

Transmission of self-employment across immigrant generations: the importance of ethnic background and gender

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Abstract This paper studies the intergenerational transmissions of self-employment abilities among immigrants in Sweden. The results show that second-generation immigrants are over-represented in self-employment compared to natives. Male immigrants from countries neighbouring to Sweden and natives alike seem to use both mothers and fathers as role models in their self-employment decision, but the father is the stronger role model among male immigrants from more geographically distant regions. Female immigrants use both their father and their mother as role models in their self-employment decision. Furthermore, male immigrants and male natives tend to become self-employed in the same business sector as their fathers; female immigrants and female natives with self-employed parents are over-represented in self-employment but not necessarily in the same business sector as their parents.

Keywords Self-employment · Abilities · Immigrants · Intergenerational transmission

JEL Classification J15 · J24 · J61 · J62 · L26

1 Introduction

Researchers and policymakers alike have become increasingly interested in immigrant self-employment in recent decades. Researchers have documented high self-employment rates among immigrants, and today immigrants are over-represented in self-employment in several countries (Borjas 1986; Fairlie and Meyer 1996; Fairlie 1999; Hout and Rosen 2000; Fairlie and Robb 2007; Clark and

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Drinkwater 2000; Hammarstedt 2001a, 2006; Constant and Zimmermann 2006; Andersson-Joona 2010). The interest among policymakers has grown since promoting self-employment has been viewed as a way to reduce the high rates of unemployment that are often documented among immigrants.¹ The fact that certain groups of immigrants are more likely than natives to choose to become self-employed is interesting; several explanations, such as traditions from the home country, the existence of ethnic enclaves, high rates of unemployment, and different kinds of discrimination, have been put forward in the literature (Borjas 1986; Yuengert 1995; Fairlie and Meyer 1996; Clark and Drinkwater 2000; Le 2000; Hammarstedt 2001a).

The intergenerational transmission of self-employment among immigrants has also received greater attention. Intergenerational links in self-employment can act through a variety of channels. An individual with self-employed parents can acquire specific human capital while helping them run their business. In addition, people with self-employed parents can also take over the family business and inherit the business contact network built by their parents (Lentz and Laband 1983, 1990; Hout and Rosen 2000; Dunn and Holtz-Eakin 2000; Hundley 2006). Thus, self-employment might be correlated across generations since the offspring acquire informal business experience from their parents; the immediate social environment provides social support through the transmission of practical skills and experience for a specific occupation that is typically not taught at school. If the offspring acquire informal business experience and managerial skills from their parents, we can expect the children of self-employed parents to be disproportionately self-employed. In addition, previous studies provide evidence that greater personal wealth increases the probability of entering self-employment (Evans and Jovanovic 1989; Evans and Leighton 1989; Blanchflower and Oswald 1998). People who are successfully self-employed, therefore, may be more able and willing than others to transfer financial wealth to their children. As a consequence, children of successful self-employed parents are more likely to be self-employed than children of parents who are not self-employed.

Intergenerational transmission in self-employment among immigrants has been studied in the United States by Fairlie (1999) and Hout and Rosen (2000). They found that among immigrants in the United States, having a self-employed father increases the probability of being self-employed and that the strength of the intergenerational transmission varies among ethnic groups. Furthermore, Fairlie and Robb (2007) have shown that black business owners in the United States are less likely than white business owners to have had a self-employed family member. According to Fairlie and Robb, one reason for low profits and low survival rates among businesses owned by African-Americans is the lack of experience with family businesses. Using Swedish data, Andersson and Hammarstedt (2010a) studied intergenerational transmissions in self-employment across three generations of male immigrants. They found a generational link in self-employment across the three generations of male immigrants but not for their native counterparts.

¹ For an overview of the labour market adjustment among immigrants in different countries see the special issue on this subject in the Review of Economics of the Household (2010), 8(1).

However, up to now, gender has been neglected in studies of the intergenerational transmission of immigrant self-employment. Therefore, this paper will study intergenerational transmissions in self-employment among male and female immigrants from different ethnic backgrounds in Sweden. Sweden has a fairly large immigrant population and also has experienced a considerable growth in immigrant self-employment during the last decades. As regards gender, research has shown that males tend to inherit their parents labour market position to a greater extent than females (Chadwick and Solon 2002). This fact has been observed in Sweden as well (Österberg 2000; Hirvonen 2008). Furthermore, it has also been shown that the intergenerational mobility on the labour market differs between immigrants and natives in Sweden (Hammarstedt 2009). Therefore, we have good reasons to believe that there are differences between males and females from different immigrant groups in terms of the intergenerational transmission of self-employment. It is, for example, plausible that a son and a daughter inherit completely different skills from their self-employed father. It is also reasonable to believe that the transmission looks completely different, depending on whether it is the father or the mother who possesses self-employment experience and self-employment abilities.

As stated previously, we aim to estimate intergenerational transmissions in self-employment across generations for both male and female immigrants in Sweden. In addition, we compare self-employment rates between individuals of different immigrant origins. Our dataset includes identification of two generations of immigrants and natives. The individuals in the second generation will be defined as follows: A second-generation immigrant is an individual born in Sweden to parents who were both born in the same country outside of Sweden. A native individual in the child generation is defined as an individual born in Sweden to parents who were both born in Sweden.

We answer the following questions: (1) Are there differences in self-employment rates between male and female second-generation immigrants of different origins and natives? (2) Does the inheritance of general human capital affect the probability of being self-employed differently for immigrants and natives? If human capital is transmitted across generations, we can expect individuals with a self-employed father and or a self-employed mother to be self-employed to a larger extent than individuals with two parents that were not both self-employed. (3) To elucidate the effect of intergenerational transfers of specific human capital on self-employment propensities, we raise the question as to the extent to which individuals with self-employed parents become self-employed in the same branch of business. (4) Finally, we take gender into account by studying if the transmission looks different for sons and daughters and if it matters whether it is the father or the mother who possess self-employment experience. This final question is of particular importance in light of the increased political interest in encouraging women to become self-employed.

The paper is organised as follows: An overview of the immigrant population living in Sweden is given in Sect. 2. Section 3 presents the theoretical framework of our study. Data and some descriptive statistics are found in Sect. 4. In Sect. 5 we describe the empirical model. The results are reported in Sect. 6 while Sect. 7 contains a summary and conclusions.

2 Immigrants in Sweden

As in many other OECD countries, Sweden's share of immigrants has increased substantially during recent decades. In 2010 about 20% of the total population are either foreign born or have at least one foreign born parent. In addition to the increase in the immigrant population, the character of immigration has also changed. During the Second World War refugee immigrants arrived from Estonia and Latvia and after the Second World War and at times during the 1950s and 1960s there was refugee immigration to Sweden from different countries in Eastern Europe. These immigrants were in general highly educated and did well in the Swedish labour market. Labour-force migration to Sweden started during the second half of the 1940s, increased during the 1950s and lasted primarily until the mid-1970s as a result of Sweden's industrial and economic expansion. The labour-force migration was made possible by institutional changes which removed the needs for residence and work permits for immigrants from the Nordic countries and made it possible for non-Nordic immigrants to enter Sweden individually and then apply for a work permit. The labour-force migration during the 1950s and 1960s consisted primarily of people from Finland, Norway and Denmark and from countries in Southern Europe. The great majority of the labour-force migrants from Southern Europe came from Yugoslavia, Italy and Greece. There was also labour-force migration from Nordic countries other than Finland and from countries in Western Europe. Labour-force migrants from these countries were in general better educated than labour-force migrants from Finland or Southern Europe. The labour-force migrants did well in the Swedish labour market and during the 1950s as well as the 1960s; the employment rate was often higher and unemployment lower among immigrants than among native Swedes.

In the mid-1960s Swedish labour organisations saw immigrants keeping wages low for less skilled workers. A more restrictive immigration policy and a deterioration in the labour market caused the character of immigration to change during the 1970s. As labour-force migration tapered off, the number of refugees started to increase. In the mid-1970s, refugee migration from Latin America started to reach significant proportions and during the 1980s and 1990s a great number of refugees came from Asia and Africa. During the 1990s and at the beginning of the 2000s, refugee immigration to Sweden has continued to increase; the influx during the 1990s was dominated by refugees from the former Yugoslavia and the Middle East while the influx during the early 2000s was dominated by Middle Eastern refugees.

The new immigration has changed the composition of the immigrant population. In 1970, about 60% of the foreign-born persons living in Sweden had been born in other Nordic countries and about 30% in other European countries. Only about 10% were born outside of Europe. Today only about 30% were born in other Nordic countries, about 30% were born in other European countries and almost 40% of the immigrant population was born in non-European countries.

Besides the fact that the composition of the immigrant population has changed the labour market position among the immigrant population has also changed. As mentioned, the employment rate was often higher and unemployment lower among

immigrants than among natives in Sweden during the 1950s and 1960s but during the last decades especially non-European immigrants in Sweden suffer from high rates of unemployment and are also over-represented among low-income earners.

3 Theoretical framework

Our theoretical framework departs from an individual's choice between self-employment and wage-employment.² We assume that an individual, *ceteris paribus*, will choose to be self-employed instead of wage-employed, if expected income from self-employment is at least as high as, if not higher than, expected income from wage-employment. In our model, an individual's income is denoted by Y_i and personal characteristics, such as age, educational attainment, and marital status, are included in the vector Z_i . Wage-employment will yield an individual an income comprising net income from wage employment and net return from assets. Thus, total net income can be written as:

$$Y_i^{WE} = w_i(Z_i) + rA_i \quad (1)$$

where w_i is the net income from wage-employment assumed to depend on personal characteristics, A_i represents assets, and r is the net rate of return from those assets.

Suppose now that a self-employed individual invests capital k in a business. The level of capital invested is assumed to depend on individual assets, i.e. on A_i . We also let individual production depend on individual characteristics, Z_i . The individual's self-employment ability is captured by the parameter θ_i and the net total income from self-employment is then given by:

$$Y_i^{SE} = f(k_i(A_i), \theta_i, Z_i) + r(A_i - k_i(A_i)) \quad (2)$$

where $f(\cdot)$ is a production function and $(A_i - k_i(A_i))$ is the amount available to earn additional capital after investing k_i in the business.

We assume that human capital is transferred across generations and that family self-employment traditions affect the individual's ability to become self-employed, given by θ_i . It is possible to distinguish two types of human capital. The first type is *general human capital*, θ_i^g , that fosters "general self-employment ability". For example, children of self-employed parents inherit self-employment skills that increase their probability of being self-employed, however, they do not necessarily remain in the same branch of business as their parents. The second type, *specific human capital*, θ_i^s , fosters "specific self-employment ability". In this way, children of self-employed parents inherit sector-specific human capital that increases their probability of being self-employed in the same branch of business as their parents. Children of self-employed parents are assumed to have inherited both general and specific self-employment abilities. Thus, individuals with self-employed parents benefit from both the general and the specific human capital that they inherited. However, specific self-employment abilities only affect self-employment

² We follow the theoretical framework used by Evans and Jovanovic (1989), Holtz-Eakin et al. (1994) and Dunn and Holtz-Eakin (2000).

performance if the individual is self-employed in the same sector as his or her parents. Specific self-employment ability then becomes $\alpha\theta_i^s$, where α equals one if the individual is self-employed in the same sector as the father and/or mother, and zero if he or she is self-employed in a different sector.

Under these assumptions, an individual will choose self-employment if expected utility from self-employment is higher than, or at least as high, as expected utility from wage-employment. That is, if:

$$E[U[f(k_i(A_i), \theta_i^g, \alpha\theta_i^s, Z_i) + r(A_i - k_i(A_i))]] \geq E[U[w_i(Z_i) + rA_i]]. \quad (3)$$

It emerges from this framework that the decision to become self-employed depends on several factors. The framework sheds light on the facts that having self-employed parents contribute to an individual's probability of being self-employed through the transmission of human capital.

With this theoretical framework as the starting point, we will be able to study the intergenerational transmission of human capital among immigrants and natives. Furthermore, it is also possible to investigate, to what extent, general and specific self-employment abilities are transferred across generations and if there are differences in this regard between immigrants and natives. We have reason to believe that immigrants and natives may have different incentives as to why they become self-employed and since different studies have shown that the intergenerational labour market mobility varies between immigrants and natives we have also reasons to believe that there are differences between immigrants and natives in regard to the human capital that is transferred across generations (Aydemir et al. 2009; Hammarstedt 2009). First, since immigrants have already taken the risk of migrating to a new country, they can be seen as a self-selected group who are more willing than others to undertake risks, in order to maximise their earnings (Borjas 1987, 1994). By virtue of this willingness to assume risks, they may also be more likely than natives to become self-employed. Second, immigrants have different self-employment traditions in their home countries. Studies have shown that immigrants from countries with larger self-employment sectors have higher self-employment rates in the immigration country (Yuengert 1995; Hammarstedt and Shukur 2009). Since self-employment traditions from the home country affect self-employment propensities in the immigration country, it is likely that the transmission of self-employment abilities across generations also varies between immigrants and natives, as well as among immigrant groups. Third, impediments to jobs and upward occupational mobility caused by different types of discrimination in the labour market may also impel immigrants to become self-employed.

There is also reason to believe that there are differences in the transfer of human capital by gender. It may be that the transmission depends on whether the father or mother is the parent who possesses self-employment experience. Research has shown that males tend to inherit their parents labour market position to a greater extent than females (Chadwick and Solon 2002; Hirvonen 2008). This has been documented in Sweden as well (Österberg 2000). Therefore, we have reasons to believe that there are differences between males and females in the intergenerational transmission of self-employment. Following this the transfer of human capital may be affected by the extent to which the father and/or the mother serve as role models

to their offspring. Since this may differ between sons and daughters, between natives and immigrants, as well as between immigrant groups, we may also expect the transmission of human capital to vary by gender.

Against this background, we could expect immigrants to transfer different sorts of human capital from that of natives to their offspring, and, thus, we have reason to believe that the intergenerational transmission of human capital varies between immigrants and natives and furthermore, that there are differences in this regard by gender.

4 Data

We use data from a multi-generation register collected by Statistics Sweden. This register contains information on demographic variables such as age, educational attainment, marital status, and region of residence. It also contains information on labour market variables such as earnings and employment status. Our data contain information on all male and female foreign-born residents in Sweden in 1990 (i.e. first-generation immigrants) and their biological sons and daughters. A special registration number assigned to everybody living in Sweden tracks individuals and links them across generations. As a comparison, we have a data set containing the corresponding information on the native population in 1990 and their biological children. We define second-generation immigrants as individuals born in Sweden and whose parents were both born in the same country outside of Sweden. Second-generation natives are defined as individuals born in Sweden of parents who were also born in Sweden. For the first generation, we have information on self-employment status for immigrants and natives in 1990. The self-employment status of second-generation immigrants and natives was taken from the 2007 data.

We study individuals in the second generation who were 20 years of age and older in 2007. In total, the sample consists of 73,424 individuals of an immigrant origin and 229,217 persons with a Swedish origin. Among the immigrants, 38,720 are men and 34,704 are women. For natives, the corresponding subsamples are 123,843 and 105,374, respectively. We divide the second-generation immigrants into groups on the basis of the parents' country of origin. Note that we only include second-generation immigrants whose parents are born in the same country. We then divide these individuals into six groups: Nordic countries, Western Europe, Eastern Europe, Southern Europe, and non-European countries.

Table 1 shows the structure of the data set and presents the definitions of first- and second-generation immigrants and natives used in the paper. We define second-generation immigrants and natives as self-employed in 2007 if they were registered as self-employed by Statistics Sweden and reported self-employment as their main activity in 2007. Having self-employment as their main activity in 2007 implies that an individual should not be defined as wage-employed, unemployed or inactive in that year. Furthermore, we only include private firms. Stock companies are excluded from the sample since owners of such companies may be registered as owners but may not be active as self-employed in the company. Finally, farmers are excluded from the sample.

Table 1 Data structure and some definitions

	Definition
First-generation immigrant	Foreign-born male or female resident in Sweden in 1990
Second-generation immigrant	Male or female born in Sweden with both parents born abroad in the same country
First-generation native	Male or female born in Sweden and resident in Sweden in 1990
Second-generation native	Male or female born in Sweden with both parents born in Sweden
First-generation self-employed observed	1990
Second-generation self-employed observed	2007

People are defined as wage-employed if they are registered as employed, if they are not registered as students, if they have not receive any unemployment benefits or disability pension, if they are not registered as self-employed, if their annual labour earnings exceed social benefits, and if they have received an annual labour income that is larger than SEK 20,000. This income restriction is imposed to exclude people who were temporarily wage-employed in that year. Individuals are defined as unemployed if they have received unemployment benefits at any time during the year, if they are not registered as students, if they have not received any disability pension, if they are not registered as self-employed, and if they are not defined as wage-employed. Finally, individuals are defined as inactive if they are not defined as wage earners, if they have not received any unemployment benefits during the year, if they are not registered as students, if they have not received any disability pension, and if they are not registered as self-employed. Our sample thus consists of individuals who are self-employed, wage-employed, unemployed or inactive. Students and disability pensioners are excluded from the analysis. First-generation immigrants and natives are defined as self-employed, wage-employed, unemployed and inactive in the corresponding way in 1990. Note that our data does not contain information on whether an individual is continuing a family business or has established a completely new one.

We are interested in how the parents' self-employment activities affect the children's self-employment propensities as adults. Investigating this with the help of register data of the kind used in this study is not unproblematic. One problem is related to the fact that self-employment most often is not a life-long commitment and that the duration of self-employment spells varies between different immigrant groups (Hammarstedt 2001b; Andersson-Joona 2010). Since we only observe self-employment status in the parental generation in one single year, i.e. 1990, an individual included in our study might have grown up with parents who were registered as self-employed in 1990 but not in the years before and after 1990. Such individuals are classified as having self-employed parents even if their parents only were self-employed in the year 1990. Of course it might also occur that individuals

grew up with parents who were registered as self-employed in the years around 1990 but not in the year 1990. Such individuals are classified as not having self-employed parents even if their parents had experience from long spells of self-employment from other years than 1990. However, despite this we find it reasonable to use self-employment in 1990 a proxy for self-employment traditions. One argument for this is that calculations by Ekberg (1991) showed that the great majority of the first-generation immigrants in Sweden who were registered as self-employed in the mid 1980s were still self-employed 5 years later, a fact that was observed among natives as well.

Another problem arises from the fact that the transmission of self-employment propensities across generations might be affected by the extent to which the parental generation was successful in their self-employment activities. Thus, individuals that were self-employed in 1990 might have had high incomes and stimulating work, which may have encouraged their children to become self-employed. However, children of the self-employed may also have been discouraged from self-employment by circumstances such as low incomes and bankruptcy among their parents. In our data, we do not have any information indicating the extent to which the parental generation was successful as self-employed.

Tables 2, 3, 4 and 5 present some descriptive statistics of the second-generation males and females who are self-employed. Table 2 reveals that self-employment is more common among men than among women. The self-employment rate of second-generation immigrants is somewhat higher than that of natives, 5.3 and 4.9% for men, respectively, and 3.2 and 3.0% for women, respectively. As regards differences by immigrant origin, the highest self-employment rates are found among non-European immigrants for men and among Western European immigrants for women, amounting to 8.8 and 4.8%, respectively. The lowest rates for both men and women are found among individuals with a Nordic background.

Table 3 presents some summary statistics of the second-generation immigrants and natives. First, on average, second-generation immigrants are younger, more likely to be married, and to have more children than natives. Further, second-generation immigrants have fewer years of education and tend to be concentrated in

Table 2 Number of observations and self-employment rate (%) of second-generation immigrants and natives (20–64 years of age) in 2007, grouped by country of origin

Origin	Men		Women	
	Number of observations	Self-employment rate (%)	Number of observations	Self-employment rate (%)
Immigrants	38,720	5.3	34,704	3.2
Natives	123,843	4.9	105,374	3.0
Nordic countries	21,540	4.2	19,479	2.4
Western Europe	1,734	6.6	1,633	4.8
Eastern Europe	3,335	5.5	3,053	4.1
Southern Europe	6,584	5.7	5,697	4.4
Non-European countries	5,527	8.8	4,842	4.1

Table 3 Descriptive statistics of second-generation men and women (20–64 years of age) in 2007, %

	Men		Women	
	Immigrant origin	Native origin	Immigrant origin	Native origin
Age (years)	34.9	37.4	35.4	38.5
Married	28.9	23.2	39.5	29.2
Number of children	1.1	0.7	1.3	0.9
<i>Education</i>				
Primary school or less	16.2	13.2	11.2	9.0
Secondary school	59.0	56.7	56.1	50.1
University degree	24.8	30.1	32.7	40.9
<i>Region of residence in Sweden</i>				
Metropolitan area	46.3	30.6	47.5	32.6
Southern and central Sweden	49.1	58.9	48.1	57.8
Northern region	4.6	10.5	4.4	9.6
<i>Business line</i>				
Construction and manufacturing	34.9	34.8	10.7	9.4
Retail and communication	20.7	20.8	16.9	15.5
Financial and industrial services	16.4	16.1	14.4	12.8
Personal and cultural services	7.5	5.3	9.1	8.6
Other	20.5	23.0	48.9	53.7
<i>Country of origin</i>				
Sweden	–	100.0	–	100.0
Nordic countries	55.6	–	56.1	–
Western Europe	4.5	–	4.7	–
Eastern Europe	8.6	–	8.8	–
Southern Europe	17.0	–	16.4	–
Non-European countries	14.3	–	14.0	–
<i>Point of time for parents immigration</i>				
Father immigrated prior to 1971	50.7	–	52.3	–
Father immigrated 1971–1980	24.4	–	23.9	–
Father immigrated 1981–1990	24.9	–	23.8	–
Mother immigrated prior to 1971	51.1	–	52.2	–
Mother immigrated 1971–1980	26.4	–	26.2	–
Mother immigrated 1981–1990	22.5	–	21.6	–
<i>Family background</i>				
Self-employed father	7.7	3.0	8.1	2.9
Self-employed mother	3.1	1.4	3.3	1.4
Number of individuals	38,720	123,843	34,704	105,374

metropolitan areas to a larger degree than natives. There are no major differences as regards the line of business by origin but there are differences by gender. Men are more heavily concentrated in manufacturing and construction than women are, whereas women tend to be employed in the category other business lines that for

Table 4 Entrepreneurial background of second-generation self-employed (20–64 years of age) in 2007 grouped by gender and country of origin, %

Origin	Self-employed father	Self-employed mother	Self-employed father and mother	Self-employed father but not mother	Self-employed mother but not father
<i>Males</i>					
Immigrants ($N = 2,050$)	16.9	5.2	3.3	13.6	1.9
Natives ($N = 6,021$)	5.6	2.4	1.4	4.2	1.0
Nordic countries ($N = 894$)	11.6	4.2	2.7	8.9	1.5
Western Europe ($N = 115$)	12.2	6.1	3.5	8.7	2.6
Eastern Europe ($N = 184$)	6.5	5.4	1.6	4.9	3.8
Southern Europe ($N = 373$)	15.5	6.7	5.1	10.5	1.6
Non-European countries ($N = 484$)	35.6	5.8	3.7	29.1	2.1
<i>Females</i>					
Immigrants ($N = 1,120$)	16.2	8.6	4.7	11.5	3.9
Natives ($N = 3,158$)	4.1	3.0	1.3	2.8	1.7
Nordic countries ($N = 464$)	8.8	5.2	1.7	7.1	3.4
Western Europe ($N = 78$)	11.5	5.1	5.1	6.4	0.0
Eastern Europe ($N = 126$)	9.5	9.5	4.0	5.5	5.6
Southern Europe ($N = 252$)	19.0	12.7	8.3	10.7	4.4
Non-European countries ($N = 200$)	36.0	12.0	7.5	28.5	4.5

example include health care and education. Table 3 also reveals that the majority of the second-generation immigrants originate in Nordic countries, followed by Southern Europe. When it comes to entrepreneurial background, the parents of second-generation immigrants have been self-employed to a larger extent than those of natives. Not surprisingly, having had a self-employed father is more common than having had a self-employed mother among both immigrants and natives. This reflects the fact that self-employment is a male-dominated occupation among immigrants as well as among natives in Sweden (Hammarstedt 2004).

Since we are interested in the extent to which individuals who have self-employed parents have a higher propensity to become self-employed, it is interesting to explore the entrepreneurial background of those in the second generation who were self-employed in 2007. Tables 4 and 5 show that the self-employed immigrants are more likely to have parents with self-employment experience than natives are. The share of immigrants that had a self-employed father in 1990 amounts to 16.9% for men and 16.2% for women; for natives the corresponding shares are 5.6 and 4.1%. Having a mother with self-employment experience is less common for both immigrants and natives; 5.2 and 8.6% of the immigrant self-employed men and women had a mother who was self-employed in 1990 compared to 2.4 and 3.0% of the native men and women. Evidently, among both immigrants and natives there is a larger tendency for women than men to have a mother with self-employment experience. Finally, both

Table 5 Probit estimates of the probability of being self-employed in 2007 for second-generation men and women, marginal effects

	Men	Women
<i>All immigrants</i>		
Self-employed father	0.0400*** (0.0051)	0.0122*** (0.0029)
Self-employed mother	0.0010 (0.0049)	0.0114*** (0.0040)
Number of observations	38,720	37,704
Pseudo R^2	0.1187	0.2329
<i>All natives</i>		
Self-employed father	0.0409*** (0.0052)	0.0049** (0.0023)
Self-employed mother	0.0157*** (0.0057)	0.0155*** (0.0041)
Number of observations	123,843	105,374
Pseudo R^2	0.0677	0.1699
<i>Immigrants by parents' region of origin</i>		
Nordic countries		
Self-employed father	0.0447*** (0.0082)	0.0087*** (0.0041)
Self-employed mother	0.0139* (0.0089)	0.0085** (0.0053)
Number of observations	21,540	19,479
Pseudo R^2	0.0727	0.2081
Western Europe		
Self-employed father	0.0487* (0.0320)	0.0254* (0.0197)
Self-employed mother	-0.0020 (0.0258)	-0.0127 (0.0098)
Number of observations	1,734	1,633
Pseudo R^2	0.0631	0.2143
Eastern Europe		
Self-employed father	0.0065 (0.0158)	0.0044 (0.0121)
Self-employed mother	0.0124 (0.0200)	0.0509* (0.0272)
Number of observations	3,335	3,053
Pseudo R^2	0.0844	0.1395
Southern Europe		
Self-employed father	0.0288* (0.0106)	0.0136*** (0.0070)
Self-employed mother	-0.0050(0.0085)	0.0080 (0.0073)
Number of observations	6,584	5,697
Pseudo R^2	0.1459	0.3374
Non-European countries		
Self-employed father	0.0341*** (0.0084)	0.0098*** (0.0039)
Self-employed mother	-0.0105 (0.0084)	0.0078 (0.0064)
Number of observations	3,697	3,307
Pseudo R^2	0.2511	0.3010

All specifications include controls for age, age squared, education, marital status, number of children, region of residence in Sweden, line of business, local labour market fixed effects. For immigrants we also control for point of time for parental immigration and region of origin. *** Indicates significance at the 1% level, ** at the 5% level, and * at the 10% level

parents tend to have self-employment experience to a larger extent among immigrants than among natives; this is true for both men and women. Looking at differences by immigrant origin, Table 4 indicate that having a father and/or mother who were self-employed in 1990 is the most common among the self-employed originating in Southern Europe and non-European countries. However, the share that only has a mother with experience from self-employment is largest among second-generation immigrants from Eastern Europe.

We also want to explore the transmission of specific human capital, i.e. the extent to which the second generation becomes self-employed in their self-employed parents' line of business. Tables 8 and 9 in the "Appendix" show the second-generation self-employed in 2007 grouped by line of business. It emerges that the majority of the self-employed immigrant men are concentrated in personal and cultural services, construction, and manufacturing whereas the majority of the native men are self-employed in construction, and in financial and industrial services. Among the immigrant groups, most of the self-employed from Nordic countries and Western Europe are active in construction and manufacturing; the self-employed from Eastern Europe are concentrated in retail and communication and in financial and industrial services. The majority of the immigrants from Southern Europe and especially from non-European countries are active in personal and cultural services.

Second-generation self-employed women are, in contrast to men concentrated in personal and cultural services, followed by financial and industrial services. However, the share of immigrant women that is self-employed in personal and cultural services is larger than that of natives. Table 9 in the "Appendix" further reveals that women originating in non-European countries and in Southern Europe have a higher tendency to be self-employed in personal and cultural services than the other groups, whereas a larger share of the immigrants from Nordic countries and Western and Eastern Europe is self-employed in financial and industrial services.

5 Modelling intergenerational transmissions in self-employment

In this section we present the specifications used to study intergenerational transmissions in self-employment. We use a binary probit model to investigate how general human capital is transferred from parents to offspring. The transmission of specific human capital is studied by estimating a multinomial logit model. The covariates used are presented in Table 10 in the "Appendix".

We begin with the transmission of general human capital by studying the effect of having a self-employed father and/or mother on the probability of becoming self-employed among sons and daughters with an immigrant and a native background. We investigate if there are differences in this regard between immigrants and natives and by immigrant groups as well as between sons and daughters. For this purpose, we use a binary probit model that we estimate separately by gender for immigrants and natives, and by immigrant group. The dependent variable equals 1 if the individual is self-employed in 2007 and 0 otherwise.

In our probit model we control for human capital variables such as age and educational attainment for immigrants as well as for natives. One should here be

aware of the fact that an individual's educational attainment might be chosen in preparation for self-employment or wage-employment. Thus, educational attainment might therefore be endogenous for the decision to become self-employed. Furthermore, we control for household characteristics such as marital status and number of children in the household as well as for area of residence in Sweden. We also control for local labour market fixed effects at the county level. Furthermore, for individuals with an immigrant background we control for point of time of their parents' immigration. Finally, we study the transmission of general human capital by including two dummy variables that equal 1 if the father and mother is self-employed in 1990, respectively, and 0 otherwise.

As a next step, we study the transmission of specific human from parents to their sons and daughters. In the theoretical framework, specific human capital was defined as knowledge specific to a certain business sector, which increases the probability of the offspring to be self-employed in that sector. We study the effect of specific human capital on self-employment propensities by estimating a multinomial logit model of the probability of sons and daughters of being self-employed in a specific business line relative to not being self-employed. Just as in the probit model we control for age, educational attainment, marital status and number of children in the household as well as for area of residence in Sweden. Furthermore, we also control for local labour market fixed effects at the county level. For second-generation immigrants, we also control for point of time of their parents' immigration.

Due to a small number of observations of self-employed in the various business lines, we estimate the models for immigrants in a single group. The dependent variable takes on the following values: 0 if the individual is not self-employed, 1 if the individual is self-employed in construction or manufacturing, 2 if self-employed in services, and 3 if self-employed in retail, communication or other business lines. The reference group comprises individuals who were not self-employed in 2007. The five business lines were added to three categories due to the small number of observations in each business branch. To create homogenous groups, we have chosen to merge retail/communication and other business lines into a single category. The transfer of general and specific human capital is measured by including dummy variables that indicate the father's and/or mother's business line as self-employed. The reference group thus constitutes individuals whose parents are not self-employed. The parents' business lines are defined in the same way as those in the dependent variable.

6 Results

6.1 Transmission of general self-employment abilities

Table 5 presents the results from our estimations of the transmission of general self-employment abilities.³ The table reveals similarities between immigrants and

³ The table only includes the coefficients for the variables of certain interest. The full estimations immigrants and natives and for each immigrant group are available from the authors upon request.

natives in the sense that having a self-employed father increases self-employment propensities by about 4 percentage points for both male immigrants and for male natives. Furthermore, for females, having a self-employed father increases self-employment propensity by about 1.2 percentage points for immigrants and by about 0.5 percentage points for natives.

Table 5 also reveals differences between immigrants and natives. The effect on self-employment propensities of having a self-employed mother varies between immigrants and natives. Having a self-employed mother increases self-employment propensities by 1.6 percentage points for male natives but has no statistically significant effect for male immigrants. Among females, the effect of having a self-employed mother increases self-employment propensities by about 1.6 percentage points for natives and 1.1 percentage points for immigrants.⁴

When interpreting our results we should be aware of the fact that there are factors that we have not been able to control for. The most important such factor may be access to financial capital. However, keeping this in mind our results overall indicate that the transmission of general self-employment abilities looks different among immigrants and natives. Male and female natives in addition to female immigrants inherit general self-employment abilities from both their fathers and from their mothers; male immigrants only inherit general self-employment abilities from their fathers. Thus, although both parents serve as role models for natives and female immigrants, it appears that only the father serves as a role model for male immigrants.

When looking at the transmission of self-employment abilities from the fathers and from the mothers one has to be aware of the fact that these estimates are not directly comparable. One reason for this is differences in male and female labour supply; females might have different labour market opportunities than males. Not at least might this affect the transmission of self-employment abilities from the mothers to their sons and daughters, since females have been, and still are, under-represented in self-employment compared to males in Sweden (Andersson and Hammarstedt 2010b). Thus, the self-employed mothers in our data are a selected group.⁵

Table 5 also reveals disparities among different groups of immigrants in this respect. While the transmission of general self-employment abilities looks very similar to that of natives among immigrants from the Nordic countries it looks different for second-generation immigrants with parents originating from more distant regions. Just as among natives, male and female second-generation immigrants with parents born in the Nordic countries inherit general self-employment abilities from both parents. Among more distant immigrant groups, general self-employment abilities are only inherited from the father. The only exception for this is female immigrants with parents originating from Eastern Europe who inherit general self-employment abilities from their mothers.

⁴ We have also estimated our probit model including individuals in the age span 25–64 years of age. In all essential the results turned out the same.

⁵ In order to deal with the fact that self-employed mothers might be a selected group we ran regressions for children in single female-headed households as a sensitivity analysis. The transmissions across generations remained in all essential unchanged.

Table 6 Multinomial logit estimates of the probability for second-generation males to be self-employed in specific business lines in 2007, marginal effects

	Immigrants			Natives		
	Self-employed in a specific business line			Self-employed in a specific business line		
	Construction/ manufacturing	Services	Retail/ other	Construction/ manufacturing	Services	Retail/ other
<i>Self-employed father's business line</i>						
Father not self-employed	Reference	Reference	Reference	Reference	Reference	Reference
Construction/ manufacturing	0.0194*** (0.0060)	0.0167* (0.0093)	0.0149** (0.0071)	0.0268*** (0.0053)	0.0000 (0.0038)	0.0065 (0.0042)
Services	0.0020 (0.0047)	0.0282*** (0.0067)	0.0050 (0.0046)	0.0068 (0.0063)	0.0249*** (0.0088)	0.0130* (0.0078)
Retail/other	0.0036 (0.0026)	0.0223*** (0.0042)	0.0182*** (0.0041)	0.0020 (0.0025)	0.0024 (0.0036)	0.0255*** (0.0050)
<i>Self-employed mother's business line</i>						
Mother not self-employed	Reference	Reference	Reference	Reference	Reference	Reference
Construction/ manufacturing	-0.0007 (0.0051)	-0.0143*** (0.0051)	0.0092 (0.0105)	0.0145** (0.0071)	0.0121 (0.0112)	0.0049 (0.0076)
Services	-0.0017 (0.0044)	0.0007 (0.0050)	0.0074 (0.0064)	-0.0031 (0.0039)	0.0173** (0.083)	0.0062 (0.0066)
Retail/other	0.0019 (0.0032)	0.0006 (0.0036)	0.0005 (0.0028)	0.0076 (0.0048)	-0.0030 (0.0045)	0.0412 (0.0039)
Number of observations	38,720			123,843		
-2 log likelihood	18,989			57,712		

All specifications include controls for age, age squared, education, marital status, number of children, region of residence in Sweden and local labour market fixed effects. For immigrants we also control for point of time for parental immigration and region of origin. *** Indicates significance at the 1% level, ** at the 5% level, and * at the 10% level

6.2 Transmission of specific self-employment abilities

Tables 6 and 7 present results from the estimations of the transmission of specific human capital among immigrants and natives.⁶ Looking at males in Table 6, we find that male immigrants and male natives both inherit specific self-employment abilities from their fathers. For example, immigrants with a father who was self-employed in the construction/manufacturing sector in 1990 has about 1.9 percentage points higher probability of being self-employed in that sector than immigrants whose fathers were not self-employed in 1990. Among natives, the corresponding figure for the construction/manufacturing sector amounted to 2.7 percentage points.

⁶ The table only includes the coefficients for the variables of certain interest. The results from the full estimations are available from the authors upon request.

Table 7 Multinomial logit estimates of the probability for second-generation female self-employed to be self-employed in specific business line in 2007, marginal effects

	Immigrants			Natives		
	Self-employed in a specific business line			Self-employed in a specific business line		
	Construction/ manufacturing	Services	Retail/other	Construction/ manufacturing	Services	Retail/ other
<i>Self-employed father's business line</i>						
Father not self-employed	Reference	Reference	Reference	Reference	Reference	Reference
Construction/ manufacturing	0.0004 (0.0071)	0.0184** (0.0090)	0.0074 (0.0518)	-0.0011 (0.0386)	-0.0060* (0.0036)	0.0060 (0.0040)
Services	0.0018 (0.0031)	0.0122* (0.0064)	0.0066 (0.0197)	-0.0010 (0.0356)	0.0171* (0.0088)	0.0114* (0.0066)
Retail/other	0.0022 (0.0375)	0.0119*** (0.0045)	0.0029 (0.0088)	0.0016 (0.0579)	0.0036 (0.0045)	0.0015 (0.0025)
<i>Self-employed mother's business line</i>						
Mother not self-employed	Reference	Reference	Reference	Reference	Reference	Reference
Construction/ manufacturing	-0.0009 (0.0150)	0.0126 (0.0145)	-0.0049*** (0.0004)	0.0256 (0.8798)	0.0258 (0.0433)	0.0005 (0.0084)
Services	-0.0010 (0.0052)	0.0477*** (0.0138)	-0.0014 (0.0048)	0.0018 (0.0632)	0.0206* (0.0112)	0.0040 (0.0056)
Retail/other	0.0004 (0.0075)	0.0104* (0.0059)	0.0071 (0.0210)	-0.0011 (0.0109)	0.0049 (0.0067)	0.0179** (0.0072)
Number of observations	34,704			105,374		
-2 log likelihood	10,974			32,406		

All specifications include controls for age, age squared, education, marital status, number of children, region of residence in Sweden and local labour market fixed effects. For immigrants we also control for point of time for parental immigration and region of origin. *** Indicates significance at the 1% level, ** at the 5% level, and * at the 10% level

The strongest effect in Table 6 is found for immigrants in the service sector. Among immigrants, having a father who was self-employed in that sector increases the probability of a son's self-employment in that sector by almost 3 percentage points.⁷

The effect of having a self-employed mother on self-employment propensities among male immigrants and natives, produces a completely different result. With one exception, neither male immigrants nor male natives inherit specific self-employment abilities from their mothers. The only exception is found for natives in the service sector. Having a self-employed mother in the service sector increases the

⁷ As for the probit model the results remained stable when we estimated our multinomial model including individuals in the age span 25–64 years of age.

probability of being self-employed in the service sector by 1.7 percentage points among male natives.

Table 7 presents the corresponding results for females and reveals a different pattern than that obtained for males. With few exceptions females do not, neither among immigrants nor natives, inherit specific self-employment abilities from their parents. However, for both immigrant and native women there is a weak tendency for females to inherit specific human capital from their mothers and fathers who were self-employed in the service sector. Having a self-employed father in the service sector increases self-employment propensities in that sector by 1.7 and 1.2 percentage points for native and immigrant females, respectively, and the corresponding effects for the mother amount to 2.1 and 4.8 percentage points. This is interesting since Table 9 in the “Appendix” shows that the great majority of self-employed females are active in the service sector. Thus, the results in Table 7 indicate that this to a large extent is a result of inheritance of self-employment abilities from the parental generation.

7 Conclusions

This paper has studied self-employment and intergenerational transmissions self-employment abilities among immigrants and natives in Sweden. We believe that the results in the paper also can be generalized to other countries, since many other OECD-countries, just as Sweden, have experienced problems with the integration of immigrants on the labour market as well as an increase in immigrant self-employment during recent years.

The results have shown that, although there are small differences, second-generation immigrants are somewhat over-represented in self-employment compared to natives. Turning to the transmission of self-employment abilities, the results shows that immigrant and native males inherit both general and specific self-employment abilities from their fathers. Native males and males with parents originating from the Nordic countries inherit general self-employment abilities from the mother as well as from the father; males from more geographically distant immigrant groups tend to inherit self-employment abilities only from the father. Thus, male natives and male second-generation immigrants from countries neighbouring to Sweden seem to use both parents as role models in their self-employment decision while the father is the dominant role model among male immigrants from more distant regions.

Among females, the situation looks somewhat different. Female immigrants as well as female natives inherit general self-employment abilities from both parents. Thus, they use the father and the mother as role model in their self-employment decision. Furthermore, females tend to inherit specific self-employment abilities to a smaller extent than males. Females with self-employed parents have a larger propensity than others to become self-employed but not necessarily in the same business sector. The one exception for this is the service sector. The great majority of self-employed females are active in the service sector and this over-

representation tends to be transmitted across generations among both immigrants and natives.

Some of these results are of certain interest for policymakers. First, even if the transmission of self-employment across generations looks different for males and females and for different ethnic groups it is a fact that children of immigrants as well as natives are influenced by their family background when making their occupational choice. Thus, the family plays an important role for the self-employment decision and is also an important factor in the integration of immigrants on the labour market. Furthermore, an increase in the self-employment rate among immigrant males in certain sectors will lead to increases in the self-employment rates in the same sectors among males in succeeding generations since males tend to inherit specific self-employment abilities across generations. Among females, an increase in the self-employment rate will lead to an increase in self-employment rates in succeeding generations. However, among females an increase in the self-employment rate will not necessarily lead to succeeding generations seeking self-employment in the same sector as their fathers and mothers since females tend to inherit general rather than specific self-employment abilities. One possible explanation to this may be that, compared to men, women in the first generation had lower levels of educational attainment and more limited labour market opportunities, which is likely to have affected their decision to work as well as the choice of occupation and whether to become self-employed. The women in the second-generation on the other hand, have had better labour market opportunities and may therefore be less likely to choose the same occupational career as their mothers.

When interpreting the results one should keep in mind that we only include second-generation immigrants with both parents born in the same country of origin. Thus, children of inter-ethnic marriages are not included. It is possible that the transmission of human-capital looks different for children from such households since studies have shown that inter-ethnic marriage is related to socio-economic outcomes, such as education (Çelikaksoy et al. 2006). Furthermore, the probability of inter-ethnic marriages has also been found to be related to time spent in the country (Chiswick and Houseworth 2010).

Finally, as mentioned earlier we have not been able to control for factors such as access to financial capital. Thus, the mechanisms behind the transmission of self-employment across immigrant generations are to some extent still unclear. Besides the fact that parents serve as role models the transmission may also operate through access to finances and other observables. Therefore, future research regarding immigrant self-employment and the transmission of self-employment across immigrant generations should also, as far as possible, account for factors such as liquidity constraints and access to financial capital.

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Appendix

See Tables 8, 9 and 10.

Table 8 Male self-employed in the second generation (20–64 years of age) in 2007 grouped by line of business, %

Origin	Line of business				
	Construction/ manufacturing	Retail/ communication	Financial/ industrial services	Personal/ cultural services	Other
Immigrants (<i>N</i> = 2,050)	27.1	20.7	19.2	29.6	3.4
Natives (<i>N</i> = 6,021)	32.1	18.2	24.0	11.5	13.3
Nordic countries (<i>N</i> = 894)	45.7	19.9	20.9	8.8	4.7
Western Europe (<i>N</i> = 115)	32.2	16.5	32.2	12.2	6.9
Eastern Europe (<i>N</i> = 184)	21.2	28.3	28.8	17.4	4.3
Southern Europe (<i>N</i> = 373)	13.1	26.5	22.3	35.7	2.4
Non-European countries (<i>N</i> = 484)	4.4	15.9	7.0	72.0	0.7

Table 9 Female self-employed in the second generation (20–64 years of age) in 2007 grouped by line of business, %

Origin	Line of business				
	Construction/ manufacturing	Retail/ communication	Financial/ industrial services	Personal/ cultural services	Other
Immigrants (<i>N</i> = 1,120)	5.5	11.9	21.8	53.2	7.6
Natives (<i>N</i> = 3,158)	6.0	14.9	23.9	39.3	15.6
Nordic countries (<i>N</i> = 464)	9.9	12.9	25.9	42.2	9.1
Western Europe (<i>N</i> = 78)	5.1	11.5	28.2	42.3	12.9
Eastern Europe (<i>N</i> = 126)	4.8	13.5	32.5	31.7	17.5
Southern Europe (<i>N</i> = 252)	1.6	11.1	15.9	67.9	3.5
Non-European countries (<i>N</i> = 200)	1.0	9.5	10.5	78.0	1.0

Table 10 Dependent and explanatory variables used in the probit and multinomial logit models

Variable	Description
<i>Dependent variables</i>	
Binomial probit, y_i	1 if self-employed in 2007, 0 otherwise
Multinomial logit, y_i	0 if not self-employed, 1 if self-employed in construction or manufacturing, 2 if self-employed in services, 3 if self-employed in retail trade, communication or other business line in 2007
<i>Independent variables</i>	
Age	Continuous
Age squared/100	Continuous
Primary school or less	Reference
Secondary school	1 if secondary schooling, 0 otherwise
University	1 if university degree, 0 otherwise
Marital status	1 if married, 0 otherwise
Number of children	Number of children living in the household, continuous
Metropolitan area	1 if living in the region of Stockholm, Gothenburg or Malmö, 0 otherwise
Northern, Southern and central Sweden	Reference
Local labour market effect	1 dummy variable for each county in Sweden (24 counties). The county of Stockholm is reference county
Construction/manufacturing	1 if active in construction or in manufacturing, 0 otherwise
Retail trade/communication	1 if active in retail trade or communication, 0 otherwise
Financial and industrial services	1 if active in financial and industrial services, 0 otherwise
Personal and cultural services	1 if active in personal and cultural services, 0 otherwise
Other business line	Reference
Nordic countries	Reference
Western Europe	1 if originating in Western Europe, 0 otherwise
Eastern Europe	1 if originating in Eastern Europe, 0 otherwise
Southern Europe	1 if originating in Southern Europe, 0 otherwise
Non-European countries	1 if originating in non-European countries, 0 otherwise
Parents immigrated 1971–1980	1 if parents immigrated between 1971 and 1980, 0 otherwise
Parents immigrated 1981–1990	1 if parents immigrated between 1981 and 1990, 0 otherwise
Self-employed father	1 if father self-employed, 0 otherwise
Self-employed mother	1 if mother self-employed, 0 otherwise
Self-employed father in construction/manufacturing	1 if father self-employed in construction or manufacturing, 0 otherwise
Self-employed father in services	1 if father self-employed in services, 0 otherwise
Self-employed father in retail trade, communication or in other business line	1 if father self-employed in retail trade, communication or other business line, 0 otherwise
Self-employed mother in construction/manufacturing	1 if mother self-employed in construction or manufacturing, 0 otherwise

Table 10 continued

Variable	Description
Self-employed mother in services	1 if mother self-employed in services, 0 otherwise
Self-employed mother in retail trade, communication or other business line	1 if mother self-employed in retail trade, communication or other business line, 0 otherwise

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