for composition effects by accounting for relevant factors at the pupil and household level. Second-generation pupils as well as pupils of a higher socioeconomic status and girls have a lower risk of being educationally poor, whereas students who mainly speak a foreign language at school have an almost 50 % higher risk of being educationally poor. At the country level, the effect of redistribution has become significant now. Once composition is controlled for, immigrants in a country with higher social contributions face a lower risk of failing at school. The same still holds for countries with bigger immigrant populations. In this model, the variance at the country level is reduced to about 7 %.

The next four models control for "level effects" by including indicators of overall educational performance and economic productivity. The higher the average achievement of natives, the lower is the risk for immigrants to fail at school. It seems that the overall performance of the educational system is confounded with equality. The effect of redistribution is no longer significant, indicating that countries with a high performance are countries with strong redistribution. The same holds if one controls for the share of educationally poor natives, while the range of achievement as well as GDP do not have significant effects; however, the equality dimensions again gains significance in the last two models (Gini, sig. at 10 %-level in Model 12). The pseudo- r^2 shows that model 9 and 10, e.g. the "full" models controlling for system performance, are the best-fitted models.

Up until now, we have treated immigrants as one rather homogeneous group, controlling only for generation status, socioeconomic and cultural background and language use. However, theory and research on immigrant integration have repeatedly shown that "immigrants are not like immigrants", meaning that there are significant differences between immigrants of different origin. In our first model we controlled for destination and community effects, but not yet for origin effects. Table 5.3 gives the result of another multilevel model which controls for origin of immigrants by including dummy variables for the respective origin regions at the pupil level. The sample is smaller since the information on origin is not available for all pupils. This means that the number of destination countries is reduced to 22. The empty model (0) gives information about the distribution of the overall variance across the different levels. Compared to the bigger sample of 38 countries, only about 10 % of the overall variance in educational poverty can be

Table 5.3 Determinants of educational poverty of immigrants, odds ratios

	M 0	M 1	M 2	M 3	M 4
<i>Origin</i>					
Western Europe		Ref.	Ref.	Ref.	Ref.
Middle East and Maghreb		4.730***	4.548***	3.089***	2.812***
India, Pakistan, Afghanistan		3.317***	3.229***	2.649**	2.104**
Eastern Europe		1.487	1.487	1.353	1.285
Caribbean		7.214***	6.636***	4.133***	3.912***
USA		2.646	1.962	2.289	2.018
Africa (Sub-Sahara)		3.673***	3.434***	2.519***	2.277**
Former Soviet Union		1.536	1.469	1.405	1.252
Former Yugoslavia		2.965***	2.926***	2.164***	1.852**
South America		4.328***	3.458***	2.683**	2.347***
South–East Asia, China		0.553	0.548	0.748	0.468
Southern Europe		2.651***	2.622***	1.966***	1.618*
<i>Country</i>					
Gini-Index			1.036	0.956 ^o	0.967
Social contributions			1.001	1.004	1.002
Share of immigrants			0.988	0.998	0.994
Homogeneity of immigrants			1.145	0.693	1.020
Policy: increase immigration			1.022	0.909	0.871
<i>School</i>					
Private school				0.821	0.899
Autonomy (staffing)				0.786 ^o	0.760 ^o
Large city				1.008	1.026
Share of immigrants				0.747	0.760
Range reading achievement				1.005***	1.005***
Average SES				0.133***	0.157***
<i>Student</i>					
First generation					Ref.
Second generation					0.674***
Socioecon. and cultural status					0.828***
Girl					0.401***
Foreign language use					1.438***
VPCcountry	0.108**	0.069**	0.064**	0.035**	0.031**
$\sigma_{v0}^2 / (\sigma_{v0}^2 + \sigma_{u0}^2 + \Pi^2/3)$					
VPCschool	0.248***	0.249***	0.240***	0.163***	0.153***
$\sigma_{u0}^2 / (\sigma_{v0}^2 + \sigma_{u0}^2 + \Pi^2/3)$					
McKelvey and Zavoina R ²		0.048	0.050	0.244	0.297

^o $p < 0.10$

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

Source PISA 2009, own computations

explained by differences between destination countries. The first model controls for differences due to origin, which reduces the country-level variance by about one third. We see that immigrants from the Caribbean have the highest risk of being educationally poor (when compared with immigrants from Western Europe). Immigrants from the Middle East, Maghreb and South America have a four times higher risk of being educationally poor than immigrants from Western Europe. There is no significant difference between immigrants from Eastern Europe, the USA, the former Soviet Union, and South–East Asia and China and those from Western Europe. Adding the destination country variables of equality and diversity (model 2) reveals no significant effect and only little more explained variance. At the school level (model 3), the average socioeconomic status and the achievement dispersion as well as the autonomy in staffing show significant effects. These factors explain much more variance than origin and destination countries alone do (McKelvey and Zavoina $R^2 = 0.24$). The last model finally controls for composition effects due to pupil level characteristics. Compared to the first model, some of the origin effects lost significance and strength. Overall, there are still significant differences between groups of different origin. These differences strongly suggest that immigrants should not be treated as a homogenous category. The destination effects of equality and diversity do not contribute to the explained variance, which is probably due to the substantially smaller sample used for this model.

5.6 Conclusion

Our chapter aimed to assess the causes of immigrants' educational poverty. Previous research has shown that some countries exhibit better structural integration outcomes than others. However, in many countries a significant part of young immigrants is threatened by an exclusion from societal integration mechanisms as a consequence of poor education. Educational poverty is not only the result of individual capabilities and opportunities but it is shaped by institutions. To this day, research lacks a systematic assessment of the relationship between host country institutions and immigrants' educational decisions. This does not only apply to scarce empirical evidence but also to the theoretical linkage between specific macro structures and individual behaviour. We tried to make a first attempt to overcome these research gaps. Our main focus is on the impact of the socio-cultural and institutional effects of destination countries if the compositional effects at the pupil and school level were controlled for. We referred to hypotheses and findings from comparative educational and political economy research. By building on Esser's SEU-model of immigrants' investment decisions, we assumed that the equality and diversity in host countries influence the educational decisions of immigrants. We hypothesised that states with low income inequality and pronounced redistribution provide advantageous opportunities for immigrants to take the risk of insecure investments in education. We further supposed that the degree

of diversity in a country prevents the formation of ethnic boundaries, thereby fostering integration.

Our results suggest that national institutions may indeed trigger these expected effects. Income inequality seems to increase the risk of educational poverty, whereas experience with immigration—measured as the size of the immigrant population—reduces the individual risk of educational poverty. If individual and school characteristics are controlled for, the effect of income inequality loses significance, but social contributions as an indicator for redistribution gain significance (e.g. more redistribution leads to less educational poverty). If the average achievement of natives as an indicator of the general performance of the educational system is controlled for, the effect of redistribution is no longer significant. This suggests that high-performing countries are also countries with more redistribution.

Thus our hypotheses are partly corroborated, though the significance of the macro effects is low. This means that our approach and our results are not yet conclusive. International comparative multilevel designs often face the problem of low case numbers at the highest level or of insufficient control of relevant factors due to missing data at the country level. A further shortcoming is our data base; the PISA survey provides valuable information that allows an international comparison of educational processes. However, since the data is cross-sectional, it does not permit the assessment of actual causal effects on educational behaviour. For instance, a high value of the Gini-Index can also be an outcome of the education system's bad performance in the past. But a current situation which has evolved in the past is nevertheless the context which drives actors' decisions at the micro-level. Moreover, analysing immigrants' countries of origin suffers from a great loss of data because in some countries, such as the U.S., data on country of origin has not been collected. This results in a regrettable loss of efficiency when macro-indicators are included while countries drop off the sample because they provide no information on countries of origin. Furthermore, the survey is not well-suited to the study of immigrant integration. Nevertheless, our chapter provides valuable hints for further research and proves that the societal context of destination countries serves as a frame of reference and opportunity structure that has to be included in the analysis of immigrant integration processes.

Our results also show that research on the interplay between welfare state institutions and immigration and integration processes has to take into account the individual level in order to be able to distinguish the effects of specific institutions. Considering our results as well as previous research, it becomes obvious that immigrant integration is the result of complex processes. Even if the multidimensionality of individual social integration seems to be theoretically undisputed, empirical approaches often extrapolate from evidence of one dimension to other dimensions. We see that national institutions can have different or even contrary effects, even for one and the same dimension of integration. The institutional setting of liberal welfare states may have positive effects on labour market integration but negative effects on educational or residential integration. Furthermore, effects can vary across different immigrant generations. Our chapter corroborates

the importance of a precise distinction of varying effects and findings in order to make reliable statements about the process of immigrant integration.

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Chapter 6

School Accountability, Autonomy, Choice, and the Equality of Educational Opportunities

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6.1 Introduction

Accountability, autonomy, and choice are the watchwords of contemporary education reformers around the globe. Concerned with the efficiency of the educational process, many countries have implemented policies in each of these areas in hopes of advancing the learning of all students in the system. A notable example of the introduction of far-reaching accountability systems is the 2001 No Child Left Behind legislation in the United States, which requires each state to establish standards for student achievement, to test students annually to see whether those

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standards have been met, and to impose sanctions on low-performing schools. Several countries with traditionally centralized school systems are considering the decentralization of decision-making authority in certain domains by transferring it from the state to the schools, a policy that has been implemented on a pilot basis in two German states. Still other countries have expanded parental choice among schools, like Sweden, which introduced both free parental choice of school and a voucher system that placed privately operated schools on an equal footing with public schools in terms of access to public funding in the 1990 s. The introduction of the 'quasi-market' of education in the United Kingdom in 1988 has included aspects of all three strategies: the publication of external exam results, devolution of control over resource allocation to the school level, and increased parental choice with public funding following students to the schools of their choice within a given district.

Proponents of greater accountability, autonomy and choice contend that these reforms will improve student outcomes by heightening incentives for various actors to perform at high levels. Accountability systems combine clear standards, external monitoring of results and corresponding rewards and sanctions based on performance indicators. By providing better information on student outcomes, proponents argue, such systems directly and indirectly reward students, teachers, and principals for their efforts. Decentralizing decision-making to the schools, advocates suggest, substitutes the creativity and knowledge of local decision-makers for the inertia and rigidity of centralized bureaucracies. Supporters of school choice contend that giving parents free choice among schools and enabling private providers of education to receive government funding unleashes competitive forces that will drive school improvement. And indeed, in a closely related analysis, Woessmann et al. (2009, Chaps. 1–6) find that many different forms of school accountability, autonomy, and choice are strongly associated with higher levels of student achievement across countries.

Incentive-based reform strategies are not without controversy. Much of the criticism of market-oriented education reforms emphasizes their potentially negative consequences for equity. Besides efficiency, school systems aspire to provide equal opportunity for all, irrespective of socio-economic or socio-cultural background (cf. e.g. OECD 2007). Equity goals are particularly salient in education because schooling decisions that are made on behalf of underage children by their parents have important consequences for their future wellbeing. School systems can therefore play a leading role in building equal opportunity by providing equal starting points in life. In fact, leading examples of the recent reform wave, such as the No Child Left Behind Act, are expressly intended to improve the achievement of disadvantaged students. So how do accountability, autonomy, and choice affect the equity of student achievement? Do they raise the educational performance of children with high socio-economic status (SES) to the detriment of low-SES children? Or are they tides that lift all boats? Could they even provide an additional boost for disadvantaged children? In this chapter, we examine how these market-oriented reforms affect the equality of educational opportunities as

measured by the dependence of student achievement on socio-economic background (SES).¹

We construct a comprehensive student-level database of more than 180,000 students from 27 OECD countries from the Programme for International Student Assessment (PISA) 2003 to analyze how accountability, autonomy, and choice are related to the equality of educational opportunities. We operationalize equality of opportunities by estimating how strongly the educational achievement measured by PISA test scores depends on the socio-economic background of the students' families in each country. We exploit cross-country variation in school accountability, autonomy, and choice in order to provide new evidence on whether the distribution of student achievement in school systems employing these institutional features is more or less equitable.

Success within the school system is crucial for outcomes later in life. The labor-market returns to education, and in particular to the quality of education as measured by cognitive achievement tests, are very high (cf. Hanushek and Woessmann 2008 for a survey). Several recent studies indicate that a one-standard-deviation increase in mathematics test scores at the end of high school is associated with about 12 percent higher annual earnings later in life (e.g. Mulligan 1999; Murnane et al. 2000; Lazear 2003). In addition, cognitive achievement is strongly related to employment (e.g. Bishop 1992; OECD 2000; McIntosh and Vignoles 2001).

Given these individual returns to education, it comes as no surprise that equality of educational opportunity is crucial for the extent of equality of opportunity and the intergenerational mobility that societies achieve in general. Nickell (2004), for example, shows that most of the existing cross-country variation in earnings inequality can be attributed to cross-country variation in skill dispersion. Within-country studies for the United States (e.g. Juhn et al. 1993) have also concluded that skill differences have a strong and growing impact on the distribution of income. Understanding how the institutional structure of school systems—and in particular the changes in those institutions brought about by recent reforms—affect the equity of student achievement is therefore critical.

The remainder of this chapter is structured as follows. Section 6.2 summarizes the previous literature. Section 6.3 briefly describes the data, then discusses the empirical model in greater detail, and presents results of a basic model that provides a first glimpse of how accountability, autonomy, and choice are related to the equality of educational opportunity. Sections 6.4–6.6 then present more detailed analyses of different aspects of accountability, autonomy, and choice, respectively. Section 6.7 concludes the chapter.

¹ Please note that we use the terms “equality of opportunities” and “equity” interchangeably here.

6.2 Related Literature

Much of the criticism of education reforms that veer towards increased school accountability, autonomy, and choice emphasizes their potentially negative consequences for the equality of opportunities within the school systems. This section reviews the existing literature on this issue.²

6.2.1 Accountability

One fear associated with the introduction of accountability into the education sector is linked to the perceived danger of the strategic behavior of schools and teachers (cf. e.g. Jacob and Levitt 2003; Jacob 2005). Opponents argue that high-stakes accountability policies have, in design and implementation, ignored equity issues (e.g. Diamond and Spillane 2004). If school accountability policies are based on performance levels rather than on added value, they may give undue advantages to schools serving students from high socio-economic backgrounds (e.g. Ladd and Walsh 2002). Furthermore, teachers may respond strategically to accountability measures by weeding out or retaining disadvantaged students (Jacob 2005). However, proponents argue that such effects can be avoided by introducing the right testing practices and by incentivizing schools to raise the academic achievement of all of their students. Thus, the effects of accountability systems on equity likely depend on the specific characteristics of the accountability system.

In an empirical cross-country study, Woessmann (2005) finds that immigrants benefit more than native-born students from the existence of external exit exams, suggesting a positive effect of the accountability feature on equity in this dimension. Using student-level data from three different international student achievement tests (TIMSS, TIMSS-Repeat and PISA 2000), he finds that the effect of external exit exams does not differ substantially for most other measured family-background characteristics. This suggests that external exit exams may be mostly neutral with respect to equality of opportunity.

6.2.2 Autonomy

There is little research on the possible effects of school autonomy on equity, be it theoretical or empirical. It may be expected that the autonomy of schools to admit students may facilitate cream-skimming. More generally, certain forms of school

² For a detailed review of the literature on the effects of accountability, autonomy, and choice on the level of student achievement, see Woessmann et al. (2009).

autonomy may provide a form of differentiation for schools that may affect students with different SES differently. Ammermüller (2005) hypothesizes that school autonomy may help to transform parents' commitment to educational success into higher achievement for their children. Educational inequalities may increase when parents committed to their children's education can exert additional influence on teachers and schools to further their children's educational progress. On the other hand, additional autonomy may allow schools to focus particularly on students with low SES. Theoretical predictions of the possible effects of autonomy on equity therefore seem limited.

Using data from the PISA 2000 international student achievement test and a combined index of school autonomy in different decision-making areas, Ammermüller (2005) provides evidence that strong parental commitment to their children's education impacts achievement more strongly when schools are more autonomous, suggesting that school autonomy may increase parents' chances to influence their children's educational achievement. However, he does not find an association between school autonomy and of the impact of attending a rural versus an urban school, and he does not report results on differential effects of autonomy on children with different SES.

6.2.3 Choice

The theoretical case of the effect of choice on equity is hotly debated. In general, issues of implementation seem crucial when choice is introduced into schooling. Without proper safeguards, choice and competition may reduce equity by increasing segregation, inducing cream-skimming and neglecting disadvantaged students (e.g., Ladd 2002; Cullen et al. 2005; Burgess et al. 2007). By contrast, simulation studies by Nechyba (2000) show that a voucher system that provides choice for poor families can actually improve equity, among other things by integrating neighborhoods. This is even more so when voucher choices are explicitly designed to target disadvantaged families. In particular, because existing systems are already substantially segregated, introducing choice can decrease segregation due to mobility, and because existing schools for low-SES students are often of bad quality, providing them with choice can help them enter better schools. A lot depends on the specific design and implementation of school choice; measures such as the flow of information from schools to parents and regulatory and financial frameworks and incentives can be devised to encourage socio-economic integration (cf. Betts and Loveless 2005).

The evidence to date regarding the effects of choice on equity, as gathered from international student achievement tests, focuses on the effects that private operation and government funding have on schools. Based on data from TIMSS and TIMSS-Repeat, the results of Schuetz et al. (2008) indicate that private operation is associated with higher equality of opportunity, while private funding is associated with lower equality of opportunity. Using PISA 2000 data, Ammermüller

(2005) finds a positive association between private operation and inequality, which is likely to be due to the neglect of the effects of the source of funding in the model specification, though.

In summary, the existing evidence suggests that the specific design and implementation of education reforms towards increased accountability, autonomy, and choice is crucial for the equality of opportunities. Proponents of all three institutional features argue that, if properly designed, accountability, autonomy, and choice may be particularly important for the educational achievement of children who do not have the advantage of an educationally rich home environment.

6.3 A Basic Model of Educational Opportunities

This section first briefly describes the database, and then presents a basic empirical model that provides a first overview of the effects of accountability, autonomy, and choice on the equality of educational opportunity within national education systems. We describe the key features of the modeling approach, and finally we report and discuss the main results of the basic equity model.

6.3.1 *Data and Estimation Approach*

The data we use to perform our analysis of the equality of opportunities come from the international database of the 2003 Programme for International Student Assessment (PISA; cf. OECD 2004 for details), a representative sample of 15-year-old students. It contains student-level information on cognitive achievement and socio-economic background and school-level information on several aspects of accountability, autonomy, and choice, as well as information on additional student and school background characteristics, taken mostly from student and school background questionnaires.³

Our analyses concentrate on student achievement in mathematics, the focus of the PISA 2003 study. Test scores are mapped on a scale with an international mean of 500 and an international standard deviation of 100 test-score points. The “grade-level equivalent” of the simple test-score difference between 9th graders and 10th graders is 22.1 for mathematics test-score points, which provides a rough benchmark of how much students learn on average during one school year.

In order to estimate the effects of accountability, autonomy, and choice on equality of educational opportunity, we exploit institutional variation across

³ For details on the construction of the database as well as for descriptive statistics, see Appendix A of Woessmann et al. (2009, pp. 113–126).

countries. More specifically, we examine how the relationship between student achievement and family background characteristics varies across countries with different accountability, autonomy, and choice policies in place. Because student achievement clearly depends on many factors that operate independently of educational institutions, we estimate so-called “education production functions” (cf. e.g. Hanushek 1994) that control simultaneously for differences in various student, family, school, and country characteristics that may influence student achievement. In order to exclude intervening effects of other student and school characteristics, our model also controls for a set of student characteristics such as gender, age, and immigration status, as well as school characteristics such as community location, class size, instruction time and material, and teacher training. To control for other influences as rigorously and efficiently as possible, we perform the cross-country regressions at the student level, which allows us to account for possible intervening effects at the level of each individual student.

Our international education production functions combine individual student-level data on educational achievement (using the first plausible value of the PISA tests) with extensive background information at the school and student level. Thus, our empirical model has three important features: It uses cross-country variation, it estimates the effects of many variables simultaneously, and it is performed at the level of individual students.

We operationalize equity by estimating how strongly the educational achievement measured by PISA test scores depends on the socio-economic background of the students’ families in each country. The size of the achievement difference between students with high and low SES provides a measure of how fair and inclusive each school system is: the smaller the difference, the more equally distributed is educational opportunity. This operationalization comports with the concept of equality of opportunity proposed by Roemer (1998; cf. Betts and Roemer 2007), who suggests that the educational achievement of children should be independent of family socio-economic background. Roemer’s concept suggests that inequality should be tolerated only if it results from differences in effort, not if it reflects circumstances that are beyond a person’s control—including the socio-economic background of their parents.

We regress student test scores on student characteristics, family background, school resources, country characteristics, accountability, autonomy, and choice. In addition, we estimate interaction effects between family background and each institutional characteristic, that is, accountability, autonomy, and choice. The estimated coefficient on the interaction terms shows whether and how the institutional features are associated with the strength of the effect of SES on student achievement, i.e. with inequality of opportunity. In effect, such models reveal whether national features of accountability, autonomy, and choice affect students from different backgrounds differently.

More formally, the achievement test score T_{isc} of student i in school s in country c is regressed on the following sets of potential influences:

$$T_{isc} = F_{isc}\alpha + B_{isc}\beta + R_{sc}\gamma + I_c\delta + (F_{isc} \times I_c)\eta + \varepsilon_{isc} \quad (6.1a)$$

In this specification, F is the summary measure of family background described in more detail below. B is a vector consisting of student characteristics and country characteristics, such as student's gender and age and the per-capita GDP of the country. R is the vector of schools' resource endowments and location, and the vector I contains the institutional characteristics of interest, all of which are measured as averages at the country level.

To account for the complex sampling design of the PISA study, and the non-trivial structure of the error term ε_{isc} , we use clustering-robust linear regression to estimate standard errors (cf. Deaton 1997). This method relaxes the classical assumption of independence across individual observations.⁴ To allow for the different sampling probabilities, and to obtain consistent student population estimates, we use sampling weights. To avoid that the coefficient estimates are driven by the student population size of a country, the sampling weight is normalized in a way that all countries contribute equally to the coefficient estimates of the international education production function.⁵

We measure family background F as the SES of the student's family. The most encompassing measure of family SES provided in the PISA 2003 database is the ESCS index. The ESCS index is derived from the highest occupational status of each student's parents, their highest educational level and a summary measure of household possessions.⁶ Because we want to estimate the interactions between this measure of family background and the institutional characteristics of accountability, autonomy, and choice, we refrain from including additional family background controls that are either components of the ESCS index (such as parental education or the number of books in the household) or that are likely to correlate with it (such as the employment status of parents).

Because SES is a key variable in the equity analyses, we dropped all student observations with missing information on the ESCS index from our sample. We also excluded Mexico and Turkey from the sample of countries because the average ESCS level for students in these countries was a full standard deviation below the international mean on the ESCS index, the central variable in our equity analyses, suggesting that comparisons between these countries and the rest of the OECD in terms of equity may be unreliable. As a consequence, the dataset used in our analyses contains 181,469 students in 27 OECD countries. We impute missing

⁴ An alternative to estimating clustering-robust linear regression models to deal with the nested data structure would be to estimate Hierarchical Linear Models (HLM). Under the assumption that the errors are independent of regressors, both approaches yield consistent parameter estimates of the regression coefficients. The HLM approach aims to gain efficiency by exploiting assumptions on the variances and covariances of the error terms, but it also rests on stronger distributional assumptions (Cameron and Trivedi 2005, p. 847). Cohen and Baldi (1998) show that under moderate violations of its assumptions of random and normally distributed effects, HLM can lead to invalid inference, whereas clustering-robust linear regressions provide consistent and robust parameter estimates.

⁵ For details on the econometric modeling see Appendixes B1 and B2 of Woessmann et al. (2009, pp. 127–129).

⁶ For detailed information on the construction of the ESCS index, see OECD (2005).

values for all remaining background variables in this sample, using a conditional mean imputation method (cf. Little and Rubin 1987).⁷

The main focus of our analyses is on the vector $F \times I$, which represents the interaction terms between family background and the measures of school accountability, autonomy, and choice. Assuming that after having controlled for the set of observed effects at the level of students, schools, and systems, there is no unobserved heterogeneity left across countries that might bias the estimates, the estimated coefficients η on the interaction terms between SES (measured at the student level) and the institutional features (measured at the country level) identify how the institutional features affect the size of the effect of SES on student achievement.

In order to make the individual coefficients α and η meaningful, we have centered both the family background variable and all institutional variables to have a mean of zero. As a result, the estimated α coefficient represents the effects of family background in the case of the international mean value of all institutional variables, while the estimated η coefficients represent the institutional effects in the case of the international mean value of family background. The sign of the coefficients on the interaction terms between the measures of accountability, autonomy, and choice and the family background variable indicates whether the influence of family background on student achievement becomes smaller or larger with increased accountability, autonomy, and choice in the schooling sector. A significant positive relationship means that inequality increases with increasing accountability, autonomy, or choice, while a significant negative relationship means that inequality is reduced.

For each model, we also estimate a second specification that relaxes the assumption that there is no unobserved cross-country heterogeneity in student achievement. This is achieved by including a whole set of country fixed effects in the model. Country-level variables such as GDP per capita, expenditure per student and the averaged institutional variables for accountability, autonomy, and choice cannot be included in this specification because they vary only at the country level. Instead, the model includes a vector of country dummies C that allows the education production function to have a unique intercept for each country:

$$T_{isc} = F_{isc}\alpha + B_{isc}\beta + R_{sc}\gamma + (F_{isc} \times I_c)\eta + C_c\mu + \varepsilon_{isc} \quad (6.1b)$$

Despite the country fixed effects, the specification still identifies the measure of interest, namely how the institutional features influence the relationship between SES and student achievement, which is again captured by the coefficients η on the interaction terms at the student level. To identify this specification, the assumption that there is no unobserved cross-country heterogeneity can be replaced by the less restrictive assumption that any remaining unobserved cross-country heterogeneity

⁷ For details on the imputation method see Appendix B3 of Woessmann et al. (2009, pp. 129–131).

is unrelated to the size of the effect of SES on student achievement. Under this assumption, equation (1b) can still identify how institutional features of the school system relate to the equality of educational opportunity. Since it requires the least restrictive assumptions on the cross-country distribution of test scores, the specification with country fixed effects is our preferred specification.⁸

The institutional features I_c are all measured as averages at the country level. The analyses thus use only between-country variation in accountability, autonomy, and choice to identify their effects on equity. The main reason for this aggregation is to evade problems of within-country selectivity bias. Within each country, students with different SES may self-select into specific schools with certain institutional features. For example, high-SES parents may be more likely to opt into schools with strong accountability systems, with autonomy over particular decisions, or under private management. This self-selection may affect how strongly student achievement depends on SES within countries and may also bias the estimated interaction coefficients when estimated at the individual level within countries. We circumvent these issues by measuring all features of accountability, autonomy, and choice at the country level. This way, selection processes within each school system cancel one another out, and the estimated coefficients show how strongly inequality of opportunity depends on the average share of schools with each institutional feature in a specific school system. The aggregate measurement also allows us to capture any systemic effects. The downside of using only country-level institutional measures is that the number of observations at the country level is again very limited.

6.3.2 Cross-Country Analyses and Potential Bias

Due to the cross-sectional nature of the PISA dataset, a caveat applies when interpreting our estimation results. First, the data do not allow for panel or value-added estimations (cf. e.g. Hanushek 2002; Todd and Wolpin 2003). Because of unobserved student abilities, cross-sectional analyses can give rise to omitted variable bias when the variables of interest are correlated with the unobserved characteristics. In this chapter, we hope to minimize such biases due to unobserved student heterogeneity by including a huge set of observed abilities, characteristics, and institutions which reduce potential biases. Estimates based on cross-sectional data will be unbiased if the explanatory variables of interest are unrelated to features that still remain unobserved, if they are exogenous to the dependent variable, and if they and their impact on the dependent variable do not vary over time.

⁸ See also Schuetz et al. (2008) for additional methodological details of the econometric technique.

Many of the institutional features of an education system may be reasonably assumed to be exogenous to individual students' performance. The cross-country nature of the data allows the systematic utilization of country differences in the institutional settings of educational systems, which would be neglected in within-country specifications. At the country level, explanatory variables are included to control for country differences with respect to educational expenditure and the development stage of a country. However, a caveat applies here in that a country's institutions may be related to unobserved, e.g. cultural, factors which in turn may be related to student performance. To the extent that this may be an important issue, caution should prevail in drawing causal inferences and policy conclusions from the presented results.

In terms of time variability, changes in institutions generally occur only gradually and evolutionary rather than radically, particularly in democratic societies. Consequently, the institutional structures of education systems are highly time-invariant and thus most likely constant, or at least rather similar, during a student's time at secondary school. We therefore assume that the educational institutions observed at one point in time persist unchanged during the students' secondary-school life and thus contribute to students' achievement levels, and not only to the change from one grade to the next. A level-estimation approach thus seems well-suited for determining the total association between institutions and student achievements. Still, institutional structures may differ between primary and secondary schools, so that issues of omitted prior inputs in a students' life may still bias estimated institutional effects, generally in an attenuating way.

6.3.3 Results of the Basic Equity Model

Because our aim in this first section of the chapter is to provide an overview of the main results for accountability, autonomy, and choice, we use only one or two summary indicators for each of the three institutional features in our basic equity model. Even in the more detailed analyses of specific institutional dimensions presented in the subsequent sections, the summary measures of the other two institutions used in the basic equity model are again included as control variables. Moreover, because the practice of tracking has proven to be one of the most important factors in determining inequality, all our equity models include a tracking variable, and the interaction between this tracking variable and ESCS.⁹

Questions of equity are of course intertwined with questions of efficiency. For example, it may be the case that some institutional features increase inequality but are nonetheless beneficial for all students. This would be the case if the achievement of low-SES students is raised, but the achievement of high-SES

⁹ See Schuetz et al. (2008), and Hanushek and Woessmann (2006) for the effects of tracking on inequality.

students is raised by an even larger amount. In such a case, everybody gains in absolute terms, and efficiency is increased in the Pareto sense (that no-one is worse off while at least some-one is better off). Assessments of the relative merit in such cases require value judgments concerning the relative importance on equity and efficiency.

While we abstain from such judgments in this chapter, our results can inform the discussion by illustrating the size of any potential tradeoffs. Detailed results on the efficiency analysis of the same institutional features (in particular accountability, autonomy, and choice) are provided in Woessmann et al. (2009). Here, we only briefly summarize these results, and we will refer to results on efficiency as well as equity whenever it is necessary for a comprehensive assessment. Table 6.1 reports results of the basic equity model for our estimation sample of 27 OECD countries (except for France, Mexico, and Turkey, for the reasons discussed above).¹⁰ Note that all models control for a large number of student background and school resource variables.¹¹ The summary accountability variable included in the basic equity model measures whether a country has external exit exams at the end of secondary school. The positive sign of the estimated coefficient on this variable indicates that students in countries that have external exit exams in mathematics perform better on the PISA mathematics test than students in countries without external exit exams. In terms of equity, however, external exit exams reduce equality of educational opportunity insofar as they increase the influence of SES on student achievement. This is apparent from the statistically significant positive interaction term between external exit exams and SES reported in the second column of specification (1), which presents additional results from the same regression model presented in the first column. (Note that the qualitative results regarding the interaction of the different institutions with SES in the basic equity model are robust to the inclusion of country fixed effects as reported in specification (2) of Table 6.1).

While these results suggest that accountability systems may enhance achievement but reduce equity, it is important to keep in mind that there are many different ways to implement accountability. External exit exams mainly provide incentives for individual students, although they may also create indirect accountability pressures for teachers and schools. Other accountability devices, such as monitoring teachers' lessons and comparing the schools' performance to district and national averages, focus instead on teachers and schools. Section 6.4 examines in greater detail the effects of these different forms of accountability policies on equality of educational opportunity.

Two measures of autonomy are included in the basic equity model: the share of schools in a country having main responsibility for formulating the school budget and the share of schools exerting a direct influence on decision-making about

¹⁰ Results for science are similar and are reported in Woessmann et al. (2009, p. 81).

¹¹ Detailed results for all background variables are reported in Woessmann et al. (2009, pp. 103–105).

Table 6.1 Students' achievement in mathematics: the basic model

	Main effect (1)	Interaction with ESCS	Interaction with ESCS (2)
External exit exams	16.840** (8.008) ^a	8.120*** (0.862)	8.750*** (0.799)
Autonomy in formulating budget	-29.740* (14.594) ^a	7.950*** (1.885)	9.329*** (1.645)
School influence on staffing decisions	31.153* (15.990) ^a	1.870 (1.492)	0.798 (1.348)
Private operation	61.385*** (12.042) ^a	-5.295*** (1.901)	-7.900*** (1.755)
Government funding	60.752** (28.731) ^a	-18.065*** (4.480)	-13.137*** (4.214)
Years since first tracking	0.038 (1.892) ^a	2.462*** (0.281)	2.119*** (0.260)
ESCS	29.475*** (0.405)	-	28.661*** (0.371) ^b
Country fixed effects	No		Yes
Students	181,469		181,469
Schools (clustering units)	6,912		6,912
Countries	27		27
R ²	0.318		0.353

Notes^a Clustering of standard errors at the country level^b Main effect of ESCS

Dependent variable: PISA 2003 international mathematics test score. ESCS = PISA index of economic, social and cultural status. Sample: OECD countries (excluding France, Mexico, and Turkey). Least-squares regressions weighted by students' sampling probability. Controls include: 15 student characteristics, 9 measures of school location and resources, expenditure per student, GDP per capita, imputation dummies and interaction terms between imputation dummies and the variables. Robust standard errors adjusted for clustering at the school level in parentheses. Significance level (based on clustering-robust standard errors): *** 1 %, ** 5 %, * 10 %

staffing. The effects of these two types of autonomy on average student achievement point in opposite directions: while autonomy in formulating the budget is negatively associated with student achievement, influence on staffing decisions is positively associated with student achievement. With respect to the effects on equity, only the interaction between SES and autonomy in formulating the budget is statistically significantly estimated. The positive sign of the estimated coefficient indicates an equity-decreasing effect of autonomy in this area, while influence on staffing decisions does not appear to have a statistically significant effect on equality of educational opportunity in this specification. As we will see in Sect. 6.5, which probes the effects of different forms of autonomy in greater detail, however, these results do not prove robust to the analysis of additional measures of school autonomy.

The summary measure of choice included in the basic equity model is the share of privately operated schools in a country. As is evident from Table 6.1, private school operation is strongly and significantly associated with higher student achievement and with greater equality of educational opportunity. Contrary to the concerns of many critics of private involvement in education, a large sector of privately operated schools does not reduce equality of outcomes for children from different social backgrounds; in fact, the opposite is true.

While in the operation of schools, private involvement is associated with better performance and more equity, the association is reversed in the case of school finance: here, a larger average share of government (as opposed to private) funding of schools is associated with better student achievement and with greater equality. Larger government funding, in particular when it is available to privately operated schools, may create choice for a larger share of the population and thus increase competition and access to good schools for children with less favorable family backgrounds. Section 6.6 will examine the effects of choice on equity in greater detail.

6.4 Accountability and the Equality of Educational Opportunities: Empirical Results

Table 6.2 reports the results concerning the effects of different measures of accountability on equality of educational opportunity. Our models include all variables that were already introduced in the basic equity model in Table 6.1, plus additional country-level measures of accountability. Specifically, the four additional accountability measures are the use of assessments for decisions on student promotion and retention and for the grouping of students, the monitoring of teacher lessons by the principal or senior, staff and the use of teacher-subjective ratings to assess students.

As already shown in the basic equity specification in Table 6.1, external exit exams are strongly and positively related to student achievement. A student with a socio-economic background equal to the OECD average of ESCS scores 37.4 test points higher on the PISA 2003 mathematics scale if the country employs external exit exams in this subject. At the same time, the use of external exit exams seems to strengthen the influence of socio-economic background on student achievement. The magnitude of this association is, however, substantially reduced in this specification, which now accounts for the effects of several other accountability measures relative to the basic equity model.

The relationship between external exit exams and equality of educational opportunity is illustrated by Fig. 6.1. There, we distinguish between children with low SES, defined as children who are at the 10th percentile of the OECD distribution of the ESCS index and children with high SES, defined as children who are at the 90th percentile of the OECD distribution of ESCS. Students at the 10th

Table 6.2 Students' achievement in mathematics: accountability

	Main effect (1)	Interaction with ESCS	Interaction with ESCS (2)
External exit exams	37.422 ^{***} (12.638) ^a	3.500 ^{**} (1.692)	3.656 ^{**} (1.506)
Assessments used to make decisions about students' retention/promotion	38.274 ^{***} (12.323) ^a	3.549 [*] (1.824)	-0.181 (1.682)
Assessments used to group students	-52.478 ^{***} (14.895) ^a	-1.409 (2.361)	-0.743 (2.210)
Monitoring of teacher lessons by principal	31.563 ^{**} (13.148) ^a	11.859 ^{***} (1.670)	11.006 ^{***} (1.539)
Teachers' subjective ratings used to assess students at least monthly	27.175 (18.715) ^a	-12.242 ^{***} (2.583)	-5.385 ^{**} (2.331)
ESCS	29.582 ^{***} (0.397)	-	28.941 ^{***} (0.367) ^b
Country fixed effects	No		Yes
Students	181,469		181,469
Schools (clustering units)	6,912		6,912
Countries	27		27
R ²	0.329		0.353

Notes

^a Clustering of standard errors at the country level

^b Main effect of ESCS

Dependent variable: PISA 2003 international mathematics test score. ESCS = PISA index of economic, social and cultural status. Sample: OECD countries (excluding France, Mexico, and Turkey). Least-squares regressions weighted by students' sampling probability. Controls include: autonomy in formulating budget, school influence on staffing decisions, private operation, government funding, years since first tracking, interaction terms between these institutional variables and ESCS, 15 student characteristics, 9 measures of school location and resources, expenditure per student, GDP per capita, imputation dummies and interaction terms between imputation dummies and the variables. Robust standard errors adjusted for clustering at the school level in parentheses. Significance level (based on clustering-robust standard errors): *** 1 %, ** 5 %, * 10 %

percentile of the ESCS distribution have lower SES than all but 10 % of the students in our sample, while students in the ninth decile have a higher SES than all but 10 % of students.¹² Figure 6.1 depicts the test scores of children with low and high SES that are associated with the presence or absence of external exit exams. While both low- and high-SES students gain from the presence of external exit exams, high SES students gain slightly more. The presence of external exit

¹² In all figures of this chapter, we will use the first and the ninth decile of the ESCS distribution to refer to students with low and high SES.

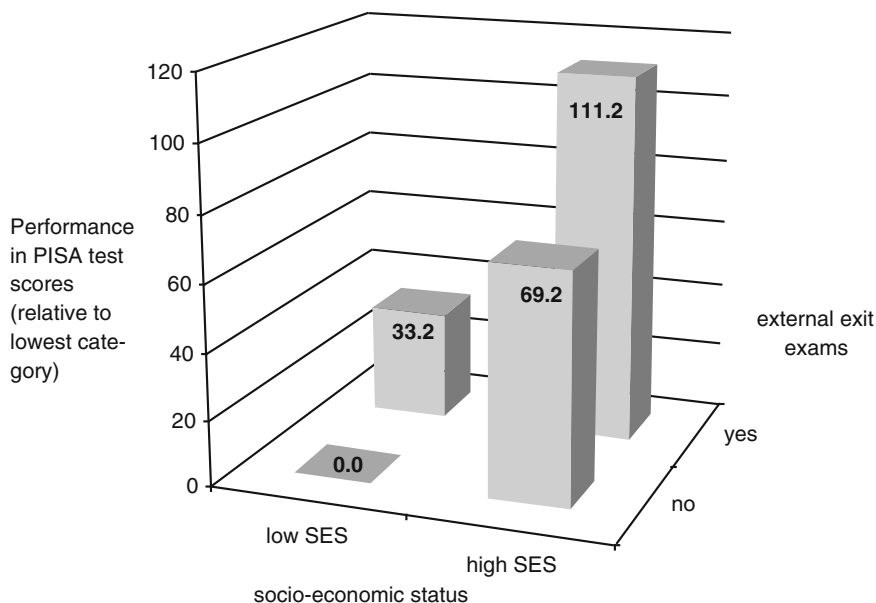


Fig. 6.1 External exit exams and SES. Performance in PISA test scores (relative to lowest category). *Note* low and high SES refer to the first and ninth decile on the PISA ESCS index, respectively. *Source* based on specification (1) of Table 6.2

exams is associated with a gain in test scores of 33.2 test score points (33.2–0.0) for low-SES students and with a gain of 42.0 points (111.2–69.2) for high-SES students.

Contrary to previous findings, these results suggest that there may be a tradeoff between efficiency and equity that is narrowly defined when it comes to external exit exams. The effect of SES on student achievement is slightly greater in systems with external exit exams. However, even students with the lowest SES gain from external exit exams: abolishing external exit exams would hurt even the most disadvantaged.

The first of the newly added measures of accountability is the percentage of schools using assessments to make decisions about students' retention or promotion, another accountability device aimed squarely at students. The results reveal that students perform significantly better in countries with larger shares of schools using this accountability measure. With respect to equality of educational opportunity, the results differ between our two specifications. While specification (1) seems to support the hypothesis that the use of assessments for promotion decisions reduces equity, specification (2) does not. The results of the latter specification, which includes country fixed effects and therefore places fewer restrictions on the model, are more credible. The use of assessments in making decisions about student retention and promotion thus appears to be unrelated to equality of educational opportunity.

The next additional measure of accountability is the extent to which the schools in each of the countries report using assessments to group students. The use of assessments for student grouping can be regarded as a proxy for the extent of tracking that takes place within schools. Students in countries with a larger share of schools using assessments to group students perform substantially worse than students in countries where fewer schools do so. This finding on the effects of tracking within schools is confirmed in the first column of specification (1) of Table 6.2. The coefficient of the interaction term between this variable and SES is negative but not statistically significant in both specifications; high-SES students seem to suffer as much from this practice as low-SES students. Equality of educational opportunity therefore does not seem to be affected by the presence or absence of the use of assessments for student grouping.

Our results show that students in countries with more monitoring of teacher lessons by principals perform better, but also that equity in these countries is reduced. The difference in test scores between low- and high-SES students becomes larger in countries where a large share of schools report using this type of teacher monitoring.

Figure 6.2 displays the effects of having a high incidence of teacher monitoring by principals (as in the United States, 99.7 % of students) as compared with a low incidence of such monitoring (as in Portugal, 4.9 % of students) for low- and high-SES students. Again, even low-SES students gain from the teacher-focused accountability, but now to a substantially smaller extent (16.3 test-score points) than high-SES students (44.8).

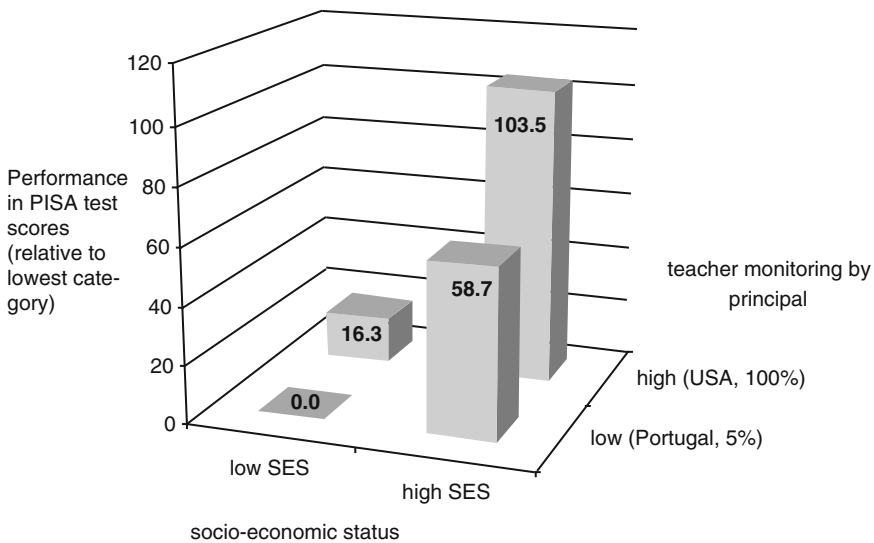


Fig. 6.2 Monitoring of teacher lessons by principal and SES. Performance in PISA test scores (relative to lowest category) *Note* low and high SES refer to the first and ninth decile on the PISA ESCS index, respectively. *Source* based on specification (1) of Table 6.2

An alternative measure of teacher monitoring available in the PISA 2003 database is whether inspectors or other persons external to the school observed classes during the previous year to monitor the practice of mathematics teachers. We used this measure as an alternative measure of teacher monitoring in the model reported above and entered it jointly with the measure of monitoring by principal. In neither specification did this measure of teacher monitoring show a statistically significant effect on equity.

The result that external teacher monitoring is neutral with respect to equity may suggest that the equity-reducing pattern found for internal teacher monitoring by principals is due to the fact that in many countries it is primarily schools catering to high-SES students that are using internal teacher monitoring. If this is the case, the equity-reducing effect of internal teacher monitoring may be more seeming than real.

The final measure of accountability included in the model reported in Table 6.2 is the share of schools that report using teachers' subjective ratings to assess students at least monthly. This form of student assessment does not have a significant effect on student performance on average, but it reduces the inequality in an education system. Figure 6.3 illustrates the effects of this form of assessments graphically. All else being equal, the gap between low- and high-SES students is very large (at 89.8 test-score points) in countries like Denmark that report very low frequencies of this form of assessment. But the gap becomes substantially smaller (at 61.4 test-score points) in countries like Portugal that report very high frequencies of this form of assessment. Thus, using teacher's subjective ratings to judge the performance of students seems to be a helpful tool in reducing

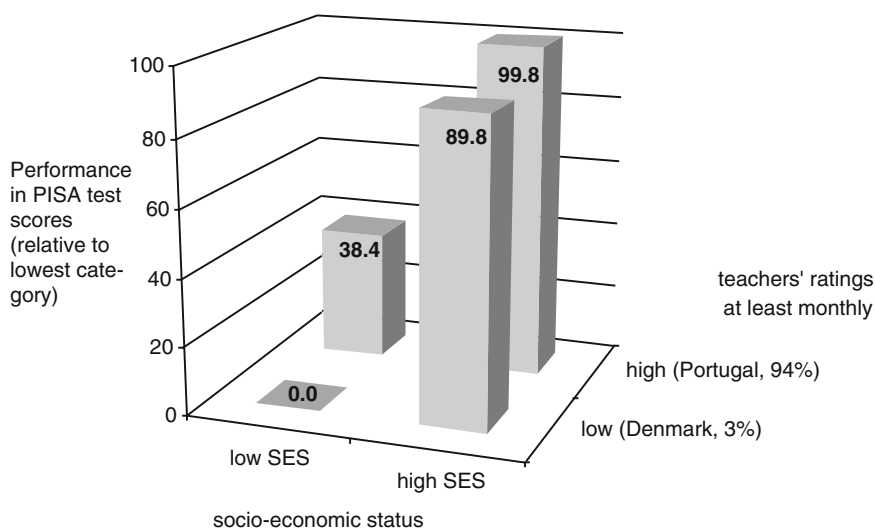


Fig. 6.3 Student assessment by teachers' subjective ratings and SES. Performance in PISA test scores (relative to lowest category). *Note* low and high SES refer to the first and ninth decile on the PISA ESCS index, respectively. *Source* based on specification (1) of Table 6.2

educational inequalities. This may be due to increased reflection by teachers on their students' performance and potential, something that might be less common in the simple grading of tests.

Similar equity-enhancing effects are found for the use of teacher-developed tests as an alternative form of student assessment. By contrast, the regular use of standardized tests is not significantly associated with the equality of educational opportunity.

Accountability measures can be targeted not only at teachers or students but also at schools as a whole. We therefore also examined within the same model the effects on equity in the use of student assessments to monitor the school's progress from year to year, to compare the school to district or national performance, and to compare the school to other schools. None of these accountability measures aimed at schools show a significant interaction with students' SES; they seem to be neutral with respect to equity.

In summary, accountability devices seem to be mostly tides that lift all boats. For most of them, there is no significant difference in how they affect low-SES versus high-SES students. External exit exams have a somewhat larger—and internal teacher monitoring has a substantially larger—positive effect for high-SES students, despite both accountability measures having a positive effect even on students with very low SES. The regular use of teachers' subjective ratings to assess students increases the equality of educational opportunity.

6.5 Autonomy and the Equality of Educational Opportunities: Empirical Results

Table 6.3 reports the main and interaction effects of five different forms of school autonomy on student achievement and on equality of educational opportunity in PISA 2003. Specification (1) displays the results for the model without country fixed effects, which therefore is also able to determine the main effects of the autonomy variables on average student achievement. Specification (2) presents the estimates for the model with country fixed effects, where main effects cannot be identified. Both regressions include the same institutional variables controlling for the effects of accountability and choice as the basic equity model presented in Sect. 6.3.

Autonomy in budget formulation is significantly negatively related to student achievement, while school influence on staffing decisions seems to be positively related to achievement (although the effect does not reach statistical significance in this specification). None of the other autonomy variables aggregated at the country level (autonomy in hiring teachers, autonomy in establishing starting salaries, and autonomy in determining course content) show a significant effect on average student achievement. However, all of the autonomy variables show a significant association with equity in specification (1) that does not include country fixed

Table 6.3 Students' achievement in mathematics: autonomy

	Main effect (1)	Interaction with ESCS	Interaction with ESCS (2)
Autonomy in formulating budget	-35.144* (20.181) ^a	-4.222** (2.104)	0.202 (1.884)
School influence on staffing decisions	25.705 (16.911) ^a	-2.810* (1.560)	-3.980*** (1.423)
Autonomy in hiring teachers	17.164 (19.501) ^a	17.231*** (1.814)	15.232*** (1.672)
Autonomy in establishing starting salaries	-6.418 (18.037) ^a	4.122** (1.960)	0.587 (1.791)
Autonomy in determining course content	-0.223 (23.814) ^a	-7.958*** (2.282)	-3.306* (1.964)
ESCS	29.559*** (0.396)	-	29.046*** (0.365) ^b
Country fixed effects	No		Yes
Students	181,469		181,469
Schools (clustering units)	6,912		6,912
Countries	27		27
R ²	0.321		0.354

Notes^a Clustering of standard errors at the country level^b Main effect of ESCS

Dependent variable: PISA 2003 international mathematics test score. ESCS = PISA index of economic, social and cultural status. Sample: OECD countries (excluding France, Mexico, and Turkey). Least-squares regressions weighted by students' sampling probability. Controls include: external exit exams, private operation, government funding, years since first tracking, interaction terms between these institutional variables and ESCS, 15 student characteristics, 9 measures of school location and resources, expenditure per student, GDP per capita, imputation dummies and interaction terms between imputation dummies and the variables. Robust standard errors adjusted for clustering at the school level in parentheses. Significance level (based on clustering-robust standard errors): *** 1 %, ** 5 %, * 10 %

effects. Two of the significant interactions are not robust to the inclusion of country fixed effects in specification (2), though, which requires the least restrictive modeling assumptions.

The interaction effect between autonomy in formulating the budget and ESCS is not statistically significantly different from zero in specification (2) with country fixed effects. While this interaction proves very sensitive to the specific model specification as long as no country fixed effects are included (being positive in the basic equity model of Table 6.1 and negative once additional autonomy measures are included in specification (1) of Table 6.3), the preferred specification with country fixed effects suggests that autonomy in formulating the school budget is not significantly associated with equality of opportunity.

The coefficient on the interaction term between ESCS and the autonomy variable which indicates that schools have a direct influence on decision making about staffing is significantly negative in both the model with and without country fixed effects.¹³ At the same time, the interaction between ESCS and autonomy in hiring teachers is significantly positive. This difference in results regarding the two measures of staffing autonomy may be due to the fact that they measure somewhat different aspects of staffing autonomy. The first measure asks about staff in general, while the second asks specifically about teachers. Perhaps more importantly, the measure of school influence on staffing decisions does not exclude the possibility that other bodies outside the school also influence staffing decisions, while the measure of autonomy in hiring teachers explicitly excludes the possibility that outside bodies have main responsibility.

Our findings suggest that equity is enhanced when schools have some influence on staffing decisions, but that it is reduced when schools have full autonomy in hiring teachers. That is, equality of educational opportunity seems to be improved by allowing schools to take part in personnel decisions, but it seems to be harmed when these decisions are completely left to the schools. However, as in the case of the internal teacher monitoring by principals discussed in the previous section, there is also the possibility that the positive interaction between SES and the share of schools with hiring autonomy says more about the type of student that schools with full autonomy in hiring teachers cater to than about any direct effect of autonomy on equity.

The fourth autonomy variable included in the model of Table 6.3 measures autonomy in establishing starting salaries. In the model with country fixed effects, the interaction term between salary autonomy and SES is not statistically significant, which suggests that autonomy in establishing starting salaries is not significantly related to equality of educational opportunity.

Autonomy in determining course content is positively associated with equality of educational opportunity. Its interaction with SES is negative in both the regression with and without country fixed effects. At the same time, it is unrelated to average student achievement in our specification (1) model. Therefore, at least in the presence of external exams (a circumstance that is controlled for in the model), giving more autonomy in the choice of content is equity-enhancing and does not have negative effects on efficiency.

In summary, some of the associations between school autonomy and equity prove sensitive to the specific model used. In our preferred model, however, equality of opportunity is lower in countries where more schools have full autonomy in hiring teachers. This negative effect of staffing autonomy on equity is

¹³ The variable ‘School influence on staffing decisions’ suffers from the weakness that it surveys the influence of the ‘school’s governing board’, which may lead to misreporting in countries that do not have the concept of school governing boards. Note that the results regarding the other institutional variables in the basic equity model do not change if the variable ‘Autonomy in hiring teachers’ is used instead of the variable ‘School influence on staffing decisions’ in the basic equity model.

attenuated (but not eliminated) by the fact that equality of opportunity is higher in countries where more schools have some influence on staffing decisions. Equality of opportunity is also higher in countries where more schools have autonomy in determining course content. Autonomy in formulating the budget and autonomy in establishing starting salaries do not show a significant association with the equity of student achievement. Keep in mind, though, that the limited degree of statistical freedom in our country-level analysis prevents us from analyzing the possibility that the effects of school autonomy depend on the extent of accountability, which proved to be an important aspect in a closely related analysis on the association of these institutional features with the level of student achievement (Woessmann et al. 2009).

6.6 Choice and the Equality of Educational Opportunities: Empirical Results

Our basic equity model in Table 6.1 reports the effects of private operation on average student achievement and equity while controlling for the share of funding that comes from government sources. The results show that a higher share of private operation increases both mean achievement and equity. At the same time, the average share of government funding also increases both mean achievement and equity. Figure 6.4 illustrates the equity-enhancing effect of private operation by contrasting the effects of high versus low levels of private operation for students with high versus low SES. Iceland is one example of countries with essentially no privately operated schools, while 77 % of the Dutch students tested in PISA 2003 attend schools that are privately operated. The figure reveals that private operation of schools reduces the achievement gap between low- and high-SES students. While the gap is 77.2 test-score points in countries without any private operation, it is lower—66.9 test-score points—in countries with high levels of private operation.

To further explore the effects of choice and private involvement on the school system, we add to the basic equity model another variable measuring the difference in the share of government funding that private and public schools received. While public schools tend to receive the largest part of their funding from government sources, the average share of funding of privately operated schools that comes from government sources varies substantially across countries. In countries such as Belgium, Ireland, and the Netherlands, public–private partnerships are quite common in schooling: Many schools are privately operated but mostly publicly funded. In Finland, Korea, the Netherlands, the Slovakia, and Sweden, the difference in the average share of government funding between publicly and privately operated schools is close to zero. By contrast, in Greece, the United Kingdom, and the United States, publicly operated schools receive nearly all their funding from government sources, while privately operated schools receive hardly any government funding. The variable of the difference in the share of government funding

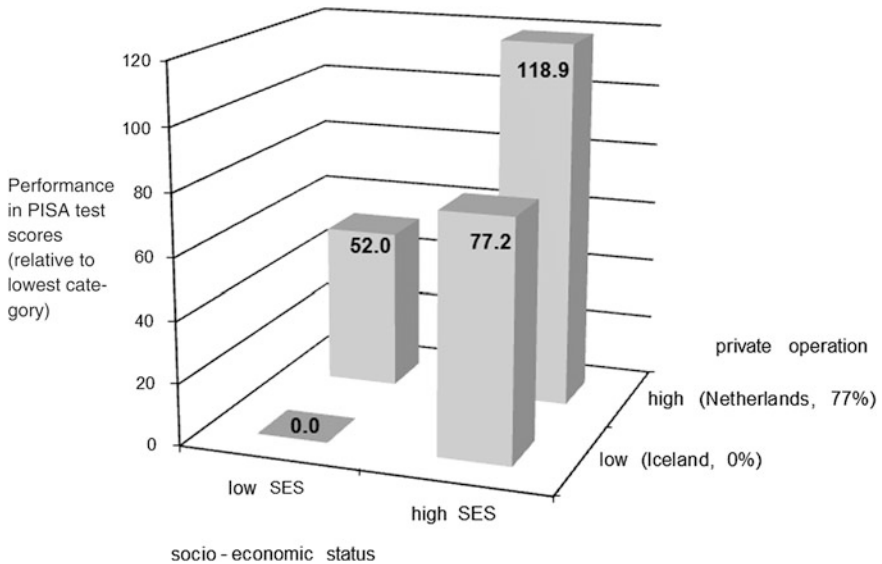


Fig. 6.4 Private school operation and SES. Performance in PISA test scores (relative to lowest category). *Note* low and high SES refer to the first and ninth decile on the PISA ESCS index, respectively. *Source* based on specification (1) of Table 6.2

between private and public schools captures essentially the extent to which the government encourages public–private partnerships by treating public and private schools equitably in terms of access to funding.

The models presented in Tables 6.1 and 6.4 differ only with respect to this new variable and its interaction term with ESCS. Comparing the results, we see that the main effect of private operation on average achievement becomes smaller and that its interaction effect with ESCS is no longer statistically significant in Table 6.4. The interaction effect of government funding with ESCS is also somewhat reduced. This suggests that the total equity-enhancing effect of private operation and part of the equity-enhancing effect of governmental funding can be ascribed to larger government funding of privately operated schools. In other words, it appears that the equity-enhancing effect of private operation stems from private schools' greater access to government funds in countries with large private sectors.

In terms of the effect of the difference in government funding between private and public schools, the results reveal that a greater difference between private and public schools in the received share of government funding is detrimental to average student achievement and equality of educational opportunity. Thus, average student performance is lower in countries where private schools receive only little funding from the government. At the same time, equality of educational opportunity is hindered by a large difference in government funding between private and public schools. It seems that government funding of private schools particularly benefits students with low SES.

Table 6.4 Students' achievement in mathematics: choice

	Main effect (1)	Interaction with ESCS	Interaction with ESCS (2)
Private operation	41.618*** (13.520) ^a	-1.637 (2.169)	0.708 (2.059)
Government funding	79.487*** (28.011) ^a	-16.346*** (4.805)	-8.104* (4.556)
Difference in government funding between	-33.630***	10.595***	13.827***
Public and private schools	(12.960) ^a	(1.658)	(1.551)
Years since first tracking	-2.067 (2.847) ^a	3.367*** (0.302)	2.726*** (0.274)
ESCS	29.612*** (0.424)	-	28.902*** (0.393) ^b
Country fixed effects	No		Yes
Students	164,532		164,532
Schools (clustering units)	6,404		6,404
Countries	25		25
R ²	0.327		0.357

Notes

^a Clustering of standard errors at the country level

^b Main effect of ESCS

Dependent variable: PISA 2003 international mathematics test score. ESCS = PISA index of economic, social and cultural status. Sample: OECD countries (excluding France, Mexico and Turkey). Least-squares regressions weighted by students' sampling probability. Controls include: external exit exams, autonomy in formulating budget, school influence on staffing decisions, interaction terms between these institutional variables and ESCS, 15 student characteristics, 9 measures of school location and resources, expenditure per student, GDP per capita, imputation dummies, and interaction terms between imputation dummies and the variables. Robust standard errors adjusted for clustering at the school level in parentheses. Significance level (based on clustering-robust standard errors): *** 1 %, ** 5 %, * 10 %

This is depicted graphically in Fig. 6.5. The lowest difference, in Korea, is actually slightly negative in the PISA 2003 sample, i.e. privately operated schools report receiving a slightly larger share of government funding. The difference is virtually zero in several other countries such as Finland, the Netherlands, the Slovakia and Sweden. The highest difference is 91 % points in the United States, where private schools receive virtually no funding from government sources. Figure 6.5 shows that while both low- and high-SES students benefit from a smaller difference in government funding between private and public schools, low-SES students gain substantially more: low-SES students gain 45.8 test-score points whereas high-SES students gain only 19.3 test-score points. Thus, the difference in achievement between high- and low-SES students becomes significantly smaller as the difference in government funding between private and public schools is reduced.

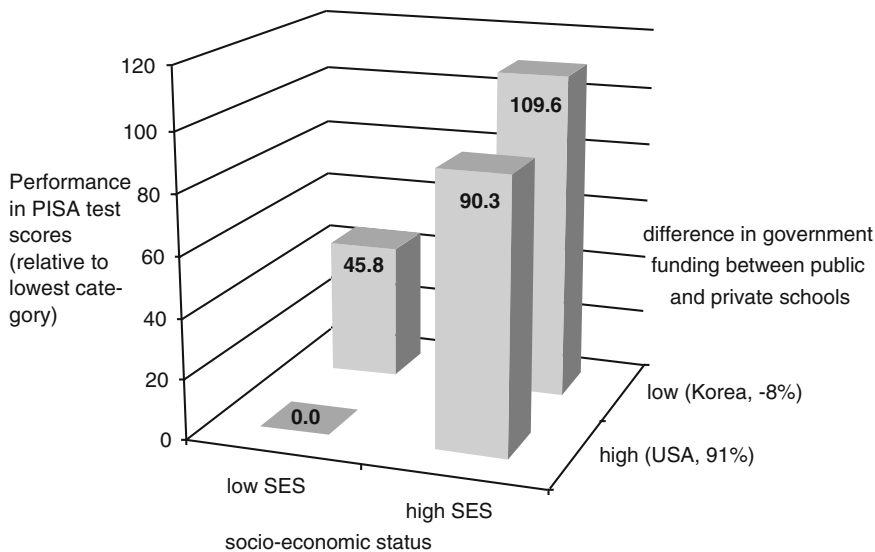


Fig. 6.5 Difference in government funding between private and public schools and SES. Performance in PISA test scores (relative to lowest category). *Note* low and high SES refer to the first and ninth decile on the PISA ESCS index, respectively. *Source* based on specification (1) of Table 6.4

We have also experimented with the two proxies for public school choice at our disposal. The first one is the share of students in a country who report attending their school because it is the local school for students who live in their area, which may serve as a proxy for the fact that students are required to attend the school in their local catchment area. The second one is the share of students in a country who report attending their school because it is known to be a better school than others in the area, which may serve as a proxy for exerted choice among schools. Both proxies have substantial limitations when used as a measure of public school choice, and they do not enter significantly when added to the basic equity model with country fixed effects. Neither the share of students attending their school because it is local, nor the share of students attending their school because it is better is statistically significantly related to equality of educational opportunity.

When adding the two proxies of public school choice to the model of Table 6.4, the coefficient on the interaction between SES and the share of students in a country who attend their school because it is known to be better than alternative schools actually turns weakly (but statistically significantly) negative, indicating that choice among public schools may also be beneficial for equity.

6.7 Choice-Based vs. Selection-Based Systems: Early Tracking

Table 6.4 also reports the effects of tracking on average achievement and on equity. We define tracking as the systematic selection of students into schools with different curricula, based on some measure of their (perceived) ability. The timing and extent of tracking varies widely across OECD countries. While many countries, like Sweden, do not track their students at all during the years for which schooling is compulsory, Germany and Austria begin tracking their students at age 10. Our measure of tracking is the number of years that have passed since the first stage of selection when students are 15 years old (the age at which they participated in the PISA 2003 study). Thus, the tracking variable will be zero if no selection has taken place by age 15 (in countries like Sweden), and it will be 15 minus the age of students at the time of first selection in countries that do employ tracking—for example, the variable takes on a value of 5 in Germany and Austria.

Supporters of tracking regimes typically argue that instruction is more efficient in tracked systems because classrooms are more homogenous, which would lead to higher average achievement in tracked systems. However, critics of tracking argue that it harms low-ability children by depriving them of the positive influence of more able peers. Moreover, because the achievement tests on which selection is based provide only a noisy signal of the students' true abilities, many students are likely to end up in the wrong track. Because high-SES parents tend to be particularly keen to place their children in high-track schools, this may mean that early tracking puts low-SES students at a disadvantage. In addition, when track decisions are made at an early age, children who did not have much exposure to education at home have little time to respond to the educational environments of schools before tracking decisions are taken, whereas they would have more time to prove their academic potential if tracking decisions came later. Children from low-SES backgrounds may therefore be at a particular disadvantage in systems with early tracking. Previous cross-country evidence corroborates such an equity-reducing effect of tracking (Schuetz et al. 2008; Hanushek and Woessmann 2006; Ammermüller 2005).

The results presented in Table 6.4 are inconsistent with the claims of supporters of tracking; however, they provide strong additional support for the concerns voiced by critics. Early tracking is not significantly related to average student achievement in OECD countries, but it does significantly reduce equality of educational opportunity. Figure 6.6 presents the results graphically. In countries where no selection takes place up to age 15, the difference in performance between low- and high-SES students is 65.0 test-score points (95.8–30.8). By contrast, in countries like Austria and Germany, where selection takes place five years prior to the PISA testing age of 15, the difference in achievement between high- and low-SES children is 107.7 test-score points. Thus our analysis confirms the finding of previous studies that tracking has harmful effects for low-SES students while providing no benefits in terms of average student achievement. While low-SES

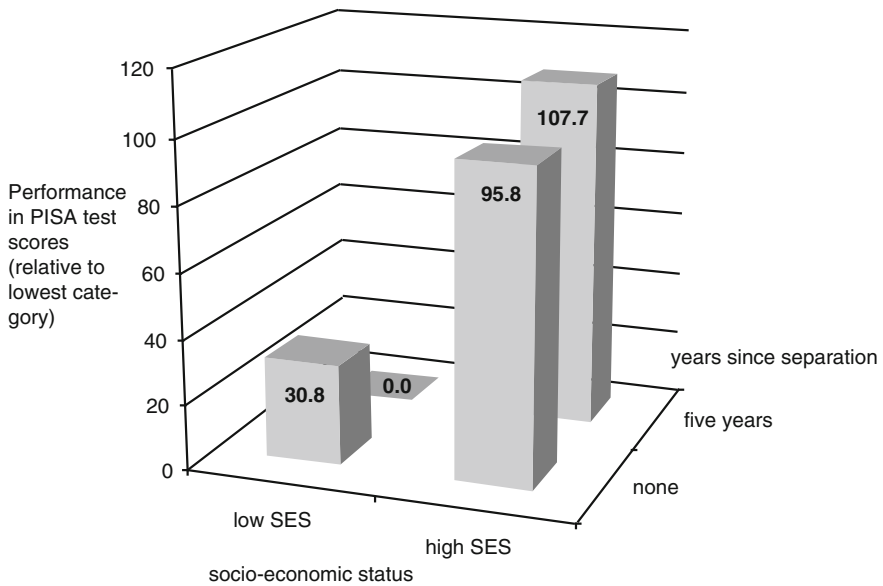


Fig. 6.6 Tracking and SES. Performance in PISA test scores (relative to lowest category). *Note* low and high SES refer to the first and ninth decile on the PISA ESCS index, respectively. *Source* based on specification (1) of Table 6.4

students lose substantially in early tracking, only the highest-SES students seem to gain a little.

These results highlight the importance of distinguishing school choice from ability-based selection as exercised by actors within the school system. Choice refers to the capacity of parents to choose from among different schools the one that is best for their children. In contrast, in tracked systems, students are selected into different types of schools. While various forms of school choice have been repeatedly shown to improve both the academic achievement of students and the equality of educational opportunity, the practice of selective tracking appears to be unrelated to average student achievement and strongly detrimental to equality in educational opportunity.¹⁴

In summary, larger shares of privately operated schools are beneficial for the equity of student achievement as long as they are treated in the same way as publicly operated schools in terms of government funding. Government (as opposed to private) funding has a general equity-enhancing effect, but this is particularly reinforced when government funding is distributed to private and public schools on equal terms. Choice among publicly funded but privately operated schools is particularly beneficial for low-SES students. The available

¹⁴ In addition to the cross-country evidence, Woessmann (2010) provides evidence from across German states corroborating the equity-enhancing effects of private school operation and later tracking.

proxies of public school choice seem to be neutral with respect to equality of opportunity. In contrast to the beneficial equity effects of choice-based systems, early tracking is detrimental to equal opportunity.

6.8 Conclusions

In general, there is very little evidence that those aspects of accountability, autonomy, and choice that are associated with higher levels of student achievement across countries—as reported by Woessmann et al. (2009, Chaps. 1–6)—have adverse consequences for the equality of opportunities within school systems. On the contrary, the choice created by public funding for privately operated schools in particular is associated with a strong reduction in the dependence of student achievement on SES.

While the effects of most accountability devices do not differ significantly for students with different SES, the effects are slightly smaller for low-SES students with a few accountability measures and larger with others. External exit exams have a strong positive effect for all students that is slightly lesser for low-SES students. Monitoring of teacher lessons by the school principal is also associated with higher performance across the distribution, although the effect is substantially lesser for low-SES students. By contrast, the positive effect of regularly using subjective teacher ratings to assess students is substantially greater for low-SES students. The effect of many other accountability devices, such as the monitoring of teacher lessons by external inspectors, the regular use of standardized tests, and the use of assessments to make decisions on student retention or promotion, to group students, to monitor school progress, or to compare the school to district or national performance benchmarks or to other schools, does not differ significantly for students with different SES.

Results on the relationship between school autonomy and equity are somewhat mixed and partly sensitive to specification choices. Equality of opportunity is lower in countries where more schools have autonomy in hiring teachers, although there is a smaller opposing effect for school influence on staffing decisions across the board. School autonomy in determining course content is associated with slightly higher equality of opportunity. In our most elaborate specification, autonomy in budget formulation and salary determination are unrelated to the equity of student outcomes.

In terms of private school choice, the positive effects of both private school operation and government funding are substantially greater for low-SES students. The equity-enhancing effect of private school operation can be attributed to international variation in the difference in government funding between public and private schools: the more similar the treatment of privately operated schools relative to publicly operated schools in terms of government funding, the less student achievement depends on family background. Thus, the competition created by

government funding for privately operated schools seems to be particularly helpful for students with low SES.

These results on choice and competition contrast starkly with the results on effects of the selectivity of the school systems, as measured by the age at which children are first tracked into different types of schools. Inequality of opportunity is substantially higher in school systems that track students at early ages.

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Chapter 7

The Consequences of Changing Education Policies on Social Inequality: The Case of Japan

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7.1 Introduction

This chapter describes the consequences of the changing education policies in Japan with the objective to point out that social inequality is taken for granted. Social inequality describes a situation where social resources (e.g. educational background, income, power, etc.) and the chances to obtain them are not equally distributed due to differences in social status. In relation to education, social inequality can be caused by the education system itself. The education system encourages competition, leading students to gain certain social statuses. Education systems operate as selection mechanisms and allocate students to specific social positions in modern society despite the supposed premise of guaranteeing equal opportunity. Therefore, educational policy has tried to address social disadvantages integrating by people into the society in conjunction with stabilizing the educational system.

The changes in education policy are influenced by globalization. Globalization is rooted in the dynamics of the world economy, which has prevented the understanding of social inequality. In fact, it is evident in the education sector that global economic actors now have an increased influence on primary and secondary education as well as higher education. In other words, there is global governance in

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education policy (Martens et al. 2007). Global governance is usually understood as “the sum of many ways individuals and institutions, public and private, manage their common affairs” (Commission on Global Governance 1995). From a political or economic viewpoint, it entails the building of norms or systems in which global problems are solved by non-governmental actors, the global market or civil society, as well as by nation states (Mouri 2002). On the basis of this definition the implementation of PISA can be interpreted as an example of global governance in Japan’s education policy (Ninomiya and Urabe 2011). Hence, it is imperative to understand the change in education policy in its global context in order to recognize the emerging social inequality.

This chapter begins by illustrating the changes in Japan’s education policy. First, it describes how compulsory education has changed since 1997 due to the impact of PISA, a study that has been conducted by the OECD and is a form of global governance. Second, we provide the empirical context to aid the understanding of how changing education policy leads to a so-called “twisted understanding”—a confusion between academic achievement and global competencies. Third, through use of the social systems theory developed by Niklas Luhmann, the chapter explains the concept of “twisted understanding” as a form of global governance. Finally, we explain an emerging new form of social inequality as a consequence of changing education policies.

7.2 The Impact of Global Governance on Education Policy in Japan

7.2.1 Changes in Compulsory Education Policy Since 1997

We start in 1997 because it is the year that the OECD began PISA (cf. Table 7.1). The following year, the MEXT (Ministry of Education, Culture, Sports, Science and Technology in Japan) introduced the “Period for Integrated Study” into the national curriculum. The “Period for Integrated Study” aims to allow schools to develop original creative learning activities based on the needs of the community, schools, or the children themselves instead of the existing standardized lessons. This curriculum enables children to learn interdisciplinary topics such as information on local and international events and development, welfare or health issues. In this period, children are supposed to learn how to study, think critically, make educated judgments, and develop investigation and research skills.

Just after the introduction of the “Period for Integrated Study” into the national curriculum some university faculties complained about the poor ability in mathematics among university students, especially in fractional arithmetic (Okabe et al. 1999). In fact, a number of university students could not perform calculations using fractions, although they should have learned to do so in elementary and junior high school. Since these complaints were raised, the deterioration of

Table 7.1 Chronology of education policy in Japan

Years	Events
1997	Start of the PISA project (OECD)
1998	Announcement of the revised national curriculum: The “period for integrated study” was established.
1999	Publication: Okabe et al. (1999) (eds.) <i>University students who are poor at fractional arithmetic</i> .
2000	Survey: PISA 2000
2001	Result: PISA 2000 (Reading: 8th, Mathematics: 1st, Science: 2nd) A lawmaker-initiated bill “fundamental plan for the promotion of reading”
2002	MEXT: “Appeal 2002 for the improvement of comprehensive learning ability” Cabinet decision: “Overview of the fundamental plan for the promotion of reading” Publication: Ichikawa (2002) <i>Debates about the decline in academic achievement</i> . Publication: Kariya et al. (2002) <i>Report: reality of the decline in academic achievement</i> .
2003	Survey: TIMSS 2003 Implementation of the “action plan for improving achievements” Survey: PISA 2003
2004	Minister: “National achievement test should be implemented soon.” Result: PISA 2003 (Reading: 14th, Mathematics: 6th, Science: 1st, Problem solving: 4th)
2005	MEXT: “Program for improving reading literacy”
2006	MEXT: “Guideline for improving reading literacy” Survey: PISA 2006 Revision of the fundamental law of education
2007	Start of the national achievement test Result: PISA 2006 (Reading: 15th, Mathematics: 10th, Science: 5th)
2008	Announcement of the revised national curriculum
2009	Implementation: Renewal system for teaching licenses Survey: PISA 2009
2010	Result: PISA 2009 (Reading: 8th, Mathematics: 9th, Science: 5th)

Ninomiya and Urabe 2011

students’ scholastic abilities has been discussed intensively in the context of the deterioration of fundamental literacy skills (e.g. Ichikawa 2002; Kariya et al. 2002). As a response to these debates, the MEXT published the “Appeal 2002 for the Improvement of Comprehensive Learning Ability: Encouragement of Learning”. It was an attempt to improve students’ skills using the so-called “Foster Academic Ability (Tashika-na Gakuryoku)” approach.

The results of PISA 2000 were interpreted as a decline in reading skills. In fact, Japan ranked 8th with regard to reading literacy. Soon after this result was announced, a lawmaker-initiated bill known as the “Fundamental Plan for the Promotion of Reading” was proposed in 2001. This led to the publication of an “Overview of the Fundamental Plan for the Promotion of Reading” in 2002. It was based on this government publication that the so-called “morning reading” sessions were implemented widely in elementary and junior high schools all across Japan. The “morning reading” sessions required students to read a book for 10–15 min before the first class of the day.

In 2003, the MEXT started the “Action Plan for Improving Achievements” in order to improve students’ scholastic proficiency. In addition, MEXT expressed its intention of implementing national achievement testing in 2004. Just after the minister had made this announcement the results of the PISA 2003 study were published revealing the poor state of students’ literacy skills. In fact, Japan had dropped to 14th place in reading literacy and to 6th place in mathematical literacy, despite its first place in the scientific literacy. In view of these results the MEXT continued to emphasize its focus on improving reading skills by publishing the “Program for Improving Reading Literacy” (2005) and the “Guideline for Improving Reading Literacy—An Analysis of PISA Results and Suggestions for Improvement” (2006).

Since 2007, the national achievement test has been conducted annually in the 6th and 9th grade. This test examines not only academic proficiency in reading and mathematics, but also students’ lifestyles and learning environments. The academic part of the test is split into two sections: fundamental skills (A-Questions) and their application (B-Questions). The year 2007 also saw the publication of the PISA 2006 results, which showed a declining trend in students’ literacy skills.

In 2008, there was a reform of the national curriculum at each grade level, and the number of hours for the “Period for Integrated Study” was reduced in order to allocate those hours to the main academic subjects (Mathematics, Science, Japanese and English as a foreign language). A renewal system for teacher licensing was also introduced in 2009 to assure the quality of the schoolteachers’ skills. Teaching licenses expired after 10 years instead of their previous lifetime validity. The results of the PISA 2009 study were announced in 2010. This revealed a significant improvement in reading skills among Japanese students; Japan ranked 8th for reading literacy.

7.2.2 Impact of the PISA Study on Compulsory Education Policy

The chronology of education policy in Japan illustrates the three main impacts of the PISA study: (1) the promotion of the development of reading skills, (2) the implementation of an annual national achievement test, and (3) the reform of the national curriculum (Ninomiya and Urabe 2011).

The first impact of the PISA study on education policy can be seen as a reaction to the primary results. In an attempt to regain Japan’s status in reading skills in the world rankings, policies were developed to improve literacy skills. In other words, the initial results of the PISA study served as a wake-up call for policy makers and teachers. The results encouraged the MEXT to develop policies, exemplified by the pertinent lawmaker-initiated bill and in cabinet decisions, to improve students’ reading skills. Many teachers encouraged their students to read more books and they developed learning materials to improve students’ reading skills (e.g. Okabe 2007).

As for the second impact cited above, PISA provided the MEXT a strong motivation to implement a national achievement test. The annual national exam tests the skills or competencies needed to get high scores on the PISA tests as well as the fundamental knowledge for passing the entrance examination to higher education. This division is represented in the “A-Question” part (traditional basic knowledge) and the “B-Question” part (new PISA competencies) of the achievement test.

With regard to the third impact, the PISA study was influential in the revision of the national curriculum. The modified curriculum (2008) recommends that students develop their critical thinking, judgement and expression abilities—skills that PISA prioritized. In fact, the Central Educational Council (2008) referred to the PISA project when modifying the national curriculum to emphasize the skills of critical thinking, judging and expressing. These three abilities are supposed to be taught in the current academic subjects, through field research and report writing.

7.2.3 Confusion in Education Policy Through the Impact of PISA

Regarding the impact of PISA as a means of global governance, it appears that Japanese education policy was strongly, albeit only partly, influenced by PISA. In other words, the Japanese government has tried to introduce new ideas of competency based on PISA as a reaction to students’ deteriorating scholastic abilities. However, the existing or traditional ideas of academic proficiency also remain unchanged because students are still expected to acquire the traditional abilities needed to pass the admission exams for the top schools and universities. This situation is also reflected in the binary structure of the national achievement test (A and B Questions).

Moreover, the discourse about developing scholastic abilities appears confused. A decline in traditional basic knowledge (for entrance exams) is often understood as a drop in PISA scores (competency). Despite the observed phenomenon of students’ difficulty in calculating fractions, the “Period for integrated study” remains in the curriculum, although seen as the reason for the reduced number of hours available for mathematics classes. However, a drop in PISA scores also encouraged the MEXT to reduce the number of hours for the “Period for Integrated Study” in order to devote the time to the development of competencies for getting higher scores in the PISA tests. It is this confusion that can be described as a “twisted understanding” of academic achievement in Japan.

7.3 Implication of the “Twisted Understanding” from the Viewpoint of Social Systems Theory

To explain what “twisted understanding” means in the context of globalization, it seems appropriate to apply social systems theory of Niklas Luhmann, as a framework. This theory describes the complex systems by understanding the relations of the social meanings involved. This idea comes from a description of the hung parliament where the two houses of the Diet are controlled by different parties and policy outcomes thus often reflect contradicting interests.

7.3.1 *What is Luhmann’s Social Systems Theory?*

Social systems theory is an epistemology of perceiving an object as a system. A system is defined as the totality of the interaction of its elements. This theory is especially useful to observe the driving force behind changing systems. Luhmann assumes that, as a system, modern society developed through functional differentiation (Luhmann 1997, p. 613), and is still functionally differentiated. In modern society various functions have developed subsystems and these subsystems differ from one another in their specific communication codes. For example, the economic system deals with different social problems than those of politics, law, or education (Luhmann 1995). These functional systems in modern society can be interpreted as autopoietic, producing their own elements (Luhmann 1995, pp. 34–36). These systems are indeed stimulated by their own environments and their modifications are brought about through their own internal networks. In other words, these systems can only change themselves; they cannot be changed from the outside.

Each autopoietic functional system in modern society is made up of binary coding and programming (Luhmann 1995, 1987). ‘Binary coding’ refers to the primary dichotomy inherent in a system. For example, the political system operates in the medium of power and applies the code government/opposition; the system of science operates in the medium of truth and applies the code “true/untrue,” while the code of “payment/nonpayment” is the primary dichotomy of the economic system. With this binary coding, each system can distinguish itself from its environment and maintain its stability (Luhmann 1995, pp. 444–445). In the case of the education system, however, it is difficult to define a binary code (Kade 1997; Luhmann 2002). Thus the code of selection “good/not good” or “better/worse” is often utilized for the education system (Luhmann and Schorr 1979). People can be promoted through their academic performance (e.g. good or bad results) and this distinguishes the education system from other systems.

The other aspect, ‘programming’, decides on the contents of the system operation on the basis of the code (Luhmann 1995, p. 317). For example, whether the code assigns the value true or untrue to a communication in science depends on

prevalent theoretical and methodological paradigms, which constitute the programs of the scientific subsystem. The political system can adopt such programs as power politics or ideologies, while the economic system regards price adjustments, scarcity of goods, or optimization between supply and demand as programs. In the education system, curricula and teaching plans are considered programs. Within each functional system the code always remains fixed. The choice of one code over another constitutes the boundaries of the subsystem. In contrast, a program can usually be replaced by another program if it does not bring about the desired result of the two options offered by the binary code (Luhmann 1987).

7.3.2 The Education System in Japan from the Viewpoint of Social Systems Theory

Japan has a single-track school system where all children study the same curriculum. In compulsory education, children attend elementary school for 6 years followed by junior high school for 3 years. All students automatically move up to the next grade, not on their academic performance but simply on their attendance. After compulsory education they can continue to a 3 year senior high school after passing its entrance examination, which about 98 % of applicants manage (MEXT 2006, p. 9). Once they enter senior high school, almost all students graduate and qualify to take the entrance examinations for university or college. For university admissions the results from the entrance examination carry more weight than previous academic performance.

In this single-track school system, every school and university should be assumed on an equal level in terms of quality of education. In practice, however, there are high and low performing schools, some encourage their students to study harder to be able to pass the entrance exams necessary to enter to a good school or university and some which do not. As a consequence of the weight that the entrance examinations carry, students tend to study merely for the sake of passing them, thus acquiring knowledge by heart is paramount. There is great pressure to successfully pass the entrance examinations in order to gain admission into a good senior-high school or university, which is regarded highly in Japanese society. In fact, this competitive entrance examination procedure in Japan is dubbed the 'exam hell' phenomenon, characterizing the exhaustive pressure mounted on children.

From the viewpoint of systems theory, the education system in Japan can be interpreted as an autopoietic social system. The binary code of the Japanese education system is good versus not good or better/worse, and this code is equated to success versus failure in the entrance examinations. Thus the difference of "success/failure" links to that of "good/bad" or "better/worse" schools (or universities) when students choose a career. The binary of success and failure is linked to the binary of good or poor scholastic performance as well as to that of a

better or worse school or university, with higher scores in entrance examinations leading better senior high schools and universities.

As for programs, curricula should be tailored to enable students to pass the entrance examination of better schools and universities. Programs have to bring about the desired alternative of the system's binary code. Once it has been acknowledged that the program or curriculum is not suitable for passing the entrance examination of better schools or universities, the existing program should be replaced by a more appropriate one. In fact, many Japanese students go to cram schools because their curriculum (coaching for the exams) appears to be much better than that of normal schools (national curriculum). Cram schools are considered a great help in gaining admission to a good school or university.

According to social systems theory, the closed and stable nature of the education system guarantees that competencies learnt at school depends upon the difference between better/worse achievements. There is an evident need for a program that is more tailored to achieving higher scores in entrance examinations. The education system in Japan can be described as an autopoietic system, one in which the system produces further better/worse achievements on the basis of the previous better/worse achievements. At the same time, students are selected and allocated to a position in society through their performance in the education system.

7.3.3 Implications of the “Twisted Understanding”: A Mixture of Two Different Education Systems

From this theoretical perspective, the education system in Japan makes sense only when children achieve the results necessary for passing the entrance examination of good schools or universities. In other words, teaching and learning with other purposes aside entrance exam preparations make little sense in the operation of the education system, even if they seem to be important for other aspects of the students' learning. This theoretical idea leads us to assume that teaching and learning plans in Japan are always forced to change toward the most appropriate program for passing the entrance examination of a good school or university.

In this context, PISA has been introduced to create a change in the education system, which is, however, based on a different type of education system in the global society as a whole. It would be of value if social systems theory was applied not only to Japanese society but also to the international or global society. Luhmann (1997, 1975) regards modern globalization as the development of a global social network, a whole social system of communicative events. World society is a comprehensive social system that exists through continual interactions and communications. In this context, each national social system is interpreted as a regional social system, which is constructed specifically outside and yet universally inside the system.

If the world society is considered an autopoietic social system, there should be a function for self-maintenance. PISA can be ascribed such a function in the autopoietic education system of the world society. In the context of globalization, world society requires an education system with the overall binary coding of “globally competent/not globally competent” to select and allocate people to their place in global society, regardless of their nationality or national educational background. Those who are globally competent have greater possibilities to obtain a better social status in the world. In fact, PISA seems to play a part in bringing this educational globalization about, and students can aspire for a better international career when they get higher scores in PISA tests.

On the basis of this perspective, the impact of PISA can be described as follows: the operation of the autopoietic education system in Japanese society (better/worse scores in the entrance exams) is confused by the operation of the global education system in the world society (better/worse scores in PISA tests). That is, the impact of global governance (PISA) can be interpreted as an irritation caused by the global education system on the Japanese education system. This irritation causes a confusion or “twisted understanding” on academic achievement in Japan. The two education systems do not seem to get along well with each other because students should be involved or integrated in different operations in the two systems. This is also symbolized or reflected in the separated structure of the national achievement test (Questions A and B).

Those who want to succeed globally may attach greater importance to the scores of PISA than to that of the entrance exams. On the other hand, many teachers and parents tend to recommend children to develop traditional academic abilities to pass the entrance exams even if they recognize the importance of developing global literacies or competencies.

7.4 Conclusion and Discussion: Consequence of Changing Education Policies on Social Inequality

With the emergence of global governance, national education policy becomes increasingly influenced by global organizations. This situation can be understood as follows: the global education system attempts to take functions of selection and allocation into the world society involving the operation of local education systems in each country. On the other hand, the “twisted understanding” on academic achievement in the transformation of education policy in Japan symbolizes a possibility to adjust the two contradictory education systems in the globalization process. In this context, how can or should the issue of social inequality be considered and discussed?

Now that social inequality (winners and losers in the process of status attainment) is produced by the education system, and the emergence of two different education systems leads us to find a new form of social inequality. Social

inequality occurs not only in the Japanese social context but also in the global context. Schools in Japan produce four types of students: (1) those that pass the entrance exam and are globally competent, (2) those who are competent in Japan, (3) those who failed the entrance exam but are globally competent, and (4) those who are neither nationally, nor globally competent and are at a total disadvantage. In this situation, it should be discussed how social inequality or social disadvantage is defined and how to eliminate it to foster social equality.

Of course, the school education should aim to develop the traditional basic knowledge (to pass the entrance exams) and the new competencies (to get better PISA scores) to develop global citizens. At the same time, those who are totally disadvantaged should be supported from various dimensions. But who should be greatly supported for realizing social equality and a better career—those who are successful in Japan but globally disadvantaged or those who are disadvantaged in Japan but globally competent? It is difficult to answer this question. Therefore, further discussion is needed to change the existing definitions of social inequality.

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Part IV
Social Networks and Social Capital in
Schools and Classrooms

Chapter 8

School Class Composition and Student Development in Cognitive and Non-Cognitive Domains: Longitudinal Analyses of Primary School Students in Germany

Thorsten Schneider

8.1 Introduction

Students from immigrant families are on average less successful in the education system in Germany than native students. A large part of these differences is due to their unfavorable socio-economic position. But even if we compare students with and without a migration background who are raised in families with comparable parental education and social class position there are still differences for some ethnic groups. One major migration-specific factor seems to be the language(s) spoken at home. For example, if children enter the school system with little or no host country language skills, they seem to be less successful (Alba et al. 1998; Esser 2006; Kristen 2008; OECD 2006).

The language skills of immigrants and the possible negative consequences for schooling, even for native students, have been discussed widely in the German media. In large cities, there are an increasing number of elementary schools attended almost exclusively by students from migrant families. According to media coverage, there is a process of segregation underway, as native parents avoid these ‘migrants’ schools’. Native parents assume that a higher proportion of students with a migration background goes hand in hand with students who are not fluent in German, and that this would lead to low-quality teaching and harm their own children.

A recent study supports the assumption that natives avoid ‘migrants’ schools’. In most parts of Germany, children are assigned to an elementary school according to their residences’ catchment area. One way to change schools is to move to another neighborhood. Another is to choose a private school (if available/affordable). But parents are also successful in opting out even if they do not move and

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remain in the catchment area. One driving force behind the decision to opt out is the share of immigrants at the assigned elementary school (Riedel et al. 2010).

There are only few studies in Europe that have addressed the correlation between migration or ethnic specific concentrations in elementary schools and academic success. For example, Kristen (2002) found with data from a southern German state that the higher the share of students with migrant background, the lower the chances are of being given a recommendation for a more demanding, more prestigious school type at the end of 4th grade. According to a study based on German data of the 2001 Progress in International Reading Literacy Study (PIRLS), the proportion of native-speaking students in a class does not correlate with reading literacy, neither for natives nor for students with a migration background, but it positively correlates with numeracy. This effect is only statistically significant at a lower level and it does not interact with students' individual migration backgrounds. Obviously, children of migrants do not profit more from German-speaking classmates than natives (Kristen 2008). A few studies rely on panel data with repeated testing and can overcome at least some of the limitations of cross-sectional studies. A study on progress in students' performance, a combined measure of text comprehension, spelling, and math, reports negative effects for the share of students with a migration background in elementary school classes, even if the average family income of the school class is taken into account (Ditton 2010). Helbig (2010) analyzed the progress in reading literacy and numeracy at elementary schools in Berlin, a city of 3.5 million inhabitants. The higher the proportion of non-native speakers is at school level, the lesser the progress is in literacy and numeracy. According to detailed analyses using a combination of the proportion of non-native speakers at school level and the cumulative rate of unemployment and welfare recipients in the school's neighborhood, students in privileged neighborhoods perform better. But there are no differences in mid-range or underprivileged neighborhoods with a high or low share of non-natives at school. For the Netherlands, there is evidence that the proportion of non-native Dutch speaking students is relevant for literacy progress in elementary school classes (van der Slik et al. 2006).

In our study, we focus on the importance of immigrant concentration in school classes for the development in cognitive and non-cognitive domains. We follow the advice of Duncan and Raudenbush (2001, p. 366) "that cognitive outcomes should distinguish between those that are learned primarily in school (e.g. math) as well as those for which the home may be primarily responsible (e.g. vocabulary)". We will argue that as far as vocabulary is concerned, it is not only the home, but also opportunities to use a non-German language outside of class, that might be particularly important for students with a migration background. In addition to math and vocabulary, we focus on the change in effort, as school performance is not only the result of prior cognitive skills, teaching, and family support, but also of student's motivation, and some theories on context effects explicitly refer to habits and role models. The main research questions are:

1. Does school class composition, particularly the proportion of students with migration background, influence improvement in performance and changes in effort?
2. Do the effects differ between curriculum-related and more general cognitive domains and non-cognitive characteristics?

If class composition had an effect, this would indicate that educational institutions independently affect inequality in student-performance. In the next section, we will discuss the main four lines in context research and the important theories and explanations they include. Then we will provide some information on the situation of elementary schools in Germany, reasons for the importance of school classes versus neighborhoods, and we will argue how features of the school class can influence the development of vocabulary, math, and effort. The rest of the chapter is made up as follows: we describe data and methods in [Sect. 8.4](#), empirical results in [Sect. 8.5](#) and then summarize the main findings in the final section, including a discussion on the importance of the findings for theories on context.

8.2 Main Directions in Explaining Context Effects

This section deals with the question of whether and how contexts may influence outcomes such as school success above and beyond individual or family characteristics. For the time being, this part ignores the question of whether neighborhoods, schools, or classes are the relevant contexts for a process or outcome at a specific stage in the education system. It provides a more general overview on research lines and explanations and it mainly follows Mayer and Jencks' (1989) classification. The four major positions in context research are:

1. Dis-/Advantaged neighbors or schoolmates are a dis-/advantage;
2. Privileged neighbors or schoolmates are a disadvantage;
3. Neighbors and schoolmates are irrelevant;
4. Neither neighbors nor schoolmates are relevant, but neighborhoods or schools are.

We start with the first position, that disadvantaged neighbors or schoolmates are a disadvantage, or that advantaged contexts produce or even reinforce individual advantages. The main assumption is that neighbors serve as a role model. If students live in a privileged neighborhood or attend a corresponding school, most people in this (social) space conform to the prevailing norm and are well-behaved and motivated. Their behavior rubs off on other people, independently of their own family. In contrast, if children grew up in an area or are attending a school together with a lot of people loitering around, playing truant, and breaking rules, the children's own attitudes would be affected by these examples. Possible mechanisms at work are imitation or a change in attitudes and preferences. According to the 'contagion model', cumulatively disadvantaged neighborhoods have a negative impact on achievement and behavior if the cumulative disadvantage hits a certain threshold (Crane 1991).

The transmission of values was a central explanation offered in the legendary Coleman report on why black students perform better in predominately white schools compared to blacks attending mainly black schools (Coleman 1966). For instance, in their study on the living conditions in black ghettos of US cities, Massey and Denton (1993) describe how unemployment, parents living out of wedlock, and father's absenteeism are amplified over time, and how new preferences and norms are established, independently of or even in contrast to the mainstream society (see also Wilson 1987).

The 'social control model' differs slightly from the 'contagion model'. The social control model stresses the mechanisms of monitoring and norm enforcement by parents or adult neighbors (Mayer and Jencks 1989, p. 1441). The most prominent theory on the influence of social control on educational attainment is provided by Coleman (1988). In his social capital theory, he assumes that close ties between parents in the neighborhood and between parents of students attending the same school are an indicator of social capital. In this situation, parents have strong control over their children and can successfully comply with and reinforce the intergenerational transmission of norms and attitudes. If parents or neighborhoods lack this social capital or 'social control', their children are less successful at school (for the importance of social closure and control in Cuban and Vietnamese vs. Haitian and Mexican groups on educational success in the US, see Portes and MacLeod 1996). Coleman's view on social capital is always approving, implying a positive effect on children. However, parental norms and resources are not necessarily in favor of their children achieving high educational success and, if this is the case, close ties can in fact hamper students' success at school (Fasang et al. 2010).

In a broad review on (mainly) US research, Leventhal and Brooks-Gunn (2000) report that high-SES neighborhoods seem to have an additional positive influence on cognitive abilities, achievement and educational attainment in childhood and adolescence, even when a standard set of family characteristics is controlled for. Differences between neighborhoods are not relevant to a noteworthy degree, except between the very privileged ones and the rest. The current study on elementary school progress in Berlin is completely in line with these previous findings for the US (Helbig 2010). In the field of behavioral and emotional problems, low-SES neighborhoods, in particular, appear to have an unfavorable impact on children and adolescents.

However, it is not only behavior or attitudes that can be affected by peers or neighbors. Significant others can also provide exposure to attitudes that lead to the more or less unintended acquisition of skills and competencies.¹ Particularly with

¹ Advantaged neighbors can also have positive effects since they can provide more information, including, for instance, about job opportunities. This has been researched in labor market studies, where weak ties are especially relevant (Granovetter 1973). In a neighborhood where almost everyone is unemployed, there is hardly anyone who can tell other people about a job or trainee position, or who can recommend a person to the head of a company (Wilson 1987). For educational careers, information on the supply and quality of different schools might also be important for the decision-making.

regard to the language acquisition of non-natives, this seems to be an important issue. In Germany, children with a Turkish migration background show lesser improvement in vocabulary over time if they attend a pre-school daycare institution (the German *Kindergarten*) with a high proportion of immigrants, compared to those attending an institution with a low proportion (Biedinger and Becker 2010). Immigrants might profit from the everyday communication with natives by learning, expanding their vocabulary, grasp of grammar and pronunciation. Attending a (pre-)school or living in a neighborhood with higher proportions of non-natives reduces this exposure. In addition, if there are students/peers of the same language, one which is not the official language at school, they have the opportunity to restrict the use of the 'official' language outside of class. The incentives can be low to invest in the host country language as they can communicate in their own language during leisure time and—at least in adulthood—in an ethnic economy (cf. van Tubergen and Kalmijn 2005; Esser 2006).²

Conversely, theories on relative deprivation predict that privileged neighbors or schoolmates are a disadvantage. According to Festinger (1954), people have a need to locate their own achievements, abilities, and opinions within a relevant group or neighborhood. If the significant others are wealthy and bright students, it is likely that a poor student will come off badly. As a negative reaction to the dominant culture (Merton and Rossi 1968), the consequences on the part of the poor student can be anger and frustration, normlessness and deviant behavior. Students from economically deprived families report less anger, delinquent and violent behavior if they attend schools with an economically poorer student body compared to those attending schools with wealthy students (Bernburg et al. 2009).

In educational psychology, there is a wealth of empirical evidence to suggest that comparisons are made at school. For instance, the general academic or domain-specific self-concept of a student is not only a function of her/his own skills and proficiencies, but also of those of his/her schoolmates. A student of average performance is a 'big fish in a little pond' if he or she is in an academically weak class, or a 'small fish in a large pond' if his/her schoolmates are exceptionally bright (Marsh et al. 2008). Assuming that academic self-concept is relevant for further educational progress, academically excellent schoolmates are a disadvantage.

The third position is that neighbors and schoolmates are irrelevant. This would be the case if tastes and preferences were time-invariant. Consequently, moving to a new neighborhood or school which is dominated by different preferences does not alter a person's own ones. Therefore, neighbors or schools are at minimum irrelevant for preferences (but behaviour might change, due to different constraints and opportunities). Another argument is that, in a school or in a neighborhood, there are virtually always competitive and uncompetitive students, norm-compliant

² A third important factor regarding the language acquisition of non-natives is efficiency, which depends mainly on intellectual capacities and age at immigration. We ignore these aspects in the discussion, as both characteristics are individual-specific and almost all of today's elementary school children with a migration background were born in Germany or arrived in Germany before school enrolment.

and deviant persons. Even in a wealthy neighborhood or excellent school, there are almost invariably some deviant persons, and in an underprivileged context, there are in nearly all cases some highly motivated and well-performing students. Only the proportions of these different groups vary across contexts. As people have the option to find someone with comparable attitudes and behavior, they can organize themselves, and the specific context is irrelevant (Mayer and Jencks 1989, p. 1441). Sorting mechanisms based on the strong attraction of people with similar attributes are also known as *homophily* in sociology (Lazarsfeld and Merton 1954).

There is a fourth position which holds that neither neighbors nor schoolmates are relevant, but neighborhoods and schools are. This position assumes that it is not the persons living in close spatial proximity or belonging to an education institution who influence progress, achievements, behavior, school or labor market success, but the institutional environment: the facilities, the curricula, the supply of schools, tracks and job opportunities, pollution, and the housing market. Hence, the fourth position considers only the pure effects of educational and other institutions.

However, there can be some feedback effects. Wilson (1987) argued, for example, that, apart from the economic downturn (increasing unemployment rates, shift in occupational structure, relocation of firms), the ‘exodus’ of wealthier blacks in inner city black neighborhoods causes a shutdown of neighborhood institutions that serve as ‘social buffers’. Such buffers are churches, libraries, parks, and other recreational facilities. The ‘exodus’ also reduces the amount of local income tax and therefore the district’s funding for public schools. In countries with a high proportion of private schools and extensive school autonomy, the quality of the schools can also depend largely on the economic resources of the families living in the catchment area. The higher the school fees are, the more highly qualified are the teachers who can be hired and the better equipped the facilities. Another type of feedback that can occur is that, if the majority of students in a class are low achievers and the teacher adapts instruction to the weakest ones, the result is low progress even of the brighter students.

8.3 Specifying the Relevant Context and Hypotheses

In our research on context effects, we have to decide whether we concentrate on schools, school classes, neighborhoods, or on all three types of contexts together.

In Germany, children usually start elementary school at the age of 6. There are clearly defined school districts, which means that every child belongs to the catchment area of exactly one public elementary school.³ Due to residential segregation, the student bodies at different schools can differ in their socio-economic and migration-related backgrounds and in the achievement distribution.

³ Only North Rhine-Westphalia has eliminated restriction in elementary school choice.

Residential segregation might, in turn, also be influenced by the features and compositions of elementary schools if ambitious, highly educated and wealthy parents take the available schools into account in their residential choices, or if immigrants have a preference for living in their own ethnic community. We can assume that structural categories such as the share of parents/adults who have a migration background, who are unemployed or who are highly educated correlate between neighborhoods, schools and classes.

Below, we argue that school contexts, especially the specific class attended, should be considered more influential than neighborhoods:

- Not all children attend their designated schools. First, a small proportion, namely 3 % in 2009/10, are enrolled in private elementary schools (StaBu 2009, p. 40). Second, as mentioned above in the introduction, some parents manage to opt out even if they stay in a public school's catchment area. Opting out tends to happen particularly often if the designated school has a higher proportion of students with a migration background (Riedel et al. 2010). In both cases, neighborhood and school context do not necessarily overlap.
- As there are virtually no existing studies that attempt to disentangle neighborhood and school effects, we have to rely on research on older students. Goldsmith (2009) tests the long-term impact of racial and ethnic composition of schools and neighborhoods. He uses US data on 8th-graders and follows their educational career up to the age of 26. Educational attainment is lower on average if there is a high black or Latino proportion at the school. However, the neighborhood as measured by zip code area has no impact, although there is a high correlation between racial and ethnic composition of schools and neighborhoods. Brännström's (2008) results on the educational achievement of upper secondary school students in Sweden also support the importance of school contexts over those of neighborhoods. Nevertheless, in his research, residential characteristics affect the outcome under investigation at least to some degree.
- Elementary school students are between 6 and 10 years old in almost all German states. Students' activities are often still restricted to the (wider) family and the educational institutions. This age group seems too young for unsupervised spells in the streets of (underprivileged) neighborhoods or for being part of a street gang. In addition, adult neighbors might not yet function as role models. For example, adults' labor market behavior and orientation may not yet directly influence students' effort at school. But especially in the case of non-native speakers, the size of the local ethnic neighborhood communities and institutions can affect exposure to and incentives for learning and using German in everyday life beyond the family.
- Finally, we would argue that the smallest unit, the school class, is more important than overall school composition. In the PIRLS study, school principals are asked if they form classes at least occasionally according to students' prior achievement. The principals who approve this question head schools with a student body that makes up less than seven percent of all elementary school students in Germany (Ammermueller and Pischke 2009, p. 322, 326).

Achievement tracking might also be an unintended consequence of class formation due to living areas. For e.g., if an elementary school has two classes per grade level and the school divides the catchment area into area A and area B for the allocation of students into classes, and if the SES and ethnic composition differs between areas A and B, then both classes presumably also differ in respect to important characteristics. Intended or unintended tracking within schools affects class composition. Ammermueller and Pischke (2009) study this topic with PIRLS data, focusing on schools with at least two classes per grade level. On the basis of the marginal distribution of students' characteristic in a school, they compare the expected and the observed number of students with these characteristics in the different classes. There is statistically significant evidence that non-native students are segregated at school, that is, they are not randomly assigned into different school classes. However, there is no statistically significant evidence that students are allocated to different classes within a school due to parent's socio-economic background. As an indicator of parental background they used the number of books at home.

In view of the four main research aspects discussed above regarding the importance of contexts, we formulate the following hypotheses about whether and how school class composition affects progress in vocabulary, mathematics, and effort:

1. According to position 3, the composition of school classes is not relevant, as long as the group size is large enough to meet and befriend other students with similar backgrounds.
2. Position 4 claims that differences in the institutional features may be relevant. In the domain of public elementary schools, the correlation between the composition of the student body and the financial resources and facilities available, and the educational qualification of the teaching staff, or other institutional characteristics, is normally rather weak within a German state. However, a large proportion of students with migration background might lead to less challenging school work if these students lack German language skills and if teachers then adapt their instruction. Consequently, it can be expected that the individual progress in vocabulary and numeracy skills is slowed down. As mathematics acquisition is less sensitive to language skills, the effect should be less pronounced in mathematics. In the case of effort, there seems to be no reason that students with or without migration background differ in effort over time.
3. Under position 1, we discussed the language acquisition model of non-natives. The higher the proportion of non-natives in a school class, the fewer the opportunities and the lesser the incentives to learn the language of the host country. Consequently, the expansion of vocabulary should be slower for students with migration background if the proportion of students with a migration background is high. As mathematics acquisition is less sensitive to language skills, the effect should be less pronounced in this subject.

Table 8.1 Overview of the hypotheses

Hyp.	Mechanism	All students			Students with migration background compared to natives		
		Vocabulary	Numeracy	Effort	Vocabulary	Numeracy	Effort
1	School class composition is irrelevant (due to <i>homophily</i>)	/	/	/	/	/	/
2	The higher the share of non-native speakers/ students with a migration background, the less challenging the level of instructions	-	-	/	/	/	/
3	Language acquisition of non-natives/migrants ('exposure' and 'incentives')	/	/	/	-	-	/
4	'contagion' or 'role models': the higher the average level of effort, the more enthusiastic all students	+	+	+	?	?	?

Notes ++ or + indicate prediction of positive effects; /predicts no effect;- or-predict negative effects; ? means no prediction is made

4. Literature and theories on the topic of position 1 often refer to effective, conformist, or deviant behavior. Thus, we state that the lower the average effort of a school class, the less the students achieve in cognitive outcomes. In addition, we assume that the overall differences between low- and high-effort classes are amplified over time. This implies that all students in a class with low average effort will be less ambitious over time. We have no assumptions on the correlations between average class effort and share of students with migration background, nor on the effect of average class effort on the progress of students with a migration background.

We have no hypotheses with regard to position 2, which states that privileged, high-performing classmates are a disadvantage. Table 8.1 provides an overview of the hypotheses.

8.4 Data and Methods

We use data collected by the BiKS project,⁴ which is an interdisciplinary research group at Bamberg University. It consists of sociologists, psychologists, and pedagogues and is financed by the German Research Foundation. This project conducts two longitudinal studies—both quantitatively and qualitatively—in the German states of Bavaria and Hesse. While the first longitudinal study BiKS-3-8 follows children from *Kindergarten* to elementary school age, the second longitudinal study BiKS-8-14 covers elementary and secondary school, from about age 8 to age 14 (von Maurice et al. 2007). The focus of the present analysis is on the second cohort.

The longitudinal study ‘BiKS 8-14’ started in spring 2006. Elementary schools were randomly chosen from eight different regions which cover rural areas, small towns and metropolitan areas. Almost 2,400 students attending 155 different classes in 82 different schools took part in at least one of the three measurement points in elementary school. The measurement points were:

- 1st wave beginning of the second half of 3rd grade,
- 2nd wave middle of the first half of 4th grade,
- 3rd wave end of second half of 4th grade

From secondary school on, grade 5 and higher, surveys take place at the end of the academic year.

Students are tested and surveyed in school, their parents respond in computer-assisted telephone interviews (CATI), and class teachers fill out self-administered questionnaires on school class composition, teaching, educational background as well as on individual children participating in the study. All dependent variables are taken from the 3rd wave, all independent ones from the 1st wave. As we have item and (temporary) unit non-response, we also use data of the 2nd wave for multiple imputations (see below for more details).

8.4.1 *Dependent and Independent Variables*

The cognitive outcomes are the levels of vocabulary and numeracy achieved, strictly speaking of arithmetic skills; the non-cognitive outcome is students’ effort. They are measured in the 4th grade. The cognitive measures are the sum of correct results of established classroom tests. The measure of effort is a summative scale based on students’ self-reports on the following items: ‘I try to solve really hard

⁴ BiKS is the acronym for the German title “Bildungsprozesse, Kompetenzentwicklung und Selektionsentscheidungen im Vor- und Grundschulalter”, which means in English “Educational Processes, Competence Development and Selection Decisions in Pre- and Elementary School Age”.

assignments'; 'I don't like pushing myself in my studies'; 'If something is difficult, I quit quickly'. Students can agree or disagree on a 4-point scale. Negative statements are inversely recoded, i.e. high values indicate strong effort. All in all, the properties of the effort scale are rather low, as Cronbach's alpha is only about 0.45–0.49. However, the size of Cronbach's alpha depends on the number of items and we generally observe, that the more items we consider, the higher are the alphas (Cortina 1993). In our study, we have the minimum number of items, namely three. Nevertheless the alphas in our study are rather low. This might increase the noise of the effort scale and reduce the estimated coefficients. As the chapter focuses on the development of competencies and effort, we also take into account test results in vocabulary and arithmetics, and reports on effort from the 3rd grade (=1st wave). For the key figures of these variables in the 3rd and 4th grades and more details, including references, see Table 8.2. For student's statistics as differentiated by country of origin, see Table A.1 in the Appendix.

The information on a student's migration background, parents' socio-economic status, and educational attainment are taken from the parent's interview in the 1st wave. If a student or at least one parent was born abroad, he or she is considered to be a person with a migration background. We construct three binary variables, which are coded as 1 if the family originates from (1) Turkey, (2) Eastern Europe, mostly from the former Soviet Union and Poland, or (3) other regions, other 0. One variable captures parents' highest score on the International Socio-Economic Index of Occupational Status (ISEI) and two binary variables for parents' highest school qualification: college entrance qualification (*Abitur*) and intermediate general qualification (*mittlere Reife*). The reference group consists of those with a lower or no formal school-leaving certificate. An additional dummy variable indicates students' gender.

For the variables at the class level, we mainly rely on teachers' reports, as selectivity in the participation of students is likely. The BiKS study is voluntary and the participation rate at student level is about 68 % (von Maurice et al. 2007, p. 34).

Therefore, an aggregation of students' characteristics could be a biased measure of class composition. Teachers are asked about the total number of students and about the number of those with a migration background. The question includes the information that migration background refers to those with at least one foreign-born parent. This is exactly the definition we use at the student level, too. Using teachers' information, we calculated the proportion of students with a migration background. To allow for non-linear relationships, one dummy variable indicates school classes made up of at least 40 % of students with a migration background and another indicates those classes made up of between 20 and 40 % of students of such background. Classes composed of none to less than 20 % of students with migration background belong to the reference group. As lower educational success of migrants and their descendants is largely due to their lower socio-economic background (SES), and as this also seems to apply to the case of the influence of class composition (Stanat 2006) and as a lot of literature on context effects focuses on SES composition, we take this into account, too. The socio-economic origin of the student body is captured by teachers' reports on three items: 'Please estimate

Table 8.2 Descriptive statistics for the dependent and independent variables (mean, standard deviation, minimum and maximum) plus source of information

	Mean	Standard deviation	Minimum	Maximum	Source
Class level (n = 154), 3rd grade					
Share of students with mig. background (<20 %)	0.18	0.39	0	1	Teacher questionnaire—2 items
$20 \leq x < 40$ %	0.29	0.46	0	1	
≥ 40 %	0	1	-2.66	2.34	Teacher questionnaire—3 items
Parental status					Aggregate of students' report
Average effort (1st quartile = low)	0.49	0.5	0	1	
2nd +3rd quartiles	0.25	0.43	0	1	
4th quartile (= high)					
Student level (n = 2,379)					
Vocabulary (4th grade)	18.67	4.85	0.19	32.57	Test—vocabulary subscale of CFT 20 (Weiß 1998)
Vocabulary (3rd grade)*	14.3	5.03	-2.64	29	Test—vocabulary subscale of CFT 20 (Weiß 1998)
Numeracy (4th grade)*	11.28	4.05	-2.79	25.94	Test – arithmetics subscale of DEMAT 3+ (Roick et al. 2004)
Numeracy (3rd grade)*	6.81	3.15	-3.35	19.42	Test – arithmetics subscale of DEMAT 4 (Göllitz et al. 2006)
Effort (4th grade)	0.07	0.6	-2.33	2.25	Student questionnaire—3 items
Effort (3rd grade)	0.06	0.64	-2.33	2.44	Student questionnaire—3 items
Country of origin (Germany)					Parent (CATI)
Turkey	0.07	0.26	0	1	
Eastern Europe	0.08	0.28	0	1	
Other region	0.1	0.3	0	1	
Parents' highest ISEI					
School education (low)	0	1	-3.68	2.98	Parent (CATI)
Mid-range	0.33	0.47	0	1	Parent (CATI)
High	0.42	0.49	0	1	
Boy (girl)	0.52	0.55	0	1	Administrative

Source BIKS 8-14, waves 1 and 3, own calculations. Figures are based on ten sets of imputed data

Notes * negative minimal values due to imputation; reference categories in italics

how many children in your class come from very well-off families'; '...from socially deprived families'; '...from highly educated families'. The answer categories are: all, the majority, about half, the minority, none. The reports on these three items are used in a principal component analysis to produce one factor.

With a view to effort, we have to calculate the average of students' reports in each school class. There are no comparable questions in the teacher questionnaire. We divide the distribution of average effort into the lowest quartile, the two middle quartiles and the highest quartile. The lowest quartile forms the reference group; the middle quartiles and the highest one are captured by two binary variables.

8.4.2 Multiple Imputation

The data contains missing information due to item and unit non-response. For example, this can be the case if a child was ill and thus absent from school on the testing day for the third wave, but took part in the first and second waves, or if a teacher refused to participate in the first wave but took part in the second one. A small proportion of teachers did not participate at all. A parent refused to answer questions on education or occupation. Therefore, we built up a complex model for multiple imputations using the variables of the analysis models and a large amount of additional information. These additional information are, among others, test results on reading comprehension, orthography, cognitive reasoning, and students' responses to different items regarding effort and school enjoyment of all three waves, parents' responses regarding household equipment and number of books, educational aspirations, use of non-German language, child's number of siblings and reading habits, proportion of child's non-native friends surveyed in the 1st wave. We also used teachers' reports on the class of the first two waves and class averages of selected features. The imputation procedure takes into account that there is information missing at different levels.

We produced ten different sets of complete data at individual and class level. The parameter estimates and standard errors that are reported in our multivariate models were obtained by applying Rubin's rules (Rubin 1987, for imputing (temporary) drop outs in panel studies see Allison 2001, pp. 73–76). For the imputation, we use the Stata commands `ice` (Royston 2009), for the analysis Stata 11.0 version of 'mi estimate'.

Each final data set consists of 2,379 students attending 154 different classes. Originally, there were 155 classes, but one was split up and students were allocated to different classes. Consequently, the impact of class composition cannot be assessed and these students were removed from the data. We observe on average 15 students per class, with a minimum of 4, and a maximum of 25 students.

8.4.3 Value-Added Model with Hierarchical Data

A simple regression of a student outcome at one point in time Y_{t1} on school class features suffers from severe pitfalls, such as ecological fallacy, or unobserved selection mechanisms, or biased estimations due to further correlations between school class features, and unobserved (individual) factors that influence the level of outcome even before starting school (Duncan and Raudenbush 2001). In the ideal case of an experimental study, students would be randomly assigned to classes with different shares of students with migration background or different levels of SES. Then we would obtain unbiased estimates for the school class composition.⁵ As we have to rely on observational studies, we estimate value-added models, controlling for a previous measure of the outcome of interest Y_{t0} . The focus shifts from the absolute level at a certain point in time to differential gains and losses over time. The assumption is that all factors that have affected the outcome up to the first point of measurement Y_{t0} are cancelled out if the initial level at $t0$ is taken into account. Taking Y_{t0} and further individual characteristics into account should also reduce the probability of biased context estimates due to non-random class assignment. As the data consist of students (i) in school classes (j), we estimate multi-level linear regressions with a random intercept and the covariates vector X_{ij} and the covariate $Y_{ij,t0}$ at the individual level, and the covariates vector Z_j on the class composition.

$$\text{Level 1 : } Y_{ij,t1} = \beta_{0j} + Y_{ij,t0} \beta_{Y,t0} + X_{ij} \beta_X + r_{ij}$$

$$\text{Level 2 : } \beta_{0j} = \gamma_{00} + Z_j \gamma_{0Z} + u_{0j} \text{ (random intercept)}$$

In addition to the random intercept, we estimate models that allow slopes to vary between classes. These random slope estimates are necessary to test whether the school class composition Z_j has different impacts on students with or without migration background. For example, the random slope for the binary variable on students with a Turkish background is

$$\beta_{Turk,j} = \gamma_{Turk,0} + u_{Turk,j}$$

or, including covariates on school class composition Z_j ,

$$\beta_{Turk,j} = \gamma_{Turk,0} + Z_j \gamma_{Turk,Z} + u_{Turk,j}.$$

Inserting the last equation into the level 1 equation makes it clear that considering covariates to predict random slopes leads to interaction terms, here $Turk_{ij} * Z_j$. As the first variable belongs to level 1 and the covariate vector Z_j to level 2, the estimated coefficients are also labeled cross-level effects.

⁵ Another advantage of experiments is that the range, the “strength” of the treatment effect can be administered. For e.g., in observational education studies we often have classes with no to some students with migration background, but only a few classes with (nearly) all students having this characteristic. If there are threshold effects starting at a higher proportion of students with migration background, the effects would not be discovered if the sample consists (almost) only of classes below such a threshold.

8.5 Empirical Findings on School Class Composition and Student Development

Tables 8.3, 8.4, and 8.5 present the multi-level models on students' vocabulary, numeracy, and effort at the end of 4th grade. The models are organized as follows: first, we estimate a model with class-level variables only. These are the share of students with migration background, average parental SES, and the level of effort. Then we shift to a value-added model, taking a previous measure of the outcome of interest into account. The second model still suffers from the problem of ecology fallacy. Therefore, we estimate a third model with covariates on students' migration backgrounds, parents' ISEI, and school attainment and student's effort. In addition, we control for a child's gender.

The estimation results of the first model on vocabulary suggest that a large share of students with migration background leads to a less extensive vocabulary and that a higher average SES composition as well as great effort in a class improves vocabulary. But if we include the results of the vocabulary assessment in the 3rd grade, all coefficients at the class level are reduced at least to one half and none of them are still statistically significant. Consequently, the features taken into account with regard to school class composition do not influence progress in vocabulary expansion.

The third model reveals that the greater the individual effort, the more vocabulary a student gains. We also see that children with a Turkish migration background lag behind more over time than natives, and that there are no differences in progress between children from Eastern Europe or other regions and natives.

Children of parents with the highest school qualification and with a higher occupational status gain more. Thus, the gaps increase between Turkish and non-Turkish students, as well as between children from socially less privileged and socially more privileged families. All these effects are observed at the individual level, however.

The results of model 4 on numeracy are somewhat similar to those of the first model on vocabulary. The higher the share of students with migration background, the lower the proficiency in mathematics.

The effect for SES composition is positive, but not significant. And there are effects for school classes with a medium or high level of effort as compared to those classes scoring low on average. If we include an initial measure, model 5, and further individual variables, model 6, negative effects remain for the share of students with migration background in a class.

These effects are at least significant at the ten-percent level. There is even a positive effect for classes with a mid-range level of average effort as compared to classes with low effort. Interesting findings on the individual level are: the positive and highly significant estimated coefficient for students' degree of effort, the increasing gap between students from socially more and socially less privileged

Table 8.3 The importance of school class composition for *vocabulary at the end of 4th grade*—results of value added models with all covariates measured more than one year ahead

	M1		M2		M3	
	Coefficient	s.e.	Coefficient	s.e.	Coefficient	s.e.
Class level (n = 154)						
Share of students with mig. background (<20 %)						
20 ≤ x < 40 %	−0.21	0.35	0.03	0.24	0.03	0.24
≥40 %	−1.43	0.36**	−0.41	0.26	−0.30	0.28
Parental SES	0.43	0.16*	0.16	0.11	0.02	0.11
Average effort (1st quartile = low)						
2nd + 3rd quartiles	0.19	0.32	0.05	0.23	−0.03	0.23
4th quartile (=high)	0.88	0.34*	0.40	0.27	0.15	0.29
Student level (n = 2,379)						
Vocabulary			0.68	0.02**	0.63	0.02**
Student's effort					0.39	0.14*
Country of origin (<i>Germany</i>)						
Turkey					−1.26	0.35**
Eastern Europe					−0.08	0.29
Other region					−0.10	0.35
Parents'						
ISEI					0.27	0.10*
School education (<i>low</i>)						
Mid-range					0.28	0.21
High					0.72	0.25*
Boy (<i>girl</i>)					−0.31	0.14*
Constant	18.71	0.28**	8.90	0.30**	9.54	0.33**
Variance						
Class level	0.65		0.35		0.29	
Individual level	22.00		10.96		10.56	
Rho	0.03		0.03		0.03	

Source BiKS 8-14, waves 1 and 3, own calculations. All analyses are based on ten sets of imputed data. Notes Reference categories in italics; + p ≤ 0.1, *p ≤ 0.05, **p ≤ 0.01

families, but in contrast to progress in vocabulary expansion, there are no differences in respect to migration background.

Table 8.5 contains the models on effort. The positive and highly significant coefficients of average class effort, measured in 3rd grade, and on students' effort, measured in 4th grade, are rather trivial.⁶ What is more interesting is that neither

⁶ 'Trivial' because in the case of real cross-sectional data, regressing a student variable (level 1) on means of this variable for each school class in a hierarchical linear model results in completely explained variance at level 2. In the 'constant only model,' the variance at level 2 is based on the different means of the dependent variable per school class and the total average between all school classes. As students' effort in grades 3 and 4 correlates, the aggregate measure of grade 3 should significantly correlate with students' efforts in grade 4, too.

Table 8.4 The importance of school class composition for numeracy at the end of 4th grade—results of value added models with all covariates measured more than one year ahead

	M4		M5		M6	
	Coefficient	s.e.	Coefficient	s.e.	Coefficient	s.e.
Class level (n = 154)						
Share of students with mig. background (<20 %)						
20 ≤ x < 40 %	−0.93	0.35*	−0.51	0.33	−0.64	0.33 ⁺
≥ 40 %	−1.62	0.40**	−0.85	0.36*	−0.95	0.38**
Parental SES	0.25	0.17	0.16	0.16	0.00	0.16
Average effort (1st quartile = low)						
2nd +3rd quartiles	0.76	0.33*	0.71	0.29*	0.59	0.29*
4th quartile (= high)	0.76	0.38 ⁺	0.51	0.37	0.18	0.37
Student level (n = 2,379)						
Numeracy			0.65	0.03**	0.61	0.03**
Student’s effort					0.56	0.13**
Country of origin (<i>Germany</i>)						
Turkey					0.33	0.35
Eastern Europe					0.05	0.29
Other region					−0.12	0.40
Parents’						
ISEI					0.32	0.09**
School education (<i>low</i>)						
Mid-range					0.79	0.23**
High					1.03	0.26**
Boy (<i>girl</i>)					−0.59	0.16**
Constant	11.27	0.30**	6.64	0.32**	6.75	0.34**
Variance						
Class level	1.45		1.24		1.23	
Individual level	14.10		10.61		10.04	
Rho	0.09		0.10		0.11	

Source BiKS 8-14, waves 1 and 3, own calculations. All analyses are based on ten sets of imputed data. Notes Reference categories in italics; ⁺p ≤ 0.1, *p ≤ 0.05, **p ≤ 0.01

the share of students with migration background nor the SES composition of the class affects students’ efforts. This result also holds true if the average level of class effort is not part of the model (estimation results not displayed in Table 8.5). If we control for individual characteristics, especially for a previous individual measure of effort, the coefficients for the average effort in a school class are no longer statistically significant. All in all, there seems to be hardly any correlation between the variables taken into account and the change in effort. Only the gap between students of low-educated and highly educated parents and between girls and boys widens over time (see model 9).

We estimated random slope models to investigate whether the share of students with migration background has different impacts on students with and without at least one foreign born parent. The analyses were carried out for vocabulary and

Table 8.5 The importance of school class composition for student's *effort at the end of 4th grade*—results of value added models with all covariates measured more than one year ahead

	M 7		M8		M9	
	Coefficient	s.e.	Coefficient	s.e.	Coefficient	s.e.
Class level (n = 154)						
Share of students with mig. background (<20 %)						
20 ≤ x < 40 %	0.02	0.04	0.03	0.04	0.01	0.04
≥40 %	0.06	0.05	0.05	0.05	0.03	0.05
Parental SES	0.02	0.02	0.02	0.02	0.00	0.02
Average effort (1st quartile = low)						
2nd +3rd quartiles	0.12	0.04**	0.05	0.04	0.05	0.04
4th quartile (= high)	0.20	0.05**	0.07	0.05	0.07	0.05
Student level (n = 2,379)						
Student's effort			0.29	0.02**	0.28	0.02**
Country of origin (<i>Germany</i>)						
Turkey					0.02	0.07
Eastern Europe					0.02	0.06
Other region					0.04	0.06
Parents'						
ISEI					0.03	0.02
School education (<i>low</i>)						
Mid-range					0.05	0.04
High					0.11	0.04*
Boy (<i>girl</i>)					-0.06	0.03*
Constant	-0.06	0.03 ⁺	-0.01	0.03	-0.04	0.04
Variance						
Class level	0.01		0.01		0.01	
Individual level	0.35		0.31		0.31	
Rho	0.02		0.03		0.03	

Source BiKS 8-14, waves 1 and 3, own calculations. All analyses are based on ten sets of imputed data. Notes Reference categories in italics; ⁺p ≤ 0.1, *p ≤ 0.05, **p ≤ 0.01

numeracy, not for effort. We neglected effort because there are already hardly any significant effects in the random intercept models presented in Table 8.5, and no explicit hypotheses have been specified for effort. First, we attempted to estimate models on vocabulary and numeracy with random coefficients separately for each dummy variable regarding country of origin, namely, Turkey, Eastern Europe, and other countries. Estimation problems emerge in 5 out of 6 models.

Only the model on vocabulary yields a statistically significant variance at school class level for students of a Turkish background. If we include the two dummy variables on the share of migrants, to 'explain' the variation of the coefficient for Turkish students between classes, no statistically significant effect could be observed (for an extract of these estimations see Table A.2 in the Appendix).

8.6 Summary and Conclusions

Our empirical research on the importance of school class composition on students' development in cognitive and non-cognitive outcomes was guided by four main hypotheses. The first one is the null hypothesis: contexts are largely unimportant due to *homophily*. For instance, this is the case if students in a class befriend those similar to themselves. The second hypothesis assumed an indirect effect of school class composition. A higher share of non-natives leads to slower-paced and less challenging teaching. The third hypothesis targets non-native students and their opportunities and incentives to use their language of origin or the language of instruction, in our case, German. The fourth hypothesis relates to the average level of effort made in a class, as many sociological explanations of the importance of contexts rely on compliance with or spreading of norms and (deviant) behavior.

The results do not support that those types of school class composition considered are relevant for achievements in vocabulary expansion. In the case of numeracy, there are negative effects regarding the share of children with a migration background in a class. The progress is slower if their share is greater, independently of the individual migration background. Similar findings for reading literacy and mathematics were reported on the basis of cross-sectional data by Kristen (2008). The effects on numeracy seem to support the second hypothesis. However, this hypothesis also assumed that the proportion of students with a migration background is more important in the domain of linguistic development and less in that of mathematics. There could be at least two different reasons for the 'reversed' picture: first, achievements in vocabulary expansion depend more on the family, numeracy more on teaching. The increasing gap between children of a Turkish background and other students in vocabulary acquisition, but not in numeracy, seems to be in line with this ad-hoc explanation. But in the case of students' socio-economic family background, we found that there are increasing gaps between students of lower SES and more privileged families in vocabulary as well as in numeracy. Second, it is not uncommon in Germany that elementary school students have only one teacher in the main subjects. In the case of students' lesser language skills, the teacher may give importance to vocabulary, reading, spelling etc., and pay less attention to mathematics.

We found no support for the third hypothesis regarding the incentives and opportunities for language acquisition for students with a migration background. Although Turkish migrants' progress in vocabulary acquisition varies significantly across school classes, there is no empirical confirmation that this is due to the proportion of children with a migration background in the respective classes. Furthermore, the failure to estimate random slopes for students with Eastern European and other countries of origin as far as vocabulary is concerned also contradicts the third hypothesis. These students advance at the same rate as natives attending the same class.

We place emphasis on the development of effort and the average effort level in a class for progress in cognitive outcomes. The individual change in effort does not rely on the class composition, and attending a very studious class does not lead to

greater improvement in vocabulary. In the case of numeracy, there are inconsistent findings. All in all, these findings contradict the fourth hypothesis, which was derived from theories on role models and spreading behavior. It is worth noting that individual effort is a very strong predictor for progress in numeracy and to a lesser degree in vocabulary, too. This underlines the importance of individual motivation and behavior and, at the same time, the insignificance of the context composition in respect to this non-cognitive domain.

In summary, we found weak or no evidence for the importance of school class composition on individual progress: no effects for the SES composition, the share of students with migration background, and the level of effort—except in the progress of numeracy, which correlates to the share of students with migration background and somewhat to the level of effort. The findings are partly in line with hypothesis 1 on the irrelevance of context, and partly also with the indirect effects of teaching (hypothesis 2). We do not find that students with migration background have lower chances of successful skill acquisition if there is a higher share of other students with a migration background in the class, nor that role models or spreading of low- or high-effort habits are at work at this stage in their educational career.

The chapter has several limitations: first, we were not able to differentiate between different ethnic groups. There is research on Sweden which suggests that the effect of co-ethnic neighborhood group size on educational attainment is moderated by the average educational qualification of the co-ethnic group. A large number of successful co-ethnics in the neighborhood fosters educational attainment, whereas a large number of less successful co-ethnics is detrimental to it (Bygren and Szulkin 2010). Second, the operationalization of students with migration background relies on country of birth. A more reliable definition might be the language used at home. Third, the change in the cognitive and non-cognitive outcomes relies on slightly more than one year. The ‘exposure’ to class composition could be too short.

Consequently, future research should take longer time spans into account, which ideally starts at the time of class formation (Berendes et al. 2011). Research should also distinguish between class composition effects in earlier and later educational stages, as the influence of peers for behavior should increase as students come of age. In addition, in highly stratified education systems the distribution of class composition should be more extreme after (first) tracking. This means, the treatment effect should be more distinct. However, variations in class composition are stronger between than within tracks. At the same time, tracks differ due to their curricula, the qualification of the staff and further resources. Thus, a clear differentiation between institutional characteristic and compositional ones is required in tracked systems.

While in our study compositional features do not seem to be influential in primary education, we see, that individual features are. For e.g. gaps increase in cognitive domains between students of low and high social background and in vocabulary also between some immigrant groups over time. Further research is needed, on the mechanisms at work, on the mediating factors and on the questions if and how individual features and context interact.

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Appendix

Table A.1 The mean values and standard deviation of student characteristics by migration background

	Turkey		Eastern Europe		Other region		Germany	
	Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.
Student level								
Vocabulary (4th grade)	14.03	5.18	18.62	4.59	17.62	4.77	19.26	4.58
Vocabulary (3rd grade)	9.71	4.68	14.36	4.84	12.76	5.33	14.93	4.76
Numeracy (4th grade)	9.66	4.21	11.11	4.08	10.45	4.2	11.56	3.96
Numeracy (3rd grade)	5.39	3.02	6.97	3.11	6.34	3.02	6.98	3.14
Effort (4th grade)	-0.01	0.64	0.07	0.61	0.13	0.58	0.07	0.6
Effort (3rd grade)	-0.07	0.71	0.03	0.63	0.12	0.59	0.07	0.63
Parents'								
ISEI	-0.84	0.91	-0.21	0.98	-0.29	1.03	0.14	0.95
School education (<i>low</i>)								
Mid-range	0.24	0.43	0.35	0.48	0.28	0.45	0.34	0.47
High	0.20	0.40	0.42	0.49	0.50	0.50	0.43	0.50
Boy (<i>girl</i>)	0.57	0.50	0.52	0.50	0.52	0.50	0.52	0.50
Case numbers (n)	170		200		236		1774	

Source BiKS 8-14, waves 1 and 3, own calculations. All figures are based on ten sets of imputed data. Notes Reference categories in italics

Table A.2 The importance of school class composition on *vocabulary at the end of 4th grade*—results of value added models with all covariates measured more than one year ahead

	M10 coef.	s.e.	M11 coef.	s.e.
Class level (n = 154)				
Share of migrants (<20 %)	0.05	0.23	0.06	0.23
20 ≤ x < 40 %	−0.30	0.29	−0.30	0.29
≥40 %	0.03	0.11	0.03	0.11
Parental SES				
Average effort (1st quartile = low)				
2nd +3rd quartiles	−0.04	0.23	−0.04	0.23
4th quartile (= high)	0.13	0.29	0.13	0.29
Student level (n = 2,379)				
Vocabulary	0.63	0.02**	0.63	0.02**
Country of origin (<i>Germany</i>)				
Turkey	−1.31	0.40**	−1.05	0.80
...				
Cross-level effect				
Turkey * 20 ≤ share of migrants < 40 %			−0.51	1.16
Turkey *share of migrants ≥ 40 %			−0.25	0.91
Standard deviation				
Class level				
Random intercept	1.52	0.67	1.49	0.63
Random slope Turkey	0.51	0.33	0.51	0.33
Corr (intercept, slope)	0.47	−0.95	0.49	−0.96
Individual level	3.22	3.11	3.22	3.11

Source BiKS 8–14, waves 1 and 3, own calculations. All analyses are based on ten sets of imputed data. *Notes* Reference categories in italics; + p ≤ 0.1, *p ≤ 0.05, **p ≤ 0.01
 Controlling for Eastern Europe, other region, student's effort, parents' ISEI and school attainment, and child's gender. See also Model 3, Table 8.3

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Chapter 9

Immigrant Children's Access to Social Capital in School-Class Networks

Michael Windzio

9.1 Introduction

Social capital is an important concept in sociological and economic studies. Not only has it been intensively investigated in migration and integration research; it is also fundamental in research on social stratification and social inequality. Certainly one of the most famous versions of this concept was elaborated by Bourdieu (1986), who argued that children profit from well-educated and economically well-off parents. Benefiting from social capital in families surely provides an important advantage in the educational system and therefore also in the status attainment process. In Bourdieu's view it is rather an obfuscation of economic inequalities to consider social capital naïvely as the ultimate cause of success in the life course. A minimum amount of economic capital is a precondition for allocating parents' time to investments into their children's socialisation. Nonetheless, social capital has been considered as a resource *sui generis* in studies on the integration of immigrants, although the "negative side" of close ties to co-ethnic immigrants has also been taken into account (Portes 1998).

Possibly due to Bourdieu's emphasis on the intra-familial transformation of capital, the role of children's ties to their peers has been neglected so far. Certainly, children can support each other not only in their daily social interactions, but also with regard to learning issues. It is a common result in the sociology of education that high levels of *cultural* capital in children's families increase children's chances of success in the educational system (Ho and Willms 1996). Children's personalities or "habitus" is strongly affected by the cultural capital available in the family. But it may also make an important difference with whom

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they interact in their classroom-based support networks. Hence, the “quality” of their peers’ “habitus” and competences might be crucial for the quality of children’s peer-related *social capital*.

It is known from previous research that highly motivated and well-performing peers can increase academic performance (Hanushek et al. 2003). Moreover, it is known that there is a considerable degree of social and ethnic homophily, especially with regard to ties in dimensions which require higher levels of investment (Windzio 2012), such as spending leisure time together or visiting friends at home (Windzio and Bicer 2013). As a matter of course, the flip side of this coin is ethnic and social segregation in networks. Despite the fact that immigrant pupils seem to have higher aspirations to pursue good educational degrees (Kristen and Dollmann 2010) numerous studies have revealed their problems and their disadvantage in the educational system.

The basic question addressed in the present chapter is whether the access to peer-related social capital could be an additional factor which contributes to the explanation of educational disadvantages. In order to compare the levels of peer-related social capital of native and immigrant children, the current chapter analyses classroom-based social networks of friendship ties and networks in which pupils complete homework together. Using the data of complete networks in school classes, it will be shown that especially dyads of two Turkish pupils have a much higher propensity of being involved in homework-groups than dyads of two native German pupils. However, considering also the *quality* of these network ties with regard to the school performance of ego’s partners as well as their endowment with family-related cultural capital, it can be shown that Turkish pupils have lower rates of possessing “high quality” network ties. On the one hand, the motivation and aspiration towards good education is high in many immigrant families and there actually is a tendency to use social capital in homework networks. On the other hand, however, ethnic and social segregation in school class-based social networks seems to prevent pupils from benefiting from “high quality” network ties.

In the following [Sect. 9.2](#) we will discuss theoretical arguments and existing empirical results on peer-related social capital and its effects on school attachment and performance. [Section 9.3](#) describes the data and statistical methods and [Sect. 9.5](#) presents the results.

9.2 Social Capital, Educational Attainment and Immigrant Integration in Institutional Contexts

The educational system will never be completely determined from outside the system (Luhmann 2008), neither by policy-makers nor by school principals. Nonetheless, educational outcomes can be influenced by the primary effects of education policies. *Primary* effects result from policies addressing learning

conditions such as class size, school autonomy or teachers' salaries. In addition to these primary institutional effects, *secondary* institutional effects result, among other things, from issues people care about, but which originated outside the organisation. Formal decision-making usually does not address the questions of how social networks among students evolve in schools and how processes of social interaction and social capital influence educational outcomes. When students establish school-related ties in their networks, the selection and stability of these ties are strongly affected by factors students bring in with them from outside the institution. For instance, the concept of homophily describes the actors' propensity to form ties according to similarity with regard to significant social characteristics. As McPherson et al. (2001, p. 215) argue, especially race and ethnicity are important sources of homophily. In addition, homophily depends on similarity in religion and social status. Yet homophily results from complex processes, most of them taking place outside of educational institutions. For instance, Alba and Nee (2003) extensively describe the origin and the dynamics of *ethnic boundaries* in modern societies. Surely, educational institutions and especially schools are important focus points where children and adolescents can meet and establish network ties. However, social and ethnic segregation in networks should not be regarded as being independent of discourses, debates and ethnic boundaries outside of educational institutions.

In this chapter, ethnic homophily and the unequal access to knowledge and cultural capital will be assumed as being relevant for educational outcomes. It will be argued that homophily leads to an unequal access to social capital since there is a considerable degree of inequality in the distribution of knowledge and cultural capital in social networks. But why is the access to social capital important?

The basic argument about how social capital affects social inequality is rather simple: ties in social networks provide access to resources which otherwise would not be available at the same cost. Social relations of reciprocal exchange, but also ties of asymmetric dependence, can structure the flow of resources from one social unit—e.g. from one individual—to the other. In most cases, strong and close ties to family members provide mutual support and constitute the basic context of children's socialisation. Depending on the level of economic, educational and time-related resources in the parents' generation, family-related social capital is supposed to strongly influence the probability of success in educational institutions. This is what numerous studies on ethnic inequalities in educational outcomes have shown (Ho and Willms 1996; Kristen and Dollmann 2010): when the impact of social background is controlled in statistical models, ethnic disparities are strongly reduced, although in most cases some ethnic residuals remain.

Below, this well-established effect of social background will be called the *direct effect of family-related social capital*. In addition, there is also a *direct effect of peer-related social capital* that results from ties to peers in children's classrooms.¹

¹ Which is at the same time a secondary institutional effect on integration and inequality in educational institutions.

Children's ties for emotional support, motivation and appropriate assistance in learning can lead to the direct effect of peer-related social capital. But the concept of social capital implies that actors can actually *benefit* from their ties. With regard to support in learning and also with regard to the emotional challenges of the lesson's requirements it might play an important role *with whom* the children establish ties. Do their friends have good or bad grades? Are children involved in learning groups with others whose parents have a rather high or low level of cultural capital? Apparently, the level of cultural capital in peers' families has an effect on peers' habitus, which includes cognitive competences as well as motivation and school attachment. Moreover, contact with peers from better-educated families provides weak ties linking children from deprived families to well-educated parents in two steps through the network. This will be defined as the *indirect effect of family-related social capital*.

This distinction between peer-related and different kinds of family-related social capital should clarify two important issues: firstly, there are different ways in which peer-related social capital can influence pupils' performance at school. These different modes are an indicator of the importance of the concept, but at the same time underline the problem of a comprehensive measurement of peer-related social capital. Secondly, it should have become clear that children's peer-related social capital is by no means independent from family-related cultural and social capital.

Many studies have highlighted the effects of children's peer relations on educational outcomes. In their study on risk factors on dropping out of school, Audas and Willms (2001) tried to explain their children's failure in the educational system with the fact that they "got into the wrong crowd". Similarly, Ellenbogen and Chamberland (1997) showed effects of network integration and inclusion on dropping out of school. Also, conflicts with other pupils can increase dissociative feelings with school peers and increase drop-out rates (Kelly 1993). In contrast, as a special kind of social embeddedness, religious involvement increases school outcomes, as Glanville et al. (2008) have shown. One reason is the degree of social control due to intergenerationally closed social networks, that is, due to social ties among children's parents, but also due to higher levels of educational resources.

According to the study of Antonio (2004), friends' level of intellectual self-confidence increases the pupil's own intellectual self-confidence, which could be—but does not have to be—positively associated with performance in school. In line with this result, Crosnoe et al. (2003) were able to show that pupils whose friends are academically oriented (e.g. they like school or are good at school) have fewer scholastic performance problems.

In the "Hamburg KESS 4" study there is a small sub-sample of total networks which includes information on two important network dimensions: cooperative learning for tests and completing homework together (Stubbe et al. 2007). These data have only been used for a descriptive analysis of three networks (density and hierarchy) and qualitative in-depth descriptions of individual actors. In her groundbreaking analysis of Dutch network data, Lubbers (2004) had the opportunity also to analyse "academic networks", e.g. cooperation and the comparing of

grades. However, so far no systematic analysis of the determinants of ties in networks where pupils complete homework together has been conducted. Most existing studies on ethnic segregation in networks are limited to the analysis of friendship nominations in schools and classrooms (Quillian and Campbell 2003; Mouw and Entwisle 2006; Knecht 2008). But is there an “ethnic factor” in the development of homework networks? Are there ethnic boundaries between “good” and “bad” ties in friendship and homework networks? These questions are closely related to the social preconditions of structural assimilation on the immigrants' side. Several studies have shown for different countries that immigrants have *ceteris paribus*—controlling e.g. for socioeconomic background—*higher* educational aspirations than natives (Dollmann 2010; Stanat 2006). Controlling for academic performance and parental social background, children from Turkish families have *higher* net-participation rates in upper-secondary education (Kristen and Dollmann 2010).

In this chapter, different dimensions of social networks of 10-year-old fourth-graders will be investigated. In contrast to a mere descriptive analysis, the focus here is placed on the determinants of ties in different network dimensions, namely friendship networks and homework networks. In addition, each of these two dimensions will be qualified with regard to the level of resources that the network ties provide. It will be investigated which determinants affect ties in friendship and homework networks to other pupils who have either a high level of “objective” cultural capital at home (as indicated by the number of books owned) or who have a grade point average above the class mean.

According to the argument presented above, one could expect that ethnic homophily restricts immigrants' access to peer-related social capital since there are remarkable differences in the average economic and cultural capital endowment between immigrants and natives.

9.3 Data

We will analyse data from a school survey of 1,604 fourth graders in 105 school classes collected in 2009 in the cities of Bremen and Bremerhaven in Germany. This survey was conducted in the DFG funded project “Dynamics of Social Assimilation in Multiplex Peer Networks”. For the model estimation, we only considered classes where at least 75 % of all pupils were present during the interview. Response rates at the class level do also depend on the level of teachers' support of the study, because the teachers had to administrate the distribution and the collection of the parental consent form. Teachers' commitment to the study could be eventually correlated with pupils' characteristics, but there is no strong argument of why it should result in a highly selective sample. The multivariate analyses are based on a minimum of 1,248 students in 17,644 directed dyads in either 76 (friendship) or 75 classes (homework). The network generator was a combination of 15 network-related items in the questionnaire and visible numbers

placed on each pupil's seat in the classroom. By reporting their own ID-numbers and the ID-numbers of their classmates with regard to each network dimension in the questionnaire, pupils provided data on complete social networks in the classroom in several dimensions. Using the indicator "visits to birthday parties" as an objective event, the reliability of the network generator could be assessed by comparing ego's information on who visited him/her at his/her birthday party with alter's information on whose birthday party he or she attended. This procedure yields a Cohen's Kappa inter-rater reliability of 0.709 and an accordance rate of 91 %, which is a good level of reliability.

Below, empirical results of effects on six dependent variables will be presented. We asked the children to report the numbers of those classmates they consider as *friends*, without restricting the total number of nominations. In addition, children reported the number of classmates with whom they sometimes *do homework together*.

In a further step, these two dimensions were differentiated with regard to the resources potentially available in these network ties: first, ties of friendship were regarded only if the respective alter's parents have *at least 150 or more books at home*. In other words, in these networks only relationships with alteri whose parents' level of cultural capital in the "objectified state" (Bourdieu 1986) is high were regarded as ties. By the same logic, an alternative condition was introduced, namely whether *alter's grade point average is better than the class mean*.² These two alternative qualifications of friendship and homework ties were made in order to account for the different levels of academic support that is potentially available in these networks. As argued in the preceding section, immigrants are expected to have lower levels of academic resources in their peer networks.

Ethnic background was measured by the mother's and father's country of origin. Children are defined as "German", "Turkish" or "Russian" if both biological parents are of the respective origin. Children are assigned to the category "German1P" if they have one native German and one immigrant parent, with "other" as the residual category. The ethnic origin of the mother takes priority in mixed non-German parental couples: if of one parent is Turkish or Russian and the other parent of another origin (except German), the child is assigned to the category of his or her mother.

When the main focus is on the effects of the ethnic composition of dyads, several characteristics related to social background and personality should be controlled. In order to control for *cultural capital* (Bourdieu 1986) in ego's family, "homophily: number of books" is included in the model. Absolute differences in the number of books between ego and were been multiplied by -1. The wording of the item was "How many books do you have at home?" and the response categories were "1. none, or just a few (0-10)", "2. one shelf (11-25)", "3. one rack (26-100)", "4. two racks (101-200)", "5. three or more racks (201 and more)". The midpoints

² The grade point average was computed for the subjects German, Mathematics and English. Each grade was centred around the class mean in order eliminate teacher specific grade levels.

of the intervals were used for the computation of the similarity of ego and alter. This information was then used to qualify the dependent variable with regard to cultural capital in alter's family. In the other models without such a control, ethnic homophily could be a spurious effect of status homophily, especially since many Turkish and other immigrant children have low-educated parents.

As a further indicator of the capital endowment of the family, it was controlled for whether both children either lived in a *single-family house* or in an *apartment block* with six or more floors. Other constellations formed the reference group, which consisted of mixed constellations, houses with fewer than five separate flats or houses with five or more separate flats. Other control variables measured whether *ego visits a museum* at least several times a year (together with parents/other relatives), *ego's self-control* and *empathy* and also similarity in terms of *mother's control of children's leisure time* (see Appendix for the scales).

As generally known from Peter Blau's structural sociology (Blau 1994), *group size* can have a considerable impact on the social climate and on the choice of friends and partners (see also Mouw and Entwisle 2006). Thus, the percentage of immigrant children of the backgrounds Turkish, Russian, one-German-parent and other were controlled for at the class level.

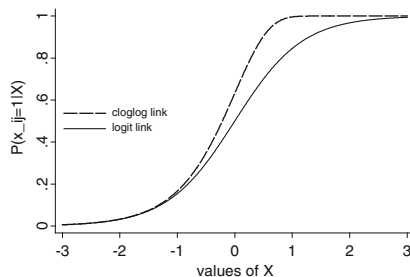
9.4 Methods

Recent versions of exponential random graph models use simulation methods in order to directly estimate the probability P of observing a given network x out of the set of all possible networks which can be formed by a given set of actors (Robins et al. 2007). Dyadic constellations of actor attributes, but especially structural network characteristics, can have a potential influence on P . We follow a simpler approach of estimating a binary choice model: each model estimates the effects on the propensity of having a tie (1 = yes, 0 = no) in a dyad. The dependent variable is thus binary. However, especially in the homework networks, but also in the friendship networks with alteri whose parents possess many books, the average network density is rather low. Instead of logistic regression models, which are often the first choice in binary dependent variable models, complementary log–log models were estimated. The complementary log–log model has the following form:

$$P(x_{i,j} = 1 | x_{ij}^c) = 1 - \exp\left(-\left(\exp\left\{\theta\left[Z\left(x_{ij}^+\right) - Z\left(x_{ij}^-\right)\right] + \beta_0 + u_{0j} + \beta'x\right\}\right)\right)$$

With regard to the prediction of *very low* probabilities the complementary log–log link function is virtually identical to the logistic link function (see Fig. 9.1). The complementary log–log model is often applied in the analysis of discrete time event history models (Skrondal and Rabe-Hesketh 2004, p. 356), where the share of sub-spells that end with an event is *rather low*. In such a situation, the asymmetric shape of the complementary log–log model (see Fig. 9.1) usually leads to a

Fig. 9.1 Complementary log–log model and logistic model compared



better fit with the data (Singer and Willett 2003, p. 420). For this reason, complementary log–log models are estimated, because the share of ones is rather low. Since the results did not substantially differ from logistic regression models (results not shown), but resulted in a slight gain in efficiency, this choice seems justified. The interpretation is very similar to Odds Ratios, but mathematically the coefficients do not show Odds Ratios but Hazard Ratios. Aside from the different terminology, the interpretation is substantially the same.

However, a standard discrete choice model does not account for the non-independence of observations in networks. Expanding the data set into a structure where each record represents a directed dyad allows the estimation of exponential random graph (p^*) models (Robins et al. 2007) by using models for discrete choice analysis. In this study, the model estimates effects on the probability P of having a tie between vertices i and j in a given network X . The term $\theta \left[Z(x_{ij}^+) - Z(x_{ij}^-) \right]$ represents the effect of the surrounding network structure on the propensity of a tie in a dyad. $Z(x_{ij}^+) - Z(x_{ij}^-)$ is the difference of a network characteristic Z when a tie is defined as being present $\left[Z(x_{ij}^+) \right]$ and then as absent $\left[Z(x_{ij}^-) \right]$, regardless of its empirical status (Windzio 2011). Since the analyses are based on 75–76 pooled class networks in which children’s dyads are clustered, an error component u_{0j} related to the intercept β_0 was estimated in a multilevel design (Rabe-Hesketh and Skrondal 2008, p. 360).

Well-aware of the problems of using maximum likelihood estimation for network data, we follow a conventional approach for practical reasons, which accounts for the statistical dependence of observations in networks by including appropriate covariates into the model. These covariates are 2-in- and out-stars, the log odds of the density of each network (Vermeij et al. 2009) and the change in the number of transitive triads due to the presence or absence of each tie. For the latter, the “prepstar” software developed by Crouch and Wasserman (1997) was used. Based on complementary log–log regressions models, Table 9.1 shows rate ratios of ties in dyads in complete networks with effects of ethnic homophily as a measure of the degree of network segregation.

Nevertheless, the empirical results hold only under the assumption that non-Markovian dependence structures do not exist in the networks and that the bias

Table 9.1 Determinants in friendship and homework networks

	M. 1 Friends	M. 2 Friends with many books	M.3 Friends with good grades	M.4 Homework	M.5 Homework with many books	M. 6 Homework with good grades
Ego: empathy	0.99	0.96	1.04	1.13**	1.14 ⁺	1.12
Ego: low self-control	0.99	0.96	0.81**	1.03	0.97	1.00
Ego: museum	1.05 ⁺	1.01	1.21**	1.01	1.26*	1.06
Boy → boy	ref.	ref.	ref.	ref.	ref.	ref.
Boy → girl	0.34**	0.43**	0.50**	0.19**	0.19**	0.26**
Girl → girl	1.04	1.09 ⁺	0.79**	0.99	0.99	0.81
Girl → boy	0.37**	0.40**	0.48**	0.22**	0.26**	0.21**
<i>Homophily</i>						
Mother: control leisure	1.08**	1.17**	1.31**	1.15*	1.26**	1.31**
No. of books/10	1.00*	–	1.00	1.01**	–	1.01*
Single family house	1.05	1.10*	1.06	1.18*	1.18	1.31*
Apartment block (6 fl. ⁺)	1.02	0.77**	1.00	0.99	0.67*	0.76
Other housing const.	ref.	ref.	ref.	ref.	ref.	ref.
Unemploy. parents	0.96	0.86	0.70	1.15	1.05	0.96
German → german	ref.	ref.	ref.	ref.	ref.	ref.
German → german1P	0.80**	0.60**	0.83 ⁺	1.00	0.69*	0.88
German → turk	0.69**	0.22**	0.61**	0.53**	0.20**	0.42*
German → russian	0.96	0.79	1.15	0.94	0.589	0.73
German → other	0.88 ⁺	0.53**	0.59**	0.71 ⁺	0.555*	0.38*
German1P → german	1.03	1.02	1.03	0.88	0.822	0.77
German1P → german1P	0.87	0.76*	0.75	1.26	1.18	1.66 ⁺
German1P → turk	0.95	0.51**	0.41**	0.89	0.31 ⁺	0.81
German1P → russian	1.16	1.22	1.07	0.70	0.32	Dropped
German1P → other	0.92	0.59**	0.54*	1.05	0.59	0.56
Turk → german	0.91	0.89	0.56**	1.00	0.90	0.72
Turk → german1P	0.96	0.77	0.42**	1.18	0.73	1.00
Turk → turk	1.22 ⁺	0.44**	0.46**	1.79**	0.43*	0.73
Turk → russian	1.02	0.94	0.49	0.84	0.34	0.38
Turk → other	1.17	0.59*	0.95	1.17	0.97	0.85
Russian → german	0.96	1.03	1.33 ⁺	1.27	1.38	2.09*
Russian → german1P	1.03	0.72	1.03	0.73	0.66	1.19
Russian → turk	1.06	0.22**	0.84	1.07	0.42	0.48
Russian → russian	0.89	0.87	1.47	1.21	0.49	2.03
Russian → other	0.85	0.77	1.10	1.59	1.77	1.23
Other → german	0.86 ⁺	0.83 ⁺	0.58**	1.33 ⁺	1.19	1.25
Other → german1P	1.08	0.83	0.60 ⁺	0.95	0.55	1.44
Other → turk	1.02	0.50**	0.73	1.16	0.39	0.54

(continued)

Table 9.1 (continued)

	M. 1 Friends	M. 2 Friends with many books	M.3 Friends with good grades	M.4 Homework	M.5 Homework with many books	M. 6 Homework with good grades
Other → russian	1.01	1.02	1.06	0.83	1.09	1.27
Other → other	1.16	0.52**	0.67	1.20	0.72	0.66
% german1p	1.00	1.00	0.99	1.00 ⁺	1.00	0.99
% turkish	0.99	0.98**	0.99	1.00	0.99	1.00
% russian	1.00	0.99	1.01	1.00	1.00	1.01
% other	1.00	0.98**	0.98*	1.00	0.98*	0.98
<i>Network structure (friends and homework)</i>						
Net density	0.86	1.02	0.68	1.19*	1.25	0.68 ⁺
Transitive triads	1.13**	1.07**	1.13**	1.26**	1.13**	1.32**
2-in-stars	0.96**	1.02*	1.01	0.98	1.08 ⁺	0.98
2-out-stars	1.02**	1.03**	1.03**	1.16**	1.25**	1.19**
Mutuality	3.57**	3.56**	4.33**	13.53**	11.78**	15.88**
ρ	0.046**	0.149**	0.285**	0.002 n.s.	0.090**	0.226**
R2 Nagelkerke ⁺⁺	0.555	0.343	0.348	0.392	0.321	0.310
N classes	76	76	76	75	75	75
N pupils	1,262	1,271	1,262	1,248	1,256	1,248
N dyads	20,536	20,830	17,644	20,354	20,636	19,932

Multilevel complementary log–log models for ties in friendship and homework networks (p^*), rate ratios

⁺⁺ single level model

⁺ $p \leq 0.10$

* $p \leq 0.05$

** $p \leq 0.01$

inherent in the pseudo-likelihood estimates does not affect the results too severely. Due to the error term at the class level, unobserved heterogeneity between the networks can be at least partially controlled. In the light of the strong and robust effects which refer to the hypotheses, this somewhat out-of-date procedure can give a first insight into the degree of segregation in these different network dimensions.

9.5 Results

The basic hypotheses of this chapter can be illustrated by comparing the different dimensions of the network in one exemplary class (ID no. 20792). The two columns in Fig. 9.2a–f, show this network in the dimensions of *friendship nomination* and *doing homework together*, respectively. White dots represent natives (both parents

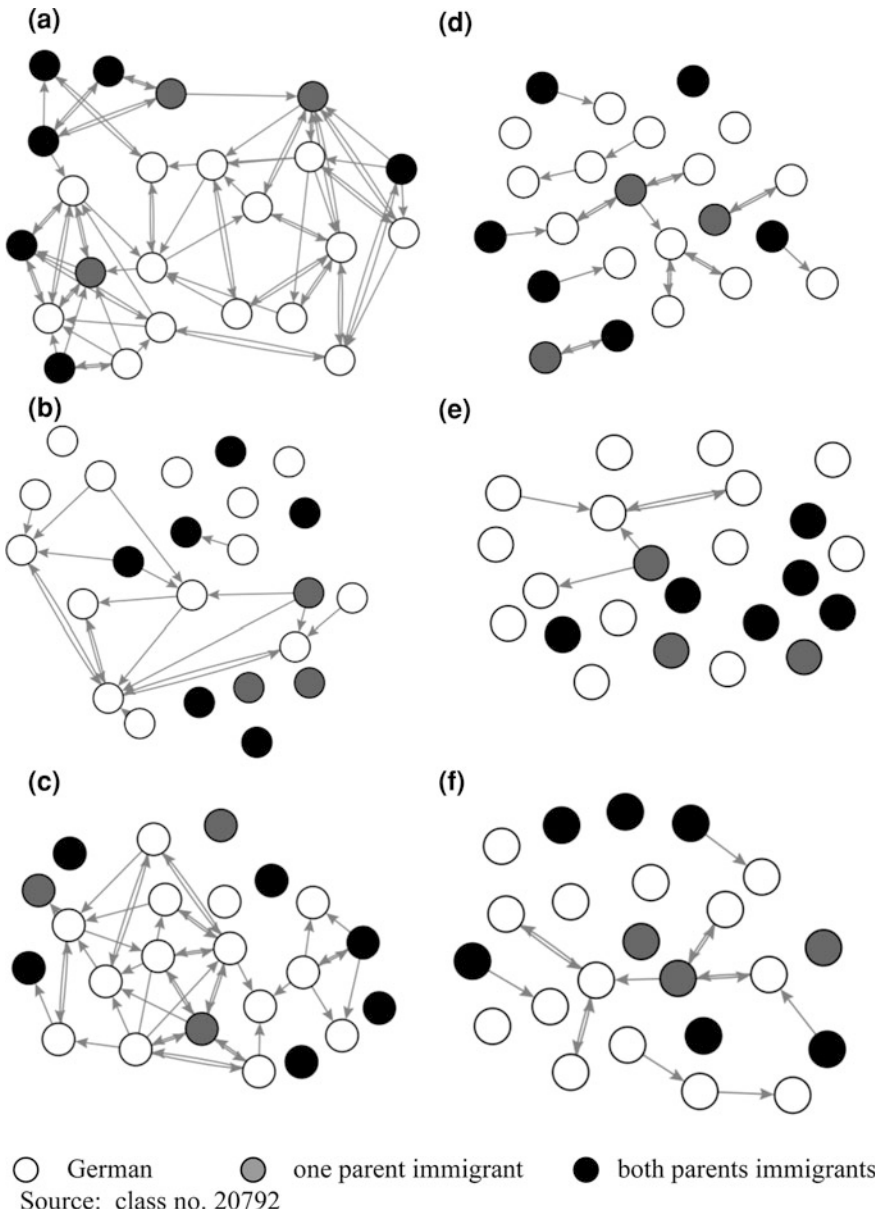


Fig. 9.2 a-f Networks of friendship and joint homework completion in one exemplary class, N = 23. **a** Friends. **b** Friends with many books. **c** Friends, grade above class mean. **d** Doing homework. **e** Doing homework with many books. **f** Doing homework, grade above class mean

native Germans), grey and black dots represent immigrants (either one or both parents are immigrants). The hypothesis of an additional disadvantage due to lower cultural and academic resources in immigrants' peer networks can be illustrated by such a simple description of the shares of isolates in the respective network.

In the *friendship dimension* the class network is quite integrated since there are no isolates and only two out of nine immigrants do not report a tie to a native child (Fig. 9.2a). Regarding ties to alteri whose parents have at least 150 books, the situation is quite different (Fig. 9.2b). Six out of nine immigrants are isolated, but only four out of 14 native Germans are as well (66.6 vs. 28.6 %). The basic pattern is similar in the network which shows ties to alteri whose grade point average is above the class mean: here, only one native German is isolated, but five out of nine immigrants (55.5 %).

In contrast to the friendship network, the *homework network* is not completely integrated, although the overall share of 13 % isolates is comparatively moderate (Fig. 9.2d). In this exemplary class, it seems to be quite usual to cooperate in homework completion, which holds for both immigrants and natives. However, in the network of cooperation with alteri whose parents possess at least 150 books at home (Fig. 9.2e), eight out of nine immigrants are isolated, whereas ten out of 14 are isolated in the native German group (88.8 vs. 71.4 %). In this case, it should be mentioned that the network consists only of three uni-directional ties and one mutual tie and has a very low density. But a similar pattern can be found in homework ties with alteri whose grades are better than the class mean: five out of nine immigrants are isolated, but only four out of 14 native Germans (55.5 vs. 28.5 %).

In summary, there might be some ethnic segregation in general friendship networks, but the important (tentative) finding is that the level of segregation turns out to be much higher if we regard ties to friends who have a high level of cultural resources or better grades. Similarly, both immigrants and natives are involved in homework networks, but when we focus on homework ties to alteri who have a high level of cultural resources or better grades, the share of isolated immigrant children increases disproportionately.

Certainly, the analysis is based on a selective and descriptive example, but it illustrates the hypothesis quite well: immigrants are embedded in social networks of friendship as well as of joint homework completion. However, it seems that the cultural and academic resources available through these networks are of lower quality. Of course, there are other classes in which the pattern is less clear and the descriptive analysis does not include control variables. In order to test the hypothesis, multivariate analyses will be performed on the basis of a large sample of 75–76 classes.

Table 9.1 shows six two-level complementary log–log models for network data (p^*) which predict the rate ratios of ties in different dimensions of the social networks. The dependent variables in models 1–3 indicate ties in *friendship networks* (=1, 0 otherwise, model 1), ties to *friends whose parents have at least 150 books* in their household (=1, 0 otherwise, model 2), and *friends who have grade point averages above the class mean* (=1, 0 otherwise, model 3). Models 4–6 estimate effects on ties in *homework networks* (=1, 0 otherwise, model 4), on ties

in *homework networks to alteri whose parents have at least 150 books* (=1, 0 otherwise, model 5) and finally, on ties in homework networks to *alteri who have grade point averages above the class mean* (=1, 0 otherwise, model 6). The first three explanatory variables measure characteristics of ego, whereas all other variables either indicate characteristics of the dyads (the similarity with regard to the respective characteristic or the constellations of gender and ethnic origin), the ethnic composition of the class or the contribution of each tie to the entire network—calculated according to the p^* logic.

To begin with, the control variables of the ethnic composition of the classes and the structural properties of the network will be interpreted (see lower end of Table 9.1): we find that, overall, the ethnic composition of the classes show only moderate effects, whereas the effects of the structural properties of the network are strong. Hence, the network effects indeed indicate a considerable level of dependence of ties within the networks. As expected, the embeddedness of a dyad in transitive triads as well as the mutuality increases the propensity of a network tie in all dimensions. In contrast, the effects of 2-in-stars (“popularity”) and 2-out-stars (“expansiveness”) (Robins et al. 1999) are rather inconsistent, albeit significant in most cases.³

As a characteristic of the individual, empathy increases the propensity of completing homework with others, as well as with others whose parents have many books (models 4 and 5), although the latter effect is significant only at the 10 % level. Empathy thus increases, at least partially, the sociability in doing homework together, while low self-control reduces friendships to classmates with good grades. Also in line with the expectations, ego's cultural capital, as indicated by regular visits to a museum, increases the propensity of being friends with alter (model 1, 10 % level), especially if alter's grades are above the class mean (model 3). Moreover, children who often go to the museum have a higher propensity to do homework with children whose parents have many books (model 5).

In line with many other studies, all network dimensions show high levels of gender segregation. Moreover, there are also effects of similarity, which indicate that social homophily is not only present in friendship networks, but also in homework groups: the more similar ego and alter are with respect to mother's control of her children's leisure time, the higher the rates are of having ties in all dimensions. Except for model 3, a similarity in the number of books has positive effects on friendship ties (factor 1.003) as well as on ties in homework networks (factor 1.009). It should be noted that the number of books in alter's household (at least 150) is one component of the dependent variable in models 2 and 5. In order to avoid endogeneity, the similarity in the number of books has not been included as a determinant of ties with alteri whose parents have many books at home (models 2 and 5).

³ For an example of how to interpret the in-and out-star effects when transitive triads are controlled, see Robins et al. (1999, p. 388).

We find a positive effect of *both children living in a single-family house* on having friends with many books (model 2), on doing homework with alter and also on doing homework with alteri who have good grades (models 4 and 6). This is another indicator of homophily with regard to socioeconomic background. Here, the reference group consists of all other housing constellations. Not surprisingly, the constellation of both children living in an apartment block has a negative effect on ties to alteri whose parents have at least 150 books, both in the friendship and in the homework networks (models 2 and 5). There is thus some degree of residential segregation by levels of cultural capital: the access to “good” ties in friendship and homework networks is hindered if both children live in an apartment block neighbourhood.⁴

Yet the most interesting results in this study are the effects of ethnic segregation in friendship and support networks. The reference group are dyads of native German pupils. Overall there is a tendency towards ethnic segregation in all kinds of networks. We see, for instance, that native Germans report a lower propensity of being friends with Turkish pupils than with native Germans (model 1). In addition, they also have a considerably lower propensity of doing homework together with Turkish pupils compared to their propensity of completing homework with native Germans (model 4). More strikingly, however, is the effect of *turkish* → *turkish* dyads: firstly, there is a slightly increased propensity of being friends compared to *german* → *german* dyads (factor 1.22, 10 % level, model 1), indicating that social integration in the minority group of Turkish children is somewhat better than in the majority group of native German children. But secondly, in *turkish* → *turkish* dyads, we find a strongly decreased propensity of having a friend whose parents have many books at home, and also of having a friend with good grades (models 2 and 3).

Even more interesting is the pattern of ethnic-social segregation in the homework network: compared to the reference group of native German dyads we find a much *higher* propensity towards doing homework together when the dyad consists of two Turkish children (factor 1.79, $p \leq 0.01$). This means that the level of social capital with regard to cooperative behaviour in the classmates is higher in the Turkish group than in the German reference group. In line with findings of Stanat (2006) who analysed PISA-E data for Germany, this can be interpreted as an indicator of academic motivation and ambition in the Turkish group. But model 5 reveals that this high *quantity* of social capital does not automatically correspond with a high *quality* of resources in the network: compared to the reference group of all-native dyads, two Turkish children have a much lower propensity to be in a dyad in which homework is completed together with an alter whose parents have at least 150 books at home (factor 0.43, $p \leq 0.05$). In the network dimension of doing homework together with children who have good grades, the effect shows a similar tendency (factor 0.73), but is not significant.

⁴ Perhaps, this could also be an issue of the limited living space offered by these blocks, which impedes the possession of many books.

Finally, results for Russian children (parents or pupils immigrated from the former Soviet Union) indicated that this group could actually benefit from social capital in the peer network: in *russian* → *german* dyads the propensity of friendships with alteri who have good grades is higher than in the reference group of two native German children (model 3, factor 1.33, $p \leq 0.10$). Furthermore, Russian children's propensity to do homework with native Germans who have good grades is twice as high as in the reference group of two native German children. From the Russian children's perspective this means that they show an affinity to native Germans with good grades—both in friendship and homework networks.

These results indicate several important points: firstly, most children seem to be well-embedded in the social networks of their school classes. Secondly, there is some ethnic segregation in the friendship networks. Thirdly, when it comes to the potential relevance of these networks for the academic performance of immigrant children, there are important differences between the ethnic groups: whereas children of Turkish origin do not seem to get access to cultural and academic resources through their peer networks and seem at a disadvantage compared to native German children, children of Russian origin, in contrast, can successfully establish ties to friends who have good grades and with whom they jointly complete their homework.

These results highlight the access to social capital, but it is still unclear whether and to what degree children actually benefit from it with respect to their academic performance, school attachment and motivation. The same is true regarding the low-resource networks of Turkish children: future research has to investigate whether their networks actually result in a further disadvantage or not.

9.6 Conclusion

Peer-related social capital constitutes an interesting research field which combines the institutional perspective on the school with issues of children's living environment outside the educational institution. Ethnic homophily in networks is not induced by the educational institutions but is carried there from the outside. Consequently, the social capital issue raises the question of how rigid ethnic boundaries in the broader society are. Up to now, not many studies have been conducted on ethnic inequalities in the endowment with peer-related social capital.

Primary institutional effects on pupil performance can be addressed by school headmasters as well as by policy-makers. In addition to these effects, the results of the empirical analysis of social networks have shown that secondary institutional effects exist in such a way that ethnic boundaries affect patterns of friendship networks and of cooperative relationships among the children. It was the idea of this chapter to give evidence of a potentially important secondary institutional

effect on integration and inequality in educational institutions: ethnic boundaries are spanned, shifted, crossed or blurred (Alba and Nee 2003) outside of educational institutions. Obviously, this does not mean that daily social interaction between children in schools and classes can't refresh or even corroborate these boundaries. But in doing so, they refer to an already existing "social stock of knowledge" (Berger and Luckmann 1991), and based on this, children in their classrooms selectively establish networks of friendship and cooperation, which may have an enduring effect on the learning conditions in schools.

As already mentioned, it is not yet clear whether the access to cultural and academic resources through these peer networks actually has an effect on performance, school attachment or motivation. Yet, research has indeed established positive effects of "good" peers on academic performance (Hanushek et al. 2003). If this is the case then ethnic differences in the access to peer-related social capital would reinforce existing ethnic inequalities. Although the ultimate cause of ethnic segregation operates outside of educational institutions (ethnic boundaries), the transformation of these boundaries into ethnic inequalities by ethnically segregated networks takes place within the institutions, and this is the reason why these processes are considered as secondary institutional effects. In other words, educational institutions are the focus point where ethnic boundaries unfold their potential for inequalities in the access to peer-related social capital.

The direct effect of peer-related social capital operates via friendship or homework ties to alteri who have good grades—regardless of his or her social background and the social capital endowment of alter's family. However, there might also be an indirect effect of family-related social capital, because being friends or doing homework with a classmate whose parents have many books at home can be an indicator of getting support either by having contact with alter's parents (Windzio 2012), or by the transmission of information on academic issues provided by alter's parents. However, the analytic distinction between the different forms of family- and peer-related social capital has not been fully implemented in the empirical analysis. Future research should find alternative measures to define resources in social networks. Indirect effects of family-related social capital could be measured by an indicator of whether ego actually comes into contact with alter's parents during visits at their home, in combination with an improved indicator of socioeconomic status and cultural and academic resources.

Moreover, future research should be based on longitudinal data, as this enables researchers to estimate the effects of endowment with social capital on educational outcomes, such as grade point averages, school attachment, motivation and effort. There will certainly be simultaneity of selection into specific friendship- and cooperation networks which cannot be easily disentangled by the use of standard methods for panel data. Hence, up-to-date methods for the simultaneous analysis of selection and influence (Snijders et al. 2010) on the basis of longitudinal data should be also applied in the sociology of education.

Table A.1 Descriptive statistics

	N	Mean	Standard deviation	Minimum	Maximum
Friends	17,644	0.176		0	1
Friends with many books	17,644	0.081		0	1
Friends with good grades	17,644	0.084		0	1
Homework	17,644	0.035		0	1
Homework with many books	17,644	0.016		0	1
Homework with good grades	17,557	0.014		0	1
Ego: empathy	17,644	3.142	0.790	1	4
Ego: low self-control	17,644	2.149	0.652	1	4
Ego: museum	17,644	0.434		0	1
Boy → girl	17,644	0.281		0	1
Girl → girl	17,644	0.210		0	1
Girl → boy	17,644	0.282		0	1
Mother: control leisure	17,644	-0.738	0.612	-3	0
No. of books/10	17,644	-10.331	9.749	-29.5	0
Own house	17,644	0.286		0	1
Apartment block (6 floors ⁺)	17,644	0.141		0	1
Unemployment of parents	17,644	0.024		0	1
German → german1P	17,644	0.088		0	1
German → turk	17,644	0.048		0	1
German → russian	17,644	0.020		0	1
German → other	17,644	0.060		0	1
German1P → german	17,644	0.085		0	1
German1P → german1P	17,644	0.027		0	1
German1P → turk	17,644	0.016		0	1
German1P → russian	17,644	0.008		0	1
German1P → other	17,644	0.023		0	1
Turk → german	17,644	0.045		0	1
Turk → german1P	17,644	0.016		0	1
Turk → turk	17,644	0.016		0	1
Turk → russian	17,644	0.005		0	1
Turk → other	17,644	0.016		0	1
Russian → german	17,644	0.021		0	1
Russian → german1P	17,644	0.008		0	1
Russian → turk	17,644	0.005		0	1
Russian → russian	17,644	0.006		0	1
Russian → other	17,644	0.011		0	1
Other → german	17,644	0.058		0	1
Other → german1P	17,644	0.022		0	1
Other → turk	17,644	0.016		0	1
Other → russian	17,644	0.010		0	1
Other → other	17,644	0.023		0	1
% german1p	17,644	16.004	9.607	0	41.176
% turkish	17,644	9.946	10.950	0	43.750

(continued)

Table A.1 (continued)

	N	Mean	Standard deviation	Minimum	Maximum
% russian	17,644	4.905	7.626	0	41.176
% other	17,644	13.081	11.844	0	40
Net density (friends)	17,644	-1.023	-0.353	1.801	-0.143
Transitive triads (friends)	17,644	4.088	4.928	0	39
2-in-stars (friends)	17,644	0.244		0	1
2-out-stars (friends)	17,644	5.177	2.679	0	19
Mutuality (friends)	17,644	5.216	2.909	0	25
Net density (homework)	17,481	-3.079	-0.501	4.575	-1.561
Transitive triads (homework)	17,644	0.129	0.591	0	10
2-in-stars (homework)	17,644	0.036	0.187	0	1
2-out-stars (homework)	17,644	0.811	0.986	0	6
Mutuality (homework)	17,644	0.819	1.047	0	8

Appendix

Scales (differences between ego and alter were multiplied by -1)

- **Mother: controls leisure time**, alpha = 0.754

1. never, 2. sometimes, 3. often, 4. always, items:

During leisure time...

1. Mother knows what I do
2. Mother knows where I am
3. Mother knows whom I am meeting

- **(low) self control**, alpha = 0.591

1. not true, 2. rarely true, 3. rather true, 4. exactly true, items:

1. Have difficulties concentrating
2. Can't sit still for a long time
3. I tend to become upset if things are not as I like them to be
4. If I am frustrated/upset people should avoid me
5. When I am in conflict with somebody, I can't stay calm

- **empathy**, alpha = 0.579

1. not true, 2. rarely true, 3. rather true, 4. exactly true, items:

1. I notice when friends feel bad
2. I can empathize with other children

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Chapter 10

Social Discrimination in Classrooms: The Contribution of a Social Networks Approach to Theory and Methods, and Empirical Evidence

Chris Baerveldt

10.1 Introduction

Ethnic mixing as an instrument for desegregation has a long history in the education policies of western countries. In 1954, a debate started in the US when the Supreme Court ruled that black people had the right not only to 'equal' schooling facilities, but also to desegregated schools (e.g. Brown 1954). Since then, many policy makers, not only in the USA (Moody 2001), but also in many western countries such as Belgium and the Netherlands, have promoted ethnically mixed school populations (Laquière 1997; Vermeij 2006). Often, practices of desegregation such as 'bussing' students to specific schools were motivated by the guiding principles of equality and integration. This is surely one of the most prominent examples of how educational institutions are expected to perform tasks that go far beyond the educational goal of skill formation. The results of the experiments were not overwhelmingly positive. Schools often tended to stay either 'black' or 'white', even when policy makers supported ethnic mixing (e.g. Coleman 1975; Karsten 2006). However, schools with actually ethnically mixed populations also did not always reach better integration results (Stark 2011).

In this paper we first sketch some of the theoretical reasons of why ethnic mixing succeeds or fails. We argue that these reasons may explain why the empirical research is still inconclusive, but also that methodological problems contributed significantly to the unclear outcome. The social networks tradition entered the field in the 1980s and initially focused on solving some methodological issues. This focus was maintained in the empirical investigation of social discrimination within classroom networks, which is presented in this paper. In several

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papers we examined the effect of discrimination on segregation and the effect of the opportunity structure on social discrimination. However, as our overview of empirical results will show, the consequences of a network approach went far beyond solving methodological issues. In particular, central constructs were adapted and operational network definitions were developed for ethnic mix, segregation, opportunity and social discrimination.

10.2 Opportunity and Social Discrimination

Politicians and policy-makers who advocate ethnic mixing generally implicitly or explicitly refer to Allport's contact hypothesis (Allport 1954; Pettigrew 1998). Contact with members of other groups is argued to lead to a rectification of prejudices, a more positive attitude towards these groups and an enhanced willingness to choose a member of this group as a friend. Also, when true cultural differences exist, contact may lead to understanding or adaptation, paving the way for satisfactory interaction with members of the other group. Out-group contact is thus assumed to reduce *social discrimination*, which we define as negative attitudes and behavior towards individuals or groups on arbitrary grounds. Note that the contact hypothesis does not imply that interethnic contact always reduces prejudices. According to Allport (1954), such contacts have to be personal. Casual and superficial contact could even reinforce hostility (p. 281). Furthermore, Allport states that contact reduces prejudice and supports social integration only if the participants have the same status level, and have at least some common goals, which can only be reached by cooperation. Moreover, relevant authorities, law and custom should support integration.

While school settings often more or less meet Allport's criteria, neighbourhood settings seldom do. Contacts at school are personal, particularly in classrooms. Also, no formal status differences exist within school classes in western countries. Furthermore, it has long been known that pupils generally prefer a friendly climate, for which they need classmates (Coleman 1961). Moreover, the school organisation and teachers usually support integration. In contrast, contacts in neighbourhoods are usually superficial. While it can be safely assumed that most residents prefer a friendly and safe environment with a certain level of social services, they are not often inclined to bring about these goals by collective action with the whole neighbourhood. Also, while local and national governments usually officially support integration, substantial measures are often lacking or are not recognised by the residents. All in all, when following Allport's reasoning, we may expect effects of mixing in many schools, but usually not in neighbourhoods.¹

¹ Exceptions are possible, if only because school and neighbourhood settings can be intertwined. Ethnic segregation in neighbourhoods may be reproduced within school populations, and schools may facilitate the mixing or segregation of parents.

There are more reasons why results may differ between contexts. The contact hypothesis is not undisputed by theorists and researchers. According to competition theory the relations between ethnic groups can be competitive (Blalock 1957; Bobo and Hutchings 1996; Quillian 1995). Inter-group boundaries are assumed to be actively and purposefully constructed and maintained, whether it is for material purposes or more symbolically for the construction and maintenance of social identity (Tajfel and Turner 1979). Therefore, interethnic contact does not automatically counteract the preference for intra-group relationships. People may discriminate even more strongly against a more or less similar group than against a group that is clearly distinguishable from their own group (Jetten et al. 2001). According to competition theory, experienced threat is an important predictor of discrimination: when members of an ethnic group feel more threatened by other groups, they will stress their own identity more. All in all, according to competition theory, mixing projects will, under certain conditions such as large enough minority groups, increase discrimination. Until now, the results of empirical research have not been conclusive. According to Pettigrew and Tropp (2006), who performed an extensive meta-analysis, the hypothesis that contact reduces prejudice is sustained by empirical evidence. However, their study is not the final answer they seem to suggest it to be. Somewhat surprisingly, the authors conclude that Allport's list of conditions is too strict because projects that did not meet (some) of the criteria were also effective. However, it is not clear what this should mean for the theory. Moreover, the mean effects of mixing projects on prejudices are rather weak, which suggests that much of the effect can be better explained by other variables. In particular, while Pettigrew and Tropp admit that contexts, such as the organisational embeddedness of the project, can have important effects, they did not elaborate on the nature of such effects and accordingly did not present results. Finally, the meta-analysis was on prejudices only, leaving the effects on actual discriminating behaviour and the quality of relationships uninvestigated.

Note that meta-analyses of ethnic discrimination presuppose that there is some way to compare ethnic groups in different contexts. However, comparison is often hazardous. According to de Federico de la Rúa (2007), ethnicity does not refer as much to identity as to identification. Ethnic identifications are not fixed, but are shaped by people depending on configurations. Thus, ethnic definitions are partly subjective and partly societal constructs, and accordingly differ between contexts. Consequently, definition and measurement problems arise when researchers compare different contexts (Musterd 2005). To illustrate from our own experience (Baerveldt et al. 2007), it was not possible to define comparable ethnic categories for Dutch and Flemish high school students, even though these EU regions share the same language, have similar school systems and a similar immigration history. The main problem was that the data for the Netherlands was older (1995) than that for Flanders (2004): the first study counted many second generation immigrant children from Morocco to Turkey, whereas most immigrant children in the latter study were third generation immigrants. This not only led to practical problems of measurement and comparison, but also brought up the question of what an ethnic

category really is. To solve this quandary, many authors only distinguish between an ethnic majority and an ethnic minority, following the local definitions of who is considered a stranger and who is not.²

10.3 From Prejudice to Social Discrimination and Social Networks

The Pettigrew and Tropp study illustrates the dominance of studies on prejudice in social discrimination studies in the 1980s. However, it is questionable whether such dominance is reasonable from a theoretical perspective. The gap between preferences and actual relationships is ignored: people may or may not have prejudices towards another ethnic group and may or may not maintain positive relationships with some members of these groups. The relation between prejudices and relationships can be rather complex, and there is no empirical evidence that they are always positively associated (Stark 2011). Moreover, when the focus is on negative outcomes of discrimination for the discriminated minority members, research and theory should include the experiences of the victim. The victim cannot perceive prejudices directly: the heads of others are closed. Instead, (s)he experiences the actual behaviour of people from other ethnic origins, especially negative behaviour like aggression or avoidance, or the withholding of positive behaviour, like job offers and friendly contacts. Social discrimination is at work when such behaviour is systematic and stronger between people of different ethnic origins than between people of similar origins. Therefore, the study of ethnic discrimination should include the investigation of actual relationships.

Researchers who studied actual relationships, such as friendship or collaboration, encountered some serious methodological problems. Many studies on actual relationships in the 1980s offered numbers regarding intra- and interethnic relationships. These numbers, however, could not be interpreted in terms of segregation or discrimination because they were affected by contact opportunity (the number of possible intra- and interethnic relationships) as well as by ethnicity-based selection (social discrimination). Therefore, controlling for the opportunity of those relationships became vital in the analysis of their actual occurrence. The question arose which possible relationships could be assumed to be opportune. For instance, are only relationships with neighbours opportune or relationships with all people living within a distance of 250 m or even with all citizens? The literature did not offer a clear theoretical solution to this problem, which probably reduced the popularity of relationship studies and enhanced that of prejudice studies.

The recent social network tradition entered the field in the 1980s, especially because it offered a solution to the problem of controlling for opportunity. Hallinan

² This is in line with the generally adopted idea that ethnic identities are socially constructed (see e.g. de Federico de la Rúa 2007; Wimmer 2008).

was one of the first to recognize the potential of quantitative network research in classrooms for the study of discrimination (Hallinan 1982, 1987; Hallinan and Kubitschek 1999). The social network approach typically combines actors—like people, organisations or countries—with relationships (ties)—like friendships, trade or cooperation—between those actors. The boundaries of many types of networks are not clear by definition and in practice are often vague. However, so-called complete networks have clearly defined boundaries. A complete network includes a ‘natural’ set of people with all the (possible) friendships among them. Examples of complete networks include the members of and relationships within organisations, travel groups, parliaments, small island populations and UN nations. The opportunity structure of such networks can be assessed for all network members. In small complete networks, such as classroom networks, all relationships within the network can be considered as (equally) opportune. Initial attempts to control for opportunity were often problematic in a statistical sense, usually because the statistical models did not cope well with the interdependence of personal data in networks (Hallinan and Smith 1985; Hallinan and Teixeira 1987; Hallinan and Williams 1989; Kubitschek and Hallinan 1998). However, appropriate statistical models were developed (Robins et al. 2007; Van Duijn et al. 2004; Wasserman and Pattison 1996; Zijlstra et al. 2006), and successfully used since the 2000s (Baerveldt et al. 2004; Moody 2001; Quillian and Campbell 2003).

What started as a solution to the technical research problem of controlling for opportunity had consequences beyond methodological ones. The social network solutions above point to a problem at aggregation levels. Allport defined discrimination as an act of communities or groups, as a macro-outcome of micro-processes in which the prejudices of individual people are at the forefront. This combination of a macro-level phenomenon with a micro-level ‘mechanism’ is not unusual; it is, for instance, in line with Coleman’s (1990) prominent vision on sociological theory. Accordingly, it seemed only logical to test social discrimination in a neighbourhood by aggregating the behaviour (usually having prejudices) of the individuals living in that neighbourhood. However, the social network tradition changed this scheme. The central unit of social network research is usually not the actor, but the dyad, i.e. a pair of actors and the (possible) tie(s) between them (Wasserman and Faust 1994). Most prominent network variables, like density, transitivity and structural equivalence, are built up by aggregating from dyads rather than from individuals. Consequently, the focus of the research shifted from the individual to the dyad, from the prejudices of individuals to the existence and quality of relationships between individuals. Accordingly, the question arose of whether the probability that two individuals have a positive relationship is higher if they have a similar ethnic background. This question fits well into social network tradition, where similarity is abundantly studied, not only regarding ethnicity but also regarding many other personal attributes. The first famous similarity studies stem from the 1950s (Homans 1950; Lazarsfeld and Merton 1954; Morton 1959). Since the 1980s a large number of studies showed similarity effects regarding a wide variety of attributes such as gender, socio-economic background, physical attractiveness, anti- and pro-social behaviour and

intellect. These similarity effects are explained from a wide variety of perspectives, most of which do not include ‘negative’ psychological processes such as the development of prejudices an overview of similarity effects and possible causes is given by McPherson et al. (2001). Thus, the social network approach did not only solve some methodological problems, but also introduced dyadic thinking and positioned ‘social discrimination’ as only one cause of one kind of similarity.

In the present paper, we continue to illustrate the consequences of a social network approach by discussing a series of three classroom network studies (Baerveldt et al. 2004, 2007; Vermeij et al. 2009). The studies were inspired by the working theory of mixing projects. First, we investigated whether segregation (ethnic boundaries) existed within classrooms, and whether this segregation was caused by social discrimination (Baerveldt et al. 2004, 2007). Second, we studied the effect of the opportunity structure in classroom networks and neighbourhoods on social discrimination (Vermeij et al. 2009). From the beginning it was clear that the network approach would have consequences beyond the methodological level. Thus, our enterprise was also meant to solve two connected problems. The first was how to define social discrimination and related concepts within a network context in clear, operational terms. The second was how to analyse effects on discrimination.

10.4 A Social Network Approach to the Study of Social Discrimination

A social network approach includes not only a certain branch of data and data gathering and a certain brand of statistical methods, but also network-based operational definitions.

When considering positive interethnic relationships (e.g. friendship, support, doing things together) in complete networks, it is possible to provide a rather straightforward definition of the opportunity structure. When the ethnic distribution across the network is known, i.e. the ethnicity of each network member, the number of possible intra-ethnic relationships is also known, as well as the number of possible interethnic relationships. All possible relationships can be viewed as relationship opportunities when it is easy for network members to meet each other. This is usually the case in classroom networks, but also in many other types of complete networks. In practice, those networks should not be too large and there should be no hindrances like geographic distances or formal rules. The opportunity for each network member is then given by the proportion of possible (positive) intra-ethnic relationships compared to the total number of possible relationships. In operational terms: when a complete network includes N members, of which N_{maj} are majority members and N_{min} are minority members, then the opportunity of intra-ethnic relationships for each majority member is $N_{\text{min}}/(N - 1)$, and for each minority member the opportunity equals $N_{\text{maj}}/(N - 1)$. Aggregating these

proportions across all members of specific ethnic categories creates opportunity indexes for each ethnic category at the network level.

While opportunity refers to what is possible at all, the ethnic mix refers to what is reality. In complete networks, where all possible and actual relationships are known, the connections are known, which offers the opportunity to count and compare and thus to assess the ethnic mix for each member of the network. The ethnic mix can then be defined as the proportion of actual intra-ethnic relationships compared to the total number of actual relationships. In operational terms: when a network member has X friendships, of which X_{intra} are within the same ethnic category, the ethnic mix index is X_{intra}/X . Aggregating these proportions across ethnic categories creates ethnic mix indexes for each ethnic category at the network level.

A low mean of the ethnic mix indicator(s) does not automatically imply segregation. When there is only one Chinese person in town, the ethnic mix indicator for the other inhabitants with respect to Chinese people is low, but this situation does not cover the idea of segregation at all. What is essential here is the actual number of relationships with a member of a certain category, compared to the number of possible relationships. The crucial question is whether people have a tendency to engage in positive intra-ethnic relationships more than can be expected from their opportunity. First, consider the total density d , i.e. the proportion of actual relationships within the whole network compared to the total number of possible relationships within the network. Then, consider the density $d_{\text{intra}}(X)$ of intra-ethnic relationship within an ethnic category X , i.e. the proportion of actual relationships with people of the same category compared to the number of possible relationships within that category. A clear segregation index is then given by $d_{\text{intra}}(X)/d$. Note that the segregation index is directly related to the existence of ethnic boundaries. Ethnic boundaries exist when the segregation index is significantly larger than 1, i.e. members of category X have a tendency to have more relationships within their own category than can be expected from the total number of actual and possible relationships in the whole network.³ Moreover, the strength of boundaries is given directly by the value of the segregation index. Note that not just one index exists for the whole network, but that one index exists for each ethnic category. Consequently, segregation is considered here as a multi-dimensional construct, where each ethnic category adds a perspective to segregation.

Social discrimination is not automatically implied when networks are segregated (i.e. when one or more segregation indexes is larger than 1), because ethnic segregation can be caused by factors other than discrimination. For instance, if minority members live in cheaper buildings than majority members in the same neighbourhood, this can cause segregation even without social discrimination. In classrooms, gender is usually the strongest divider (most friendships are intra-gender friendships), which can indirectly cause ethnic segregation. This initially led us to define social discrimination as a propensity of network members to engage more in

³ We focus on the strength or permeability of the boundaries, and do not take into account how society defines the relevant 'ethnic' categories (Alba 2005; Esser 2004, 2008; Wimmer 2008).

intra-ethnic than in interethnic relationships (Baerveldt et al. 2004). Note that while social discrimination is usually defined at aggregation levels above the individual, the propensity should refer to networks or categories. The word ‘propensity’ refers to people and accordingly suggests that the construct is aggregated from an individual variable. However, in social network research, the unit of analysis is usually the dyad and not the individual. What is important here is what happens to dyads, in particular the status regarding the existence of positive relationships within the dyad. What is essential is whether the propensity to engage in intra-ethnic relationships has an effect on this status. Consequently, we defined social discrimination as a (positive) effect of ethnic similarity on the probability that a possible relationship is an actual relationship. This definition enabled us to include social discrimination as an effect in appropriate statistical models. But it also affected the view on discrimination. Note that by this definition, social discrimination is observed as an activity that is only directly visible in its effect on the formation of dyadic relationships. The intention and prejudices of the ‘sender’ (i.e. the discriminator) and any of the sender’s psychological mechanisms are not taken into account. Social discrimination is not defined as the outcome of preferences; other mechanisms, such as peer pressure, can as easily play a role. The process within the ‘receiver’ (i.e. the discriminated) is also not taken into account.

10.5 The Three Classroom Studies: Design, Analyses and Results

10.5.1 Data and Design

Three different databases were used to investigate networks of high school pupils in the Netherlands and Flanders. First, segregation (ethnic boundaries) and social discrimination were studied in 20 Dutch pupils’ networks (Baerveldt et al. 2004). Second, 34 high school pupil networks in Flanders were investigated and compared with the Dutch networks (Baerveldt et al. 2007). Third, a dataset comprising 86 pupils’ networks in the Netherlands were used to study the effects of ethnic composition on social discrimination (Vermeij et al. 2009). Each network from the first two databases consisted of a school cohort at an intermediate level of education (track). These networks usually included more than one classroom. The third database included separate classroom networks. Friendship relations within the networks and ethnicity were measured by questionnaires; pupils were asked to indicate with whom in their class they had (specific) positive relationships, like friendship, emotional and practical support. These items were used across all three studies, but there was some variation in the way they were used in the analysis. While precise information about ethnicity existed and was used in descriptive analyses, only the distinction between majority and minority members was used in the final analyses. See the cited publications for more information about design and measurements.

10.5.2 *Statistical Methods*

Our first concern was to define the concepts above in such way that, on the one hand, they were as true as possible to the theoretical framework behind the mixing discussion and, on the other hand, in line with the social networks approach. The statistical models were developed in the last decades, and two of our co-authors contributed significantly to the models we needed (Van Duijn et al. 2004; Zijlstra et al. 2006). Consequently, the definitions given above were partly inspired by the development of new statistical models, as the development of the models was partly inspired by our search for clear definitions and results. It is only by defining social discrimination as an effect on dyads that we were able to use the new models.

Classical methods, such as log linear or logit analysis, presuppose that data at the individual level is independent. However, such variables are usually interdependent in social networks. For instance, the number of friendships a pupil has within a classroom network depends partially on the number of friendships of his/her classmates. However, methods that deal correctly with the problems of interdependency in social networks have become available recently, not least the p_2 and p^* models which are examples of Exponential Random Graph models (ERGMs, see e.g. Robins et al. 2007). In our analyses, we used the p_2 model (Van Duijn et al. 2004; Zijlstra et al. 2006). The p_2 model is a random effects multinomial logistic regression model with a complex variance structure to account for the dependence between dyads. The dependent variable is the relationship status of a dyad (i,j), indicating whether an actual relationship exists between pupils i and j. The model incorporates and controls for sender and receiver characteristics, such as ethnic group membership, and for dyadic characteristics, such as ethnic similarity between the pupils of a dyad. This makes it possible to assess social discrimination as an ethnic similarity coefficient in the p_2 model. Recently, a multi-level version of the p_2 model has been developed (Zijlstra et al. 2006) that includes the effects of network-level variables, such as ethnic network composition, in the equation. The interaction effect of network composition variables and the social discrimination coefficient on the status of dyads can now be interpreted as the effect of ethnic composition on social discrimination.

10.6 Results

In all three studies, we first investigated the ethnic mix. We found that majority members predominantly had positive relationships with majority members. In our first study (Baerveldt et al. 2004, p. 64) we found that 79 % of (received) support relationships of the native Dutch pupils in the first study were with other native Dutch pupils and only 2 % with pupils of Moroccan origin. However, only 24 % of the support relationships of the pupils of Moroccan origin were with other Moroccans and 27 % with native Dutch pupils. The results in the other two studies

were similar: while minority members had mixed networks, majority members mostly remained in their native network.

The ethnic mix seems to imply that majority members were discriminating, but our investigation of segregation suggested a completely different interpretation. While the percentage of intra-ethnic relationships in the personal networks of majority members was more or less equal to the possible percentage of these relationships in these networks, minority members had (many) more intra-ethnic relationships than could be expected, taking the ethnic distribution into account. Thus, majority members were not segregated, but minority members were. Our analysis of social discrimination supported the hypothesis that the segregation was caused by social discrimination. Again, we found striking differences between majority and minority members. Minority members discriminated, whereas majority members did not discriminate or discriminated less.

Finally, we investigated the effect of the opportunity structure on social discrimination (Vermeij et al. 2009). Our data permitted us not only to take the ethnic mix in the classroom into account, but also the ethnic mix in the neighbourhood (postal codes) where the pupils lived. Table 10.1 shows that the results run counter to expectation, whether on the basis of contact hypothesis or competition theory.

We found (1) no effects of a larger number (proportion) of minority members in classroom networks on social discrimination by majority members. This seems contrary both to contact theory, which predicts less discrimination, and to the competition perspective, which instead predicts stronger discrimination. In contrast, we found (2) that a larger number of minority members in the neighbourhood reduced social discrimination by majority members in the classroom. As we have argued, however, neighbourhoods do not meet Allport’s criteria for such an effect. Also, our finding is not in line with the competition perspective, which predicts a rise of social discrimination. Table 10.1 also shows that (3) there were no effects of ethnic classroom composition on social discrimination by minority members. This does not contradict the contact hypothesis. The main reason is that minority members usually have abundant contacts with majority members and that a larger number

Table 10.1 The influence of a larger number of minority members in the classroom and in the neighbourhood on social discrimination among classmates. Predictions from a contact and from a competition perspective, and empirical results

Larger number of minority members in:		Predictions from		Empirical results
		Contact theory	Competition perspective	
Majority members				
(1)	Classroom	-/-	+	0
(2)	Neighbourhood	0	+	-/-
Minority members				
(3)	Classroom	0	+	0
(4)	Neighbourhood	0	+	+

would not substantially reduce the number of such contacts. Our finding is, however, contrary to the competition perspective because, when minority members find themselves in larger numbers, they would, according to that perspective, more easily build identities around their own ethnicity. Finally, we found (4) that an increase in the number of minority members in the neighbourhood reinforced minority members' social discrimination of majority members. This is not in line with the contact hypothesis, which never predicts stronger social discrimination under these circumstances. However, it exactly matches the predictions of competition theory.

10.7 Conclusion and Discussion

In this paper we presented a series of three studies of social discrimination in a social networks frame. First, to overcome some problems of earlier discrimination studies on positive relationships and networks, operational network definitions and measurements were developed for ethnic mix, segregation, opportunity structure and social discrimination. Second, making use of the fact that the opportunity structure for relationships is known in complete networks, we analysed three datasets of classroom networks. Third, using p^2 models, we tested the effects of discrimination on segregation and of ethnic mix on discrimination. This approach led to some remarkable results. While most majority members had only few positive relationships with minority members in the class, more than half of the relationships of minority members were with majority members. This is entirely due to the opportunity structure because, strikingly, minority members discriminated more than majority members. The ethnic classroom composition had no effect on social discrimination, whereas the effects of neighbourhood composition were clear: minority members discriminated more strongly in neighbourhoods with more minority members, and majority members did discriminate less. None of these findings seems to be in line with either Allport's contact hypothesis or social identity/competition theory.

Before going on with the interpretation of the results and the evaluation of the chosen research strategy, we want to discuss some possible limitations of our study. First, we ignored institutional discrimination, like discrimination by organisations, in the economy or by laws and policy. We acknowledge that institutional discrimination can have a huge impact on everyday life and cannot be studied sufficiently from our dyadic approach. However, our inspiration came from ethnic mixing projects, which aimed to boost integration and equality in educational institutions, because such projects still take on a major role in integration policy in some western countries. The driving force for mixing projects is not structural, but social discrimination. Therefore, we limited ourselves to a social network perspective and dyad-based constructs.

Second, we acknowledge that our empirical results cannot be generalised automatically to apply to school populations of other configurations. The Dutch schools in the first and third study were not randomly selected, and probably

counted fewer minority members than average in the Netherlands. The problems regarding the assessment of the membership in a minority group suggest that measurement problems will probably arise when studying other countries or historical periods. Moreover, in some configurations, integration will be supported by authorities and in others it will not, which according to theory (Allport) would lead to different expectations (regarding the outcome). However, there is one reason not to be too pessimistic about generalisation. The Flemish schools in the second study were selected randomly, and while the percentages of minorities in the class and the political context were different, some striking outcomes were still the same. While the minorities were the social discriminators in the class, they still had mixed personal friendship networks, whereas the majority members did not discriminate but had a less diverse ethnic mix. Therefore, we expect that our findings are no coincidence and that studies in western countries will probably often replicate our findings.

Third, while the use of complete networks makes it possible to measure the opportunity structure and social discrimination, the friendship networks of the pupils in our study are still cut off by classroom walls, and the pupil's networks outside school remain invisible. The question is: how important are the pupils' friends outside of the classroom network? We asked the pupils how important they were and they indicated that the most important friends were usually those in the classroom. We also controlled all our analyses for this variable, which did not change the major outcomes. Also, for theoretical reasons, it could be argued that social discrimination is generalised across all settings (like a personal trait), and that pupils would socially discriminate as much in school as outside of school. However, there still is a slight chance that behaviour inside and outside of school differs, and it would be wise to include out-of-school friendships in future research.

Fourth, in Vermeij et al. (2009, p. 238) we interpreted our findings regarding the effect of the ethnic composition of neighbourhoods on social discrimination: majority members discriminated less and minority members more as the number of minority members in the neighbourhood increased. We suggested that this might be explained by the neighbourhood choice of ethnocentric parents: parents with ethnic majority background would leave neighbourhoods with many minority members, and ethnocentric parents of a minority background would readily enter them. However, it is not probable that such a mechanism would offer a full explanation of the findings. Other neighbourhood features, such as house/rent prices, distance from work, safety and facilities probably affect the choice of neighbourhood more. Moreover, while there is usually a mean effect of parents' morals on their children, the effect should be very strong to explain the large differences we found. While keeping in mind that the influence of parents on their children rapidly decreases as the children enter adolescence (Meeus et al. 1999), we conclude that the neighbourhood choice of ethnocentric parents cannot explain away our findings.

Our findings illustrate that mixing projects may 'work', even though they do not support the theoretical basis of Allport's contact hypothesis. The data shows that social discrimination exists, but that minority members still have plenty of

interethnic contacts. Thus, the effects of ethnic composition on the ethnic mix in personal networks can easily outweigh the effects of social discrimination. Therefore, the negative consequences of social discrimination experienced by minority members are probably more than compensated for by positive experiences in positive relationships. Consequently, when mixing projects indeed succeed in creating ethnically mixed school populations, they have positive externalities for minority members, such as social and cultural capital, even if they do not reduce social discrimination between pupils. This suggests that mixing projects should focus on these externalities rather than on the prevention of social discrimination.

We found that classroom composition did not affect social discrimination by majority and minority members. This seems contrary to Allport's contact hypothesis, which predicts that a larger contact opportunity should reduce discrimination. However, we already indicated that it is possible that the classroom contexts did not always meet Allport's additional criteria. A strong initial segmentation of classroom networks or negative signals from authorities regarding integration would, according to Allport, impede the reduction of discrimination. Nevertheless, we also found that a larger number of minority members in the neighbourhood reduced social discrimination, while the probability that neighbourhood contexts meet Allport's criteria, is even less. We conclude that the contact hypothesis may only be valid when Allport's additional criteria are considered. We would like to suggest the abandonment of Allport's idea that only personal contacts matter and acknowledge that superficial contacts can have more important effects on selection. This latter idea has become rather popular in the social network tradition, since Granovetter (1973) advocated the 'strength of weak ties', and should be given serious consideration.

Our findings are only partially in line with the competition perspective. First, because classroom composition did not affect social discrimination, the competition perspective should depart from the idea that personal contacts are the most important ones for competition. Competition seems to be enhanced by a more abstract feeling to be part of a larger group than by actual experiences in intimate social networks. Second, while minority members, as predicted, discriminated more when their numbers were larger in their neighbourhood, majority members discriminated less. The latter outcome deviates further from a competition perspective than can logically be expected. It might be possible for neighbourhood composition to have no effect on discrimination by majority members, if those members do not experience a larger number of minority members as a threat. However, a negative effect is not in line with the perspective.

We propose that the amount of social discrimination is best explained as a balance between the positive and negative effects of superficial contact opportunities. Stronger social discrimination is due to the potential and possibilities of a strengthening of the actors' own ethnic identity, roughly in line with the competition perspective; however, conflicts between actual persons usually do not play a major role here. Contexts at higher aggregation levels, such as political climate, economy and housing policy, will probably have a strong effect on this process. A decrease in social discrimination may still be brought about by (social) psychological processes,

including the reduction of prejudices, associated with repeated superficial contact. These processes are more general and less context-dependent.

Apart from the empirical results, the use of a social network approach alone has had some important consequences for the study of social discrimination. First, the focus shifted from the individual to the dyad. While we first followed tradition and defined social discrimination as a seemingly individual attribute, we later redefined and analysed it as an attribute of dyads. This enabled us to distinguish between certain kinds of dyads. For instance, the strength of ethnic discrimination could be compared easily between same-sex and opposite-sex dyads. In general, dyadic analysis enables researchers to control for selection mechanisms that compete with ethnic discrimination. Second, a certain kind of 'symmetry' is a natural feature of the social network approach. It is hazardous to compare social discrimination as measured by the prejudices of majority and minority members. The main reason is that the relevant prejudices of majority members are usually different from those of minority members. In contrast, we have defined social discrimination as friendship selection, independent of the (ethnic) position of the potential discriminator, and majority and minority discrimination are easily compared. Third, social discrimination is more explicitly defined as a cause instead of a consequence. When analysing social discrimination, it is assessed as the effect of an independent variable (ethnic similarity) on friendship choice. Fourth, defining ethnic discrimination as a similarity effect stresses that social discrimination is only an example of a selection pattern. This suggests that the theoretical approaches of other fields can be used to understand discrimination. For instance, there is no compelling reason to interpret social discrimination as the outcome of preferences; peer pressure, scarcity of attractive candidates for friendships and erroneous information can as easily lead to social discrimination (Baerveldt et al. 2010). Also, the occasionally moralistic values embedded in the study of 'prejudices' can be avoided. There is no overarching theoretical reason why it would be negative to select same-ethnicity friends and positive to select same-gender friends. The only reason to avoid social discrimination would be in the negative externalities, not because discrimination itself is 'bad'. Fifth, the relations between the important concepts, ethnic mix, segregation, social discrimination and opportunity structure are intuitive and clear in a social network approach and can easily be translated into analyses.

Finally, the object of our study shifted from 'prejudices' to 'friendship choice'. This is, again, partly an effect of the network approach: network studies usually do not focus on intra-personal development factors, such as maintaining or dropping prejudices, but on actual relationships between people. We would like to emphasize the merits of this shift. The rather complex (and not always positive) association between prejudices and discrimination in friendship choice makes it unfeasible to regard prejudices and social discrimination as equivalent. As we already stated, the usually negative moral value associated with ethnic discrimination is not embedded in the fact that people have prejudices, but rather in negative externalities, such as aggression or avoidance, poorer education and less job opportunities. According to the literature (e.g. Wimmer 2008), ethnic boundaries can have strong direct effects

on these externalities, and therefore the study of those boundaries seems to be more salient than the study of prejudices. Our contribution is that, with our segregation index, we developed a method to measure the strength of the ethnic boundaries (given the societal definitions of the relevant ethnic categories). Moreover, we developed a segregation index for each ethnic category, implying that the strength (or permeability) of the ethnic boundary can differ between those categories. This is in line with the understanding that members of one ethnic category can more easily cross the ‘same’ ethnic boundary than members of another category.

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Chapter 11

School Interconnectedness and School Inequality as Determinants of the Ethnic Gap in Violent Behaviour

Dirk Baier

11.1 Introduction

Numerous studies show that migrant adolescents in Germany are much more violent than native German adolescents. Looking at other types of delinquent behaviour, on the other hand, the two groups scarcely differ. Particularly high levels of violence are reported for adolescents with Muslim backgrounds, such as Turkish and Arabic adolescents. These migrants are also more often exposed to factors associated with violent behaviour. The economic situation of migrant families is significantly more likely to feature unemployment or welfare benefit dependency and there is greater acceptance of violence e.g., as means of parenting. The ethnic gap in violent behaviour can be partly explained by taking these factors into account.

One aspect that has not yet been studied is how far the school environment contributes to the higher violence levels of migrant adolescents. Without question, school ranks as a key socialisation context alongside an adolescent's family and peer group. In addition to the basic task of skill formation, schools are expected to produce desired behavioural principles. But individuals' school experiences can also affect their propensity to engage in violent behaviour. Poor school grades, for example, can act as a form of frustration that may turn into violence. If migrant adolescents tend to encounter such experiences with greater frequency, then this is possibly a further explanation for the greater propensity to violence across this group. This would mean that educational institutions do not only fail at fulfilling the additional tasks of norm-internalization and crime prevention, they even induce or at least trigger delinquent behaviour in disadvantaged groups. The central question in this chapter is

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therefore whether school factors additionally help to explain the ethnic gap in violent behaviour. This question is analysed using data from a representative nationwide survey of Year 9 school students in Germany.

11.2 Previous Findings and Theoretical Considerations

Empirical studies on delinquent behaviour among adolescents carried out in Germany almost unanimously confirm higher violence levels among migrants than among native Germans. In Crime Statistics, the number of violent crime suspects per 100,000 population is about three times higher for non-German adolescents than for German adolescents (Baier and Pfeiffer 2008, p. 70ff). The two groups scarcely differ, on the other hand, regarding vandalism and shoplifting—two other common offences in adolescence (Baier 2011).

Self-report studies report similar results (for an overview see Baier and Pfeiffer 2007). Oberwittler (2003), for example, shows prevalence rates for violent offences by adolescents with migrant backgrounds to be at least 1.3 times those found for Germans. Turkish adolescents prove to be particularly violent. Enzmann (2010) likewise concludes that violence levels are especially high among Turkish adolescents. Most studies, however, only distinguish a small number of migrant groups. An exception is the study by Baier et al. (2009, p. 70), which distinguishes a total of 14 ethnic groups. Only Asian adolescents show violence levels comparable with those of their German peers; very high levels of violence and notably large numbers of multiple offenders are found among Turkish adolescents, Arabic adolescents and adolescents from countries of former Yugoslavia. Only one study in Germany so far has reported comparable violence levels for German and Turkish adolescents (Boers et al. 2006). An explanation for the unique result may be the special location of this study: It was carried out in the city of Duisburg with a very large Turkish community that may be able to exercise exceptionally strong informal behavioural control on adolescents.

Most of the existing studies are focused on violent behaviour by adolescents in the public arena and outside of school hours. However, it has been shown that migrants are also more violent in the school context as well. Fuchs et al. (2005) report for all forms of school-related violent behaviour (including psychological and verbal violence) that adolescents with migrant backgrounds show higher violence levels than native Germans. Baier et al. (2009, S. 86ff), too, report that all migrant groups except Asian adolescents display physical violence more frequently than Germans. The finding that migrants engage more frequently in violent behaviour thus applies regardless of the context under analysis, i.e., both inside and outside school.

That the way schools are organised can reinforce the differences in violent behaviour between Germans and migrants is something that has not been discussed in research so far. Possible reasons considered instead include social deprivation among migrants, lower educational integration, more frequent confrontation with

family violence, and more frequent endorsement of norms of violence (see e.g., Baier and Pfeiffer 2007; Wilmers et al. 2002, p. 171).

School conditions are not entirely ignored as influencing factors in violence research, however. A large number of studies showed that a positive school climate and supportive teachers prevent school violence (e.g., Baier and Pfeiffer 2011; Gottfredson et al. 2005; Spratt 2004). Conversely, negative factors (such as a high level of aggression) can increase the individual propensity to violence (e.g., Kellam et al. 1998). Certain structural characteristics such as the proportion of migrants (Baier and Windzio 2006) or the share of students with experience of family violence (Fuchs and Schmalz 2010) also effect individual violent behaviour. Up to now it was not analysed whether these factors explain the behaviour of Germans and migrants in a different manner. If they were found to do so, then such factors would be moderator variables that might explain why migrants show more violent behaviour than Germans.

However, for the above mentioned factors this seems not theoretically plausible. Both the positive and the negative school factors investigated are likely to operate equally on migrants and Germans. School or class factors—special attention is paid in the empirical section to the class level—ought instead work in a different way for migrants and Germans when they refer to the mutual relationship between the two groups. Usually, this relationship is described with the concept of integration. The integration model proposed by Esser (2000, 2001) distinguishes various dimensions of integration: cognitive, structural, social and identificational integration. By definition, cognitive and identificational integration cannot meaningfully be measured for Germans in a German context. Germans generally speak their native language (cognitive integration) and generally consider themselves German (identificational integration); these dimensions of integration show no variance in the German group. For this reason, they appear poorly suited as means of describing relationships between Germans and migrants at school or class level.

This restriction does not apply for structural or social integration. Structural integration (or ‘placement’) refers to the occupation of status positions in society, for example by taking up occupational and other positions that depend on having undergone an educational career. The educational qualification attained is consequently often used as an indicator of structural integration. This indicator has the problem that it cannot be stated with certainty for adolescents still at school. Substituting it with the leaving qualification that students are going to require at the attended school type is again problematic because this feature would not vary at class level; i.e., all students in a given class (migrants and Germans) aim for the same leaving qualification. If class factors are used to explain the correlation between migrant status and violent behaviour independently of school type, an explanatory factor is needed that varies between students of classes (within a given school type). This purpose can be served by economic deprivation. Deprivation, in the form of unemployment, welfare benefit dependency and the like, is considered an influencing factor for delinquent behaviour (see, e.g., Rabold and Baier 2007). At the same time, migrants on average are more economically deprived than native

Germans (see, e.g., Woellert et al. 2009). This can be differently pronounced in different classes within a school type: While migrants are certain to be more economically deprived than Germans in some classes, they will be less so in others. In classes where migrants are more economically deprived and inequality is therefore more visible, this situation is likely to cause greater frustration for migrants than a situation of economic equality. Aggressive in-school violent behaviour represents a way of dealing with frustration. For migrants, inequality presents itself as a form of relative deprivation; it is known, among other things from research on right-wing extremism, that relative deprivation (deprivation relative to a certain group) motivates prejudice and stereotype formation more strongly than absolute deprivation (see, e.g., Rippl and Baier 2005). What matters is therefore not solely the economic status of migrants, but the difference with respect to Germans in the school and class context.

In the school context, economic deprivation will probably not be the only type of inequality between Germans and migrants that is linked with violent behaviour, particularly among migrants. Another dimension of inequality can be grading. Students are divided into successful and less successful students by their grades. For less successful students this can be a further source of frustration. They become more likely to distance themselves from school and school commitment becomes weaker, with truancy as a potential consequence. It is therefore unsurprising that different studies report a relationship between poor school performance and violent behaviour (e.g., Maguin and Loeber 1996). If migrants systematically gain poorer grades than German students, then the grade difference would be expected to make migrants more strongly motivated to engage in violent behaviour than Germans. There would therefore be a bigger ethnic gap in classes with larger performance differences between the two groups than in classes with small performance differences.

Another aspect of integration is social integration. Social integration means relationships entered into by individuals and characterised by mutual orientation through knowledge and symbols (Esser 2000, p. 283). Such relationships can take forms ranging from being neighbours to friendship and marriage. The most relevant form in adolescence is likely to be friendship. Rabold and Baier (2011) show that migrants' propensity to violence falls as the percentage of Germans in their friendship network increases. German friends tend on average to be more positive behavioural role models, so they transmit the norms and values prevalent in Germany—norms and values that include non-violence. Migrant-only friendship networks, in contrast, may socialise cultural norms relating to violence or masculinity, which are strong determinants of delinquent behaviour (see, e.g., Enzmann et al. 2004). Interethnic interconnectedness is thus a protective factor against violent behaviour. This refers to simultaneous contact in both directions between Germans and migrants. At class level, interconnectedness can vary: Classes with weak interconnectedness are likely to be matched by classes with strong interconnectedness. A point to note is that interconnectedness depends on structural factors. Students cannot maintain friendships with migrants if there are no migrants in a class. Any analysis of interconnectedness must therefore control

for the percentage of migrants. The ethnic gap ought to be extra-large in classes that show low interconnectedness despite a large share of migrants. This can be explained by cliques formed along ethnic lines. Given their greater acceptance of violence, migrant cliques can be a source of violent incidents.

Based on these considerations, hypotheses can be formulated as follows for the empirical analysis:

- Migrant adolescents show school violence more frequently than German adolescent (Hypothesis 1). The relationship varies among classes, i.e., there are classes where the ethnic gap is larger and others where the ethnic gap is smaller (Hypothesis 1a).
- The assumptions formulated in Hypotheses 1 and 1a also apply when controlling for important determinants of violent behaviour (Hypothesis 2). Factors to be included in the analysis are gender, experience of parental violence, and school type. Relationships with violent behaviour have repeatedly been shown for these factors in the past (see, e.g., Steffensmeier et al. 2005; Baier and Pfeiffer 2007a; Smith and Thornberry 1995); in some cases migrants and Germans differ significantly with regard to them.
- Because the in Hypothesis 2 mentioned factors do not explain the ethnic gap entirely, the higher school violence levels of migrants must be explained by bringing in other class level factors. The ethnic gap is assumed for this purpose to be smaller in classes with strong interconnectedness than in classes with weak interconnectedness (Hypothesis 3a). And the ethnic gap ought to be larger, in contrast, in classes where migrants face greater levels of social deprivation or are at a greater disadvantage in school performance (as two forms of school related inequality).

11.3 Sample and Measuring Instruments

The empirical analysis is based on a survey of school students carried out in 61 rural and urban districts in Germany in 2007 and 2008 (see Baier et al. 2009). The survey was spread across two years because it took longer to reach a compromise on data protection in some German federal states than in others. The areas were randomly selected such that the sample was representative of the whole of Germany and to allow analyses for different regions (east/west, north/south, rural/urban). Methodologically, a class-based survey approach was taken, with the survey conducted in approximately every second (or in cities every sixth) randomly selected class, in each instance with the whole class present and in the attendance of a teacher and a specially trained test leader. The survey was restricted to Year 9 classes.

A total of 44,610 adolescents were surveyed in 2,131 classes at 1,207 schools, with a response rate of 62.1 %. From the ratio of classes to schools it can be seen that on average fewer than two classes were surveyed per school. The data thus

reveal very little about the situation of a given school but do allow inferences about class characteristics. In the following, therefore, the class is taken as the unit of analysis alongside that of the individual. Various studies show that students are more strongly influenced by class than by school characteristics (see, e.g., Barth et al. 2003), thus providing an additional reason to focus on the class level.

Full information on the used variables is not available for all students and classes. The dataset is therefore limited to students and classes for whom full information is available. Additionally, classes are only included in which more than five students were surveyed, allowing reliable estimation of aggregated class characteristics from respondents' observations. The analysis is also restricted to the western German sample because the proportion of migrants is far lower in eastern Germany and the migrant population there is differently structured (see Baier et al. 2009, p. 33ff). In total, the analysis covers 35,058 students from 1,690 classes (ranging in size from six to 42) from 44 administrative districts or urban municipalities. So the mean class size is 20.7 students.

The dependent variable in the study is violent behaviour in the school context measured by three statements (hitting/kicking, extortion/robbery, hitting a teacher) in the last half academic year. Frequency was originally measured on a six-point scale (from '1—never' to '6—several times a week'). As the last three answers were rarely given, they are merged into one category, giving a four-point scale (zero to three). The mean of the three items was calculated for all respondents to be 0.14 (Table 11.1). The reliability of the scale rates is adequate with Cronbach's $\alpha = 0.62$.

Migrant background was determined with questions on country of birth and nationality. If at least one natural parent or the respondent itself does not have German nationality or was not born in Germany, he or she is classed as a student with a migrant background. This applies to 29 % of students (mean: 0.29). The two largest migrant groups are Turkish adolescents and adolescents from countries of the former Soviet Union, each making up 6.3 % of the sample.

The individual-level analyses in the following include gender and experience of severe parental violence as control variables. Half of all respondents are male. Fifteen percent of respondents report having experienced severe violence in

Table 11.1 Descriptive statistics for the variables—individual level

	Mean	Mean for Germans	Mean for migrants	
School violence	0.14	0.12	0.18	$t = -13.73^{***}$
Migrant background	0.29	–	–	–
Gender	0.50	0.51	0.48	$t = 4.73^{***}$
Severe parental violence	0.15	0.11	0.25	$t = -28.76^{***}$
Interethnic friendships (interconnectedness)	0.22	0.11	0.51	$t = -76.42^{***}$
Social status (inequality)	0.11	0.07	0.19	$t = -28.19^{***}$
School grades (inequality)	3.02	2.97	3.14	$t = -19.34^{***}$

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

childhood. Students were asked to say if before they were twelve their mother or father struck them with an object, hit or kicked them, or beat them. At least one instance of one such experience ranks as experience of severe parental violence.

Interconnectedness and inequality are likewise initially measured at individual level. Interconnectedness is measured by the proportion of friendships with individuals of different ethnic origin. Students were asked to state the ethnic origin of their five best friends. A German respondent with no friends of migrant background is scored as 0, a German respondent with one such friend as 0.2, etc. Conversely, a respondent with migrant background and no German friends scores 0, etc. A German respondent with exclusively migrant friends scores 1, as does a respondent with migrant background and exclusively German friends. The average for this variable is 0.22; interethnic friendships are therefore less frequent than intraethnic friendships. There is a key problem with this indicator, however: It is not known whether the friends concerned are in the same class. From surveys of younger age groups it is known that the majority of friendships form in the class context (see, e.g., Baier et al. 2006, p. 85). This may be similar for older years. On the other hand it can be argued that openness to other ethnic groups as reflected in a large proportion of interethnic friendships, including outside school, may contribute to a school climate of acceptance for interethnic friendships.

With regard to the inequality dimension, two characteristics are measured. Economic inequality is based on whether at least one parent is stated to be currently unemployed or drawing social assistance benefit or Unemployment Benefit II ('Hartz IV'). Performance differences are measured with reference to school grades in German, mathematics and history on the respondent's last report. The mean was calculated from these grades (Cronbach's $\alpha = 0.63$).

There are significant differences between German and migrant adolescents on all analysed variables. This confirms Hypothesis I, that migrants show higher levels of school violence. At the same time, migrants more frequently experience severe parental violence, more frequently maintain interethnic friendships, more frequently face social deprivation and gain poorer grades at school.

It is assumed in the hypotheses that the decisive factor is not the individual degree of interconnectedness or deprivation (inequality) but the situation in the class as a whole. Interconnectedness and inequality are not expected to influence violent behaviour directly but to moderate the relationship between ethnic origin and violent behaviour. To determine the class variables, individual variables were aggregated as follows to class level:

1. The proportion of interethnic friendships was averaged for all respondents in a class to give the mean degree of interethnic interconnectedness. The class-level mean is nearly identical to the individual-level mean (Table 11.2).
2. To determine the difference in economic status, for each class, the proportion of German recipients of social assistance or Unemployment Benefit II ('Hartz IV') was subtracted from the proportion of migrants in the same situation. A figure greater than zero means more migrants are recipients of social assistance or

Table 11.2 Descriptive statistics and correlations (Pearson's r) for the variables—class level

	Mean	Interconnectedness	Status difference	Performance difference
Interconnectedness	0.23	–	–	–
Status difference	0.08	0.02	–	–
Performance difference	0.12	–0.05*	0.01	–
Proportion of migrants	0.31	0.49***	0.08**	–0.07**

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Unemployment Benefit II. The larger the difference, the more pronounced is economic inequality.

- The performance difference was calculated similarly: The mean grades of German students in a class was subtracted from the mean grades of migrant students. A larger difference likewise indicates greater inequality in grades.

The proportion of migrants in a class is additionally included in the following as a control variable. This figure averages 31 % on a range from three to 96 %. The correlations for the class variables are additionally shown in Table 11.2. The only strong correlation is between interconnectedness and the proportion of migrants: Classes with a large proportion of migrants show strong interconnectedness. This relationship shows that for adolescents a large share of their friendships seems to be constituted through class opportunities.

A final factor included as a control variable is the school type, distinguishing between Förderschule/Hauptschule, Realschule/Gesamtschule, and Gymnasium. Various considered factors (including the proportion of migrants) vary with the school type, hence it appears necessary to control for this variable, too. Of the respondents, 33.5 % go to a Förderschule/Hauptschule, 39.5 % to a Realschule/Gesamtschule and 27.0 % to a Gymnasium.

11.4 Findings

To investigate what influence school interconnectedness and inequality have on the ethnic gap, in the following findings of multilevel analyses using the HLM 6 program are presented (Raudenbush et al. 2004). Multilevel analyses make it possible to investigate individual and class factors simultaneously (see, e.g., Ditton 1998) while taking into account that the responses given by the students of the same class are not mutually independent as is assumed in OLS regression analysis. Multilevel analyses therefore permit significance levels to be correctly estimated. Given the large sample in the 2007/2008 schools survey, it would be correct to restrict the interpretation to coefficients that are significant at the 0.1 % significance level, but because only 1,690 classes are used when calculating the significance of context factors, there appears to be ample justification for additionally including coefficients that are significant at other significance levels. Finally, the

models analysed were not two-level but three-level models, because the level of the 44 administrative districts was also included. No hypotheses were formulated for this level and consequently there is no discussion of findings with regard to it.

Table 11.3 reports the findings of various multilevel models with school violence as the independent variable. Model I, first of all, shows that classes differ significantly with regard to students' propensity to violence. The intra-class correlation (ICC) is 0.0545, meaning that up to a maximum of 5.5 % of the variance in violence is attributable to class factors. Class characteristics therefore indeed play a part in explaining school violence.

Table 11.3 Factors influencing school violence (linear multilevel analysis; unstandardised coefficients shown)

	Model I	Model II	Model III	Model IV	Model V
Constant	0.143***	0.127***	0.022***	0.067***	0.067***
<i>Fixed Effects: students</i>					
Migrant		0.051***	0.045***	0.036***	0.037***
Gender: male			0.177***	0.174***	0.174***
Severe parental violence			0.109***	0.106***	0.105***
<i>Fixed Effects: classes</i>					
School-type: Real-/ Gesamtschule				-0.042***	-0.042***
School-type: Gymnasium				-0.072***	-0.072***
Proportion migrant (z)				0.032 [†]	0.023
Interconnectedness (z)				-0.013	0.012
Social status diff. (z)				-0.001	-0.000
School performance diff. (z)				0.005	0.002
Proportion migrant * migrant (z)					0.022
Interconnectedness * migrant (z)					-0.099*
Social status diff. * migrant (z)					-0.003
School performance diff.* migrant (z)					0.026*
<i>Random Effects</i>					
Migrant region		0.00001	-	-	-
Migrant class		0.00893***	0.00777***	0.00784***	0.00774***
Variance level regions	0.00022**	0.00017**	0.00015**	0.00016***	0.00016***
Variance level classes	0.00594***	0.00398***	0.00228***	0.00143***	0.00142***
Variance level students	0.10280	0.10100	0.09303	0.09304	0.09302
Total variance	0.10896	0.10515	0.09546	0.09463	0.09460
ICC level regions	0.0020	0.0016	0.0016	0.0017	0.0017
ICC level classes	0.0545	0.0379	0.0239	0.0151	0.0150
Explained variance		3.5	12.4	13.2	13.2

(z) Variables are grand-mean centred, [†] $p < 0.10$, *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Model II adds migrant background as an independent variable. The coefficient shows that migrants have a 0.051 point higher level of school violence. This effect is shown as significant, which provides further confirmation for Hypothesis I. Migrant background explains 3.5 % of the variance in school violence. At the same time, the model shows that the relationship between migrant background and school violence varies significantly among classes ('random effects'), as expected in Hypothesis 1a. Migrants are not more violent than native Germans to the same extent in all classes, making it necessary to investigate potential moderating factors.

The findings remain unchanged when further factors influencing violent behaviour at individual level are introduced (Model III), as postulated in Hypothesis 2. The factors included are gender and experience of parental violence, which increase the explained variance to 12.4 %. Male respondents show a 0.177 point higher level and students suffered severe parental violence a 0.109 point higher level of school violence. As all three individual-level variables are dichotomous, the coefficients can be directly compared, making it possible to infer that school violence is most strongly influenced by gender and most weakly influenced by migrant background. Including the control variables does nothing to alter the fact that the influence of migrant background varies significantly among classes.

Model IV investigates to what extent various class characteristics directly increase violence. No hypotheses were formulated on this point. Only a small number of significant relationships are found. The only really significant factor is the school type: Violence is significantly lower at Realschule/Gesamtschule than at Förderschule/Hauptschule schools. The effect is even stronger for the Gymnasium school type. A weakly significant factor is the proportion of migrants: In classes with a larger proportion of migrants, there tends to be a greater frequency of violence from individual students. Interconnectedness and inequality, on the other hand, do not exert any significant direct influence on violent behaviour. The intra-class correlation falls when class characteristics are included but still stays significant.

Lastly, Model V specifies the interactions introduced in Hypotheses 3a and 3b. In multilevel models, interactions are not integrated in the conventional way by multiplying two independent variables, but by making the regression coefficient (slope)—as the expression of the relationship between independent and dependent variable—the object of explanation by a higher-level variable. The variables concerned are still referred to here as interaction variables, however, and the variables in Table 11.3 are labelled accordingly. The findings show, firstly, that the proportion of migrants has no effect on the relationship between migrant background and violent behaviour; indeed, no such effect was expected. Secondly, however, in accordance with Hypothesis 3a, interconnectedness is shown to have a significant effect. In classes with strong interconnectedness, the influence of individual migrant background is reduced, i.e., the difference in violent behaviour between migrants and native Germans is smaller. Thirdly, performance difference but not social status difference has an effect on the ethnic gap: In classes where

performance differences are larger, the influence of migrant background is accentuated, i.e., migrants are even more violent than in classes where the performance gap is smaller.

Despite the inclusion of these interactions, the relationship between migrant background and school violence is still seen to vary significantly among classes. It therefore appears necessary to investigate further moderating factors. The moderating effect of interconnectedness and performance differences on the relationship between migrant background and school violence is graphically illustrated for the Realschule/Gesamtschule school type in Fig. 11.1. On the left side of the chart it can be seen that violence levels among Germans remain near-constant as ethnic interconnectedness increases.

For migrants, on the other hand, greater interconnectedness reduces violence rates. Precisely the opposite applies for performance differences: As the performance gap widens, the violence rate for migrants increases while that for Germans again stays nearly constant. The interconnectedness groups were distinguished by trichotomising so that a third of all classes came within each group. A different approach was taken for performance differences. The classes first were divided between those in which migrants on average gain better grades (ultimately again about one-third of all classes) and those in which Germans gain better grades, and then the latter divided again into two groups by splitting at the median. It is notable that the ethnic gap is particularly small when migrants gain better grades; only a small difference in favour of Germans, on the other hand, goes hand in hand with a larger ethnic gap. It also appears to apply generally that Germans and migrants do not show equally high violence rates in any of the different groups. The ethnic gap cannot therefore be fully explained using the class variables.

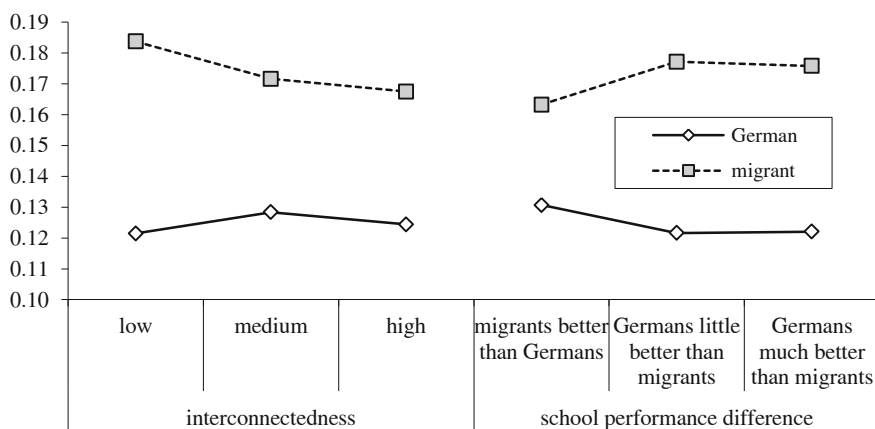


Fig. 11.1 School violence for different groups (means shown; school type Realschule/Gesamtschule only)

11.5 Discussion

This chapter started out by assuming that school conditions can contribute explaining the difference in violent behaviour between Germans and migrants. The analyses deliver empirical proof of this for two of the factors looked at: In classes where Germans and migrants are interconnected through friendships, migrants show less violent behaviour than in classes where there is little or no such interconnection. Interethnic friendships thus primarily reduces violent behaviour of migrants. Inequality in school grades acts in the opposite direction. In classes where there are large performance differences, migrants show violent behaviour more frequently than in classes where migrants gain better grades. These findings confirm the formulated hypotheses. Only the hypothesis that economic inequality is relevant for violent behaviour of migrants is not confirmed by the analyses. One explanation may be that the measurement of the economic situation largely focuses on the parents (unemployment/benefits) rather than on the students themselves. This form of deprivation may be less salient in the school context. For adolescents, it may be more important how much pocket money they have, whether parents can satisfy different aspirations with regard to clothing and media equipment, etc. Such aspects tend to depend more on parental income. The influence of economic inequality should therefore be examined using different indicators in future research.

The necessity for seeking out further moderating factors is demonstrated by the fact that the relationship between migrant background and violent behaviour still varies significantly among classes despite the inclusion of interconnectedness and grade inequality. Possible future research may concentrate more on the behaviour of the teachers. The finding that performance differences have an effect on the ethnic gap may be an indication that teachers apply different grading standards to Germans and migrants. Open or subtle forms of discrimination may also be found in other areas of teacher behaviour and may contribute to greater violence rates of migrants.

A key shortcoming of the study presented here is that no distinction is made between different migrant groups. As shown in particular in the study by Baier et al. (2009), the various migrant groups differ both with regard to violence rates and integration status (see Baier et al. 2010). The groups of migrants are therefore very heterogeneous in their own right. This calls into question the existence of a shared migrant consciousness of the kind that is assumed at least for the inequality indicators. The existence of such consciousness is not unlikely, on the other hand, for large migrant groups such as Turkish or Arabic adolescents where it is not uncommon for several individuals to be in the same class. The influence of interconnectedness and inequality may prove to be even stronger for these migrant groups if they are analysed separately.

Moreover, some causal statements are based on assumptions. They can hardly be derived from the empirical data on its own. Future research should also be based on longitudinal data as well as on methods explicitly developed for causal analysis.

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Chapter 12

Friendships of Delinquent and Non-delinquent Adolescents in Classrooms

Andrea Knecht

12.1 Introduction

Early adolescence is the time when the “maximum likelihood of delinquency” occurs (Hirschi 1977, p. 339) and, coincidentally, the time when friends become increasingly important (Durkin 1995). Delinquency related to friendships of adolescents is an obvious and relevant topic of investigation since a reliable explanation of the link may lead to effective ways for preventing delinquency and its negative effects on society. Indeed, numerous studies have been conducted with mainly two foci.

Classically two different though theoretically related issues form the focus of research. One is related to the question of why adolescent friends are similar in their delinquent behaviour. This has been found repeatedly (e.g. Dishion et al. 1995; Fletcher et al. 1995; Haynie 2001; Reed and Rose 1998). Whether this correlation is due to selection processes, i.e. delinquent adolescents become friends, or due to influence processes, i.e. friends influence an adolescent’s level of delinquency, is at the heart of that line of investigation. The second prevalent issue tackles the question of how delinquent and non-delinquent adolescents differ in their friendship relations. We attempted to explain the first issue elsewhere (Knecht et al. 2010) with the data set used for the study at hand. In this study I focus on the second issue, i.e. relational differences of delinquent and non-delinquent adolescents.

In the context of friendship relations of delinquent and non-delinquent adolescents typically the distinction is made between the social ability model and the

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social disability model (Hansell and Wiatrowski 1981). The social ability model assumes delinquent adolescents to have social skills like other youth and, thus, to have social relationships comparable to those of non-delinquent adolescents. In contrast, the social disability model assumes that there are severe differences in the social relationships of non-delinquent and delinquent adolescents with the latter having relationships of only poor quality.

The objective of the present study is to compare the predictions of the social ability versus the social disability model. In other words: are friendship relations of delinquent adolescents different from those of non-delinquent adolescents?

As stated before, there are studies attempting to give answers to this question. Some of these studies suffer from methodological drawbacks. Several studies use selective data sets that consist only of information regarding homogenous groups of adolescents. Often the data that are analysed are limited to male respondents (Marcus 1996). As differences between boys and girls may be profound, such results would merely apply to half of the adolescent population. Other studies focus exclusively on data on ethnic minorities (e.g. Pabon et al. 1992), which again produces results that cannot be generalised. Another disadvantage related to data is the reliance on personal perceptions of relations. Complete network data yield additional information on the structure of friendship embeddedness as isolates are also included (Demuth 2004) and mutual relationships can be detected. As of recently, more and more attempts are made to apply social network analytical methodologies (e.g. Baerveldt et al. 2004; 2010; Weerman and Bijleveld 2007).

To allow for new insights regarding the frequently asked research question at hand, I use self-reported data of Dutch pupils in early adolescence. These data include information on friendships and delinquent behaviour of both boys and girls from the ethnic majority and minorities. Complete networks of adolescents have been assessed in classroom settings in order to determine friendship embeddedness. Social activity, popularity, reciprocity, and a measure for social status are regarded as indicators for friendship quality.

Section 12.2 contains an outline of the theoretical explanations of the social ability and disability models and related hypotheses. In Sect. 12.3, I provide a description of the data before presenting the results in Sect. 12.4. The chapter concludes with a discussion.

12.2 Theory

As the theoretical underpinning of the social ability model and the social disability model, we draw on learning theories such as differential association theory, and on social control theory such as social bond theory. Since learning theories and social control theories have been studied extensively¹ a complete review of the research

¹ According to Cohn and Farrington (1999), Hirschi is one of the most cited authors in academic journals on criminology, particularly in the US.

related to these theories is obviously beyond the scope of this study. Therefore, I sketch the main assumptions and present hypotheses in this section.

12.2.1 Social Ability Model

According to social learning theories such as the differential association theory (Sutherland and Cressey 1978), adolescents are delinquent because they learn this way of behaviour like other kinds of behaviour from their peers. Therefore, a prerequisite for delinquency is some kind of intimate social relationship—because delinquency is passed on by socialisation processes. In order to develop and maintain intimate social relationships, someone needs to be socially adept. Learning theory considers the same social skills in delinquent and non-delinquent youths and, hence, no difference in friendship embeddedness. Relationships are characterised by stability, reciprocity, and transitivity and they are organised in cliques (Hansell and Wiatrowski 1981). Meaningful relationships are potentially possible for all adolescents alike, and can also be maintained by and with delinquent persons.

12.2.2 Social Disability Model

Social control theory deals with the theoretical idea of the social disability model. An example of social control theory is Hirschi's social bond theory. From the perspective of this theoretical approach everybody is potentially deviant by nature. So instead of explaining why people become delinquent or criminal, the question is rather why they are not. Key in preventing delinquent behaviour is a bond to society. Social bonds require social skills and are formed in the family and in other settings including educational institutions (Wiatrowski et al. 1981). If the bond is weak or absent the natural disposition manifests. Attachment (as one component of the theory) to others restrains people from acting out on deviant streaks. Hirschi (1977) states that “[d]elinquents do tend to associate with delinquents, just as kids interested in chess tend to associate with each other, but the ties among delinquents are not equal in quality to those among other peer groups” (p. 337). Their relations tend to be instable, unreciprocated and are found in fussy conglomeration rather than in clearly defined cliques (Hansell and Wiatrowski 1981). A lack of social skills leads to low friendship quality and less social embeddedness of delinquent youths.

In short, friendship quality of delinquent adolescents is poor compared to the friendship quality of non-delinquent adolescents due to the lack of social abilities. Social abilities manifest themselves in different ways. I use social activity, popularity, reciprocity, and relational status as indicators (see Sect. 12.3). Social activity requires an interest in others and also reflects previous experiences with peers. Popularity indicates that others appreciate that person's company; this is rather unlikely with people who lack social abilities. Reciprocity shows that a social relationship is 'successful'. It tells us something about the strength of a tie

(Granovetter 1973). It is generally understood that real friendships are supposed to be reciprocal. The relational status relates social activity and popularity. People who are socially skilled are believed to have more options to find friends, and their wish for friendships is easily saturated. Our hypotheses regarding delinquency and friendship embeddedness are formulated from the perspective of the social disability model, where differences between delinquent and non-delinquent adolescents are postulated as follow:

- H1 Delinquent pupils are socially less active than non-delinquent pupils.
- H2 Delinquent pupils are less popular than non-delinquent pupils.
- H3 The social relationships of delinquent pupils tend to be reciprocal to a lesser degree than the relationships of non-delinquent pupils.
- H4 Delinquent pupils have lower relational status than non-delinquent pupils.

12.3 Data

We test our hypotheses with data that were collected in 126 first-grade classes in 14 secondary schools in the Netherlands.² The schools are in rural as well as urban areas and include both private and public institutions. The survey was conducted during the academic year 2003/2004. The original data set contains of 3,017 pupils, both male and female, both majority and minority. On average, pupils are 12 to 13 years old at the beginning of the data collection. The pupils themselves reported on their friendships within class and their behaviour at four points in time in one school year, so there is the advantage of having self-reported data available (Jussim and Osgood 1989).

For more information on the content of the data set and on the way it was obtained see Knecht (2006). For the analysis presented in this study I rely on a subsample of 857 pupils in 35 classes. The mean number of pupils per class is 24.5, indicating comparatively low levels of non-response in the selected sample. This subsample resembles the full sample in important characteristics. In order to explore the topic, as a first step we further restricted the analysis to information obtained in the first wave of the survey.

12.3.1 Measures

The instrument used for data collection was a questionnaire for the pupils. It included questions about their delinquent behaviour and their friendships. Important background information were gathered as well. Besides these questions, many others that are less relevant for the study at hand were included as well.

² The data collection was funded by the Netherlands Organisation for Scientific Research (NWO) under grant 401-01-554.

12.3.2 *Delinquency*

Delinquency was measured by asking for four offences, namely theft, graffiti spraying, interpersonal aggression, and vandalism. Pupils were asked about whether they had partaken in these kinds of actions in the last three months prior to data collection. Responses were coded as frequencies with five answer categories, that is to say ‘never’, ‘once’, ‘two to four times’, ‘five to ten times’, and ‘more than 10 times’. Descriptive statistics for the four delinquency items are given in Table 12.1. It is obvious that the great majority is not involved in delinquent actions, a result that replicates the findings of most other studies on ordinary adolescents. Theft is the delinquent behaviour that occurs the least; interpersonal aggression is the most widespread offence and also the one that is committed the most frequently, with 4.3 % of adolescents in the sample having been involved in fights more than ten times within three months. For these items, the percentages of missing values consistently remain below 10 %.

Though the different categories of delinquency items are not equidistant with regard to frequency, they might very well be so with regard to perceived intensity. The averages of the four items were transformed into a delinquency scale with values ranging from 1 (zero delinquency) to 5 (high level of delinquency). The scale’s internal consistency is demonstrated by a high alpha coefficient of 0.66, and a factor analysis proved its one-dimensionality. For the purpose of our study we divided the pupils into two groups according to their level of delinquency. One group comprised those adolescents who reported no or almost no delinquent acts (60.8 %). They had either never committed any offense or had not committed any of the four offences more than once. The other group consisted of those adolescents who had reported a higher rate of delinquent behaviour (39.2 %).

Table 12.1 Frequency of delinquent behaviour in percent (N = 785–789)

	Never	Once	2–4 times	5–10 times	>10 times
Theft	92.5	4.5	1.9	0.5	0.6
Graffiti spraying	91.2	5.1	2.0	1.2	0.5
Interpersonal aggression	67.7	12.5	12.0	3.4	4.3
Vandalism	85.9	8.3	4.4	0.4	1.0

12.3.3 *Social Network Indicators*

The measure for friendships is based on the question “Who are your best friends in class?” Nominations of up to 12 classmates were allowed. Obviously, this restriction of answer options did not present a source of difficulty as the average of nominations suggests. On average, pupils nominated 3.37 fellow pupils as friends.

The relational data is assessed in terms of directed graphs (Wasserman and Faust 1994). Information is available on ties connecting two persons and also on the

direction of a tie. The sender and the receiver of a tie can be identified. The following features are prerequisites for the social network indicators: social activity, popularity, reciprocity, and relational status. Social activity is operationalised as the so called outdegree, i.e. the outgoing friendship nominations. As noted above, the average outdegree is 3.37. Approximately three other pupils in the same classroom are considered friends by these adolescents. The popularity of a person is measured as indegree, i.e. the incoming friendship nominations. That means a person was nominated as a friend by others. The indegree is 3.37, which corresponds to the average numbers in outdegree. On average, each adolescent is considered a friend by three others. As the relational data are based on unconfirmed friendship nominations, the friendship nominations are not necessarily returned by the receivers towards the senders. If they are returned we speak of a reciprocated tie. Reciprocity can be seen as an indicator for the strength of a tie. Typically two friendships of each adolescent are reciprocated. The relational status can be operationalised in different ways. I apply a measure relating outdegree and indegree. Relational status is higher if the indegree exceeds the outdegree. The measure has a standard deviation of 2.69. All four measures meet the requirements of parametric tests.

12.3.4 Background Information

As background variables we obtained the information on sex, with 48.3 % female and 51.7 % male adolescents. Regarding ethnicity, we have 70 % Dutch and 30 % non-Dutch pupils in the sample. Being Dutch is determined by having one parent or both parents who were born in the Netherlands and having Dutch as the dominant language at home. In addition we know that pupils are on average 12.2 years old, with the youngest being 11 years old and one pupil reporting to be 15 years of age. The majority of the pupils have their most important friends in class (53 %) and somewhat fewer pupils have most of their friends in class (36 %), making the classroom and, thus, the educational institution an important setting for friendship formation and maintenance.

For gender and ethnicity we present the distribution of delinquent behaviour in Table 12.2. In general, boys are to some degree more delinquent than girls. More boys than girls are involved in delinquency and also to a higher degree. The result does not surprise and can be found in most other studies on delinquency in

Table 12.2 Delinquency level according to gender and ethnicity in % (N = 763/697)

Delinquency level	Low				High
	1	2	3	4	5
Female	69.4	27.3	2.9	0.3	0.0
Male	52.6	38.7	5.4	2.8	0.5
Dutch	63.6	31.6	3.0	1.4	0.4
Non-Dutch	54.1	38.1	6.2	1.5	0.0

Table 12.3 Network embeddedness by gender and ethnicity (mean values; N = 218–542)

	Activity	Popularity	Reciprocity	Status
Female	3.36	3.29	2.00	−0.08
Male	3.37	3.42	1.96	0.05
Dutch	3.43	3.44	2.10*	0.01
Non-Dutch	3.43	3.33	1.84*	−0.11

*Significant difference at the 0.05-level

adolescence when data on male and female youth are available (e.g. Houtzager and Baerveldt 1999). Considering the differences in delinquent behaviour with respect to ethnic majority and minority, we see that adolescents who belong to the minority committed somewhat more offences. Both groups contain only a minimal number of notorious delinquents.

The relation of network indicators by gender and ethnicity are shown in Table 12.3. Social activity seems to be independent of gender and ethnicity. Boys and girls have similar levels of social engagement. The same holds for Dutch and non-Dutch adolescents. Though dissimilarities are rather small, boys are more popular than girls and the Dutch pupils are more popular than the non-Dutch pupils in the Netherlands. Similarly, for relational status there are also minor differences. The status of boys compared to girls and of Dutch compared to non-Dutch are slightly higher. None of these comparisons are statistically significant. By way of contrast, reciprocity forms an exception, at least when considering ethnic groups. The Dutch pupils in our sample have, on average, significantly more reciprocated ties (2.10) than non-Dutch pupils (1.84).

12.4 Results

In this Sect. 12.1 present correlations of delinquency and network embeddedness as described in the hypotheses H1–H4. They are tested using t-tests. The corresponding outcomes are shown in Table 12.4.

For both, activity and reciprocity, there are no differences between delinquent and non-delinquent adolescents in their mean values regarding these network indicators. Regarding status, delinquent adolescents have higher values than non-delinquent ones. Tests of the statistical significance of results for these three network indicators yield p-values higher than 0.05. The null hypotheses that assume similarity are thereby refuted. Only the difference in popularity is significant. In contrast to our prediction, delinquent individuals are not less or equally popular, but more popular than non-delinquent ones. On average non-delinquent pupils are chosen by 3.32 others as friends, delinquent pupils by 3.57 others.

When taking a closer look and splitting the delinquency scale into its four items, we get a fuller picture of the correlations at play. Delinquency is ordinal and

Table 12.4 Comparing delinquent and non-delinquent adolescents and their network characteristics (N = 296–464, four separate t-tests)

Network indicator	Level of delinquency	Mean (sd)	p (t-test)
Activity	–	3.48 (2.44)	0.950
	+	3.49 (2.63)	
Popularity*	–	3.32 (1.67)	0.049
	+	3.57 (1.75)	
Reciprocity	–	2.06 (1.30)	0.556
	+	2.01 (1.35)	
Status	–	–0.16 (2.52)	0.246
	+	0.08 (3.06)	

*Significant difference at the 0.05-level

Table 12.5 Correlation of offences and network embeddedness (rho and its p-value; N = 779–789)

	Theft	Graffiti spraying	Interpersonal aggression	Vandalism
Activity	0.02 (0.553)	–0.03 (0.377)	–0.02 (0.608)	–0.01 (0.801)
Popularity	0.02 (0.546)	0.01 (0.818)	0.08*(0.018)	0.03 (0.482)
Reciprocity	0.00 (0.975)	–0.03 (0.465)	–0.05 (0.201)	–0.03 (0.469)
Status	0.00 (0.983)	0.03 (0.517)	0.06 (0.094)	0.01 (0.847)

*Significant at the 0.05-level

not normally distributed; therefore Spearman's rho is the appropriate statistic here in order to assess the strength and the direction of the bivariate correlations. The results are presented in Table 12.5. All correlations are rather small. The correlation of popularity and interpersonal aggression has the highest coefficient (0.08) and the only one that is significant at the 0.05-level. The direction of the association is positive. Higher levels of aggressive behaviour are related to higher levels of popularity. Note that the cross-sectional data only allows speculation on causal mechanisms.

Next, let us zoom in further on the association of offences and network indicators and consider differences between boys and girls. Here again, most correlations have values around zero and p-values far beyond 0.5. Two coefficients stand out because they have a fairly higher, significant value. These are the associations of popularity and status with interpersonal aggression. This is only valid for boys and not for girls. For male adolescents, both popularity and status are positively related to aggressive behaviour (Table 12.6).³

³ For the sake of completeness, no correlations are significant when considering differences by ethnicity. Results are not presented.

Table 12.6 Correlation of offences and network embeddedness by gender (rho and its p-value; N = 378–405)

		Theft	Graffiti spraying	Interpersonal aggression	Vandalism
Activity	Female	−0.02 (0.727)	−0.01 (0.829)	0.01 (0.867)	0.03 (0.543)
	Male	0.05 (0.328)	−0.05 (0.370)	−0.03 (0.580)	−0.03 (0.496)
Popularity	Female	−0.04 (0.457)	−0.03 (0.533)	0.01 (0.841)	−0.03 (0.616)
	Male	0.06 (0.233)	0.04 (0.468)	0.14*(0.005)	0.06 (0.212)
Reciprocity	Female	−0.03 (0.517)	−0.03 (0.543)	−0.08 (0.133)	−0.03 (0.602)
	Male	0.03 (0.603)	−0.02 (0.690)	−0.02 (0.711)	−0.02 (0.668)
Status	Female	0.00 (0.971)	−0.02 (0.722)	−0.00 (0.943)	−0.06 (0.264)
	Male	0.00 (0.997)	0.05 (0.290)	0.11*(0.026)	0.05 (0.287)

*Significant on the 0.05-level

12.5 Conclusion

In this chapter I examined possible differences in network embeddedness between adolescents who exhibit delinquent behaviour and who hardly exhibit delinquent behaviour, or none at all. The purpose of the present investigation was to compare predictions from the social ability model and the social disability model.⁴ The first theoretical model draws on learning theories. Here, the focus is on differential association theory (Sutherland and Cressey 1978). While the other model—the social disability model—draws on social control theories, here represented by social bond theory (Hirschi 1977). Social bond theory assumes delinquent adolescents to lack social skills, which leads to adverse friendship embeddedness, in contrast to non-delinquent adolescents. Generally, differential association theory does not assume differences and regards all youths as socially able.

I was looking at the friendships of delinquent and non-delinquent pupils in early adolescence in general, regardless of their friend's delinquency. Friendship embeddedness was assessed using social network indicators such as social activity (outdegree), popularity (indegree), reciprocity and relational status. The data set of young adolescents in the Netherlands is heterogeneous with regard to gender and ethnicity. It contains information on complete friendship networks within classrooms in secondary schools that are appropriate for computing the proposed network indicators.

The results of this study suggest that delinquency is not related to social activity and the strength of ties. Delinquent and non-delinquent adolescents are equally socially engaged and have reciprocal friendship ties. These findings contradict the prediction of the social disability model and favour the ability model. Results are possibly explained by learning theories rather than by Hirschi's social bond theory. They are in line with other studies that overall support the ability model and use a network analytical approach (Baerveldt et al. 2004; Smångs 2010). The evidence

⁴ Note that social ability only refers to relational properties and does not take into account (unfavourable) characteristics of the contact person.

for the ability model is not perfect, as another finding indicates that delinquent boys are slightly more popular and have a slightly higher relational status than less delinquent boys. This outcome resembles the findings of Weerman and Bijleveld (2007). Their results show delinquent adolescents to be more popular than their non-delinquent peers, though the difference in popularity between the two groups is also small. This unexpected result does not agree with either the social ability model or the social disability model. Therefore, an explanation has to be found elsewhere. Theory and empirical research in developmental psychology acknowledge that delinquent behaviour is not unattractive and is rather seen as a sign of maturity by peers with the result that aggressive behaviour may lead to an increase in popularity, at least for boys (De Bruyn and Cillessen 2006; LaFontana and Cillessen 2002; Rodkin et al. 2000). Delinquent adolescents are not avoided or rejected. We can draw this conclusion after considering differences for boys and girls and splitting the scale for delinquency into its single items. The analyses showed different results when a scale was used (no significant effects) and when single items were used (few significant effects).

Future studies should take into account differences due to gender as implied by the study at hand. One should also bear in mind that different measures of delinquency may lead to different results (see Wiatrowski et al. 1981; for the division of petty and serious crime see Weerman and Bijleveld 2007). Especially interpersonal aggression is related to network embeddedness and should be given special consideration. Further analyses would also profit from a longitudinal approach. Longitudinal analyses reveal deeper insights, e.g. into the causality of popularity and aggressive behaviour. Using longitudinal data and suitable statistical programs would also permit an investigation of the interrelations of network indicators and the dependence of social network data.

The current study has the following limitations that need to be paid attention to when evaluating the results and putting them into context. Firstly, only friendships in class are analysed. Though the classroom is an important context, delinquent behaviour may most often occur outside the classroom, where other friends are important, e.g. (older) siblings, other pupils from different classes or peers from the neighbourhood. Systematic differences have been found by Claes and Simard (1992), namely that delinquents tend to socialise more outside of educational institution than non-delinquents do. Secondly, other relational and structural characteristics may lead to different results. We only focused on social activity, popularity, reciprocity and a measure for relational status. There are many more sensible indicators for friendship quality, e.g. triadic closure as an indicator for the formation of cliques as used by Smångs (2010). The quality of friendships went unconsidered, though the structural embeddedness shows no huge differences as demonstrated by the study at hand; the strength of friendship relations may differ systematically between delinquent and non-delinquent adolescents. Thirdly, we focused only on one aspect of the theoretical models, namely friendship quality. Another aspect is the chronological order of friendship and delinquency, i.e. whether friendship precedes delinquency (influence) or if the inverse is true (selection) as was briefly mentioned in Sect. 12.1. Influence processes are, again,

related to learning theories (e.g. Sutherland and Cressey 1978) and selection processes are related to control theories (e.g. Gottfredson and Hirschi 1990). A study on both aspects—causality of friendship emergence and delinquency and of friendship quality and delinquency—might be helpful to decide the usefulness of the social ability and the social disability model.

Despite these limitations, our study produced important results, such as the special case of interpersonal aggression among other acts of delinquency. In short, this article demonstrates that the existing theoretical models that are often used cannot explain all findings. A more complex theoretical framework seems to be necessary. Instead of theoretically differentiating only between the social ability model and the social disability model, a third variant should be introduced and developed: some kind of “social super-ability model” that incorporates the fact that delinquent adolescents may even be more relationally integrated than others.

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Part V
Institutionalized Transitions into and out
of Vocational Training

Chapter 13

Immigrants in the German Vocational Training System: A Closer Look at Young People with Low Educational Credentials

Can M. Aybek

13.1 Introduction

Germany is confronted with demographic challenges that will affect the social as well as the economic life of the country. According to the Organization for Economic Co-operation and Development some sectors of the economy already are suffering from a lack of qualified workers and this trend is likely to continue (OECD 2012). In addition to various strategies to attract high-skilled workers from abroad, it is also necessary to think about new ways to develop a high qualification level among the workforce already residing in the country. Within this context, it is important to ensure that young people with a migratory background¹ get a chance to obtain vocational skills. Minister of State in the Federal Chancellery and Federal Government Commissioner for Migration, Refugees and Integration in Germany, Maria Böhmer, commented in March 2010 on an official report about the situation on the vocational training market as follows:

Without vocational skills the doors leading to the labor market will stay closed. Moving socially upward for young people from immigrant families will be a goal difficult to reach. We should not allow our society to drift apart. [...] I appeal to the employers to give young

I would like to thank the Hanse-Wissenschaftskolleg—Institute for Advanced Studies for providing me with a fellowship in the spring of 2012 during which I revised this manuscript.

¹ I use the terms ‘young people with migratory background/of immigrant origin’ and ‘(young) migrants/immigrants’ in this article interchangeably to refer to young people whose parents or who themselves have immigrated. However, I would like to distinguish terms such as ‘young foreigners’ and ‘young people of foreign citizenship’ etc., which refer to persons with a non-host-country citizenship.

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people from immigrant families, who obtained a school diploma and fit the job in the same way, more chances. Nobody should be excluded because of name or origin. A lot of companies already count on young immigrants as they are the qualified workforce of tomorrow!²

Especially worrying, in terms of access to vocational education and training (VET), is the situation of young people who have attended lower tiered schools. Empirical studies repeatedly have illustrated that the chances of these young people of acquiring a fully qualifying vocational training³ are restricted. For instance, young people who obtained a diploma from the lower secondary school, or *Hauptschule*, are three times less likely to start vocational training than are graduates of an intermediate secondary school, or *Realschule*. In comparison to the graduate of the upper secondary school track, or *Gymnasium*, this likelihood drops to four and a half times lower (BMBF 2008, p. 68; Bildungsberichterstattung 2006).

Starting from these observations, this chapter analyzes the transition processes of young people with lower educational credential into VET. This transition is, as pointed out by Commissioner Böhmer, of central importance for individuals living in Germany if they want to gain access to the labor market. The chapter will, however, not draw comparisons between groups of people who differ from each other in terms of their educational level, but rather will focus on individuals with a low education, i.e., at most a diploma from the *Hauptschule*.

The rationale for this focus can be explained as follows: Studies that have adopted a longitudinal perspective have concluded that the body of students attending the lower secondary school track in Germany since the 1970s has become more and more homogeneous with respect to its social background (Solga and Wagner 2001, 2007). Comparing native-born and immigrant youth who attend this school type will bring some new insights to this claim, as it is not yet clear if the experiences of the two groups are similar once they leave school in search for vocational training. Studies focusing explicitly on the search process are rare. In order to obtain a more detailed account of these experiences, the gender dimension will be added to analyses presented in the following.

The chapter starts off with a brief description of the vocational training system in Germany. In addition to basic data on the situation of immigrant youth in the VET system, some information about changes in the structure of the economy and consequences for vocational education will be given. Following that, the data set that was used for the empirical analyses presented in this chapter is described. The analyses presented afterwards will follow the sequence of the research questions formulated:

² <http://www.bundesregierung.de/Content/DE/Pressemitteilungen/BPA/2010/03/2010-03-04-it-beauftragte-bbb.html> (Accessed on: 10.03.2010).

³ A ‘fully qualifying vocational training’ is an educational scheme that upon successful completion offers the participant a certificate in one of the professions acknowledged by the German Vocational Training Act or the Crafts and Trade Code.

For youth aged 15–20, which is considered critical for the transition from school to VET, are there any differences between native-born and immigrants, and between males and females, with respect to the activities pursued?

Are there any differences between males and females of immigrant and native descent with respect to the time duration they need to make a transition into VET? Which characteristics at the individual level improve and impede the process of starting a VET?

Before presenting the outcomes of these analyses, it seems necessary to introduce the reader briefly to the particularities of the German school and vocational training system.

13.2 The German System of Vocational Education and Training

In Germany the realms of school based education and vocational training are strongly interconnected. Even after young people start their vocational career, for instance, they continue to attend a school that complements their practical training program. Furthermore, in many professions, standards defining the minimum requirements in terms of educational credentials in order to be accepted as an apprentice are established. At the same time, in the German federal political system education policy is essentially controlled by the German states (*‘Länder’*), not by the central government. As a consequence, there are differences from state to state in terms of the structure of the school system, but the characteristics highlighted here hold for most parts of the country.

In terms of its education and skill formation system, Germany is described in cross-country comparisons to be highly stratified as well as socially selective (Allmendinger and Leibfried 2003; Deutsches PISA-Konsortium et al. 2001; Walther et al. 2004). An important reason for this categorization is related to the fact that a triple-tiered school system exists into which students are channeled after they complete their fourth year of elementary school when they are on average 10 years old. The three-tiered secondary school system consists of the lower track, or *Hauptschule*, the intermediary track, or *Realschule*, and the highest, most academic track, or *Gymnasium*. These three school types differ in their educational programs and in the number of years needed to obtain a diploma. Having completed primary school, at the *Gymnasium*, for instance, eight to nine years of education are required and the diploma (*‘Abitur’*) can only be received after a series of graduation exams are successfully taken. In comparison, the time to complete *Realschule* or *Hauptschule* is five to six years in duration and the content of educational program is less ambitious.

One central argument put forward when claiming that the German educational system is socially selective concerns the mechanisms that lead to the matriculation into the different school tracks. Studies have shown that, indeed, the question of

who among the students is going to follow the upper *Gymnasium* track is determined not only by the performance of a student at school, but also by his or her social and familial background (Bildungsberichterstattung 2006, pp. 49–50). A student whose parents work in high-status professions is four times more likely to visit a *Gymnasium* than someone whose parents are members of the blue-collar working class. The studies also indicate that in some states parents from higher social background are often successful in circumventing their child from being channeled into the *Hauptschule* even if the child's performance at school is as weak as those children who come from the lower social class and were recommended to attend the lower track.

The situation of children from immigrant families in the educational system has been an issue in the public as well as in scientific debates in Germany for several decades. A government report published in 2007 stated that, for instance, only 15 % of those children whose parents were German citizens attended the lower secondary school track, compared with 40 % of children whose parents held a foreign citizenship. In contrast, 21 % of the latter group of children managed to go to the *Gymnasium* track, while nearly 50 % of children with parents of German citizenship did so (Migrationsbeauftragte 2007, pp. 57–58). This origin-based divide with respect to the allocation of children to school types has, as will be argued in the following, significant consequences for the prospects of these young people when they look for a vocational training opportunity.

As this chapter focuses on the transition from school to vocational education and training, the structure of the German VET system is briefly described here. The basic structure of the vocational training system consists of three areas:

- A traditional apprenticeship system that is a combination of practical training in a company and theoretical education at school, called the ‘dual vocational education system’ (*‘duales Berufsbildungssystem’*);
- a vocational education that is fully school-based (*‘Schulberufssystem’*), common for obtaining a degree in certain professions such as nursing, and
- a range of different transition programs funded by the public and called the ‘intermediary sector’ (*‘Übergangssystem’*), which aim to provide qualifications and skills to school leavers who did not manage to enter either the traditional apprenticeship system or the school-based vocational education system.

The backbone of German vocational education is considered to be the dual vocational education system. In this chapter, when referring to vocational education or training, this dual system is meant unless otherwise indicated.

The candidate for such an apprenticeship, applies herself⁴ to the company she wants to be trained at and, if she is accepted, she is educated in this firm for a period of 2–3 years. During the practical training, she also attends school once or twice a week. Every vocation in the dual system is regulated in terms of structure and content of the vocational training; hence the final qualifications obtained are

⁴ Here the female pronoun is used, but both sexes are meant.

highly standardized. Although companies and their practices might differ from each other, graduates of such instruction are expected to have a knowledge that is similar and professional skills that are sufficient to work anywhere in the particular profession.

There are more than 340 professions in Germany that are registered and regulated in such manner. Most of the young people who complete the lower and intermediate secondary school tracks wish to acquire training in one of these vocations, but some of them experience great difficulties in finding an entrance point. Official figures confirm that the share of young people without any certified vocational qualification is much higher among those with a migratory background than for the native-born population (BMBF 2007, pp. 123–126). In the year 2008, 30.7 % of the adults below the age of 30 who migrated themselves or have parents who immigrated to Germany did not have any vocational training, whereas the share of unskilled people among the native-born in the same age group was 12.9 % (Autorengruppe Bildungsberichterstattung 2008, p. 38 and table B3-7 web).

According to Burkert and Seibert (2007, pp. 9–10) the participation rate of young men with a foreign citizenship in the dual system dropped from 40 % in 1993 to 28 % in 2004. Over the same time period, the rate for young women with a foreign citizenship remained quite stable, but at an already very low level of 23–25 % (BMBF 2006, p. 31). The low participation rate for both groups seems to be quite persistent, as the VET report for 2011 with updated information shows (BMBF 2011, p. 39). In 2009 the participation rate among young males with foreign citizenship was reported to be 33.6 %, and for females of the same group it was 29.1 %. The corresponding participation rates for German citizens in the same year were 72.7 % for the males and 55.5 % for the females, illustrating the stark differences between the two groups.

Young individuals who do not manage to enter a vocational training in the company- or school-based systems are directed by the Labor Office and other public authorities in Germany to the ‘intermediary sector’. As a consequence of the increase in the numbers of young people who leave school but cannot enter the VET system, the qualification programs offered as part of the ‘intermediary sector’ have been expanding during the last decade (Baethge et al. 2007). Most of the young people were registered in ‘vocational orientation programs’ (*Berufsorientierung*) or ‘vocational elementary education’ (*Berufsgrundbildung*). Another similar scheme that has been expanding over the last years is called ‘vocational preparation’ (*Berufsvorbereitung*) and is offered by the Labor Office to young people who were found to be not yet ready for vocational training. Next to these big programs, there are also smaller, school- or neighborhood-based programs financed by regional and local governments.⁵ The participants of such programs get the opportunity to finish their school and acquire some skills, but the courses they attend do not lead to a recognized vocational certificate.

⁵ The typical classification presented here is, however, by no means clear cut, because the contents of different programs may be quite similar on a (local) implementation level.

Adding to the difficulty that young people who attended the lower secondary schools had in finding a training opportunity in recent years are changes in the structure of the vocational training market itself. Small- and medium-sized companies in the manufacturing sector have traditionally offered training opportunities that were attractive for lower educated youth because they did not have to compete with the graduates of higher secondary schools. During recent decades, however, the training capacities of such companies, notably the construction sector, decreased due to economic circumstances. Furthermore, the internal structure in some of these industrial branches has shifted toward a stronger knowledge-driven way of working and producing. Manual work has been substituted by computer-driven processes, which has resulted in a so-called ‘internal tertiarisation’ of these branches, i.e., an increase of white-collar jobs (Baethge et al. 2007, pp. 27–28). As a consequence, the standards that potential apprentices must meet in terms of academic skills have increased in many companies to a level that can hardly be fulfilled by young people coming from the lower secondary school system (Lappe 2003, p. 10).

While training capacities in the manufacturing sector have decreased, there has been a moderate increase in the number of apprenticeships in the service sector (Autorengruppe Bildungsberichterstattung 2008, p. 80). But for youth from lower secondary schools it has not been easy to find access to the training opportunities in this sector, as they have to compete in many branches with the graduates from *Gymnasium* and *Realschule*. The importance of soft skills in some businesses in the areas of communication and social interaction may also put young people from working class and/or non-native background at a disadvantage.

The factors and processes described above have made it more difficult for young people coming from the lower secondary school track, or *Hauptschule*, to gain access to training opportunities. The following parts of this chapter focus on this group and try to determine whether the experiences made during the search for a VET opportunity are similar for males and females and for young people with and without a migratory background.

13.3 Data Set and Descriptives

The empirical analyses presented in this chapter are based on a data set that was gathered for the explicit purpose of gaining more insight into the pathways followed by young people during their schooling and vocational training. The ‘transition survey’, as the study is named, was conducted in 2006 and consists of a net sample of 7,230 individuals belonging to the birth cohorts 1982–1988 (for details see Schiel et al. 2006). In other words, the young people in the sample were between 18 and 24 years old when they were interviewed for the survey. These interviews were conducted in a computer-assisted way on the phone (CATI). The respondents were told to start off by telling about their early school career and then were asked in a chronological way about the type and duration of each education

and work related activity they had pursued until the time of the actual interview. This type of empirical information is stored in a spell-based or episode-based data structure (Tarling 2008, pp. 186–187).

The information provided by this survey fills an important gap in official statistics. The official figures consist mostly of aggregated numbers that do not give any information about the diverse paths young people might follow once they finish regular schooling. German authorities regularly report on the total number of young people who leave the school system and on the number of people who take up a vocational training, but from these figures alone little can be said about the factors that contribute to or hamper a successful transition into VET. Furthermore, based on these data little can be known about the time duration different groups of young people might need to accomplish this transition. The questions pursued here, however, require data that allow for analyses of the timing and duration of events in the critical period during which young people are searching for an opportunity to obtain professional qualifications.

The empirical findings presented in the following parts of this chapter draw upon a subsample of the transition survey mentioned above.⁶ Included in this subsample are only young people with low educational credentials. The term ‘low’ refers here to graduates of the German lower secondary school track, the *Hauptschule*, and to young people who dropped out from this school type.

The central characteristics along which comparisons are drawn in the analyses focus on the dimensions of having or not having an immigrant background and being male or female. Whether a person has an immigrant background is determined in the following analyses by way of ‘exclusion’, i.e., by identifying those who fall into the category of being native-born. Respondents who hold German citizenship, who in their childhood spoke only German at home, and whose parents were born in Germany were defined to have no immigration background. The rest of the sample fell into the category of young people with an immigrant background.

After these criteria were imposed, the sample size dropped to 1086. As can be seen in the cross-tabulations below, this unfortunately would not allow for any further specifications within the remaining group of immigrant youth in terms of ethnic backgrounds, but the sample is still sufficient for the analyses comparing native-born youth and immigrant youth in general.

One advantage of the data set used here is that interviewees were asked if they had been seeking a vocational training opportunity in each of the time periods they reported on. This is of key importance, as the indication that someone leaves school is not sufficient to conclude that this person was actively aiming for VET.

A comparison of the percentages of young people who reported they were or were not looking for vocational training when they left school is illustrated in

⁶ I would like to thank the German Federal Institute for Vocational Training (BIBB) and especially Joachim Gerd Ulrich and Michael Friedrich for permitting me to make use of the data set.

Table 13.1 Vocational training aspirations of low educated school leavers (weighted shares in percent)

		Looking for a vocational training	Not looking for a vocational training	Total	Number of cases	χ^2 (df)	Pr
Sex							
Native-born	Male	88.0	12.0	100.0	488		
	Female	87.2	12.8	100.0	323	1.08 (1)	0.300
Immigrants	Male	90.3	9.7	100.0	173		
	Female	93.2	6.8	100.0	102	0.49 (1)	0.484
Age when leaving school							
Native-born	≤15 y.o.	91.1	8.9	100.0	330		
	16 y.o.	85.4	14.6	100.0	283		
	17 y.o.	70.3	29.7	100.0	142		
	≥18 y.o.	52.0	48.0	100.0	56	2.29 (3)	0.404
Immigrants	≤15 y.o.	92.6	7.5	100.0	70		
	16 y.o.	94.0	6.0	100.0	110		
	17 y.o.	81.2	18.8	100.0	72		
	≥18 y.o.	56.2	43.8	100.0	23	2.50 (3)	0.475

Data BIBB transition study, birth cohorts 1982–1988; own calculations

Table 13.1. As a group, young women of immigrant background were most interested in entering vocational training (93.2 %), followed by men of the same category (90.3 %). Among the native-born males (88.0 %) and females (87.2 %), the share of those in search of a training place was lower. When we look at these shares broken down by age, the strongest interest in VET is among those who were 16 years and younger upon graduation. The older the individuals when they leave school, the higher the share who reported that they were not looking for vocational training. This might be due to their perception of having to obtain further education before applying for an apprenticeship, or in some cases the wish to enter employment without any professional skill.

Table 13.2 relates also to the issue ‘age when leaving school’, but illustrates a different dimension, namely the question ‘How many of those who were (not) searching for VET were X years old?’ The table shows that the immigrant school leavers were on average older than the native-born young people who were looking for a training opportunity. This is likely at least in part due to disruptions in the school careers that some of the immigrants have experienced.

In order to gain better insight about the group- and gender-specific developments in the critical time period of finishing school and searching for and entering a vocational training, in the next section, a method is employed that captures the shares of individuals engaging in specific activities from the time they were 15 years old until their 20th birthday.

Table 13.2 Age composition of low educated school leavers according to their vocational training aspirations (weighted shares in percent)

	Age when leaving school	Looking for a vocational training	Not looking for a vocational training	χ^2 (df)	Pr	
Native-born	≤15 y.o.	36.8	25.6			
	16 y.o.	38.0	36.8			
	17 y.o.	17.9	28.7			
	≥18 y.o.	7.3	8.9			
	Total	100.0	100.0		3.02(3)	0.389
	Number of cases	710	101			
Immigrants	≤ 15 y.o.	26.1	22.5			
	16 y.o.	40.7	25.4			
	17 y.o.	22.9	45.1			
	≥ 18 y.o.	10.4	7.1			
	Total	100.0	100.0		3.38(3)	0.336
	Number of cases	234	41			

Data: BIBB Transition Study, birth cohorts 1982-1988; own calculations

13.4 Distribution of Low-Skilled Youth Across Different States during the Transition Process

Plotting the distribution of individuals during a time period of interest engaged in different types of activities, i.e., grouping them into different categories or ‘states’, e.g., those who attend school, participate in a qualification program, etc., is a recognized method for analyzing temporal data (Brüderl and Scherer 2006, pp. 331–333; Brzinsky-Fay 2007; Rohwer and Trappe 1997; Windzio and Grotheer 2002). In contrast to survival analysis methods that will be employed in the latter sections of this chapter and that deal with the transition from one state into another, with this method, a whole sequence of transitions into different states over a defined time period is analyzed. The term ‘sequence’ signifies here “a succession of at least two transitions within a process period” (Sackmann and Wingens 2001, p. 42). Our interest is to analyze a time period in terms of a series of interrelated events. Done here for different groups on an aggregate level, this gives us the chance to look for similarities and differences between these groups with regard to the overall patterns of activities in specific time intervals.

The specified age period is essential with respect to the school-to-VET transition, as young people who attend the lower secondary school track in Germany leave school on average between the age of 15 and 17 (Solga 2003, p. 20). A different approach, instead of an age interval, would have been to start with the point in time when individuals leave school or—as we will employ in the later analyses—when they start to search for a vocational training, but these specifications would not allow to look at age-related patterns.

Based on monthly information about the activities pursued in the following graphs (cf. Figs. 13.1 and 13.2), the individuals are grouped into one of the seven

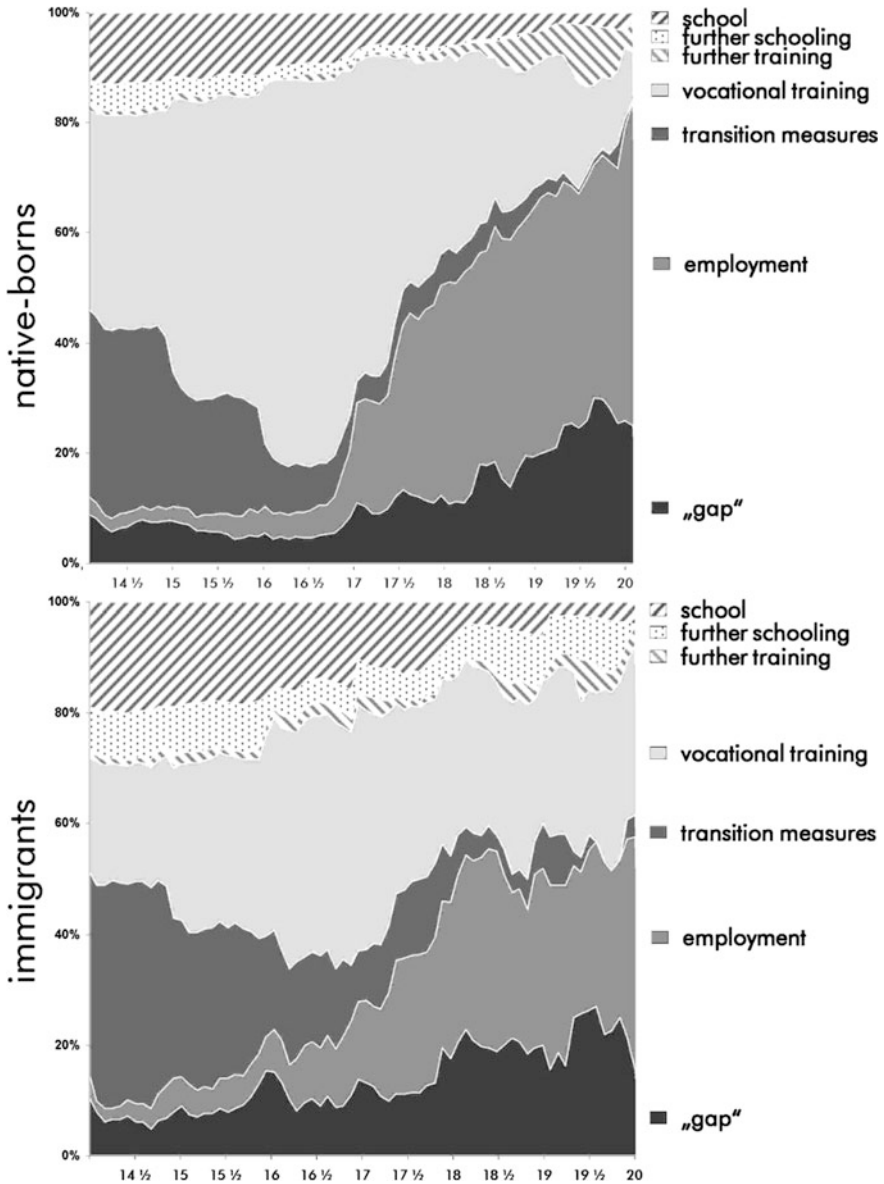


Fig. 13.1 State distributions of low-skilled males between the ages 15–20. Data BIBB transition study 2006; birth cohorts 1982–1988; own calculations

specified states at a certain age. They were attending school (1) or vocational training (2), or were employed (3). The category of being “employed” is taken here in a broad sense and includes such activities as pursuing military service and/or voluntary services. The category of ‘attending school’, in contrast, is interpreted

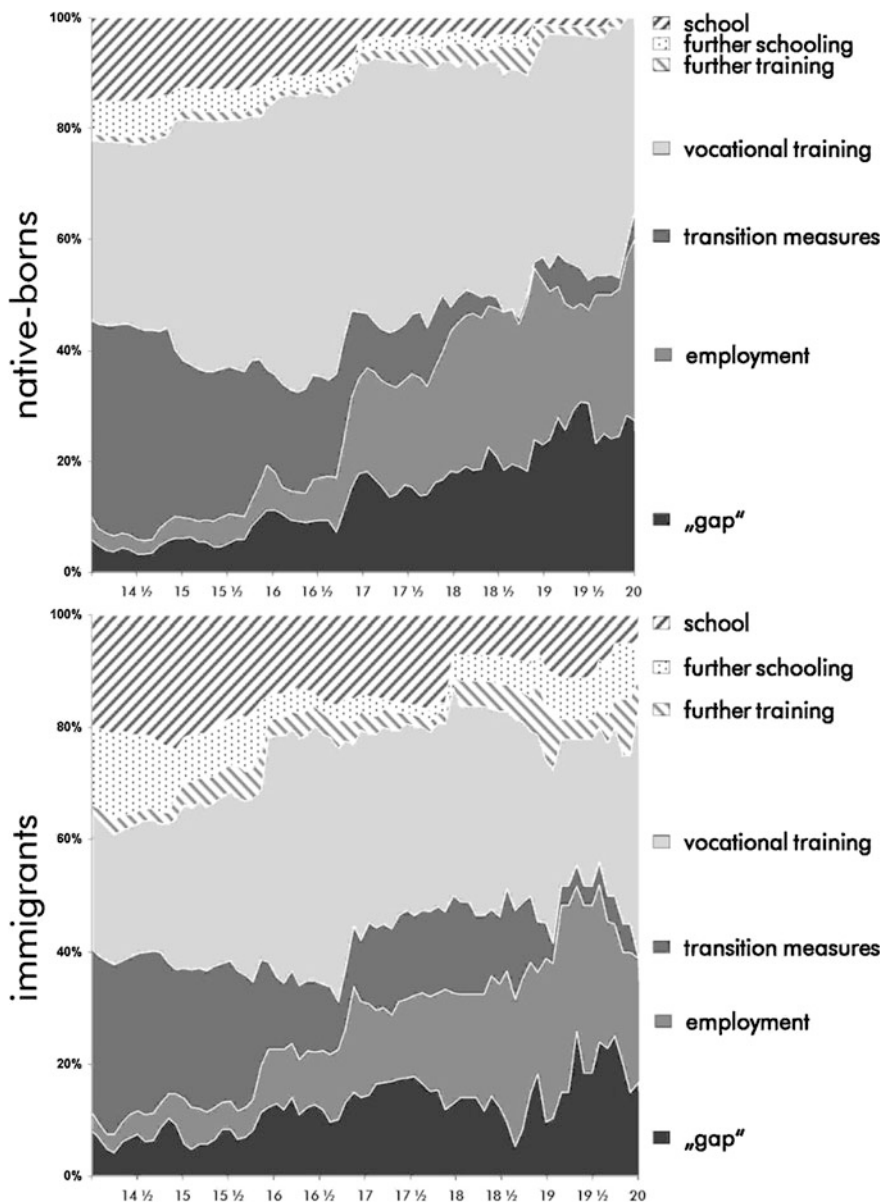


Fig. 13.2 State distributions of low-skilled females between the ages 15–20. Data BIBB transition study 2006; birth cohorts 1982–1988; own calculations

narrowly and refers here only to regular schooling, whereas attending a further education after leaving the lower secondary school track is summarized under the labels ‘further schooling’ (4) or ‘further training’ (5).

Attending ‘transition measures’ (6) differs from the aforementioned activities; it refers to the participation in specific courses or programs offered in the intermediary sector by public authorities with the aim of improving the chances of ‘disadvantaged’ young people on the VET market. Last but not least, the category ‘gap’ (7) refers to periods during which the respondents reported to have been engaged in no particular activity or to have been preoccupied with ‘other things’. In order to get insight into gender- and immigrant-specific issues, the graphs for males and females of native-born and immigrant origin have been plotted separately.

These graphs illustrate how the overall share of a group in a certain domain changes with the age of the respondents. In order to highlight major differences, in the following discussion the situations at only three ages are considered: First, the starting point of the observation period when the respondents enter the age of 15; second, the situation at age 16 ½; and, finally, the distribution when entering the age of 19 toward the end of our observation period. At the age of 15 more than one-third (36.3 %) of the native-born males already make a direct transition from school to the vocational training system, whereas 12.2 % still go to school. A third (33.8 %) of them who did not manage to find a VET place enter a transition measure. For the group of immigrant males of same age, the share in transition measures is a bit higher (36.7 %), and their participation rate in VET is, at 20.6 %, clearly lower than their native-born peers. Another difference is that a significant portion of males with a migratory background is still in school (18.8 %) or is attending further schooling (8.3 %).

The share of native-born females who at the age of 15 immediately start a vocational qualification is similar to the native-born males (32.5 %). The share of them participating in preparatory measures amounts to more than a third (35.4 %) of the whole group, while 15.1 % are attending school. In comparison to that, immigrant females at this age not only take part to a lesser extent in both vocational training (24.3 %) and in transition measures (29.1 %), but more of them attend further schooling (13.5 %), compared to native-born females (5.8 %), and more than a fifth (20.3 %) of them is still attending regular schooling.

When males of native origin reach the age of 16 ½, the majority of them have entered vocational training (70.0 %). The share following a transition program drops at this age to 8.0 %, and only 9.1 % of them are still in school. Among the immigrant males, only 42.6 % are participating in VET, 16.2 % are attending transition measures, and 14.0 % are still in school.

Compared to the males of the same group, the share of the 16 ½ years-old native-born females in VET is lower, with only about half (51.0 %) following a vocational education and about a fifth of them (19.0 %) attending a transition program. The share of immigrant females who are in VET is higher at 45.3 %, while the rate of those who participate in transition measures (12.8 %) is lower than among the native-born females. Similar to the males, 14.0 % of females of immigrant origin are attending school.

By age 19 the picture for all groups of young people in terms of their distribution across different activity fields looks quite different from the situation

observed at younger ages. Among the 19 years-old native-born males, 46.4 % enter employment and slightly less than a quarter (22.4 %) is in vocational qualification programs. A fifth (20.0 %) of them report to have been doing 'nothing in particular' which might be interpreted also as a period of looking for an employment opportunity. A similar share of immigrant males has reported to be in such a 'gap', but a much smaller share, only 32 %, is employed; 8.0 % is attending further schooling and 6.0 % is still in regular schooling.

Looking at the females, we observe almost four out of ten (39.2 %) of the native-born young women are still attending vocational training, less than a third (29.7 %) of them have reported to be in employment, and nearly a quarter (23.0 %) are in an interim phase during which they are not preoccupied with a specific activity. The share of females from immigrant background in employment was similarly high (29.0 %), but the share participating in VET (29.0 %) was lower than among their native-born peers. Interestingly, at the age of 19, still more than a quarter of immigrant females (25.9 %) were attending some type of schooling or further education.

Based on these descriptive analyses, we can conclude that the age specific distribution of different types of activities from the age of 15–20 varies considerably along the characteristics of having an immigrant background or not and being male or female. The native-born males conform most strongly to the institutionally envisaged pathway from school to VET. Many of them enter vocational training directly after leaving school and by the age of 16 ½ the vast majority of them, 70 %, participate in vocational training. For all other groups the picture is less clear cut. In particular, both women and men of immigrant background seem to participate for an extended period in different realms of education before they enter VET in a delayed manner. A reason for this delay seems to be that many of them not only need a longer period to finish regular schooling, but they also to a bigger extent take part in further education activities to improve their chances on the VET market.

13.5 The Transition Rates of Low-Skilled Youth Entering Vocational Training

In the above analyses the share of young individuals pursuing different activities were plotted as a function of age. This approach provided a general overview about the distribution of different states on an aggregate level at a certain age. The next step in the empirical analysis presented here will be to switch from the aggregate to the individual level to try to get preliminary information about the probabilities that members of a certain group of low-skilled young people enter vocational training at a specific age. In order to accomplish this, the product-limit estimators are calculated (Blossfeld et al. 2007, pp. 72–86; Castilla 2007, pp. 179–191; Singer and Willett 2003, pp. 483–491). This method, also called the Kaplan–Meier

estimation method, is a nonparametric approach that has the advantage of taking into account all information in the data set on transitions into VET.

In contrast to the descriptions provided in the previous parts, the following analysis considers only those individuals who reported to have been actively looking for a training opportunity. The survivor functions or hazard rates are plotted separately for males and females, and in each graph native-born and immigrant individuals are also compared. After pointing to the differences between the groups, the results will be discussed to see if the presented functions differ from each other on a statistically significant level. Finally, certain features concerning the shape of the survival functions will be highlighted providing valuable information for the analysis that follows.

The survival functions show that three months after beginning their search, some 40 % of the native-born males have entered vocational training, whereas only 27 % of the immigrant males have done so. By 14 months, the gap between the two groups apparently grows, with 44 % of the young male immigrants having entered vocational training, compared with 60 % of native-born males. By slightly more than 2 years, the share of native-born males in VET reaches 70 %, while the percentage of the immigrant group in VET is still 48 %. The disparity continues: At the end of the five-year observation period, 82 % of the males of native origin make a successful transition into VET, but only 64 % of those with an immigrant background do so.

The survival functions for the females show that three months after starting to search, the share of those who enter VET is 41 % for native-born young women and 22 % for those of immigrant background. Half of the native-born manage to begin a vocational training after 14 months, whereas the immigrant females need more than 2 years (25 months) to reach that level. After four and a half years a clear difference between the two groups persists: By then, 86 % of the native-born females manage to enter VET whereas this is true for only 63 % of the immigrant females.

The question of whether the deviations between native-born and immigrant males and females are statistically meaningful can be answered by examining the test statistics noted in the above graphs. If the test results are significant then the null hypothesis, which states that there is no statistically meaningful difference between the two survival functions, must be rejected. The test statistics provided in Fig. 13.3 for the males confirm that the observed differences are strongly significant in statistical terms. For females, the test results in Fig. 13.4 are mixed, with two indicating significant statistical differences and a third, the Wilcoxon-Breslow-Gehan test, indicating that the differences are statistically insignificant. The computed tests differ from each other in terms of their regions of sensitivity, and the Wilcoxon-Breslow-Gehan test is especially sensitive to the initial phases of processes (Blossfeld et al. 2007, pp. 77–81). However, keeping in mind that the outcomes of the other test statistics turn out to be significant, the overall interpretation still should be that the transition rates into VET for females of native and immigrant origin differ from each other, but these differences are not as pronounced as they are for males.

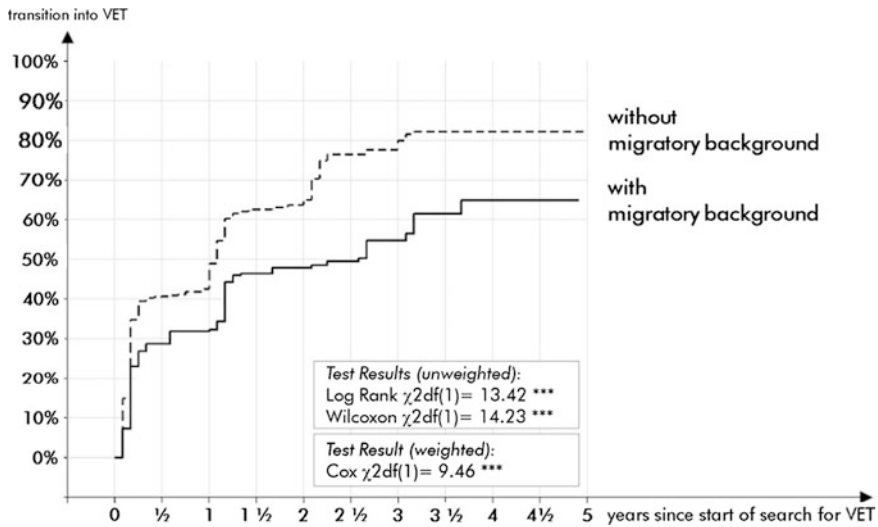


Fig. 13.3 Product-limit estimations for low-skilled males entering VET. N (males) = 493; N (transitions) = 285. Data BIBB transition study 2006; birth cohorts 1982–1988; own calculations

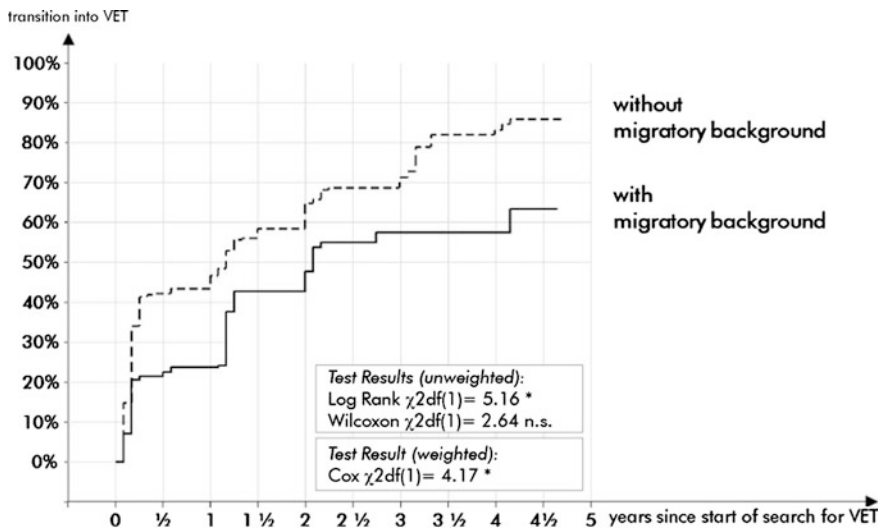


Fig. 13.4 Product-limit estimations for low-skilled females entering VET. N (males) = 319; N (transitions) = 196. Data BIBB transition study 2006; birth cohorts 1982–1988; own calculations

The shape of the functions plotted in both Figs. 13.3 and 13.4 indicate that the probabilities of making a transition into vocational training are not uniform during the observation period, but develop in a stepwise pattern. During the four months after the search for VET begins, a high level of transitions are taking place. In the next 8 month period the transition rates drop to a rather moderate level and then rise again subsequently for a duration of three to four months. This pattern is repeated to some degree, although the difference between high and low transition periods toward the end of the observation time is not as big as during the initial phase.

13.6 Individual Characteristics and the Probability of Entering Vocational Training

The information about the temporal patterns displayed by the survival functions is utilized in the following analyses through referring to piecewise exponential models. In such hazard rate models the total observation time is divided into smaller chunks and the hazard rates for each of these time periods are computed separately (Blossfeld et al. 2007, pp. 116–127). Before presenting the results of these computations, the reader will be introduced to a set of individual level characteristics that will be incorporated into the models, as they are deemed to be relevant for predicting the transition probabilities of a person.

Continuing the previously established gender-specific perspective, the first block of explanatory variables includes the covariate being female. Numerous studies have pointed out that young women, even though they are on average better at school, have greater difficulties in entering the vocational training system (e.g., Boos-Nünning 1993; Granato 2000; Granato and Schittenhelm 2003, 2004; Weißhuhn and Rövekamp 2003). This is due to a complex set of conditions (Tippelt 2006, pp. 104–106; Krüger 1999) and remains an issue of pivotal importance for the school-to-work transitions in Germany.

In a meritocratic system, another straightforward assumption would be that the grades obtained at school affect the chances of entering VET, because potential providers of training opportunities would refer to those grades in order to predict the potential of a candidate. Therefore, another covariate accounts for the grades the respondent earned in the final year at school. In the grading system in Germany 1.0 is the best and 6.0 is the worst possible grade. Having a ‘higher graduation degree’ means in these analyses to have an average grade better than 2.5, whereas the reference category is to have a grade between 2.5 and 6.0.

The covariate ‘parents educated higher’ is also incorporated into the first model. From a sociological standpoint, one would assume that a young person from a family with richer socio-economic resources is likely to be more successful in finding a training opportunity (Henz 1996; Shanahan 2000, p. 674; Solga and Wagner 2001, pp. 114–115). As our analyses deal with low-skilled youth, parents

that are educated higher consist in this context of fathers and/or mothers who have obtained a higher degree than the lower secondary school certificate (*Hauptschule*) in Germany.

Research about factors leading to inclusion in or exclusion from the German VET market shows that the chances of being excluded grow for individuals with rising age (Solga 2000, p. 15; Ulrich et al. 2006, p. 45). Of course the mean age of applicants varies depending on the school type they have attended. As mentioned earlier, in this chapter only the youth who followed the lower educational track are included in the analyses. This group on average will graduate from school at the age of 15 or 16. Therefore, in the model introduced, the covariate ‘higher age when leaving school’ refers to women and men who are 17 years old or more at the time they start to search for a training opportunity. The background assumption is that if applicants are 17 years or older, their age is interpreted in terms of a prolonged school career and their lengthier stay at school may be interpreted by companies that offer vocational training as a sign of lower performance or capacity in the future.

In the second model presented, the variable ‘left school without degree’ is included. Dropping out of school without obtaining a degree is clearly disadvantageous on the German VET market (Kupka 2003). Even though many young people without a school diploma are channeled towards special programs that aim to enhance their chances of finding a proper vocational training, participation in such programs might be perceived by companies to be a sign of low intellectual capacity. In this case the program participation turns into a stigma and actually may lead to an even higher risk of staying without any qualification (Solga 2002). The share of young people who leave school without any degree is more than twice as high among immigrants as among the population without any migratory background (BMBF 2011, p. 38). By including the variable ‘left school without degree’ an important individual circumstance is taken into account.

After these variables, which are considered to be of central importance, have been incorporated into the first two models, a third model is introduced, which incorporates a covariate indicating if a person has an ‘immigrant background’. The aim of introducing this covariate separately in a third step is to see if, through its incorporation, the size and significance of the other covariates change. A possible, initial assumption would be that in a meritocratic system, being of immigrant origin should not exert an autonomous effect because other important characteristics are controlled for and the ethnic or cultural background of a person is not related to his or her potential capabilities. A competing assumption, however, would be that the vocational education system is not perfectly meritocratic and the relevant actors do not behave purely rationally. In this case, being of ‘immigrant background’ may lead to a downplaying of the educational and personal characteristics of an applicant if the recruiters believe that coming from a migratory background is a feature that is not advantageous for the work done in the company (Imdorf 2008).

In this case they would try to avoid an erroneous recruitment, i.e., the variable would exert a negative effect on the probabilities to enter vocational education.

As mentioned above, a piecewise constant estimation method is employed. This estimates the hazard, or to be more precise, in our case transition rates for specified time periods separately. In order to define these periods, information was taken from the transition functions plotted earlier. The time intervals of 0–4, 5–11, 12–15 months, etc., were determined according to the already described periods with high and low rates of transitions. Going one step further in the fourth and last model presented,⁷ the aim is to investigate if the impact of having an ‘immigrant background’ changes over time and, if yes, how it changes. Therefore we specify the model in such a way that allows the parameter estimation for this covariate to vary across the specified time periods (Blossfeld et al. 2007, pp. 123–127). The parameters presented in the right-hand part of Table 13.3 show the effect of having an immigrant background for specific time intervals.

Table 13.3 includes the so-called ‘empty model’, which contains the estimated baseline transition rates. The likelihood value for the empty model serves as a point of departure to evaluate the improvement of the fit of the subsequently introduced models.

The parameters obtained for the baseline transition rates confirm the observation from the product-limit estimations made earlier: In the first four months, the transition rates are very high. They drop during the subsequent six months and then rise again in the time period from the 12th to the 15th month, etc. This fluctuation in the transition probabilities is most probably induced by the calendar set by institutions involved in recruitment and education: After the regular school year ends, a three to four month period of intensive recruitment starts. At the end of this period young people either begin a vocational education, e.g., an apprenticeship and visit school during the first years of their training only for one or two days a week, or they do not manage to enter VET and try to acquire qualifications or skills for a later attempt. After the ‘high season’ of placement into VET ends, the chances of getting a training slot diminishes until the beginning of the next recruiting season.

Among the variables introduced in the first model, being female, having higher grades when leaving school, or having parents with higher education do not have a significant effect on transition probabilities. Apparently for young people with lower educational credentials these aspects do not represent a systematic advantage or disadvantage. The variable indicating that a person was 17 years or older when he or she left school, however, exerts a significant negative effect, i.e., it reduces the chances of making a transition into vocational training by approximately 30 %.

Surprisingly, in model 2, the variable indicating that someone left school without obtaining a diploma does not seem to significantly affect the chances of

⁷ Due to space restrictions, other model specifications that were tested, including interaction effects between ‘having a migratory background’ and other covariates, are not presented here. Furthermore, instead of the overall grade average, the models were also run with the mean grades in maths or German. Another approach was to introduce the ‘having a migratory background’ covariate in the first model instead of waiting to include it later on. None of these alternative specifications led to any outcomes that would question the results presented here.

Table 13.3 Individual Level Factors Affecting the Transition into VET

Periods (months since search begin)	Empty model	Model 1	Model 2	Model 3	Model 4
0–4	0.1175***	0.1451***	0.1489***	0.1680***	0.1653***
5–11	0.0034***	0.0042***	0.0042***	0.0049***	0.0053***
12–15	0.0728***	0.0898***	0.0909***	0.1069***	0.1006***
16–23	0.0061***	0.0075***	0.0076***	0.0089***	0.0099***
24–27	0.0637***	0.0783***	0.0794***	0.0943***	0.1094***
28–36	0.0117***	0.0145***	0.0146***	0.0176***	0.0164***
36+	0.0151***	0.0196***	0.0196***	0.0256***	0.0305***
0–4 x immigrant backgr.					0.6141**
5–11 x immigrant backgr					0.3689
12–15 x immigrant backgr					0.7053
16–23 x immigrant backgr					0.3594
24–27 x immigrant backgr					0.2907*
28–36 x immigrant backgr					0.7007
36 + x immigrant backgr					0.3683
Covariates					
Female		0.8649 n.s.	0.8648 n.s.	0.8673 n.s.	0.8635 n.s.
Higher graduation degree		1.0518 n.s.	1.0245 n.s.	0.9710 n.s.	0.9643 n.s.
Parents educated higher		0.8385 n.s.	0.8536 n.s.	0.9120 n.s.	0.9204 n.s.
Higher age when leaving school		0.6985**	0.7150*	0.7181*	0.7176*
Left school without degree			0.5437 n.s.	0.6256 n.s.	0.6200 n.s.
Immigrant background				0.5673***	–
N (persons)	1585	1585	1585	1585	1585
N (events)	1011	1011	1011	1011	1011
Log pseudolikelihood	–2106	–2089	–2082	–2052	–2046
χ^2 (df)		34(4)	48(5)	108(6)	120(12)

n.s. = not significant; immigrant backgr. = immigrant background

*p < 0.05; **p < 0.01; ***p < . 0 01

Data BIBB Transition Study 2006;birth cohorts 1982-1988; own calculations

making a transition. Nevertheless, one should note that the effect size, although not significant on a level of at least 5 %, is strongly negative with a parameter of 0.54.

The estimate for the characteristic of having an immigrant background introduced in model 3 is significantly negative. The parameters for the covariates introduced already in the first model do not change in a significant way, except for the variable related to a higher age of graduation. The effect size for leaving school without a degree changes, but remains statistically insignificant. The effect of having a migratory background, in contrast, is highly significant and strongly negative, diminishing the transition probability of a person by nearly 44 %.

The results obtained through the estimation of the fourth model illustrate that the negative effect of a migratory background, indeed, changes over time and is not significant in all of the defined time intervals. Within the critical first four months, the ‘high season’ of making a successful transition into vocational education, immigrants apparently experience severe disadvantages: Their transition

rate is nearly 40 % lower than that of their native-born counterparts. This disadvantage is not limited only to the initial phase of the search for VET. Even after more than two years, a negative effect is observed that is not as significant as in the first four-month period, but stronger in size. Moreover, the negative effect of being older when leaving school also remains in this model. This indicates that age norms and having an immigrant background are quite separate factors and may therefore potentially create a combined disadvantage, if the person searching for VET is both of migratory background and older than the average competitor.

13.7 Concluding Remarks

The observations made on the transition processes of low educated young people in Germany point to differences that exist already at first sight on a descriptive level. This is graphically illustrated by the state distributions plotting different activities young people have reported to be preoccupied with from the age of 15–20. The graphs show that there are differences between the native-born and immigrants on the one hand, and between males and females on the other. One of the plotted graphs, for instance, shows that many of the native-born males start a VET immediately after they leave school; at the age of 16 ½ 70 % of them are already participating in a vocational training. The overall picture for this group implies a strong conformity of the timing of transition processes with the timing anticipated by the relevant institutions in terms of regulating life courses (Leisering 2003; Leisering et al. 2001). The plots for all other groups, native-born females as well as immigrant males and females, do not illustrate such a high degree of conformity. Particularly interesting is the observation that in this age period a bigger share of the immigrants (compared to native-born) follows a type of school-based education. Although it is not clear if this engagement is voluntary, a possible explanation could be that they try to obtain further educational credentials with the hope that they will help in the search for an apprenticeship. Generally the processes experienced by the males and females of immigrant origin seem to be often delayed and to take place in a manner that is not as orderly as observed for the native-born.

The question whether observable differences exist between immigrant and native origin males and immigrant and native origin females with respect to the time needed to make a transition into VET can be answered ‘yes’. Such differences are more pronounced between the males than they are for the females. After 2 years, the share of native-born males pursuing a vocational training is 70 %, while this share among the immigrant males is only 48 %. At the end of this five-year observation period during which individuals have reported to be searching for VET, 82 % of the native-born males enter VET, but only 64 % of those with an immigrant background do so.

In order to assess the impact of various individual level characteristics on the transition processes, piecewise constant exponential models were estimated. The

advantage of this approach was the possibility to estimate the probability of making a VET transition separately for pre-defined time periods. The parameters obtained in a multivariate perspective show that for the group of young people with lower education, gender differences, better grades at school, or having parents who have higher education are not characteristics that significantly impact the chances of making a transition into VET. Having left school at an older age, however, seems to exert a negative impact. The variable of central importance, coming from an immigrant background, has a significant and negative effect and therefore can be considered a disadvantage for being successful on the VET market.

The above analyses also made clear that there are factors of temporal character that influence the probabilities of entering VET. Apparently shorter time periods exist during which transition probabilities are high. These are followed by longer time periods when the total numbers of transitions drop. A last approach was therefore to look if the impact of having a migratory background varies along these time periods. The obtained results indicate that in the short time period immediately after starting the search for an apprenticeship young people of immigrant origin seem to be especially disadvantaged.

The analyses presented have some limitations that make further research necessary. Future research could go beyond individual level factors, as they alone may not suffice to explain the differences between different groups in full detail. It would be worthwhile, for instance, to take into account regional differences in the overall supply of vocational training opportunities. An interesting alternative path of research would focus on the selection and recruitment procedures that are followed by the companies and their recruiting staff. All in all, the analyses above should have made clear that young people with lower school-based education in Germany do not represent an uniform group with respect to their chances on the vocational training market, but those among them who have a migratory background are likely to experience more difficulties during their transition from school to VET.

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Chapter 14

New Institutional Linkages Between Dual Vocational Training and Higher Education: A Comparative Analysis of Germany, Austria and Switzerland

Christian Ebner, Lukas Graf and Rita Nikolai

14.1 Introduction

The expansion of the service sector, changes in technology and increasing demand for abstract and codified knowledge feed the need for qualified personnel. The transformation of work has profound consequences for the process of skill acquisition in schools, vocational training institutions and the workplace. In countries like the US or France, which can be characterised as “internal labour markets” (ILMs), the link between the education system and the labour market is rather loose and it is mostly the company which is in charge of organising work and jobs. In contrast to this, in “occupational labour markets” (OLMs) like Germany or the Netherlands, the education system provides occupation-specific skills and jobs are very much structured around standardised occupations that require specific formal training (Marsden 1990; Gangl 2001).¹

We decided to put the spotlight on three countries within the OLM cluster: Germany, Austria and Switzerland. In the political economy literature, these countries have also been labelled as “collective skill systems” (Thelen and

¹ Similarly, Maurice et al. (1986) distinguish between “organisational spaces” and “qualificational spaces”.

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Busemeyer 2008; Busemeyer and Trampusch 2012). All three countries have a federal form of government, highly “stratified” school systems (Allmendinger 1989; Ebner and Nikolai 2010), and a considerable number of young people who go through dual vocational training at the upper-secondary level²: in Austria 36 %, in Germany 45 % and in Switzerland 60 % of all students in upper secondary education are enrolled in dual vocational training (OECD 2011, p. 305). Compared to other OECD countries, dual vocational training is very dominant in these countries. These countries’ unique dual vocational training system is characterised by the following three features (Greinert 2005; Trampusch 2010): Firstly, the state regulates apprenticeship training in cooperation with unions and employer representatives (corporatism). Secondly, apprenticeship training takes place in two different but complementary learning environments: in the company and in the part-time vocational school (in conjunction these are called “*Duales System*” or dual vocational training). Thirdly, training follows the occupational principle: young people are trained for several years in a specific occupation and acquire occupation-specific skills.

In all three countries, universities largely developed separately from industrialisation and business, whereas vocational education and training (VET) developed separately of higher education (Greinert 1999; Gonon 1994). Traditionally, the completion of dual vocational training does not provide eligibility for higher education entrance in Germany, Austria and Switzerland (“*Educational Schism*”) (Baethge 2010). Writing on the German case, Baethge (2006) observes that all reform efforts in the 20th century have failed to dissolve the institutional divide between dual VET and academic (or higher) education, given the deep roots of VET in the social structure of German society as well as in the German mode of diversified quality production.³ Recently, however, the possibility of progression from VET to higher education has become a widely-discussed topic—both at the national level in the countries in question and in the European context (Allmendinger et al. 2010; Powell and Trampusch 2012; Powell and Solga 2008). Not only does the option to progress from VET to HE agree with the concept of lifelong learning (Jakobi and Rusconi 2009), but it should also accommodate the increasing demand for academics (“*academic drift*”) (Busemeyer and Trampusch 2012) arising from the development towards a knowledge-based service economy (Iversen and Wren 1998; Mayer and Solga 2008; OECD 1996). The permeability of educational institutions is also closely linked with educational opportunity and is viewed as a key to enhancing social mobility. Similarly, facilitating the transition from dual vocational training to higher education aims to improve work and career

² Furthermore, Germany, Austria and Switzerland also provide vocational training in full-time vocational schools and general schooling to varying degrees (Ebner and Nikolai 2010).

³ On the one hand, this refers to the role of an influential German educated middle class (“*Bildungsbürgertum*”) in excluding other social classes from access to higher education (Baethge 2006) and, on the other, to the important status of the dual training system and, hence, vocationally skilled workers within ‘*Rhenish capitalism*’ (see Streeck 1991 on diversified quality production).

chances for individuals without a higher education entrance qualification. At the beginning of the 1990s the three countries in question featured low entry rates to higher education compared to other OECD countries. Meanwhile, entry rates into higher education increased by more than 20 % points between 1995 and 2009 in Austria and Switzerland. This trend towards an educational expansion is less obvious in Germany (OECD 2011, p. 317).

In this chapter we analyse in what ways Germany, Austria and Switzerland are establishing institutional links between the dual vocational training system and higher education and thus try to increase openness. We will moreover touch upon the issue of “institutional differentiation” (Lepsius 1990) and discuss in how far the introduction of “new” educational institutions or the differentiation of existing ones can lead to a loss in institutional specificity and cause institutional ambiguity.

The chapter is divided into four main sections. Section 14.2 presents our theoretical framework. In this section we review the literature on educational institutions and argue that there are—from a theoretical point of view—at least six ways of how a country can institutionalise bridges from VET to higher education. In Sect. 14.3 we explore the actual approaches to linking the dual system to higher education. Even though these three countries belong to the same skill regime cluster (see also Busemeyer and Trampusch 2012; Ebner and Nikolai 2010; Nikolai and Ebner 2012; Powell and Solga 2008), they have not adopted the same strategies for increasing openness. In Sect. 14.4, the article concludes with a summary of the findings and an agenda for future research in this area. Our analyses are based on evaluations of statistical data, official documents and secondary literature.

14.2 Educational Institutions: State of Research and Theoretical Approach

Generally speaking, studies on educational institutions fall into two broad categories. One strand of research deals with *change and stability of educational institutions*. In the German-speaking research area an important focus is on changes of the dual system of vocational training, often raising the question of whether or in how far this system is still appropriate in a knowledge-based service economy (Thelen 2004; Thelen and Busemeyer 2008; Solga 2009; Trampusch 2010; Geißler 1991; Heidenreich 1998). Besides these studies on the dual system, the higher education system has more and more attracted researchers’ interest, not least due to the Bologna reform, i.e. the implementation of undergraduate (Bachelor) and graduate (Master) studies all across Europe (e.g. Teichler 2007; Ebner and Nikolai 2010; Powell et al. 2012a; Graf 2009). A third focus within this strand of research is on the interconnectedness of different types of educational institutions and how they influence one another (e.g. Baethge 2006; Shavit and Müller 2000). For instance, a number of studies have been conducted on the

competition between the dual system of vocational training and full-time vocational schooling (Ebner and Nikolai 2010; Graf et al. 2012) or of that between the dual system and higher education (Nikolai and Ebner 2012; Powell and Solga 2010).

A second strand of research deals with the topic of *educational institutions and individual life chances*. Most studies in this field are concerned with general schooling, focusing on how school structure shapes individual decision making. In particular, it is the early separation of children into different school forms that was identified as central to the evolution of inequalities in education and low inter-generational mobility (e.g., Bauer and Riphahn 2006; Boudon 1974; Breen and Goldthorpe 1997; Erikson and Jonsson 1996; von Below 2002; Pfeffer 2009; van de Werfhorst and Mijs 2010). Further studies indicate that educational institutions also affect individual labour market entry (Allmendinger 1989; Müller and Shavit 1998) and the assessment of an individual of his or her economic position (Groß 2003). In more general terms, institutions can be described as imposing informal constraints (norms, customs) and formal rules that not only create social order and reduce uncertainty, but also shape opportunity structures for individual behaviour (North 1990, 1991). This idea is very similar to life course research, which argues that life courses—in this case the specific pathways through the education system—are shaped by institutions (Mayer 1990, 2009). Especially in countries like Germany, Austria and Switzerland—in which apprenticeship training traditionally plays a pivotal role next to higher education—institutional changes in the relationship between dual vocational training and higher education may increase inter-sectorial permeability and thus can be viewed as key to enhancing social mobility (Bernhard et al. 2010; Powell and Solga 2011).

In this chapter we build on such institutional theory to illustrate the ways in which Germany, Austria and Switzerland are establishing institutional links between the dual vocational training system and higher education. This is interesting for at least two reasons. Firstly, it gives an impression of a country's opportunity structure for VET graduates and illustrates how institutions affect equality of opportunity in the education system. Secondly, it delivers—from an institutional perspective—insights into the degree of “institutional differentiation” (Lepsius 1990) within a national educational system. If a country has adopted several measures to link the dual training system to higher education, the differentiation between and specificity of institutions are likely to become less clear. Thus, we can observe that both the dual vocational training system and the higher education system are challenged to take on additional institutional functions which implies increased institutional differentiation. Whereas previously the goal of vocational training was to develop comprehensive vocational competence in a specific vocational field (“Beruflichkeit”) (Kraus 2007), there now prevails the idea that the dual vocational training system should ideally also provide people with the general competences required for access to and successful completion of higher education programmes. Higher education, on the other hand, is typically meant to equip students with academic skills for research-based work and similarly demanding professions (Powell et al. 2012a). However, in order to facilitate

institutional openness to allow a progression from dual vocational training to higher education, universities and universities of applied sciences (see below) are now asked to introduce procedures which enable the consideration of vocational competences for admission (Freitag et al. 2011b) but also to cater the specific needs of applicants with mostly occupational experiences. As we will show, this ongoing institutional differentiation may lead to *institutional ambiguity* and to *institutional task overload* for educational institutions, both in dual vocational training and in higher education. In this context, institutional ambiguity refers to institutions sending unclear signals to students as well as employers, while institutional task overload refers to institutions being assigned multiple tasks resulting in operational deficiencies.

Before we take a closer look at Germany, Austria and Switzerland, we will first consider from an ideal–typical point of view the different institutional approaches to bridging the gap between dual vocational training and higher education (e.g. Dunkel et al. 2009; Nikolai and Ebner 2012; Powell et al. 2012b). We differentiate between six measures: the upgrading of VET, dual courses of study, the attendance of upper secondary schools, parallel completion of dual vocational training and higher education admission certificate, admission to higher education based on prior work experience and the recognition of prior learning as an element in higher education programmes. Please note that we focus on fairly recent developments. For example, we do not discuss the topic of specific higher education entrance examinations for persons without higher education entrance qualification, which have existed for a long time in different forms and variations in the countries in question (see e.g. Wolter 2010 on the German case).

The *upgrading of VET courses* means that former VET institutions are transformed into higher education institutions. An example are the universities of applied sciences (“Fachhochschulen”) that have been created through such upgrading in Germany and Switzerland and that are more practically and vocationally orientated than the traditional theoretical and research-orientated universities. *Dual courses of study* (“duales Studium”) combine higher education with practical in-company training periods. However, both of these measures (upgrading and dual courses of study) have the disadvantage for young people that they must still meet the formal requirements for admission into higher education: the completion of either a general higher education entrance qualification—or a university of applied sciences entrance qualification—is usually mandatory. The opportunity for dual vocational training graduates to acquire a higher education entrance certificate can again be institutionalised in two ways.⁴ First, these certificates can be obtained after graduating from the dual vocational training system via the *attendance of an upper secondary school*. For individuals this has the obvious disadvantage that they have to return to the education system for at least

⁴ Please note that in this chapter we are not concerned with individuals who acquired a higher education entrance certificate prior to entering dual vocational training.

one year and are not able to cash in on acquired vocational competencies in the labour market full-time. The second way of increasing openness from the dual vocational training system to the higher education sector is by enabling the *parallel acquisition* of a dual vocational training degree and a higher education entrance certificate at the same time. This increases the graduates' flexibility on the labour market and in the education system. Another way to link dual vocational training and higher education, which does not require the acquisition of a higher education entrance certificate after or during dual vocational training, is the *admission to higher education on the basis of prior work experience*. This means that graduates from dual vocational training can enter the higher education sector without any higher education entrance qualification, but by proving that they have a dual vocational training qualification and been employed for a certain number of years, thus qualifying for higher education in a specific area of studies. A related possibility to promote the openness of and progress from dual vocational training to higher education is to define procedures for the recognition of prior learning *as an element within higher education programmes*. That is, vocational competences relevant to a specific higher education programme are credited and count towards this programme to avoid redundant learning and, hence, to reduce study load and time.

14.3 Institutional Linkages Between Dual Vocational Training and Higher Education

With regard to the theoretical-institutional approaches presented above, we next investigate which of these links have been established in Germany, Austria and Switzerland to bridge the gap between dual vocational training and higher education.

14.3.1 Upgrading of Vocational Education and Training Courses

The upgrading of VET courses, as one measure for linking dual vocational training and higher education, can be found in all countries in question: as far back as the 1970s, some schools of engineering, academies and higher institutes of design, social work and economics in Germany were upgraded to universities of applied sciences ("Fachhochschulen") and hence became part of the higher education sector. Universities of applied sciences were established at a later date in Austria (1993) and Switzerland (1997) (Graf et al. 2012; Gonon and Maurer 2012; Culppeper 2007; please note that the Swiss 'Fachhochschulen' are a clear case of

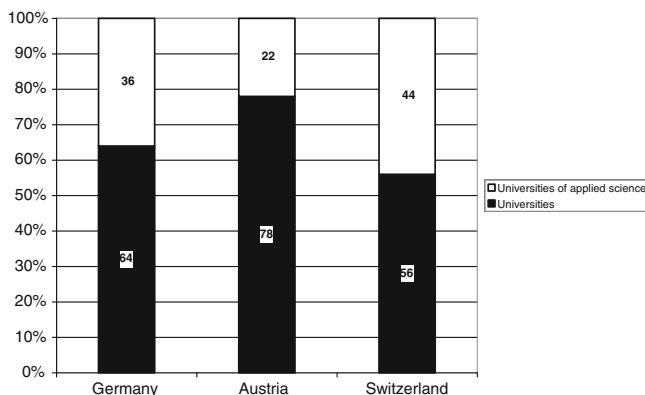


Fig. 14.1 Relationship between universities and universities of applied science in Germany, Austria and Switzerland—Percentages of freshmen in the winter semester of 2008/2009. *Sources* (BFS 2010; Statistik Austria 2010; StBa 2009)

upgrading, whereas the Austrian ones were established from scratch). In general, universities of applied sciences are rather practical and occupational in their orientation, whereas universities are more theoretical and research-orientated (Mayer et al. 2007; Buchmann et al. 2007; van der Wende 2008). This higher education structure, consisting of universities and universities of applied sciences, has been labeled a “binary” structure (Shavit et al. 2007). Universities of applied sciences have become an important sector within the higher education system in all three countries under investigation.

Figure 14.1 illustrates the relationship between the universities and universities of applied sciences in the winter semester of 2008/2009. In all three countries universities remain the most dominant sector in higher education. Nevertheless, particularly in Switzerland, universities of applied sciences have gained in importance as 44 % of freshmen opt for this type of institution (BFS 2010). The relative share of freshmen attending universities of applied science is still over one-third in Germany (36 %) (StBa 2009) and 22 % in Austria (Statistik Austria 2010).

14.3.2 Dual Courses of Study

A second way of establishing closer links between dual vocational training and higher education is the introduction of *dual courses of study* (“duales Studium”). All of the German *Länder* are attempting to combine dual vocational training with higher education through such *dual courses of study* and *vocational academies* (“Berufsakademien”) (BLK 2003; Busse 2009; Hippach-Schneider et al. 2007). During their dual studies, students are trained at a higher education institution as

well as in the workplace. They receive a monthly salary throughout and have the insurance status of employees. Yet, with the exception of the degrees awarded by the Baden-Wuerttemberg Cooperative State University (“Duale Hochschule Baden-Württemberg”), the bachelor’s degrees awarded by the vocational academies are not always accepted by the regular universities as entrance qualifications for master’s programmes (Hoeckel and Schwartz 2010). Dual courses of study are, to this date, mostly a German phenomenon, and even there these programmes cater only a small proportion of the overall student population (see Minks et al. 2011). However, even if dual courses of study have not yet attained a high level of significance in quantitative terms, they are growing rapidly and have become an attractive model for companies and individuals (Graf 2012).

14.3.3 Attendance of an Upper Secondary School

Both of the two abovementioned measures, i.e. the upgrading of educational institutions and the introduction of dual courses of study, have the disadvantage for young people that they must still meet the formal requirements for entrance into higher education. Therefore, a major obstacle regarding access to the higher education sector remains. The requirement for admission to higher education is usually the successful completion of a corresponding higher education entrance qualification. Two forms of entrance certificates can be identified in principle: the general higher education entrance qualification (“allgemeine Hochschulreife”) which enables the holder to study at both universities and universities of applied sciences (in Switzerland access to the latter often requires relevant work experience), and the university of applied sciences entrance qualification (“Fachhochschulreife”) which only provides access to universities of applied sciences. Higher education entrance certificates are usually acquired at general upper secondary school. In Switzerland, since 1993, individuals holding a federal VET certificate can attain a vocational baccalaureate (“Berufsmaturität”) typically after one year of full-time schooling. This certificate then allows direct access to universities of applied sciences. In Austria, since 1997, it is possible to attend “vocational education matriculation classes” after completing dual vocational training in order to obtain a general higher education entrance qualification (“Berufsmatura”). A similar possibility has existed for a long time in Germany in the form of the courses provided by the specialised upper secondary schools (“Fachoberschule” and “Berufsoberschule”), where graduates normally study for a qualification that will give them access to universities of applied sciences. These programmes usually last for one to two years on completion of a basic VET programme.

14.3.4 Parallel Acquisition of a Dual Vocational Training Qualification and a Higher Education Entrance Qualification

Switzerland and Austria, but not Germany, have comprehensively institutionalised the possibility of the parallel acquisition of a dual vocational training qualification and a higher education entrance qualification. Thus, the Swiss vocational baccalaureate (“Berufsmaturität”) can also be attained parallel to the completion of a dual apprenticeship programme. In 2008, Austria introduced the apprenticeship with a general higher education entrance qualification (“Lehre mit Matura”) which enables students to acquire a general higher education entrance qualification while simultaneously completing dual vocational training.⁵ In both countries, the parallel completion of dual vocational training and higher education entrance qualifications has established close institutional links between different learning locations. For the completion of such a course, the apprentices are released from work for an additional half-day or day per week. The training company, the apprentice and the vocational school coordinate the specific way in which the “matriculation classes” are integrated into dual training. Similar options exist in some places in Germany. However, these options vary across the 16 federal states. For example, young people in some of the German *Länder* can combine a VET qualification with a higher education certificate in pilot projects and as part of the ‘Kollegstufe’, as in North Rhine-Westphalia.⁶ Given that the parallel acquisition of such qualifications is not institutionalised at the national level in Germany, apprentices may sometimes find it difficult even to access adequate information about a suitable programme.

14.3.5 Admission on the Basis of Prior Dual Vocational Training Qualifications and Work Experience

In addition to the upgrading of VET courses, dual courses of study and parallel qualification certificates, the linking of dual vocational training and higher education can also be achieved through admission to higher education on the basis of prior VET qualifications and work experience. The master craftsman’s certificate (“Meisterprüfung”) and similar qualifications fall in the category of professional education and training (PET, “Höhere Berufsbildung”) in the countries in question and also belong to the tertiary level. However, a clear distinction is drawn at

⁵ In the case of Austria, three out of the four necessary exams can be completed parallel to apprenticeship training. The last exam follows *after* the VET certificate has been awarded (and on the condition that the individual is at least 19 years old) (BMUKK 2011, p. 8).

⁶ Available from: <http://www.berufsbildung.schulministerium.nrw.de/cms/> (accessed 1st December 2011).

tertiary level between tertiary-level A (ISCED 5A) (universities and universities of applied sciences) and shorter programmes which are located at tertiary-level B (ISCED 5B) (PET programmes). The graduation rate at tertiary level B was 13.8 % in Germany, compared to the OECD average of 10.4 % (OECD 2011, p. 68). In the 1990s, some German *Länder* had already introduced regulations to grant holders of vocational master's certificates and similar qualifications subject-restricted access to universities and universities of applied sciences (Ulbricht 2012). With the KMK-resolution⁷ of 2009, this regulation applies nationwide and now also includes general access to universities and universities of applied sciences (KMK 2009a, b). Since 2009, moreover, prospective students in Germany with basic dual vocational training qualifications can become eligible for subject-restricted university admission if they can demonstrate three years of occupational experience (sometimes an additional entrance examination or a trial period of study are required). In Switzerland, holders of PET qualifications may enrol in universities of applied sciences without having to obtain the "Berufsmaturität" (SKBF 2011, p. 244). The Swiss PET sector comprises the Federal PET Diploma Examination, the Advanced Federal PET Diploma Examination ("Meisterprüfung") and the PET Colleges. The graduation rate at tertiary level B was 18.9 % in Switzerland (2009) and thus higher than in Germany. In Austria, tertiary level B programmes (e.g. "Meister" and "Werkmeister") are less popular than in Switzerland and Germany. The graduation rate was 10.1 % in 2009 (OECD 2011, p. 68). Compared to Switzerland and Germany, these programs do not grant access to either universities or universities of applied sciences.

14.3.6 Recognition of Prior Learning as an Element in Higher Education Programmes

In all three countries some limited provisions exist for the recognition of prior learning as an element *within* higher education programmes. However, these measures are rather marginal or, as in the case of the German ANKOM initiative, in the process of being further developed. The ANKOM initiative ("Anrechnung beruflicher Kompetenzen auf Hochschulstudiengänge") started in 2005 and since then has established a range of methods and tools to test equivalences of VET and higher education learning outcomes (Hartmann et al. 2008). Two specific approaches have been tested in 10 higher education institutes, namely accreditation of prior experiential learning (APEL) and accreditation of prior certified learning (APCL). The key difference between the two approaches is that the former is based on a case-by-case assessment of an individual's competences ("individuelle Anrechnung") while in the latter case an entire course or

⁷ The KMK ("Kultusministerkonferenz") is the Standing Conference of the Ministers of Education and Cultural Affairs of the *Länder* of the Federal Republic of Germany.

qualification is tested for equivalence (“pauschale Anrechnung”) (Hartmann 2008). While both approaches are often described as essential to promote progression from VET to higher education,⁸ it has turned out that their actual implementation is highly challenging due to the differences in learning styles between VET and higher education (Müller 2008) and the need to adjust these measures to specific institutional conditions (e.g. the type of higher education institution or programme of study) (Freitag et al. 2011a). In Austria, recognition of prior learning as an element in higher education programmes can, for example, be found in the case of VET college graduates who have the option to commence studies in the second or third semester at universities of applied sciences in their field and may also be offered some exemptions at universities. However, the extent to which prior learning is counted towards credit depends in large part on the individual higher education institution (Prokopp and Luomi-Messerer 2009). In the German-speaking part of Switzerland, there exists no genuine and systematic procedure for the accreditation of prior learning as an element of higher education. However, in the French-speaking part, the University of Geneva and the University of Applied Sciences Western Switzerland have procedures in place to credit non-formal and informal learning. Here, persons with 3–5 years of professional experience and above 25 years of age can obtain advanced credit and an adjusted study plan for specific Bachelor or Master programmes (Voit et al. 2010, p. 6).

14.3.7 Discussion

It becomes clear that the dual training systems in the countries we studied are interlinked with the higher education system in different ways. Dual courses of study are far more widespread in Germany than in Austria or Switzerland. This way of reconciling work and study at university level has not yet attained a high level of quantitative significance, but could become a rather popular model in the future. To date, the recognition of prior learning as an element *within* higher education programmes remains underdeveloped in all three countries (see paragraph above). However, Germany, Austria and Switzerland have implemented new measures in order to increase the number of VET graduates entitled to access university: Austria and Switzerland are trying to bridge the gap between VET and higher education through the introduction of the parallel acquisition of qualification certificates. In Germany this is hardly an option as key actors have opted to provide VET graduates with access to higher education by taking individual work experiences into account. These new approaches should generally increase opportunities in the education system as a whole, even though it is too early to

⁸ Please note that the ANKOM initiative is strongly focused on accreditation of prior certified learning (APCL).

conclusively evaluate recently introduced measures such as the Austrian “Lehre mit Matura” or the German way of recognizing work experience.

Nonetheless, the introduction of “new” institutions such as universities of applied sciences as well as the creation of links between different kinds of institutions (e.g. Austria: “Lehre mit Matura”; Switzerland: “Berufsmaturität”) might have unintended consequences, such as a loss in institutional specificity. This, in turn, could lead to *institutional ambiguity* and send unclear signals to students and employers. Several examples may serve to illustrate this point. Firstly, the introduction of universities of applied sciences in Germany, Austria and Switzerland increased institutional differentiation in the higher education sector. Even though universities of applied sciences are rather practical in nature, there is still a great amount of overlap with universities, which makes it difficult for potential students as well as for employers to judge the value of these institutions’ degrees (Merkator and Teichler 2010). The higher education sector has become even more diversified with the introduction of Bachelor and Master degrees as promoted by the Bologna process. The corresponding emphasis on “employability” and “professional relevance” in higher education (Powell et al. 2012a) foster the “vocational drift” (Dunkel et al. 2009) in all three countries under consideration. In fact, the three-year bachelor’s degrees now create increasing competition for dual vocational training, which also normally lasts three years (Powell and Solga 2010). Companies now have the opportunity to either employ graduates with Bachelor’s degrees or train their own staff within the dual vocational training system. Institutional ambiguity also manifests when regulations do not apply nationwide. Switzerland and Austria introduced the parallel acquisition of a dual vocational training qualification and a higher education entrance qualification with the passing of a federal reform act in all cantons and *Länder*. With this standardisation, students and employers can be assured that the regulations apply throughout the country. In Germany, the KMK-regulation of 2009 regarding *admission on the basis of prior dual vocational training qualifications and work experience* had to be passed by each individual legislation of the *Länder*, which means that significant differences in its actual implementation are possible.

The national objective of increasing the ability to progress on from VET to higher education requires both educational sectors to take on new functions, which might lead to *institutional task overload*. Today the expectation is that VET should not only train for a specific occupation and provide occupation-specific skills, but also offer access to university and universities of applied sciences—this is particularly the case in Switzerland (“Berufsmaturität”) and Austria (“Lehre mit Matura”). But the universities and universities of applied sciences are also faced with a new task: they are asked to introduce procedures which enable the consideration of vocational competences for admission purposes, and to cater to the specific needs of applicants with mostly occupational experience—this trend is most obvious in the case of Germany with regard to the recognition of prior learning and work experience. Another educational institution which lies “in-between” dual vocational training and the higher education sector is formal non-university based further education at the tertiary level (tertiary level B). In

Germany, Austria and Switzerland graduates of the dual vocational training system have the option of attending shorter, often two-year educational courses which focus on practical, technical or occupational skills (“Meisterausbildung”, “Technikerausbildung”, “[Höhere] Fachschulausbildung”). In Germany, since the KMK resolution of 2009, the attendance of these courses has also opened up access to universities.

14.4 Outlook

Germany, Austria and Switzerland have traditionally provided a large proportion of their workforces with qualifications obtained in the dual vocational training system. At the same time the share of tertiary graduates used to be relatively low in these countries. Despite this well-known similarity, Germany, Austria and Switzerland show remarkable differences when institutional linkages between dual vocational training and higher education are analysed. In recent years, Germany, Austria and Switzerland have adopted different strategies to increase progression from dual vocational training to higher education. Thus, Germany currently puts a strong emphasis on higher education admission based on prior dual vocational training qualifications and work experience as well as on the recognition of prior learning as an element within higher education programmes, while Switzerland and Austria have opted for a comprehensive introduction of the parallel acquisition of a dual vocational training qualification and a higher education entrance qualification. With regard to the latter, there are differences between Switzerland and Austria regarding qualifications that grant general access to higher education (e.g. *Berufsmatura* in Austria) as opposed to those which grant (subject-)restricted access to higher education (e.g. *Berufsmaturität* in Switzerland, granting direct access only to FHs).

One future task will be to analyse how institutions which have recently been established in Germany, Austria and Switzerland actually affect individual mobility between VET and the higher education sector. So far it remains unclear whether the route via upper-secondary education (Austria: “*Berufsmatura*” and “*Lehre mit Matura*”, Switzerland: “*Berufsmaturität*”) or via the labour market (Germany: recognition of work experience) is the more promising one to further mobility. This, however, can only be done with suitable data at hand. Further empirical questions are being raised by our findings. Ongoing institutional differentiation is always connected to the topic of social stratification. What positions will graduates of the dual training system, from non-university based further training, Bachelor and Master graduates from universities and universities of applied sciences occupy in the labour market? And how will a shift in the institutional structure of the education system labour market stratification?

As the three countries in question have adopted several measures to link the dual vocational training sector to the higher education sector, these two arenas are now moving closer together, but—in doing so—are also becoming more

ambiguous. As we have shown, the differentiation between and specificity of institutions in dual vocational training and higher education is becoming less clear. The dual vocational training sector and the higher education sector are taking over additional institutional functions which, in turn, lead to increased institutional ambiguity. We would therefore suggest that future research should pay greater attention to institutional differentiation and institutional ambiguity within the education system as a whole.

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Chapter 15

Conclusion: Institutional Effects on Integration and Inequality

Michael Windzio

15.1 Introduction

This volume focused on the analysis of integration and inequality in educational institutions. Like all other social sub-systems, the system of education is inter-linked with other parts of the society. Nevertheless, it seems to be a special case. Many other jobs are assigned to it, in addition to the production of competencies. Event though the system is closed up against its environment by the binary code, it is open at the level of the programme for prevailing ideas, interests and ideologies. Because of their orientation to the future, educational institutions are often regarded as a medium for social intervention, particularly when ideologies change or when new problems are defined in the public discourse. Moreover, educational institutions have to cope with externalities created by other institutions (Lepsius 1995), such as immigration and social exclusion.

However, institutions only run efficiently if they are able to focus on their principal activity or at least on a limited set of activities. Yet, reforming educational institutions usually involves non-intended effects, particularly at the organizational level, where “garbage-can” decisions-processes are not exceptional (Cohen et al. 1972). Against this background, educational institutions might be incapable to efficiently produce competencies and to reduce inequality in opportunities. Rather, they can even increase inequalities and can become a fertile ground for the spread of delinquent behaviour.

In the following, the major theoretical and empirical results of the individual chapters are summed up and then related to the question of how externalities

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generated in other systems and institutions disturb the operation in educational institutions, particularly by indirect effects of educational reforms and by social problems carried from the outside into the institutions.

15.2 Education and Society

Since the breakthrough of the modern state in the 20th century, at the latest, the education state has taken on the task of economic, political and cultural integration, as Weymann has argued. Obviously, integration is one of the most complex processes in modern societies. Particularly the dynamic urbanised society requires a good fit between its individuals on the one hand and institutionalised norms and values on the other hand. Archer's (1996) recommendation that actors and structures (or systems) should be regarded as irreducible constituents of the social reality implies that integration proceeds simultaneously at the macro-level of *system integration* as well as on the micro-level of *social integration* (Lockwood 1964). These two levels are distinct from each other, but at the same time they are mutually interdependent. Thus, there is an *interplay* at both levels: system integration depends on a minimum level of social integration at the micro-level—otherwise, the normative and cognitive basis of legitimacy of modern institutions (Scott 1995) would not exist. On the other hand, modern societies are based on division of labour, stable and sustainable patterns of social integration are only possible if institutions and subsystems do not systematically disturb each others' functioning. For instance, families could not exist if the economy did not provide the required resources for their daily reproduction. Accomplishing the task of integration is therefore a heavy burden to the education state because it requires the governance of two distinct, but interdependent, levels. Furthermore, not only social and system integration must be governed, but also the interplay of both levels. Assuredly, designing institutions which are perfectly capable of coping with these tasks is almost impossible. Educational institutions evolve over time and also change their demographic composition at the *population level* by means of organisational founding and dissolution (Baum and Singh 1994).

Following from this, the modern education state always had to cope with a multitude of complex problems. It seems that this multitude and complexity has even increased during the last 15 years, when the performance of educational institutions became an issue of international benchmarking. According to the Bologna Process, higher education is now regarded as a transnational undertaking. But the costs of implementing and administrating this goal—if measured in working hours of highly qualified personnel—might be so high that a German sociologist of organisation regarded the Bologna-Process as an “insane imagination of planning”. One example of the non-intended effects is that the Bologna-Reform even made the crediting of academic credentials more complicated (Kühl 2012)—which is in sharp contrast to the original intention.

15.3 Institutions and Educational Outcomes in a Comparative Perspective

The study of Lindemann focused on Estonia and Latvia where the Russian-speaking community is very large. In both countries the Russian minority was segregated from the majority in the labour market and especially in the educational system. In both countries there were specific schools in which the language of instruction was Russian. When these countries became independent in the early 1990s, the high level of ethnic segregation and segmentation became an issue and came to be regarded as a potential source of societal disintegration.

Again, the task of integration was delegated to the educational system: in the wake of educational reforms, Russian-medium schools became more bilingual, and the intention was that children and adolescents of Russian minority background would be educated on the basis of the Latvian or Estonian language and culture. Interestingly, the educational outcomes in both linguistically divided educational systems were rather different: in Latvia, there was no substantial difference between Russian minority pupils at Russian-medium and Latvian-medium schools in mathematics, whereas in Estonia, Russian minority pupils at Russian-medium schools had significantly lower results in mathematics compared with pupils at majority language schools. Lindemann provided several arguments to explain this difference. Firstly, in Estonia the socio-economic composition of Russian-medium schools could explain to some extent the lower performance of Russian minority pupils compared with Estonian-majority pupils. Remarkably, this context effect turned out to be independent from the socio-economic background of the individuals at the micro-level! The second explanation points to changes in the mathematics curriculum in Estonia, which resulted in difficulties particularly for the Russian minority pupils. Finally, studies have shown that the teaching methods also differ between Russian-medium and Estonian-medium schools. Even though it is not perfectly clear what the explanation for the test score gap in Estonia is, due to the control of the socio-economic background at the micro-level the differences can be most likely attributed to context-effects. The interesting thing is that the original intention was to increase the integration of Estonian society by educational reforms, but the result were *indirect effects* of changes in educational policies, which resulted in ethnic inequalities in pupil performance. In other words, there seems to be a trade-off between integration by more frequently teaching minorities in the majority language, and social inequalities within the ethnic minority group. In view of the complexity of social and system integration and the interplay between both levels, it is not surprising that these reforms also resulted in unintended effects.

In their internationally comparative analysis, Dronkers and van der Velden have shown that a school's ethnic diversity has a negative effect on the language skills of immigrant pupils. Interestingly, this result is independent of the degree of stratification of the educational system in the receiving country. Diversity in *socio-economic* status has no effect, but diversity in *socio-cultural* status has a

comparatively strong one, which is even stronger for immigrant pupils. Since the study is based on a very large group of receiving countries, the reasons for immigration—e.g. the economic reasons for guest worker immigration or the reception of refugees—are not clear in any case. However, it becomes obvious that there is tension between policies which encourage certain kinds of migration on the one hand and the performance of the educational systems on the other hand. We find an *indirect effect* of policies implemented in one field of society, e.g. the economy, in which the reception of guest workers was considered as an advantage, and the educational system that has to deal with externalities triggered by the economy. The result is also important with regard to the origin of the immigrant groups. Dronkers and van der Velden showed that even if socio-economic status in pupils' families is controlled for, there are remarkable differences between immigrants from Islamic countries, who perform comparatively bad, and highly-performing immigrants from non-Islamic Asian countries. The question of whether immigration policies should be selective, e.g. with regard to educational levels or the economic status of potential immigrants, is very controversial. Canada, for instance, has selective immigration policies with regard to educational and socio-economic status. However, policies of immigration and naturalisation that aim to select immigrants with regard to ethnic, national or religious origin would imply *collective* rights instead of *individual* rights and are thus hardly conceivable in many western countries. The study of Dronkers and van der Velden shows that educational systems do not only provide the competencies and skills required in society, they also have to deal with the ethnic and cultural diversity which is a result of policies in other social fields. The international comparative study shows how educational systems differ with regard to accomplishing this highly complex task. For instance, the negative effect of diversity on educational performance of native students can only be found in educational systems that have a comparatively a high degree of stratification. Hence there is an institutional moderator effect of stratification: those who are at higher levels of secondary education are protected from the negative effect of diversity, whereas those who are at lower levels in the stratified structure have to bear the consequences.

Tensions or conflicts between institutions in society are also an issue in the study of Teltemann and Windzio. Here the focus is on the impact of welfare regimes on educational poverty. At the micro-level of the individual pupil, educational poverty means that a pupil is not able to solve basic problems or to understand simple texts. In a sense these pupils are excluded from the modern knowledge society. With regard to first-generation immigrants, the so-called welfare-magnet hypothesis states that strong and extensive welfare states attract a negative selection of immigrants because the incentive to draw on comparatively high welfare benefits is a strong motive for immigration. If this hypothesis is correct, then the tension between the institutions of the welfare state and the educational system is quite obvious: a strong welfare state attracts immigrants who do not have the resources required by the educational system. As a result, educational institutions are expected to compensate for the disadvantage of these immigrants. But as Teltemann and Windzio argue, this does not seem to be the

common pattern with regard to *second-generation* immigrants: results indicate that the risk of educational poverty is lower in regimes with low income inequality and high levels of redistribution. The theoretical argument holds that extensive welfare states provide a realistic incentive for upward mobility into the middle class. So even though extensive welfare states are magnets for low-skilled *first* generation immigrants, the incentive for the *second* generation can be rather positive to invest in educational resources—if the parental background is controlled for. Assuredly, the educational system *has to* accomplish the task of compensating for the educational and social inequalities. But the results have shown that this additional function of compensating for inequalities can be better accomplished in conjunction with extensive and strong welfare states, which are generally also regimes where the average educational performance is rather high.

The study of Schütz et al. is explicitly devoted to the issue of institutional determinants of inequality of educational outcomes. They analyse how indicators of institutional dimensions—accountability, autonomy and choice—affect educational opportunities differently for low- and high-status social groups: they show, for instance, that external exit exams increase the educational performance rather strongly, but this effect is slightly lower for lower SES. External exit exams create a higher level of performance; however, they also create minor inequalities at the same time. Nevertheless, in light of the argument of Luhmann's systems theory, which hints at the function of selection by assigning grades or evaluations of 'better or worse', the increasing inequality actually *is* a disadvantage for low-SES pupils, because high-SES pupils are favoured over low-SES pupils when it comes to labour market or employment decisions. Social inequality is *not* affected by an "escalator effect" (Beck 1986) which raises the competence levels of all groups at the same rate, but has no impact on the relative difference between the groups. Here we indeed find a trade-off because it obviously makes sense for the domestic economy to raise the overall level of competencies, but this is at the expense of the competitive situation of low-SES pupils compared with high-SES pupils.

The most striking effect of their analysis is that both private school operation and government funding have stronger effects for low-SES pupils than for high-SES pupils. In other words, private school operation enhances equity in educational outcomes between the status groups. A large share of private schools means that there is competition between schools in providing the best educational outcomes. This increases inequality if there is just a *low* share of government funding available for private institutions. However, if government funding for privately operated schools is *high*, pupil achievement becomes less dependent on family background, because low-SES pupils are also able to afford the attendance at private schools. This result is a good example that diversification in the educational system by having a large share of private schools does not automatically increase existing inequalities! Contrarily, such a setting in conjunction with a large share of governmental funding of private schools de-couples attendance at private

schools from parental background. Indeed, this seems to be a good practice, which leads to a high average level of educational performance, but a comparatively low level of inequality.

The study of Urabe et al. provides theoretical arguments on the *modus operandi* of educational systems. According to systems theory, a sub-system of education only exists if it coherently applies a binary code of 'better'/'worse' or 'selected' or 'not selected'. The operation of this specific code determines the existence of the system. Therefore, the code cannot be changed. At the level of the programme the system is open to varying definitions of skill or competency according to which the respective value of the code will be assigned to the pupils. Interestingly, despite of Japan's comparatively high average performance in the PISA study (Japan ranked always among the top 10 countries, except for reading literacy in 2003 and 2006), the result initiated a political debate on the performance of the Japanese educational system. Following the line of argument of Urabe et al., the education system in Japan consists of a mixture or a confusion of two different programmes (while at the same time the code remains fixed): on the one hand, Japanese pupils have to be well-prepared for the entrance exams which are necessary for the successful transition into tertiary education. On the other hand, competence in the global education system in world society has been defined by having better or worse scores in the PISA test. While good scores in the Japanese entry exams qualify students and pupils for integration into the Japanese domestic labour markets, this does not automatically mean that they are also globally competent. The "twisted understanding" of education in Japan means a mixture of two different and sometimes contradictory goals of education. It is an interesting outcome of political decisions that were implemented in order to cope with the challenges of a globalised world. It is also a very good example of how political decisions following one specific intention (increasing competencies in the globalised world) have unintended consequences, if they at the same time decrease the competencies for passing the domestic entry exams.

In addition, the study highlights the problems of a too simplified understanding of social inequality! Following Urabe et al.'s distinction, students and pupils can be competent in Japan as well as on the global labour market, but they can also be competent in only one of these two realms. In other words, it is an important difference if students and pupils are disadvantaged in the domestic labour market, but globally competent on the one hand or, on the other hand, are not competitive in the global market, but well-prepared for a career in Japan. This might be a specific problem of educational institutions that explicitly prepare students and pupils for domestic entry exams. It would be a very interesting point to compare the Japanese findings with different educational systems. It could also be the case that the basic result is that students and pupils are either competent or incompetent in both spheres simultaneously.

15.4 Social Networks and Social Capital in Schools and Classrooms

The longitudinal design of Schneider's analysis allows the interpretation of estimated coefficients in terms of effects on the progress of educational performance, either with regard to numeracy or with regard to vocabulary acquisition. His main focus was on the social and ethnic composition of school classes in the development of competencies. Interestingly, according to his results, the ethnic composition of the school class only has an effect on numeracy acquisition, which is negatively influenced by high shares of immigrants. Schneider's results highlight that the effects of class composition on individual progress in elementary school should not be overestimated. In contrast, pupils' effort has a consistent, positive and rather strong effect on vocabulary acquisition as well as on numeracy acquisition. At the same time, the average inter-class correlation in his models is rather low. In general, the context effects are rather weak. Following on from his results and interpretation, policies of de-segregation and mixing should have only a weak impact on progress as well as on inequality in progress between ethnic minorities and natives and between low- and high-SES pupils. According to his results, one could argue that non-intended and indirect effects of de-segregation policies would probably outweigh the positive outcomes.

Using data of school class-based social networks of 10-year-old fourth-graders in Germany, the study of *Windzio* came to the conclusion that social capital potentially accessible through social networks strongly differs between immigrants and natives. Even though Turkish pupils are somewhat better integrated among each other, the access to friends with high levels of academic resources or cultural capital in their parental household is very limited. In other words, results indicate that the access to social capital in terms of mutual support is definitely important for immigrant minority pupils. However, social capital is not only an issue of having a contact in general, but also of *to whom* these pupils have contact or not! The access to *resources* through the social network—and this is actually the definition of social capital—is limited for Turkish pupils compared with native German pupils, even though Turkish pupils are eager to establish support networks for the completion of homework. The basic reason for a potential disadvantage of Turkish pupils is the level of ethnic segregation of network ties, which has brought in from outside the educational institutions and results in inequalities in social capital (Cohen et al. 1972). If there were not any ethnic segregation of network ties, this kind of disadvantage would not exist. However, the basic task of educational institutions is the production of skills and competencies, and explicit practices of ethnic de-segregation of network ties would result in an overload from the institution's point of view. Further analysis should extend the perspective to the level of *cliques* of mutual support within classrooms, since cliques seem to be a basic context in which social resources become relevant.

The paper of *Baerveldt* draws conclusions from existing studies on social networks and ethnic boundaries in classrooms. One of the main results is that

members of ethnic minority groups tend more to social discrimination than majority members, which is definitely in contrast to what is commonly discussed in migration and integration research. The social network perspective is a rather new and a very direct way of measuring segregation and social discrimination. Many studies focus on the measurement of prejudices against different ethnic groups and thereby follow Allport's contact theory. The results of Baerveldt's paper do not reject this theory, but highlight that the opportunity to have contact per se does not reduce prejudice. Social discrimination only decreases if all criteria of Allport's contact hypothesis are met. Moreover, Baerveldt's studies showed that the ethnic composition of the classroom does not have an effect on social discrimination. On the other hand, he found relatively clear effects of the neighbourhood composition. In neighbourhoods with a high share of minority members, these minority members tend to higher levels of social discrimination. In contrast, in these neighbourhoods majority members discriminated less. Here we have a clear hint that the everyday situation experienced by pupils not at school but in their neighbourhoods is carried into the educational institution and frames the process of social integration.

The propensity to form interethnic friendships in the classroom has a strong effect on social integration. Baier shows that comparatively high shares of interethnic friendships reduce violent behaviour in immigrant pupils. Violent behaviour is an indicator for the social disintegration of a school class. It is increased by high inequality in school grades between ethnic Germans and immigrants. Ethnic inequalities in school performance thus lead to a situation which is at least indirectly related to the learning situation in the classroom. Since the outcome of these inequalities is violent behaviour, ethnic boundaries could become even more rigid, and this could in the end increase discriminating practices on the teacher's part as well as tendencies towards ethnic retention on the immigrant pupils' part. In such a situation, educational institutions could produce social disintegration in a feedback loop. One consequence from Baier's study could be that classes should be composed of pupils whose average performance is as similar as possible in order to avoid strong ethnic differences in school performance and grading. However, the public discourse—not just in Germany—seems to favour rather non-stratified educational systems, which is comprehensible in the light of the PISA results (Hanushek and Wößmann 2006; Betts and Shkolnik 2000; Gorard and Smith 2004).

The “social fabric of the classroom” (Lubbers 2004) has been also analysed by Knecht. She investigates the question of whether there is an association between indicators of the network position and delinquent behaviour. She showed that there are remarkable gender differences. There is a positive association between interpersonal aggression and popularity as well as between interpersonal aggression and status in the network for male pupils. Other associations are not significant, neither for different offences (theft, graffiti spraying and vandalism) nor for females. Of course, analysing correlations always raises the question of causality. However, it does not seem to be plausible that popularity or status should cause interpersonal aggression! Rather, the network position might depend on the behaviour of male adolescents, as Knecht convincingly shows. If this is true, then

the social fabric of the classroom could be a fertile ground for delinquency if male adolescents tended to improve their network position by committing violent offences. Again, we find an effect of the educational institutions' environment (Cohen et al. 1972): adolescents' values and norms about what defines prestige and status are carried from the outside into the educational institution and here, the institution breeds delinquent behaviour, which is definitely not in favour of school performance and social integration.

15.5 Institutionalized Transitions into and Out of Vocational Training

In contrast to the preceding studies, Aybek focused on the transition from *secondary education* into *vocational training*. He showed that there are differences between immigrant and native pupils and, in addition, these differences depend on specific time periods in which the disadvantage of immigrant school leavers becomes apparent. His results give insight into the fact that ethnic inequality becomes apparent in the context of institutionalized transitions in the life-course—even though it is not sure whether they are also increased or even created by the institutions themselves.

Another transition was the focus in the study of Ebner et al., who analysed institutions established in order to facilitate the transition between vocational education and training and higher education. According to the common view, the economy of a globalised knowledge society requires the competencies to deal with information, organisation and communication at a rather abstract level. These competencies should be developed during academic education. But the non-academic workforce, which is often well-trained in the vocational arena and vocational education systems in Germany, Switzerland and Austria, could also be further trained in order to meet the demands for appropriately qualified personnel. At first sight, institutionalism would support the idea of specially established institutions that regulate the transition between the two educational sub-systems (Lepsius 1995) so as to avoid overloading educational institutions with this complex task. The authors have argued, however, that these new institutions might have unintended consequences: for instance, the institutional differentiation implies a considerable overlap in learning content between universities and the newly created universities of applied sciences, resulting in a confusing and hardly desirable system of tertiary education. As a result, evaluating the quality or the appropriateness of a programme can be challenging, both for prospective students and employers. In addition, if vocational training and education is expected also to prepare for tertiary education, the result can be an institutional task overload. A similar problem could arise for universities if they were expected to also be attuned to the needs of applicants who mainly have occupational training and occupational experience—and who are, in many cases, interested in competencies and degrees that further increase their employability.

15.6 Conclusion

In this volume several empirical studies investigated the association between integration and inequality in educational institutions at different levels. They gave insight into what actually happens in educational institutions: they have to deal with problems in their environments, they have to absorb externalities created in other institutions and are permanently reformed in order to meet ideas and ideologies about current social problems and solutions. Of course, social systems are generally open for changes in the code—for example if new theories in science alter the assignment of the code. Function overload can happen in all sub-systems and institutions. However, educational institutions are a special case. It is highly appealing for policy makers to consider them as a medium for social intervention because social change is obviously mediated by cohorts (Ryder 1965), which is why ideologies of designing or therapying society focus on young and shapeable individuals. Educational institutions are thus particularly predisposed to become interpenetrated by other systems and institutions (Münch 1986). But the result is not always mutually improved performance, but often a defeat in the “struggle of institutions” (Lepsius 1995).

In many countries, education became again an increasingly important issue in the public debates since the PISA-Study and the Bologna-Reform. Problems have been identified, but sometimes solutions seem to be too quickly available. Of course, the overall perspective of this book is *not* to condemn social intervention and attempts at solving social problems in the context of educational institutions in general! There is no denying that the output of educational institutions should be well-educated, at least more civilized individuals, who are an indispensable resource for the functioning of the overall society.

However, the theoretical and empirical analyses of educational institutions presented in this volume highlight the problems coming along with the fact that educational institutions are embedded into their wider social environment. Certainly, it is by no means a new insight that their problems are systematically linked with their environments. On the other hand, the delegation of tasks such as integration of ethnic diversity or compensation of unequal opportunities seems to have become even more important during the last decades. It is surprising that neither theories of institutional conflict nor theories of political or organizational governance are the main reference in the public and scientific debates. Hopefully, this volume can make a fruitful contribution to these debates. The main basic arguments given in this volume should be considered when systematic problems are defined and supposed solutions are applied. These arguments can be summarized as follows:

1. Educational institutions are embedded in a network of other institutions and are involved in “struggles of institutions”. But *criteria of rationality* (Lepsius 1997) can effectively guide behavior only if they are institutionalized in more or less *pure* form. Since educational institutions often have to absorb

externalities from other institutions, e.g. consequences of social exclusion and immigration, they are not able to exclusively pursue their own rationality.

2. At the level of their program, educational institutions are not only open to ideas, interest and prevailing ideologies. They are often considered to be the ideal context for intervention. Usually interventions and reforms also result in unintended *secondary effects* on integration and inequality, because members of “garbage-can” organizations bring in issues from the outside (Cohen et al. 1972), which must be accounted for in the process of decision and implementation of reforms.
3. Resulting from the task-overload and conflicting expectations, clearly defined *criteria of rationality* are often replaced by a syncretism of guiding principles. Combined with the high complexity of decision-making processes and implementation of reforms, and also combined with the increasingly rigid austerity of most European governments, as it can be expected in the future, educational institutions could become even more incapable to adapt to the changing requirements. Nevertheless, they heavily rely on conformity with their institutional environment (Meyer and Rowan 1977). A possible response to this dilemma could be the investment of their scarce resources into celebrating the myth of the formal structure, which actually removes resources from their technical activities.

Reasoning on educational institutions in the light of these three theoretical arguments could at least give rise to a critical assessment of common views about the basic task of educational institutions.

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