

The theory of the experimentally organized economy and competence blocs: an introduction

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Abstract This article presents the theory of the experimentally organized economy and competence blocs. The theory assumes that information is immense and that economic actors are boundedly rational. This makes practically all economic activities to some extent uncertain and unpredictable; they become experimental in nature. Economic growth is, hence, viewed as an evolutionary process of the discovery, use and selection of knowledge. So-called competence blocs—the minimum set of agents with different, but complementary competencies required to generate and commercialize new combinations—are identified as necessary for efficient resource allocation. The incentives given by the institutions to the actors in the competence bloc are crucial for economic performance.

Keywords Experimentally organized economy · Competence blocs · Evolutionary theory · Competent team · The Swedish growth school

JEL Classification B52

1 Introduction

It is widely acknowledged that the evolution of knowledge is a major determinant of long-run economic growth, and there are several traditions in economics studying economic growth as an evolutionary process. In Sweden, for instance, there is a long history of evolutionary research that dates back to at least the beginning of the last century. This research appears to a large extent

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to be unfamiliar to foreign readers. Among the probable reasons are that it has been carried out by a considerable number of, almost exclusively, Swedish researchers, e.g. Wicksell (1898), Åkerman (1939, 1944) and Dahmén (1950), some of the basic texts are in Swedish, and the empirical work mainly concerns data on Sweden. There is an influence of Austrian and Schumpeterian ideas, but theoretical and empirical contributions are such that it is reasonable to talk about a distinct tradition, which has recently been recognized by Johansson (2000, 2001). Johansson and Karlson (2002) identified this tradition as the Swedish growth school (*Den svenska tillväxtskolan*). Work on this tradition is still in a preliminary phase, and much remains to be done, e.g. how it differs from other theories and how the contributions from different researchers are linked together and should be integrated; Erixon (2005). Still, the insights of this tradition have been shown to be fruitful for understanding economic development and economic growth.

The purpose of this essay is to present this approach to an English-speaking audience and to develop further this tradition by focusing on the theory of the experimentally organized economy (EOE) and competence blocs—the latest contribution to the Swedish growth school.¹ Developed in the last two decades, it has begun to influence research, providing the intellectual foundation of several doctoral dissertations (Johansson 2001; Jonasson 2001; Fridh 2002; Sandgren 2005) and the basis for a number of empirical studies (e.g. Eliasson and Eliasson 1997; Eliasson 2000; Luukkonen and Palmberg 2006; Henrekson and Johansson 2009). The theory underlies the founding of The Ratio Institute in 2002, which has as one of its objectives the development and empirical application of the theory of the experimentally organized economy and competence blocs and the tradition of which it is a part.

Originally, the theory of the EOE (Eliasson 1987, 1991b, 1996) and competence blocs (Eliasson 1995; Eliasson and Eliasson 1996) was developed as two separate theories. The theory of the EOE was formulated first with the purpose of analyzing the economy in a more realistic way than is done in, for instance, general equilibrium theory. One cornerstone is to recognize that actors most probably will never have perfect information and that most decisions can, therefore, be described as business experiments. The competence bloc theory was formulated afterwards to study industrial development as a process of competitive selection of innovations and firms in an experimentally organized economy.

In what follows, I extend previous work by integrating the theory of the EOE and the competence bloc theory to one single theory. I also generalize

¹ It is beyond the scope of this essay to compare or to evaluate the theory of the EOE and competence blocs with other economic theories, e.g. endogenous growth theory (e.g. Romer 1986; Lucas 1988; Aghion and Howitt 1998), neoclassical general equilibrium theory (e.g. Walras 1874; Solow 1957), national systems of innovation (e.g. Lundvall 1992; Edquist and McKelvey 2000) or technological systems (e.g. Carlsson and Stankiewicz 1991; Carlsson 1997).

the theory from explaining competitive selection to a theory of resource allocation. In this context, I discuss resource allocation as the creation and use of new knowledge. I also relate the theory to the Schumpeterian concept of new combinations and establish a relationship between individual firm activities, industrial dynamics, industrial transformation and macroeconomic performance.

2 Resource allocation in the experimentally organized economy

Economics is concerned with the problem of resource allocation: how efficiently to produce the most preferred goods and services using scarce factors of production such as capital, labor, and land. The theory of EOE and competence blocs defines this as a problem of coordination, the use of knowledge, the use of competence, and the institutional set-up. Economic actors have to co-ordinate their plans and activities using knowledge about consumers' preferences and the means to their satisfaction (cf. Hayek 1945). The success of this depends on the competence to create and to use productive knowledge.² The institutions—the “rules of the game”—defined as the humanly devised constraints that shape human interaction (North 1990) are crucial for what activities are undertaken, how they are coordinated and whether productive knowledge and competence are created and used.

Schumpeter (1934, pp. 14, 15) regards all ways in which the factors of production are integrated in production processes, in products, in the distribution of products etc. as different *combinations*. The introduction of a new combination into the economy is defined as an *innovation*, and the coming up with a novel idea for a new combination as an *invention*. He classifies the innovations into five major categories (Schumpeter 1934, p. 66):

1. The introduction of a new good—that is one with which consumers are not yet familiar—or of a new quality of a good.
2. The introduction of a new method of production, that is one not yet tested by experience in the branch of manufacture concerned, which need by no means be founded upon a discovery scientifically new, and can also exist in a new way of handling a commodity commercially.
3. The opening of a new market, that is a market into which the particular branch of manufacture of the country in question has not previously entered, whether or not this market has existed before.
4. The conquest of a new source of supply of raw materials or half-manufactured goods, again irrespective of whether this source already exists or whether it has first to be created.

²Knowledge consists of the two subsets: *information*, the codable and communicable part of knowledge, and *tacit knowledge*, the non-codable part of knowledge (Eliasson 1996, p. 18). Competence is defined as the ability to use knowledge for a particular purpose (Johansson 2001, p. 16).

5. The carrying out of the new organisation of any industry, like the creation of a monopoly position (for example through trustification) or the breaking up of a monopoly position.

From this I define:

Definition I: The state space of the EOE as all combinatorial possibilities.

Definition II: The business opportunity set of the EOE as all profitable combinatorial possibilities.

The business opportunity set, hence, is a subset of the state space, and critical entrepreneurial competence is required to identify and to select combinations that lie within the more narrow business opportunity set.

The theory of the EOE builds on two assumptions related to knowledge about the state space and the business opportunity set (Eliasson 1996, pp. 24–30):

1. The state space, as well as the business opportunity set, is for all practical purposes open-ended in the long run and extremely large, beyond the comprehension of any individual or group of individuals. The largeness and openness rests on the many possible combinations and on the property of the state space to expand through exploration and learning, i.e., the discovery of new combinations. Eliasson (1987, 1996, p. 27) calls this the Särimner effect.³
2. Knowledge is to a large extent tacit in the sense of Polanyi (1967), i.e., it is impossible to codify.

A third may be added:

3. The economic actors are rationally bounded, i.e., the economic actors have limited cognitive capacity to understand and to analyze information (Simon 1955, 1990).

The assumptions mean that there is no way of objectively assessing the profitability of an innovation with certainty until it has been tried in the market. Hence, the only way to value new knowledge is through market experiments and *every business activity accordingly can be seen as an experiment—or a business hypothesis—that is tested in the market*; thus the name the experimentally organized economy. Central overview and central planning of the economy, thus, is a naive and costly illusion (cf. Hayek 1937, 1945, 1978).

³According to the Viking mythology, Särimner was a pig in Valhalla, the dwelling of Gods and dead warriors. The warriors slaughtered and ate Särimner. The next day he returned, once again to be slaughtered and eaten.

3 The competence bloc

The idea behind the competence bloc theory is that the successful creation and exploitation of new combinations is the task of “optimizing” the creation and allocation of technological as well as economic competencies without knowing the exact content of the competencies. It shows how resources are efficiently allocated without anyone being more than fragmentarily informed of the whole, and many being misinformed. A competence bloc is defined in the following way (Eliasson and Eliasson 1996, p. 14):

It is the total infrastructure needed to create (innovation), select (entrepreneurship), recognise (venture capital provision), diffuse (spillovers) and commercially exploit (receiver competence) new ideas in clusters of firms. The competence bloc is dominated by human-embodied competence capital that determines the efficiency characteristics of all other factors of production, including the organisation of all economic activities that constitute the competence bloc. This means that the choice of market and hierarchical organisation is part of the competence bloc. Above all, the definition includes the institutions of the market that are needed to activate innovations, entrepreneurship and venture capitalism... Competence bloc formation concerns the dominant intangible human-embodied competence associated with a particular industrial success, and only secondarily the physical dimension of production.

The competence bloc identifies the minimum set of competencies necessary successfully to *generate, identify, select, expand* and *exploit* profitable new combinations in the state space. All competencies are human-embodied, but it is not possible to specify exactly the content of the competencies. It is, however, possible to categorize the competencies and, hence the actors, according to their function:⁴

- *Competent customers.* The competent customer is not an ordinary customer who solely buys the product, but rather a strategic partner who takes an active part in the development and the commercialization of products. The competent customer serves as a channel of information and informs the firm about the market and specific customer demands. He acts as a catalyst for innovation and has a decisive influence on the development and final design of new products. Sometimes the competent customer also finances part of the development of the product and shares in the risks.
- *Inventors* come up with new combinations that solve specific economic, organizational and technical problems.
- *Innovators* integrate different technologies for what is needed for particular product functions. The innovator in the competence bloc fulfils

⁴Note the similarities with the actors inventors, entrepreneurs and creditors in Schumpeterian theory. I have extended the original definition of the competence bloc to include inventors and skilled labor.

a more advanced function than does the Schumpeterian inventor. He solves advanced technological problems and puts large-scale technologies together into technically advanced products (or systems of products) such as airplanes and cars. The function is more like that of an administrator of large-scale innovative activities, than of an inventor of incremental technical changes. The function of an innovator (as with that of the other actors) can be carried out by one person or a group of persons.⁵

- *Entrepreneurs* select innovations that satisfy economic criteria and introduce them into the economy. The entrepreneur, thus, discovers inventions in the state space that he believes belong to the business opportunity set. The entrepreneur has the most critical economic function since he understands, selects and initiates the commercialization of the innovations.
- *Industrialists* scale innovations up and carry them to large-scale production. The industrialist resembles the imitator and participates in the process of diffusion, to connect to Schumpeter's (1934) original work. As is discussed by, for instance, Nelson and Winter (1982), competition fosters imitation, which does not simply mean copying the original innovation, but also making improvements and adjustments of the original innovation to new markets. This process comprises many incremental innovations that in the long run may have a larger economic impact than the original innovation. The industrialist is active in these later stages of commercialization and crucial for organizing firm growth. The industrialist does not have to be a competitor to the entrepreneur who introduced the original innovation. On the contrary, they may very well be partners in the same company. In a sense, competence bloc theory, hence, moves focus from the entrepreneur to the industrialist.
- Competent *venture capitalists* recognize and finance viable business opportunities, identified, organized and presented to them by the entrepreneurs. This task includes an assessment of the competence of the entrepreneur as well as that of other managers of the venture. The venture capitalist provides "competent money". That is, he provides financial resources bundled with, e.g., his management competence, personal networks and experience. The main task of the venture capitalist, however, sharply emphasized by Eliasson and Eliasson (1996) and Eliasson (2003), is to recognize and correctly price innovations. "Incompetent money" has a negative effect on firms, since the financial capital then confers power and authority to actors who do not understand the business. In a well-functioning market economy, incompetent venture capitalists will soon be outcompeted, and the misallocation of resources will be relatively small. The only time large-scale misallocation can go on for an extended period

⁵In Schumpeterian theory, innovators and entrepreneurs are synonymous, as they carry out the same function. That is not the case in the theory of the EOE and competence blocs.

of time is when government intervenes in economic life and puts the market-exit mechanisms out of order, e.g., in the Swedish shipyard industry (Carlsson 1983) and in the form of support to regions (Bergström 1998, 2000).

- *Actors in the secondary (exit) market* accommodate exit availabilities for venture capitalists and other investors through providing a secondary market. They constantly evaluate the management team. There are potential profits in replacing the top management of a firm in case of sustained bad performance, and actors in the secondary market will enforce such change. The capital market is the ultimate controller of projects, since the interest rate connects the future with the present. There is a symmetric evaluation in all relations in the competence bloc. The venture capitalists, for example, selects entrepreneurs and projects, but the entrepreneurs choose to co-operate with different venture capitalists.
- *Skilled labor* carries out production. This includes white-collar as well as blue-collar workers.

The competence bloc is complete when it has the critical mass to attract competent actors in large numbers such that the process of generation, identification, selection, expansion and exploitation of business ideas functions well. In such a situation, the competence bloc successfully terminates losers (avoids type 1 errors) and does not miss radically new and profitable innovations (avoids type 2 errors). A few implications about the economic process follow:

1. All actors in the competence bloc have to be present to create the economic development that ultimately explains fast economic growth endogenously. Economic development can be seen as a chain of activities starting with an invention that is introduced into the economy and diffused in the market. The result of each activity (success or failure) depends on the competence of the actors involved at each stage, e.g., entrepreneurial and venture capitalist competence. If one competence input is missing, the chain is broken and this particular economic development might fail.
2. Business mistakes are a natural cost for selecting winners, not a net waste of resources.
3. The competence bloc serves as an attractor. Firms will locate close to a competence bloc or co-operate closely with the actors of the competence bloc to be part of the dynamic network and knowledge creation that can make them competitive.
4. Truly successful competence blocs cannot be planned. They form spontaneously in markets.⁶

⁶Cf., for example, Lazerson and Lorenzoni (1999) who conclude that no industrial district in Italy has been promoted by active industrial policy. The industrial revolution in England involved no public activities (Mathias 1969), except institutional changes protecting private property rights and promoting private entrepreneurship (North and Thomas 1973).

5. Institutions that create the right business conditions and incentives for the creation of competence blocs can, however, be supported by deliberate economic policy.
6. Economic development is the result of creative experimentation and selection. Research and search for knowledge are uncertain, and in many cases it is impossible to estimate the costs needed to achieve desired results. Decisions about initiating or terminating projects are about critical choices based on incomplete information and not on calculations under perfect information. The organization of research and other creative activities has a decisive influence on the generation and the results of new ideas. In a sense, economic competence is primarily an organizational competence—the competence to organize the creation, selection, expansion and exploitation of business ideas.
7. Competence can be seen as a factor of production as, for instance, real capital. It differs, however, from all other factors in a number of respects. Most important is that competence, sometimes tacit, is the dominant factor of production. Organizational competence operates as a leverage (or scale) factor on total productivity and determines the efficiency in the use of other factors of production. Creativity, the ability to come up with new ideas and solutions, is an important dimension of the competence capital. Competence also allocates itself, which gives it special characteristics (Pelikan 1993).
8. Redistribution may have a negative effect on economic efficiency since it deprives successful entrepreneurs of their wealth by high taxes. In a market economy, simply put, the only way to accumulate wealth (heritage, gambling etc excluded) is to produce better products or to produce the same products more efficiently than the competitors. Redistribution implies transferring resources from individuals who have proven to be competent managers of economic resources to individuals who have proven to fail to be competent managers of economic resources (Eliasson 2003).⁷ The competence previously associated with the money has been removed (washed out).⁸
9. One of Smith's (1776) fundamental insights was that specialization and diversification give rise to enormous gains in the use of resources. Specialization and diversification are limited by the size of the market, which implies that output is limited by the size of the market. This conclusion has been part of economic analysis ever since. However, the EOE and competence bloc theory revises this conclusion. Considering that new

⁷This suggests that the total tax level may influence economic growth.

⁸Observe that another competence is added, namely the competence to use the political system to redistribute private wealth. Hence, redistribution implies that unproductive competence controls a larger share of total resources (cf. Bhagwati 1982; Baumol 1990; Tollison 1997). This effect is not explicit in the current version of the theory of the EOE and competence blocs.

products and new markets are created through the creativity of actors in the pursuit of profits, the limiting factor no longer is the size of the market but the competence to produce new products, new qualities and to find (or create) new markets (Eliasson 1996, p. 29).

The theory also places focus on transactions costs (Coase 1937). Following North and Wallis (1994), transactions costs are distinguished from transformation costs.⁹ Dahlman (1979, p. 148) concludes that transactions costs are actually information costs since “they all have in common that they represent resource losses due to lack of information”. In the theoretical framework of the EOE and competence blocs, transactions costs, then, are information costs for exploring and expanding the state space, i.e., costs for discovering (or creating) new combinations (inventions), introducing them into the economic system (innovations) and disseminating them in the market (diffusion). Information costs dominate transformation costs in the sense that the organization of transformation, and hence the costs for transformation, depend on the information that is discovered, gathered and used to organize production.¹⁰

4 The firm as a competent team

Actors in the competence bloc establish firms with the objective of making profits through exploring the state space by discovering and exploiting new combinations. The success thereof is conditioned on the competence of the employees and on the way they are organized: the competence and actions of the individual employees need to be coordinated to “strengthen” the whole. Firms are, therefore, described as *competent teams* (Eliasson 1990a).

The competence of the top-management (or top-competent) team is stressed, since they are responsible for organizing people into teams. The theory specifies what general competence of the top management is required for the firm to become successful (Table 1). The top-management team must have the competence to: *orient* the firm in the state space and in the business opportunity set, i.e., to define the business idea of the firm, which includes risk willingness (the courage to act on incomplete information); to *select*, i.e., to identify and correct, business mistakes; and to *operate*, i.e., to manage successful “experiments” and feedback information to adjust the orientation of the firm.

⁹Transformation costs are the costs incurred when physically transforming inputs (land, capital, labor etc.) into outputs, while transactions costs define the costs incurred when transferring property rights from one actor to another.

¹⁰Information costs have also been found to be large. Wallis and North (1986) estimate them to be at least 45% of the U.S. GDP. Eliasson (1985, p. 86) estimates them to be at least 50% of total costs in large Swedish manufacturing firms and much higher at the GDP level.

Table 1 The competence specification of the experimentally organized firm

Orientation
Sense of direction
Daring (risk-willingness)
Selection
Efficiency in identifying mistakes (analysis)
Effectiveness in correcting mistakes
Operation
Effectiveness in managing (“coordinating”) successful experiments
Effectiveness in feeding acquired experience back onto orientation

Source: Eliasson (1996, p. 56, Table III.1) and Eliasson (1990a, p. 283)

The general competence specification carries over to the four main daily operational tasks of the firm (Eliasson 1996, p. 13, Table I.1):¹¹

1. *Identify business opportunities.* This is the first step in the process of the creation and exploitation of new knowledge, where novel ideas and innovations are suggested.
2. *Choose and select among potential business ideas.* Next, firms have to choose among business ideas, select the ones to introduce on the market, decide which introduced products to withdraw from the market, etc. This is a filtering process, which includes the important choices of staff, their careers and mobility in firms.
3. *Co-ordinate firm activities.* The daily operations and strategic discussion are coordinated by the management within the firm and by markets between firms. Competition disciplines the organization—management, employees and owners—to economize on scarce resources.
4. *Learn.* Finally, the firms have to create efficient systems for knowledge transfer through education, imitation and diffusion.

The search for profit constantly expands the state space, and the more firms are searching, the more the state space expands. This give rise to the knowledge paradox, establishing that even though the knowledge base of society expands, individual actors nevertheless may become increasingly ignorant about all there is to learn, since new knowledge most likely is created faster than one can learn (Eliasson 1990b, p. 46). This implies that, when a firm has identified a profitable innovation, there most probably are more competitive ones. However, it is possible that no other firm has identified them or introduced them into the economy. It is pure luck if a firm finds the *best* of all solutions to a problem. Plus, if the firm happens to find it, neither that firm, nor any other firm will know about it. Hence, a firm has to act prematurely using “its” competence and intuition, since the firm has to reckon with the possibility that with a profitable solution it cannot be alone (Eliasson 1998b, p. 87).

¹¹These four operational tasks are identified as the information activities of both the firm and the entire economy and are called the statistical accounts of the knowledge-based information economy (Eliasson 1990b). They are estimated to have covered more than 50% of the resource input into the average Swedish manufacturing firm in the late 1980s (Eliasson 1990a).

Even though not explicitly stated in the theory, expected Net Present Value (NPV) is the selection criterion of investment opportunities. Selection at the firm level is carried out through the:

1. entry of firm projects,
2. exit of firm projects,
3. re-organization of firms and
4. rationalization of firms.¹²

Rationalization is a special case of re-organization, the main purpose of which is to exploit economies of scale etc., by expanding inputs over a given organizational structure. New firm entry and exit of existing firms are special cases of (1) and (2). Each individual firm carries out these activities to stay competitive and these activities generate the:

1. entry,
2. expansion,
3. contraction and
4. exit of firms,

or what is sometimes referred to as industrial dynamics. At this stage in the economic process, profits are the selection criteria (cf. Alchian 1950).

The critical question is what makes individual firms enter and expand rather than exit and contract, generating macroeconomic growth instead of macroeconomic stagnation or decline. As discussed, this balancing of the generation and identification of winners for promotion, the missing of winners and the withdrawing of resources from losers is determined by the competence of the actors in the competence bloc. By relating the creation and selection process of the competence bloc to the direction of resources to expected winners and the withdrawal of resources from expected losers, the competence bloc is made the resource allocator in the theory of the EOE and competence blocs.

In general, the theory of the EOE and competence blocs expects firm characteristics, such as firm age and firm size, to affect firm growth. For instance, new and young firms may be more open-minded, more flexible, more innovative and less risk-averse than old firms, and will therefore, on average, be more prone to explore new innovations with a great economic potential. Small firms may on average provide a better organizational milieu for entrepreneurs than large firms because their size makes them less hierarchical.

The number of firms is also expected to have an impact on firm growth (Eliasson 1984, 1991a).¹³ Many firms imply more entrepreneurs and indus-

¹²Eliasson (1996) calls these four activities the four growth mechanisms. In Eliasson (2001), he changed the title to the four mechanisms of Schumpeterian creative destruction and growth.

¹³A common explanation of the positive effects on firm growth of many firms and entrepreneurs, suggested by, e.g., Davidsson et al. (1994), is that existing entrepreneurs are positive role models for “to-be” entrepreneurs. The theory of the EOE and competence blocs does not dispute this particular effect but advances a few additional explanations related to competence and knowledge.

trialists, which implies a broader and more varied competence-base when generating and exploiting business ideas.¹⁴ This is positive for the efficient matching of new technologies with people who are able to recognize and to exploit the potential profits of new ideas. Entrepreneurial and industrial competence is also largely acquired through individual learning by doing in firms. Hence, firms can be seen as universities for educating talented people in managerial skills (Eliasson and Vikersjö 1999) and many firms suggest a well-developed management education system.¹⁵ The number of firms in different size classes is probably important because firms of different sizes might require different managerial competence.

Ownership matters critically for firm growth. Publicly owned firms are expected to influence firm growth negatively for several reasons: (1) in the free market, there will be a selection according to the owners' ability to manage the firms. In publicly owned firms, owners (i.e. politicians) are appointed because of their competence to win elections (manage voters), which is a negative selection mechanism when it comes to economic performance (e.g. Pelikan 1993). (2) Decision-making is bureaucratic in organizations run by politicians, and these organizations lack flexibility (e.g. Moe 1997; Wintrobe 1997). (3) Politically run organizations are governed by other criteria than economic efficiency and value maximization, e.g., vote maximization, which gives (long-run) negative effects on economic performance (e.g. Paldam 1997). (4) Political control and the power of the political system to define property rights and redistribute private property give rise to a negative incentive structure impinging on productive entrepreneurship and promoting the wrong rent-seeking behavior (e.g. Bhagwati 1982; Baumol 1990).

In general, the theory of the EOE and competence blocs is negative to the ability of public sector to generate value through enterprising of its own or through various type of grants and subsidies. Instead, the public sector is seen as an important actor in shaping the framework for economic activity with the potential to generate economic growth and general prosperity. In particular, the theory recognizes the role of public sector in designing and upholding formal institutions, such as private property rights, within which entrepreneurship and economic development can occur.

The theory also proposes that many entries and exits (a high turnover rate) of firms in an industry may increase growth of that industry, because it increases the probability of discovering and selecting winners (Johansson 2005). There may be a non-linear relation between firm turnover and long run economic growth, though. A too fast turnover of firms may destabilize the price mechanism and, eventually, cause a negative effect on GNP growth;

¹⁴The theory of the EOE and competence bloc shares this emphasis on the fundamental importance of heterogeneity in the knowledge base of economic actors with other traditions stressing evolution and complexity (cf., for instance, Dopfer and Potts 2004 and Pyka and Hanusch 2006).

¹⁵Small firms might also function as a cost-efficient mechanism to identify, select and develop entrepreneurial and managerial talents. Mistakes can be fewer and learning costs lower in small firms because small values are at stake (Lucas 1978; Davis and Henrekson 1997).

particularly, if the turnover of firms is unbalanced (there are large differences in the entry and exit rates), factor prices may increase, causing inflation and low economic growth (Eliasson et al. 2005).

5 From micro to macro

A Salter (1960) diagram shows the ranking of a performance variable, e.g., value added/employee, over firms in an industry; firms with good economic performance appear to the left and firms with poor performance to the right. Figure 1 shows firms' value added/employee in the Swedish IT industry in 1996.

High-performance firms are forced continuously to innovate to keep ahead of new entrants and incumbent firms. If not, competition will decrease their profits and they will move down to the right and eventually close down. Similarly, low performing firms have to improve, otherwise they will not be able to compete for capital and labor and they will have to exit.

Due to the extremely large state space, tacit knowledge and bounded rationality, no firm will ever feel safe. Every firm is forced by real or imagined circumstances to constantly improve efficiency, even if the firm already exhibits the highest profitability.¹⁶

The theory of the EOE and competence blocs defines economic transformation as the (outward) shifting of Salter curves as a consequence of the process of competition described above. It takes two forms, one being interindustry related, and the other being intraindustry related. *First*, firms in a deregulated industry constantly have to try to introduce new combinations with a higher value added to stay competitive. Successful firms increase their share of the industry output through entry and growth, while unsuccessful firms decrease their share of production through exit and contraction. Hence, in the case of positive economic development the Salter curve moves up to the left over time.

Second, labor, capital and other factors of production organized within firms and coordinated in markets are reallocated to industries with a higher value added from industries with a lower value added. This reallocates resources to firms and industries with better economic performance and makes the Salter curve of the whole economy shift up to the left.

The aggregate change of value added defines GDP growth. In other words, the change of the Salter curves—the economic transformation—moves GDP growth in this example (but in another case contraction might have occurred). The micro-to-macro relation, thus, can be described as a five-step process. *First*, the individual firm takes productive action in its attempt to maintain or increase profits. *Second*, the individual firm activities (entry, exit, re-organization and rationalization) generate, *third*, industrial dynamics

¹⁶The only thing that can protect a firm is a monopoly that reduces competition, guaranteed and enforced by government. Superior products, organization, technology, etc. creating a private monopoly are not a problem in the same way since monopoly profits sooner or later will be eroded by new entry (if allowed).

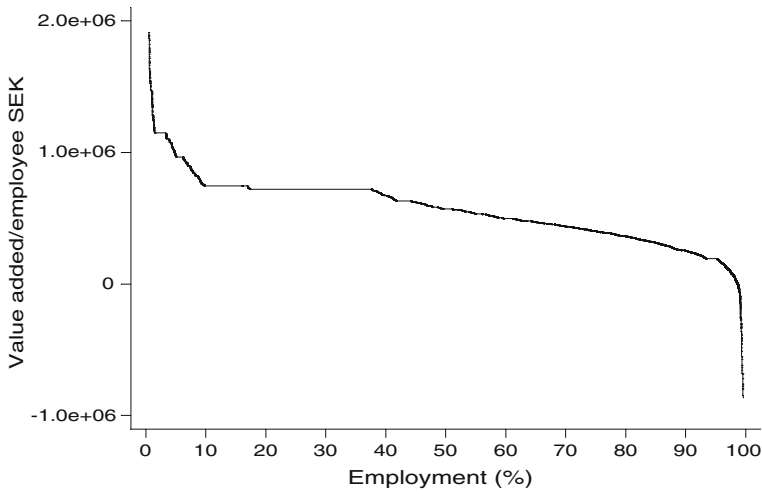


Fig. 1 Salter diagram of the Swedish IT industry in 1996

(entry, exit, expansion and contraction of firms) that, *fourth*, shifts the Salter curves suggesting that economic transformation takes place. *Fifth*, the sum of the shifting Salter curves is converted to macroeconomic aggregates. If the incentive structure in the economy is right—an institutional issue (Eliasson 1998a; Eliasson and Wihlborg 2003)—the shifts of the Salter curves will be predominantly outward.

6 Concluding remark

The theory of the EOE and competence blocs emphasizes competition as the key to industrial dynamics and economic transformation and, therefore, to economic growth. Restrictions on competition imply restrictions on the possibility to explore the state space (cf. Hayek 1978). Also, the threat from both incumbent firms and new competitors constantly keeps each actor on the alert, disciplining the actors to an efficient use of scarce resources.

This theory also acknowledges institutions, in particular private property rights, to be the foundation of competition and the incentives for economic actors. Accordingly, they are the underlying determinants of economic growth.

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