The Arctic Research Forum (NARF) is a research association established in 1990 for multidisciplinary research in contemporary Arctic problems.

Objectives for NARF are the following:

- Promote and stimulate Nordic research cooperation, to increase the participation of Nordic research in international Arctic research and to establish links among researchers and other people and institutions concerned with Arctic research.
- Promote and stimulate Nordic education and education programmes for those studying Arctic problems.
- Increase public awareness in the Nordic countries of development in the world and of Arctic research.
- Operate and communicate with the public and private sector in the Nordic countries, local and indigenous people and with institutions and organizations interested in Arctic matters and development.

The second symposium was held at Slette Strand, Northern Jutland, January 1993.

Sustainability in the Arctic

Proceedings from Nordic Arctic Research Forum Symposium 1993

Edited by Tom Greiffenberg

ISBN 87-7307-471-3
Contents

Considerations on Sustainable Development in the Arctic
Lise Lyck 7

Implementation of Sustainable Development
- Methodological and Conceptual Considerations Concerning the Measuring of Sustainability
Rasmus Ole Rasmussen 25

Sustainable Development in the Arctic:
Inherent Problems and Possible Solutions in a Theoretical Perspective
Urban Ignaz Häggl 75

Cultural Sustainability - Anthropological Perspectives on Terrestrial Animal Production Systems in Greenland
Hans-Erik Rasmussen 85

The Northern Quebec Isolated Communities Database:
Structure, Issues, Challenges
Pierre Saint-Laurent 103

Trends in Development and Research in the Arctic Regions of Russia
Vladimir Pavlenko 119

Sami Bill up in Smoke - Discourse Strategies within Sami Ethnopolitics in Sweden
Etvind Torp 127

Collective Entrepreneurship and Microeconomies
Ivar Jonsson 145
Collective Entrepreneurship and Microeconomies

Ivar Jonsson

The main topic of this paper is to analyse the fundamental dynamics of entrepreneurial activity in relation to the particular size related problems of accumulation of microeconomies. In the first part entrepreneurial activity is defined and neo-classical theory is criticized for its lack of realistic account of entrepreneurial activity. An alternative theory is offered which emphasizes the collective nature of entrepreneurship and is based on an evolutionary and institutionalist theory of technical change. The concept of collective entrepreneurship is defined which takes into account social as well as economic determination of technical change. In the second part, the constraints of entrepreneurial activity are analysed in terms of the particular size related problems of accumulation of microeconomies. In the third part, entrepreneurial activity is analysed in terms of increasing globalization trade and production and global firms. Finally, in the last part problems of collective entrepreneurship in Iceland as a microeconomy are observed.

Economic growth, search strategies and techno-economic paradigms

Entrepreneurial activity is essential for economic growth. Research into the causes of economic growth have shown that, unlike what orthodox, neo-classical theory presumes, it is competitiveness in research and development (R&D) and capacity to deliver rather than competitiveness in labour costs per unit, that is important for economic growth in the medium and long run (see J. Fagerberg 1988 for a study of economic growth of 15 OECD countries during the period 1961-83): The dynamics of technical change should therefore be of great interest for students of economic growth. However, this is not the case. Research into the dynamics of technical change requires institutional approach that does not only take into account...
economic conditions of technical change but highlights as well the role of political structures and actors and sociological aspects dealt with in organizational theory. Studies of economic growth have been predominated by neo-classical theory. This train of thought suffers from serious shortcomings as concerns technical change. Its inability to deal with institutional determination of technical changes is its greatest limitation in this field of study.

In neo-classical theory, firms are viewed as operating according to a set of decision rules that determine what they do as a function of external (market) and internal (such as available capital stock) conditions. These rules are reduced to the principle of maximizing on the part of the firms, which usually refers to maximizing profit or present value of the firms. To be able to calculate maximum output in this sense, firms are further presumed to have precise knowledge of how to do. In terms of production in the traditional sense, such a precise knowledge of how to do refers to maximizing activities or techniques and consequent "production sets". In terms of other fields, such a precise knowledge of how to do refers e.g. to advertising policies or financial asset portfolios. Finally, it is presumed that maximizing firms make their decisions or choices on the basis of given sets of known alternatives to choose from, whether these are alternative actions, market constraints, internal constraints such as short term available quantities of factors. In some models, the idea of maximizing behaviour takes into account information imperfections, costs, and constraints (R.R. Nelson and S.G. Winter 1982, 12).

The neo-classical principle of maximization is inadequate as a microlevel explanation of how firms make their decisions and choices as concerns technical change. The real world is much more complicated and much more uncertain than neo-classical theory would have it. In periods of technical change, maximizing in the literal sense becomes very difficult to say the least, because knowledge of how to do is undermined as competitors exploit new technology which is not yet diffused and unknown to the firm in question. As a consequence, the neo-classical postulate of choosing between known alternatives and maximizing becomes unrealistic. Furthermore, industrial R&D, invention and innovation is by nature open ended and results are to a high degree uncertain. A more sophisticated concept is needed to analyse firms decision rules than the concept of maximization.

The concept of 'routine' supersedes the naive formalism of neo-classical theory (R.R. Nelson and S.G. Winter 1982, 14-18). This is a concept developed by economists and is is related to the sociological concept of social norms, but is comparatively underdeveloped. The concept of a 'routine' refers to all regular and predictable behavioral patterns of firms and covers characteristics of firms that range from well-specified technical routines for producing things, through procedures for hiring and firing, ordering new inventory, or stepping up production of items in high demand, to policies regarding investment, R&D, advertising, and business strategies about product diversification and overseas investment (ibid., 14). R.R. Nelson and S.G. Winter have identified three main types of routines depending on their different levels of abstraction of decisions making. Firstly, there are routines that refer to what a firm does at a any time, given its prevailing stock of plant, equipment, and other factors of production. These are routines that govern short-run behaviour and have been called 'operating characteristics'. Secondly, there is a set of routines that determine the period-by-period augmentation or diminution of the firm's capital stock, as an example when it is decided whether to implant a new machine or repair an old one, building new plant or investing in a major R&D program on a recently opened technological frontier. Thirdly, there are routines that operate to modify over time various aspects of the operating characteristics of firms. These are routines that guide the 'searches' of firms as they change the routines mentioned above. Search policies or strategies of firms are determined by routines that take into account different factors, such as size of the firm, anticipated level of risk and profit, what competitors are doing, assessment of the payoff of R&D in general and of classes of projects in particular, evaluation of the case or difficulty of achieving certain kinds of technological advances, and the particular complex of skills and experience that the firm possesses (ibid., 16-18 and 249).
Studies on the decision making process of R&D in firms reveal how unrealistic the neo-classical theory is with its maximizing principle. The decision making process reflects the uncertain nature of R&D and technical change. It appears from the studies that a widely used procedure is to begin by developing lists of projects that if successful would have high payoff, and then screening this list to find those projects that look not only profitable if they can be done, but doable at reasonable cost. Payoff-side factors are examined first, and those relating to cost or feasibility are looked at second. However, in certain search, R&D and industrial innovation firms proceed by focusing first on exciting technological possibilities and then screening these to identify the ones that might have high payoff if achieved. Neither case is literally optimal. Since all alternatives cannot be considered, there must be some mechanical procedures employed for quickly narrowing the focus to a small set of alternatives and then homing in on promising elements within that set (ibid., 255).

Furthermore, search, R&D and industrial innovation is not simply a matter of responding to market demand. The role of the selection environment has to be taken into account and it can not simply be reduced to market-demand. The market determines search, R&D and industrial innovation in so far as competition forces firms to imitate and exploit new technology that reduces production costs and hence prices. Those firms that do not follow this rule perish from the market. However, the relations between markets and firms are not altogether one-sided. Typical market structures are not perfectly competitive and firms try to modify the demand of their products by employing advertising and research and development as a central competitive weapons (Packard 1975 and Galbraith 1967).

There are other nonmarket selection environments as well. Most theorizing of market selection assumes a relatively clear separation of the "firms" on the one hand, and consumers and regulators on the other. Consumer evaluation of products - versus their evaluation of other products and versus price - is presumed to be the criterion that ought to dictate resource allocation. Nonmarket sectors are not characterized by such clear separation between firms interests and consumers interests. Search, R&D and industrial innovation is affected by more complicated set of criteria than maximization of firms' profits and consumers' utility in market terms. In the case of a public agency such as a school system, and its clientele (students and parents) and sources of finance (mayor, council, and voters) there is not the arm's-length-distance as between a seller and buyer of a car. The public agency is expected to play a key role in the articulation of values and to internalize these and work in the public interest. Even in nominally private-sector activity such as in the provision of medical services, doctors are not supposed to make decisions regarding the use of a new drug on the basis of the profits he or she makes from it. To mention but few example of nonmarket selection environments, we would highlight public regulation concerning pollution and public health standards, the public postal services and ministries of defence that affect search, R&D and industrial innovation through procurement etc (R.R. Nelson and S.G. Winter 1982, 268-72).

Sofar, we have analysed the conditions of economic growth by observing the micro-level principles of firms activities as concerns technical change. However, the routines of firms and search strategies develop in macro socio-economic contexts that generate and reproduce clusters of basic ideas or paradigms that mould the micro-level routines and search strategies of firms. Such clusters of basic ideas have been called 'techno-economic paradigms. Techno-economic paradigms refer to clusters of ideas in the field of organization of production and technical change that change the basis range of industries and generate technological revolutions and long lasting economic waves, i.e. Kondratieffs. Fordist mass production was the key technological factor that generated the long wave of economic growth between the 1930/40s to 1980s, while information and communication technology is the key technological factor in the present process of shifting techno-economic paradigms.

Diffusion of techno-economic paradigms depends on changes in regimes of accumulation, i.e. social and political structures that foster, reproduce and transform basic ideas of best practice technology and organization of work. Such changes of regimes of accumulation depend on the balance of power of social and political forces and their struggle in the process of hegemonic
politics (see Jonsson 1991a). In this sense changes of techno-economic paradigms differ from other classes of innovations as they are inter-regime changes. From these changes we can distinguish innovations that lead to intra-firm changes, inter-firm changes and inter-branch changes. Intra-firm changes refer to innovations that change the technological base of individual firms and their organization in an incremental way. They often occur, not so much as the result of any deliberate research and development activity, but as the outcome of inventions and improvements suggested by engineers and users of technology ('learning by doing and learning by using). Inter-firm changes refer to changes in the relations between firms in the sense that new products are produced. They are based on adical innovations that usually are the result of deliberate research and development activity by enterprises and/or university and government laboratories. Unlike incremental innovations, they not occur from improvement of existing processes or products of production. Rayon as an example could not have resulted from the improvement of rayon plants or the woollen industry. They are important as the potential springboard for the growth of new markets. Radical innovations are relatively small and localized but may develop over a period of decades into new industries if clusters of radical innovations are linked together as in the case of the synthetic materials industries or the semiconductor industry. Finally, Inter-branch changes refer to changes of technological systems that are far-reaching changes in technology, affecting several branches of the economy, as well as giving rise to entirely new sectors. They are based on combination of incremental and radical innovations, together with organizational and managerial innovations affecting more than one or a few firms. An obvious example is the cluster of synthetic materials innovations and petro-chemical innovations (Freeman and Perez 1988).

Entrepreneurship

The concept of the entrepreneur has had a "come back" in economic discourse in recent years after having been trivialized by neo-classical theory. Neo-classical theory trivialized the concept with its emphasis on perfect information and perfect markets according to which the entrepreneur plays a static and passive role which was reduced to the efficient size of the firm and marginal efficiency curves. Such a view has some relevance in periods when economic development is relatively stable and profitability and productivity forecasts etc. can be based on past market trends.

However, neo-classical theory fails both in its emphasis on marginal efficiency as a guiding principle in running business and in its a-historical approach as economic and social uncertainty affects the rationality of investment and such uncertainty is periodic due to long waves, i.e. Kondratieffs, and technical and social change (Jonsson 1991b). When a long wave in the world economy enters the phase of a recession and markets become saturated, profits have been competed away and a shift to a new techno-economic paradigm is necessary (Freeman 1987), the role of the entrepreneur becomes the more important. It goes for all periods that the role of the entrepreneur is to make judgemental decisions, i.e. to take managerial decisions when no decision rule can be applied that is both obviously correct and involves only freely available information (Casson 1982). However, the uncertainty level of judgemental decisions is historically determined as uncertainty is greatest at the lower and upper turning point of long waves. But, there more critical points to be made concerning this definition of entrepreneurial decisions.

There are two critical points that should be emphasized concerning the definition above of an entrepreneur. Firstly, all management decisions presume judgemental content and uncertainty. As a consequence, one has to distinguish between basic entrepreneurial decisions and other management decisions. An entrepreneurial decision is different from other decisions insofar as it is related to the realization of the entrepreneurial function. We will discuss that function below. Secondly, the idea of an entrepreneur presumes that it is an individual or a firm that makes entrepreneurial
decisions. This view is a myth as, on the one side entrepreneurial activity is as much a product of the accumulated knowledge and technological progress of the society that hosts the entrepreneur as a product of his/her insight. On the other side, it is a myth as firms are not totally unified entities and decisions by firms are a product of conflict ridden processes in which different departments and individuals on different managerial levels take part. Furthermore, managerial decisions in large modern firms are taken by teams rather than individuals and as such they are more than sums of the opinions or ideas of the individuals in question.

The idea of the entrepreneur as an isolated genius is misleading and innovations do not fall on the heads of individual entrepreneurs as manna from heaven. In fact, entrepreneurship is a social process in which innovations are generated by social and cultural conditions that constitute at the same time the preconditions of their establishment and acceptance (G. M. Hodgson 19, 268). Realist analysis of entrepreneurial activity require a qualitative research into the structural conditions of techno-economic as well as social innovations. Following J. A. Schumpeter, we would claim that entrepreneurial activity centers around realizing the entrepreneurial function. As Schumpeter puts it:

"...the function of entrepreneurs is to reform or revolutionize the pattern of production by exploiting an invention or, more generally, an untried technological possibility for producing a new commodity or producing an old one in a new way, by opening up a new source of supply of materials or a new outlet for production by reorganizing and industry and so on" (Schumpeter, 132).

Schumpeter's concept of the entrepreneurial function is inadequate as it does not take into account social innovations. His concept reduces innovations to pure economic and technological factors, while social innovations are bypassed. By social innovations we refer factors such as developing new consumer tastes and traditions, transforming the knowledge base of nations, restructuring industrial relations, organizing new systems of interest mediation, generating firm-nets, user-producer relations, new forms of interlocking directorships, etc.

Fundamentally, social innovations affect external economies of scale, while technological or Schumpeterian innovations affect internal economies of scale. Briefly, economies of scale can be analysed as internal plant and internal firm economies of scale and furthermore as external plant and external firm economies of scale. Internal economies at the plant level derive from the exploitation of production techniques involving the specialization of labour, machinery and management and the accumulation of knowledge through experience in the production or running the plant. Internal firm economies on the other hand refer to the scale of management, distribution, the acquisition of inputs and the organization of research and development facilities. External economies at the plant level refer to factors such as access to credit and to cheap inputs of wage goods and capital equipment resulting from easy access to other suppliers and from available social infrastructure (communication, education, research, law and order, etc.). External firm economies, finally, refer to the access to large scale credit facilities, and to the communications and social and educational services required to maintain a high level of manpower division and be able to sustain control of international dimensions such as access to foreign markets and capital. These economies are sectorally, spatially and historically unevenly distributed so that locational specificity measured in terms of the distribution of internal and external economies, determines the different volumes and rates of capital accumulation which generates uneven economic development between countries, monopolization and disequilibrium (Brett 1983 and Jonsson 1991a).

It is clearer today than ever before that the entrepreneurial agent that realizes the entrepreneurial function can not be reduced to an individual or firm as we mentioned above. The active economic role of institutional actors such as local authorities, communes, the central state, international organizations and organized cooperation between firms in regulating and promoting conditions of competition and competitiveness leads us to the conclusion that the entrepreneurial function is realized through a process of collective entrepreneurship. This is a process in which external economies
of scale are created and transformed. Furthermore, as the institutional base of economic activity is different in the different countries, so is the organization of collective entrepreneurship different. However, collective entrepreneurship is not limited to national economies alone. Increased foreign direct investment (FDI) and globalization of capital accumulation (Chesnai 1988 and Julius 1990) due to cross border activities of multinational corporations (MNC) has generated forms of collective entrepreneurship that are essential for competitiveness of firms in international markets such as automobiles and electronics (K. Hoffman and R. Kaplinsky 1988 and Chesnai 1988).

**Forms of collective entrepreneurship**

Basically, forms of collective entrepreneurship depend on the one side on the entrepreneurial actors and, on the other side, on structural constraints, i.e. 1) constraints that are country specific such as the constraints of a microeconomy and 2) constraints set by the structural development of international trade and the world market.

As concerns entrepreneurial actors, forms of collective entrepreneurship are based typically on relations between actors such as the state, organized interests, firms and individuals. The following table 1 highlights some well known forms of relations between these actors that can be considered as examples of collective entrepreneurship. Table 1 indicates that there are many possible forms of collective entrepreneurship. Depending on the balance of power between the entrepreneurial actors and depending on culture and history of different countries, the hegemonic role in entrepreneurial activity may be played by the state such as in the case of 'state entrepreneurship' in Taiwan and South-Korea (Davis and Ward 1990, Huang 1989 and Cotton 1992). In other cases, such as in USA, firms and markets are more important in determining the path of innovative activity (Nelson 1988).

**Table 1.**

<table>
<thead>
<tr>
<th>Forms of collective entrepreneurship</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Actors</strong></td>
</tr>
<tr>
<td>Supporting international R&amp;D projects, e.g. EUREKA, ESPRIT, ERASMUS; development plans for R&amp;D on regional level; Establishing R&amp;D funds and institutions, science parks etc.; tax reductions for R&amp;D, procurement etc.</td>
</tr>
<tr>
<td>R&amp;D projects in the welfare state, health and work conditions. Collaboration in the field of transformation of skills and flexibility of labour and technology as well as spatial flexibility of labour</td>
</tr>
<tr>
<td>R&amp;D projects related to the improvement of the environment, consumer information and health standards and gendered technology and discrimination</td>
</tr>
<tr>
<td>Firm</td>
</tr>
<tr>
<td>Individual</td>
</tr>
</tbody>
</table>
In table 2, we have highlighted the main types of measures that fall under state forms of collective entrepreneurship as they have appeared in the advanced capitalist countries in recent decades.

**Table 2.**

**State forms of collective entrepreneurship**

<table>
<thead>
<tr>
<th>Policy tools</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Public enterprise</td>
<td>Innovation by publicly owned industries, setting up new industries, pioneering use of new techniques by public corporations, participation in private enterprise</td>
</tr>
<tr>
<td>2. Scientific and technical</td>
<td>Research laboratories, support for research associations, learned societies, professional associations, research grants</td>
</tr>
<tr>
<td>3. Education</td>
<td>General education, universities, technical education, apprenticeship schemes, continuing and further education, retraining</td>
</tr>
<tr>
<td>4. Information</td>
<td>Information networks and centres, libraries, advisory and consultancy services, databases, liaison services</td>
</tr>
<tr>
<td>5. Financial</td>
<td>Grants, loans, subsidies, financial sharing arrangements, provision of equipment, buildings or services, loan guarantees, export credits, etc.</td>
</tr>
<tr>
<td>6. Taxation</td>
<td>Company, personal, indirect and payroll taxation, allowances</td>
</tr>
<tr>
<td>7. Legal and regulatory</td>
<td>Patents, environmental and health regulations, inspectorates, monopoly regulations</td>
</tr>
<tr>
<td>8. Political</td>
<td>Planning, regional policies, honours or awards for innovation, encouragement of mergers or joint consortia, public consultation</td>
</tr>
<tr>
<td>9. Procurement</td>
<td>Central or local government purchases and contracts, public corporations, R&amp;D contracts, prototype purchases</td>
</tr>
<tr>
<td>10. Public services</td>
<td>Purchases, maintenance, supervision and innovation in health service, public building, construction, transport, telecommunications</td>
</tr>
<tr>
<td>11. Commercial</td>
<td>Trade agreements, tariffs, currency regulations</td>
</tr>
<tr>
<td>12. Overseas agent</td>
<td>Defence sales organizations</td>
</tr>
</tbody>
</table>


**Microeconomies and collective entrepreneurship**

Collective entrepreneurs face different constraints upon their activity depending on country specific conditions of capital accumulation. Microeconomies, i.e. economies with less than one million inhabitants, have particular size related problems of accumulation different from large economies (Jonsson 1991a and 1992). These size related problems of accumulation in microeconomies appear in five fundamental structural constraints of capital accumulation: 1) the absolute number and size of firms tends to be very small in microeconomies (as the case of Iceland indicates, see table 3 and the Appendix); 2) the very small size of the home market; 3) great openness of the economy; 4) great fluctuations in GDP and; 5) the very small absolute size of administration.
Table 3.
Size of the manufacturing sector (ISIC 31-39) and level of value added in the Nordic countries 1985

<table>
<thead>
<tr>
<th></th>
<th>Manufacture% (ISIC 3) as % of total labour force</th>
<th>Value added of ISIC 3# as % of gross output</th>
<th>Average size of persons engaged per establishment</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Denmark</td>
<td>20.1</td>
<td>40.5</td>
<td>57.9</td>
<td></td>
</tr>
<tr>
<td>Finland</td>
<td>21.8</td>
<td>36.8</td>
<td>69.3</td>
<td></td>
</tr>
<tr>
<td>Iceland</td>
<td>14.6 (13.8)*</td>
<td>32.9 (34.2)*</td>
<td>8.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(8.0) +(0.8)+</td>
<td>(16.1) +(23.8)+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Norway</td>
<td>17.9</td>
<td>27.2</td>
<td>44.0</td>
<td></td>
</tr>
<tr>
<td>Sweden</td>
<td>22.4</td>
<td>41.2</td>
<td>84.6</td>
<td></td>
</tr>
</tbody>
</table>

# The figures on Iceland are based on The Economic Institute. Other figures are based on Nordic Council of Ministers 1988 and OECD 1989.
* ISIC 31-6 and 38-9, i.e. ISIC 30 and 37 excluded (ISIC 37 = aluminum and ferro-silicon production by multinationals).
+ ISIC 30
++ ISIC 37

Sources: Nordic Council of Ministers 1988; OECD 1989; The Economic Institute.

Furthermore, a microeconomy is characterized by a small home market in absolute terms and the smaller the home market is, the fewer firms can be established in the markets and firms will tend to be small and threatened with over-investment due to difficulties of exploiting economies of scale. The smaller the economy is, the more unlikely it is to be self-sufficient in terms of production of goods demanded (depending on the diffusion of markets and consumption of industrially produced goods). As a consequence, the smaller the economy is, the more open it must be. The smaller the economy is, the greater will the fluctuations in GDP be. This is the case because the smaller the economy is, the fewer the branches of industry are. Thus, fluctuations in one part of the economy may not be met by counter-affecting fluctuations in other parts of the economy as is the case in larger economies. Finally, the smaller the economy is, the smaller is the administration in absolute terms. The size of the administration constrains its neutrality, quality, forms and way of conduct.

Finally, the very small size of the home market and the small absolute number and size of firms (whether in terms of income or person years) determines monopoly tendencies and chances of exploiting economies of scale. These two last mentioned factors affect levels of value added as monopoly and oligopoly lead to decreased output of the economy and increasing costs of other non-monopoly sectors (Yarrow 1985) and lack of economies of scale leads to relatively low levels of productivity. Furthermore, the openness of the economy affects the role of exchange rates. The smaller the economy is the more open it will tend to be and the more important exchange rate policies will be for the economy. This is the case both in terms of costs of imported goods for consumption and production as well as in terms of profitability of export sectors and long term rationality of investment in these sectors. The fourth factor, fluctuations in GDP, affects social and political stability. Fluctuations in GDP lead to fluctuations in income distribution and class relations as well as fluctuations in state revenues and party voting. Finally, the fifth factor, the absolute size of administration, determines its grounds to function as a formally neutral body vis-à-vis social and economic interests and to contribute to collective policy-making. The smaller the administration is in terms of number of persons, the more it is likely to depend on short term influences of governments and interest groups. The smaller the administration is, the more likely it is to lack resources and specialization to contribute to long term policies and economic and political stability (Jonsson 1991a).

The consequence of the size related factors is that the size of an economy affects the resources and level of social, economic and political stability upon which the quality and time-scale of economic policies and accumulation strategies depend (Jonsson 1991a).
The size related problems of accumulation in microeconomies set limits to collective entrepreneurs located in such economies. This is a challenge that collective entrepreneurs need to overcome with special measures. Due to the low level of value added and scant R&D of individual firms and limited possibilities of user-producer networks as firms and branches of industry are few in absolute terms, ineffective use of R&D resources and the risk of investing in industrial innovations is high. Furthermore, as firms tend to be very small in microeconomies, problems of crossing minimum capital thresholds in R&D and lack of marketing new products is severe.

As a consequence, due to all these constraints the need to rationalize entrepreneurship and the need to develop productive systems of collective entrepreneurship is even greater in microeconomies than in large economies. Two principles appear to be necessary cornerstones of strategies to develop such systems in microeconomies: On the one side, it has to be based on country specific know-how in order to develop firms and branches of industry that are able to enter particular market niches; On the other side, in many cases it has to be based on collaboration between domestic and foreign and/or multinational corporations in order to decrease risk and provide the small domestic firms with access to relevant components as well as marketing channels.

Due to the very small homemarkets of microeconomies they tend to be very open in terms of imports and exports compared to large economies (see Appendix). The small homemarkets tend to be small for new products and they are quick to saturate. The need to export new products is therefore great already in the early stages of the life cycle of products. As a consequence the constraints of the development of international markets is great for entrepreneurial activity in microeconomies.

**Globalization and collective entrepreneurship**

Increasing international trade is immanent to capitalist development. In the post war era the process of internationalization of capital accumulation has been characterized by higher growth rates of international trade compared to the rate of growth of individual OECD countries (OECD 1992). The first phase of high growth of international trade in that era took place in the 1950s-70s. It followed, on the one side, increased foreign direct investment (FDI) by multinational corporations (MNCs) that increasingly exploited cheap labour in Third world countries. In the 1960s American MNCs invested increasingly in Europe. This increased FDI of MNCs in Europe was followed by increased intra-industry trade between their units or plants in different countries. FDI in Europe decreased again in the 1970s due to the oil crises of the early and late 1970s (Julius 1990). On the other side liberalization of international trade followed agreements such as GATT and international organizations such as EC and EFTA. A second phase started in the 1980s with increased globalization of firms, system of manufacture and increasing protectionism in the advanced capitalist countries (Hoffman and Kaplinsky 1988 and Julius 1990). Trade between the advanced capitalist countries has increased fast and FDI in these countries has grown faster than in Third world countries (Julius), but FDI in Eastern Europe and Mainland China increased fast in this period as well (Chesnai 1988).

Global firms characterized by system of manufacture - i.e. internationally integrated firms with geographically dispersed units of design, production and marketing, but integrated by the means of information technology - have typically developed in the automobile and electronics industry, but flexible specialization for specified markets is also possible in other industries/markets as the well known cases of Benetton and fashion clothes shows.

Increasing international trade, increased FDI and globalization of firms create both new opportunities and constraints for collective entrepreneurship in microeconomies. This development creates opportunities for easier access to market niches and chances increase for small firms in microeconomies to become sub-contractors of global firms. However, the competition between sub-contractors undermines their position vis-à-vis the global firms. Furthermore, small firms have weaker position in competing with big firms as it is more difficult for them to exploit new technology than is the case with big firms. Research into transfer of technology shows as an example...
that MNCs invest more intensively in information technology than national firms and big firms are more information technology intensive than small firms (Kaplinsky 1984). In this situation the need for productive collective entrepreneurship is felt even more greatly in microeconomies because of the small size of firms.

We may conclude that the present structure of international trade is both an advantage and disadvantage for microeconomies. Liberalization of international trade is necessary for the export-oriented microeconomies and insofar as they can develop and produce high quality products for market niches, liberalization is an advantage for them. However, difficulties in exploiting new technology is a special problem as we mentioned above. The threat of becoming a low tech and low value added sub-contractor of MNCs is great.

Collective entrepreneurship and the case of Iceland

There are three islands in the Atlantic North-Arctic area that can be defined as microeconomies, i.e. the Faroe Islands, Greenland and Iceland. They are all characterized by tiny population and they all are predominantly fish exporting economies with very small and stagnant manufacturing sectors (see Jonsson 1992 for a comparison of these economies and larger economies).

We can not deal with all these three economies in this short paper and will therefore concentrate on the case of Iceland. Being a microeconomy, entrepreneurial activity in Iceland faces structural constraints that are both due to the problem of size for capital accumulation as well due to the constraints of international trade.

In terms of domestic constraints and the problem of size, Iceland is characterized by very small firms and low levels of value added (cf. table 3 above). The regime of accumulation in Iceland has been predominantly extensive for all this century. Economic growth has, on the one side, been based on increasing fishing and fish processing and flow of cheap labour from the country side to the fishing communes and the capital during the first half of the century and from the fishing communes to the capital area during the post war era. Finally increased participation of women in the labour market since the 1970s provided further cheap labour. On the other side economic growth has been based on imported technology for production both in the fishing and fish processing sectors (the F-sector) and in the manufacturing sector. As a consequence, exploiting the technology gap has been a very important factor of economic growth (for detailed analysis, see Jonsson 1991a. See also Jonsson 1992 and Jonsson and Jonsson 1992 for a short discussion).

By importing best practice technology and periodically restructuring the F-sector (importing British trawlers in the late 1940s, stern trawlers in the 1970s and freezing trawlers in the 1990s) and by periodically extending the territorial waters (4 miles in 1952, in 12 miles 1958, 50 miles in 1972 and 200 miles 1975), the extensive regime of accumulation has succeeded in securing long periods of high rates of economic growth. However, in the latter part of the 1970s and during the 1980s growth rates contracted as table 4 shows and the five years period since 1987 has been the longest permanent recession since the war. R&D has never been important for entrepreneurial activity in Iceland as expenditure on R&D has always been less than 1% of GDP (Jonsson 1991). This is to be expected in an economy which is predominantly characterized by an extensive regime of accumulation.
Table 4.
Real Growth of GDP per Capita

<table>
<thead>
<tr>
<th></th>
<th>Denmark</th>
<th>Germany</th>
<th>Iceland</th>
<th>UK</th>
<th>USA</th>
<th>OECD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1977</td>
<td>1.3</td>
<td>3.1</td>
<td>7.9</td>
<td>2.3</td>
<td>3.4</td>
<td>2.9</td>
</tr>
<tr>
<td>1978</td>
<td>1.2</td>
<td>4.1</td>
<td>8.5</td>
<td>2.7</td>
<td>4.0</td>
<td>3.3</td>
</tr>
<tr>
<td>1979</td>
<td>3.3</td>
<td>4.1</td>
<td>4.1</td>
<td>2.7</td>
<td>3.6</td>
<td>2.3</td>
</tr>
<tr>
<td>1980</td>
<td>-0.6</td>
<td>0.7</td>
<td>4.8</td>
<td>-2.3</td>
<td>1.8</td>
<td>0.9</td>
</tr>
<tr>
<td>1981</td>
<td>-0.8</td>
<td>2.8</td>
<td>-1.4</td>
<td>1.2</td>
<td>1.2</td>
<td>0.9</td>
</tr>
<tr>
<td>1982</td>
<td>3.1</td>
<td>-0.9</td>
<td>0.7</td>
<td>1.8</td>
<td>3.6</td>
<td>-1.0</td>
</tr>
<tr>
<td>1983</td>
<td>2.6</td>
<td>1.9</td>
<td>-5.1</td>
<td>3.6</td>
<td>2.9</td>
<td>2.0</td>
</tr>
<tr>
<td>1984</td>
<td>4.4</td>
<td>3.2</td>
<td>-0.4</td>
<td>2.0</td>
<td>6.2</td>
<td>4.0</td>
</tr>
<tr>
<td>1985</td>
<td>4.2</td>
<td>1.9</td>
<td>2.5</td>
<td>3.3</td>
<td>2.8</td>
<td>2.8</td>
</tr>
<tr>
<td>1986</td>
<td>3.5</td>
<td>2.2</td>
<td>6.6</td>
<td>3.7</td>
<td>2.2</td>
<td>2.3</td>
</tr>
<tr>
<td>1987</td>
<td>0.2</td>
<td>1.4</td>
<td>7.3</td>
<td>4.5</td>
<td>2.5</td>
<td>2.7</td>
</tr>
<tr>
<td>1988</td>
<td>1.1</td>
<td>3.1</td>
<td>-2.4</td>
<td>4.0</td>
<td>5.5</td>
<td>3.7</td>
</tr>
<tr>
<td>1989</td>
<td>0.8</td>
<td>2.2</td>
<td>-2.5</td>
<td>2.0</td>
<td>1.8</td>
<td>2.5</td>
</tr>
<tr>
<td>1990</td>
<td>1.6</td>
<td>2.8</td>
<td>-1.0</td>
<td>0.5</td>
<td>-0.1</td>
<td>1.4</td>
</tr>
</tbody>
</table>

Source: OECD 1992

Entrepreneurial activity in Iceland has predominantly been in the form of investment in imported technology in the F-sector and collective forms of entrepreneurship have especially important. As the financial system in Iceland has during the post war era been dominated by state-banks and investment funds controlled by the state, state entrepreneurship has been predominant form of entrepreneurship. Investment in the F-sector has predominantly been directed through the state banks and state dominated investment funds. Furthermore, the state is the prime motor of R&D activity in terms of expenditure as we mentioned above. In terms of performance of R&D, business enterprises perform around 10-15% of R&D activity measured in person-years (Jonsson 1991a).

The administration in Iceland is very small in absolute terms and because of great political instability in terms of duration of governments and unstable support for political parties in parliamentary and municipal elections, state entrepreneurship in Iceland is characterized by ad hoc policy formation rather than long term accumulation strategies. Basically this appears in huge investment peaks in the F-sector that last for few years while new technology is imported and new investment peaks do not appear again until after couple of decades when the technology is felt to be obsolete. Furthermore, due to low level of concentration and centralization of capital in Iceland there has not developed a powerful network of firms and/or organized interests that would be able to take over the role of forming a long term accumulation strategy (Jonsson and Jonsson). As a consequence the structural conditions for long term entrepreneurship is lacking. In 1990 the employees of the administration of the central state were 4255, excluding employees of the municipalities. The elite at policy making level of the administration was approximately 51 persons (The Economic Institute 1992 and Jonsson 1991b).

The lack of structural conditions for effective collective entrepreneurship leads to a national system of innovation in Iceland, i.e. the organization level of R&D expenditure and its objectives, which is weak in terms of R&D expenditure and in terms of being slow to shift to the new technoeconomic paradigm of information technology and developing innovative industries on the bases of this new technology. Icelanders need to strengthen the structural base of collective entrepreneurship in Iceland if are to develop their regime of accumulation from being a technology dependent economy and become a high technology exporting country by means of exploiting local know-how in the F-sector and energy sector.
References


Cotton, J., 1992, Understanding the state in South Korea in *Comparative Political Studies* Vol. 24 No. 4: SAGE Publications.


Economic Institute (various years) *Atvinnuvegaksbyrslur*, Reykjavik: The Economic Institute.


Huang, C., 1989, The state and foreign investment; the cases of Taiwan and Singapore in *Comparative Political Studies* Vol. 22, No. 1: SAGE Publications.


Nordic Council of Ministers (various years) *Yearbook of Nordic Statistics*, Nordic Council of Ministers: Copenhagen.

OECD (various years) *Economic Outlook*, Paris: OECD.


