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INDUSTRIAL POLICY**

by
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1. The Problem

The theory of industrial policy making is a natural part of a more general theory of market regulations (or market imperfections) covering its institutions and what link them together in the market process. We have to understand the policy maker, his motives and the body of interests that he represents. We also have to understand the recipient of policy action - the firm - and how its behavior can be modified to suit the policy maker. This paper is concerned with the latter aspect although it recognizes - as a matter of realistic convenience - that policy bodies operate according to their own utility functions which should not automatically be associated with the public interest.

It is a fairly well established fact that the long-term rate of return determines the value growth of a firm - if currently generated resources can be reinvested at that same rate of return. This paper recognizes a firm that is solely concerned with pursuing such long-run profit objectives of its own.

Maximum value growth of a firm is not synonymous with maximum output or employment growth of the same firm or industry. Since output and employment are typical targets of national policy makers a conflict between business objectives and national policy targets may exist.

This paper investigates - as a first area of policy concern - under what circumstances a micro-macro targeting conflict does exist.

We may think of socially desirable target modifications like keeping unemployment low or nationalistic target modifications like maintaining a viable defense industry or beating the Americans in sophisticated electronics. Whatever the reason for the micro-macro targeting conflict it manifests itself as modifications of those targets the firms would be aiming at, if left on their own. Lack of competence, lack of resources or pure profit motives have been cited as reasons in the debate on why business targets have to be modified. These have also been the most frequently voiced reasons for industrial policy action.

Most business organizations are complex structures that are guided by a group of people (owners and managers) more or less devoted to the profitability target and supported by an information-enforcement system through which the business organization is run. This system connects the group of decision makers outwards with an uncertain external environment and inwards with an (also) uncertain or incompletely known internal organization. The information system determines the efficiency by which the organization can be influenced (guided), and the efficiency of business target fulfillment.

The second area of policy concern that we discuss, hence, has to do with the means whereby and the places where the business organization can be influenced by policy makers to achieve a modification of business targets to meet national policy targets.

Industrial policy making has always been a loosely defined concept. It is concerned with affecting the structural adjustment process and as such conventionally contrasted with stabilization policies, that takes structure more or less for granted. By such a standard, industrial policy makers appear to be engaged in most

kinds of economic policy except the traditional fiscal and monetary repertoire.¹ This somehow means that industrial policy making is concerned with getting the economic system and its prices and quantities in a nice balance that is compatible with a long-term stable growth rate compatible with what is politically desired.

For the time being we will leave the term loosely defined as that. Part of our problem in what follows will be to narrow it down, make it more concrete and relate it to the decision machinery of a business organization.

¹ Of course no short-term policy or activity is one hundred percent neutral vis-à-vis the long-term development.

2. The Target Dichotomy

Maximum value growth of the firm conventionally defines the first priority of firm management. Maximum value growth means the maximum rate of creation of economic resources. For a whole industry this tends to be associated with maximum economic growth and employment in the longer term. Hence, industrial policy makers would not appear to be inclined to interfere with the market process or firm management to correct business targets at the expense of long-term profitability, except for three reasons:

(1) There exist other, feasible organizational solutions that achieve at least the same profit performance, and an improved performance in other socially or politically desired dimensions

- a) between firms as improvements in market performance (market approach)
- b) within firms as improvements in management performance (positive approach).

(2) There exists another micro allocation or another timing of value growth that achieves at least the same long-term growth in the value of business resources and an improved performance in other dimensions.

Can profits be sacrificed now to the benefit of social targets without diminishing the present value of the firm to its owners? For government industrial policy makers to achieve such ends they have to possess a superior overview of the entire industry situation. We call this the planning approach.

The first policy option is concerned with improving either the ways by which the economy is organized and run - antitrust policies belong here - or the ways firms are operated. The latter was, in fact, an explicitly stated objective for the forming of the

Swedish state operated business conglomerate (Eliasson-Ysander, 1981). To be successful it requires that the necessary industrial competence resides within the policy forming body and/or that it has access to it. Such "static", one shot efficiency improvements - if feasible - shift the production possibility frontier - of the economy or the firm - outwards, everything else the same.

The second policy option has to do with improving the dynamic efficiency of firm operations or with the time preference of the nation.

One has to recognize that internal "structure improving" operations, defined as above, belong to the normal operating repertoire of firms, conglomerate business organizations or industrial groups. Continuous internal restructuring is the normal means to increase productivity and to attain profitability targets. So the new aspect brought in here is that new solutions can be attained that cater for variables that firm management tends to neglect, but without violating the basic business targets.

(3) The third reason for policy interference is different and has become a focal point for policy concern during the stagflation experience of the seventies. Due to exogenous environmental changes a firm may suddenly face a factor and product price combination that

- a) it cannot cope with in terms of maintaining its rate of return target and/or
- b) makes it opt for a factor output combination that means less output growth and less employment.

If so, the government may want to change the adjustment process of the firm by slowing it down and/or correcting its development path to be more compatible with policy objectives.

This may be at the expense of owners, or the owners may be compensated for the additional costs incurred in adopting a modified set of targets, so that its value growth or profit objective will not be impaired. We call this the subsidy approach to industrial policy making. In the post 1973 economic crisis among industrial nations such policy ambitions have become widespread to hold down unemployment.

This paper discusses and identifies the means by which such alternative solutions can be achieved.

Many principal discussions of this problem have already been published. On this score, we offer very little new to the existing literature. The contribution of this paper lies on the empirical side, in that it responds to the question HOW to carry out policies.

This means that we have to identify where exactly the firm information and decision systems "open up" for policy influence. To do so we first have to describe the nature of the modern manufacturing firm - which differs considerably from the concept used in economic theory - then proceed to identify its administrative guidance systems. After that we can discuss the options open to policy makers. Finally, we return to the original question, namely, are there alternative environmental, management and/or policy regimes that perform better than the systems implemented today are capable of? We discuss options and experience under the headings; the positive, the subsidy, the planning and the market approach to industrial policy making.

3. The Modern Firm¹

This paper is mainly oriented towards the large firm. There are three reasons for this. Sheer numbers keep policy bodies from interacting with more than a small, select group of large firms. The large firms wield financial power. They can honor industrial policy contracts with the government. This little group often dominates industrial output and employment and the opinion is frequently voiced (see e.g. Bray, 1982) that government industrial policies should be run through these large firms and their networks of subcontractors. This problem we will return to and also to the small firm, or the new entrant, in the capacity of being a guardian of the competitive vitality of the market environment of large firms.

The modern manufacturing corporation internalizes more or less of the following six activities, namely those of:

- (1) an innovator, including the management of R&D activities
- (2) an investment & long-term financing institute
- (3) a bank
- (4) an insurance company
- (5) one or more production entities
- (6) a marketing and sales institution (a trading house)
- (7) an educational institution.

A list of other functions can also be added like purchasing, tax analysis, public relations and the function that is perhaps most important - and growing - in the context of policy making; the government relations function.

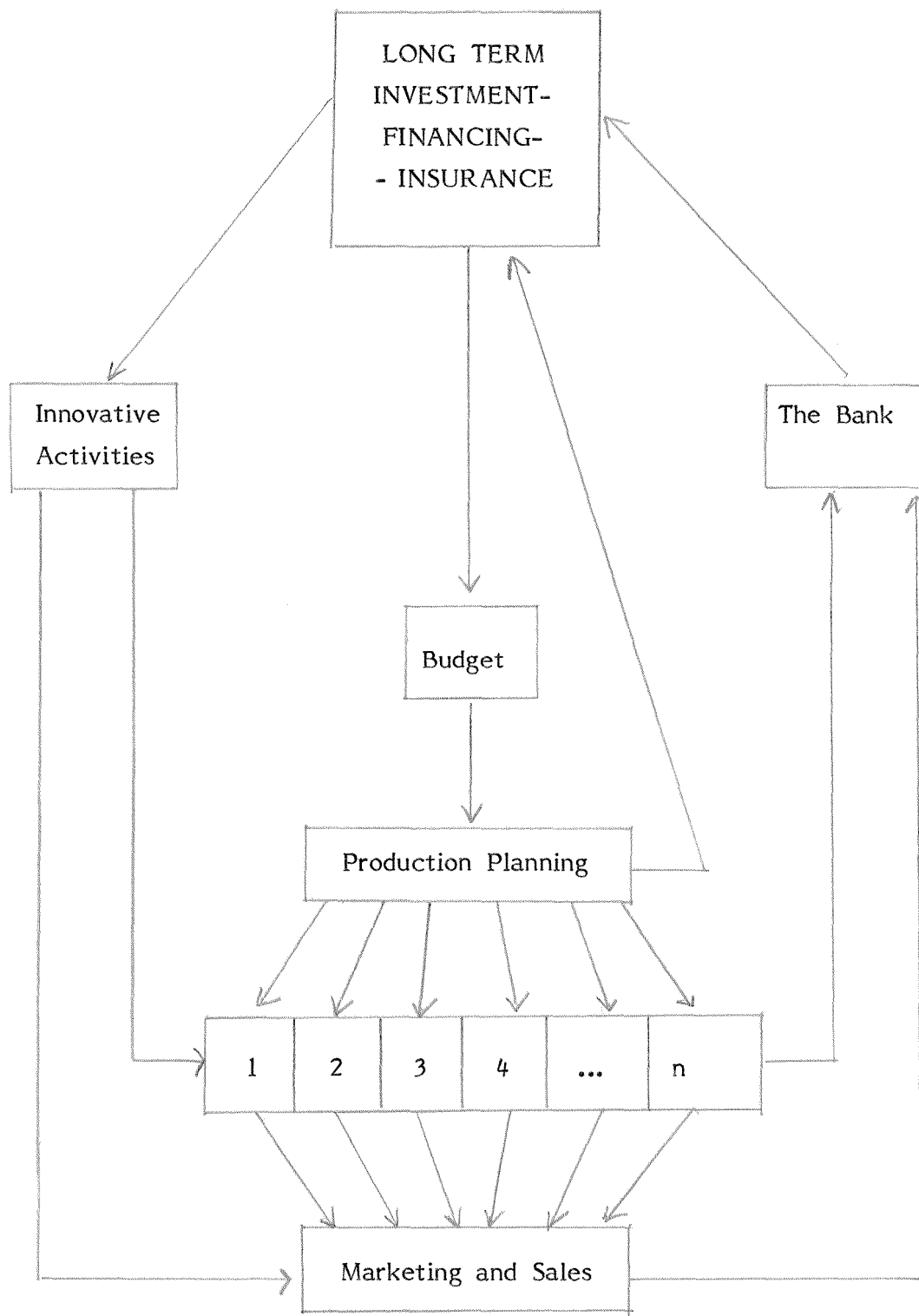
¹ Many of the empirical results reported in what follows draw on current micro econometric research at my institute. This includes a large project on "Information Technology, Productivity and the Management of Large Business Organizations" in progress and my earlier interview study on Business Economic Planning (Eliasson, 1976). I have tried to keep references to our own research down to a minimum but several conclusions require explicit references to back-up evidence.

In the small "one plant, one firm" business unit (the classical concept of a firm in economic theory) physical hardware production normally dominates in terms of using up resources. Other functions increase relatively with size, and in the large Western corporations they together probably use up more, or much more, than 50 percent of currently applied resources within the company. I know large, internationally known firms where the figure is just about 10 percent. The point I want to make here is that the "service content" of value added in manufacturing is increasing rapidly across the firm population in an advanced industrial economy, and that it is already a dominating feature in sophisticated technological and/or large firms (Eliasson, 1982). In fact, the 25 largest Swedish manufacturing firms should be characterized as large international marketing institutions, rather than production organizations. Such a factor input structure carries strong and new implications for the effects of policy making.

The seven administrative functions listed above differ enormously in character. They are vested with different management groups within the firm. They are normally not well coordinated neither in time nor in "function". The practical reason for this is the sheer difficulty of combining and coordinating activities that are extremely diverse in nature and talent requirements. Contrary to popular opinion in business administration literature a decade or so ago, there is no corporate model available for this purpose except in the minds of a few high level executive people. Their talent in this respect defines their management competence.

The seven administrative functions are hierarchically layered and Figure 1 gives a rough idea of their ranking. The existence of these different activities within the firm very much determines the nature and behavior of the modern manufacturing corporation as something very much beyond a well structured production process. In large western firms like Siemens, Philips or Electrolux the various financial functions isolate the interior firm activities, like production and investment, from environmental disturbances,

Figure 1 Activity structure of a modern firm



including policy making on the part of governments. The effects of industrial policy making that we will be discussing also differ significantly depending upon which objectives and through which management channels policies are implemented.

We have so far regarded the modern firm as if it were a given entity, composed of a fixed set of organizational units and functions. In the long run this is also a clear misrepresentation of a firm, and especially of a successful firm, the inner life of which is extremely "dynamic". Long-term growth and survival of a business organization always is accompanied by a continuous restructuring of the nature of productive activities within the firm. Part of this shows up as a consequence in the relative growth of the various activities shown in Figure 1, part of it in the form of exit and entry of production entities from and to the firm. Most of this structural change simply alters the nature of the activities, and hence does not appear explicitly in this classification scheme.

4. The Administrative System of a Modern Firm

The large western business unit can very much be seen as a bundle of production plants held together by an investment institute, a bank, an insurance company and a marketing organization. In fact, all activities except the physical production process are administrative devices that allow the firm organization to beat the market in terms of efficiency and to expand in size (Coase 1937, Arrow 1974).

Without the superiority of these administrative coordination systems one would expect each production plant to be on its own in the market producing and selling. The rationale for the large western firm rests on the efficiency of such management information and enforcement systems relative to the market. We have to pass some judgement in this paper on the extent to which the existence of some business organizations (like large conglomerates or international firms) depends on efficient management systems or inefficient market regimes. If the profitability of atomistic action at places within the organization is higher than coordinated action this would mark the limit of the firm organization and signal that these marginal operations are ripe for exit - and vice versa. Hence, at those boundaries the coordinated group will start to leak funds or to have difficulties in attracting funds. In fact, the financial boundary defined and determined as such is the proper foundation of a theory of the size and growth of the firm (Eliasson, 1976, pp. 231 ff.). However, if the capital markets are highly regulated and/or undeveloped and a below market interest rate is artificially maintained (which frequently seems to be the case (Teigen, 1976)), and if large financial units are favored in their ability to get access to long-term external sources of funds, then one could easily envision the growth of colossus and profitable financial conglomerates which are internally inefficient.

Similarly speaking, large economies of scale in distribution and marketing can often support an inefficient or obsolete production

system. A few highly profitable products can cover internal loss operations and less successful endeavours in other areas for a long time. Having said this one has to recognize that the interior of a large firm often hides major inefficiencies of the kind we expect to follow from some forms of industrial policy making. The reasons may be the same as those for policies; not to reduce unemployment too fast. For many large companies the image of being a good employer is a perfectly rational part of its long-term profit oriented strategies.

Any industrial policy action on the part of a government has to be empirically informed about these matters to be successful. In fact, policies have to be implemented either by affecting the business environment or through direct incentive or enforcement measures applied to the firm management system.

Before we discuss the contact surface for policies (the policy instrumentation) we will briefly outline some features of the various administrative systems of a modern firm. First, some general comments about the management system typically in use are in place. With growth, with size and with long-run survival of the firm, successful, innovative activity and a constant restructuring of the internal life of the firm seem to be a must (Eliasson, 1980). These are badly defined activities which are difficult to predict and do not lend themselves to routine operating management. The larger the business operation, the more important that such activities do not drown in day-to-day routine management.

Two features appear to be important ingredients in the design of successful planning and control systems (Eliasson, 1976):

- (1) An efficient procedure to delegate management of routine operations downwards in the organization in order to free top management for strategic decisions.
- (2) An efficient way to set reasonable and enforceable targets top down on the basis of incomplete and unreliable information.

The organization is often streamlined accordingly: There are as few targets as possible, responsibilities are geared to negotiated agreements around those targets and targets represent systematic breakdowns of the dominant profitability objective.

The normal state of affairs, even in large companies, however, witnesses top management as heavily involved in day-to-day operations, strategic thinking often being delegated to staff "strategic planners" who are typically academic and non-communicative with operations. That arrangement works as long as nothing unexpected occurs in the environment of the firm.

Well designed management systems separate process from innovative management and places the former on a grid of administrative routines that respond with "flashing red lights" if something is off routine. The annual budget process is the most important administrative routine in this context. It generates a reference set of measures or targets to compare current performance with. Most large western companies, and most typically the large American companies, have instituted automatic "flashing" routines when the company is "off the budget" in some significant way. Of course, these targets, and the whole budget, are made up solely on the objective function or the value system of the firm and its owners. The value system of a typical, well-run business organization is monolithically concerned with profitability. It is supreme in its disregard for, say, the employment consequences of its action. As little as possible of inputs should be used for the production of one unit of output. This has to be recognized when we discuss the potential of industrial policy action. It is important to ask to what extent interference with these objectives impairs the overall efficiency of firm management and profitability.

The larger the organization the more distant management from the physical action going on and the more important the quality of the measurement system used to learn about what is going on and to enforce corporate objectives from a distance.

In terms of Figure 1 the long-term (1) and (2) activities are not subjected to routine management except in the sense that a "costframe" has been allocated to them. The rest is routine management that is captured by the short-term budgeting process.

However, even if top management time has been successfully freed from routine day-to-day operations it is an entirely different question whether there is talent enough at the top for the entire business organization to be successful on the innovative side and in the long-term strategic decisions.

The key to successful delegation is an efficient target and enforcement system that top management can have confidence in. This, in turn, requires that targets are simple and monolithic, that measurements are reliable and interpretable, and that targets can be placed very close to what is feasible, perhaps with an extra effort. We note again a potential conflict with industrial policy making aimed at attending to social variables, i.e., adding new targets and making the guidance system more complex.

Simplicity in goal formulation, to avoid a complex analytical and unreliable planning apparatus that would lack significant information inputs of sufficient quality and precision when they are needed, are key notions in large scale management systems. The solution is delegation and lower level autonomy down to the limit where simple goals (targets) can be enforced.

The necessity to simplify means that administrative systems used in firms differ considerably in "philosophy". One extreme version is not to place any restrictions on what the various profit centers do as long as minimum profit standards are passed. The other extreme is the top-down, bottom-up agreement on a detailed plan that is closely monitored by Corporate Headquarters in much of its detail by an efficient reporting against the plan system. Firms occupy much of the range in between these extremes. Electrolux, for instance, is run by the less detailed, profit orient-

ed, decentralized method of the first type. The latter, bureaucratic system has often been typical of the large U.S. corporations (Eliasson 1976, chapter X. Also see Dearden, 1972).

It appears that the less detailed but more flexible administrative system has proven most successful during the messy market conditions of the 70s. On the same grounds, the bureaucratic U.S. systems have been criticized for being rigid and unresponsive to needs for structural adjustment etc (Hayes-Abernathy, 1980). For our purpose we take note of the different opportunities to influence the business organization depending on which system it operates on. The bureaucratic system is more amenable to industrial policy action than its opposite for the simple reason that the latter is not even set up to allow its own management to guide it onto paths that takes it away from the profit target. It is perhaps natural that industrial policy bodies and unions often favor organizations equipped with a bureaucratic management order.

5. Target Setting and Efficiency

Target setting on the basis of insufficient knowledge, hence, is the key "art" of large scale management. The interior structure of a large firm is unknown to those who manage the firm to the extent that they cannot participate in, guide or directly monitor the "how to do things" process (Eliasson, 1976). Rather, rules of thumb or proxies are resorted to in more or less sophisticated ways (Cyert-March 1963, Winter 1964, Simon 1959, 1979). By this I mean that one abstraction applied throughout the theory of planning (Heal, 1973), namely that the necessary information for an informed decision can be gathered through a sequence of top-down bottom-up exchanges of information, is principally wrong. The abstraction is wrong in the sense that it leads to the wrong policy conclusions on firm behavior if used as presented in literature. There are two reasons for this; first lower level management by definition always possesses superior and more detailed process knowledge than higher level management. Hence, there is always a vertical bargaining relationship in a firm and information will normally be withheld locally because this leaves more autonomy there.

Second, at some limit the capacity to coordinate, analyze and use information ceases to be efficient because of sheer complexity and required time. Hence, a reference, most efficient solution cannot be determined in principle and no top firm management operates on the premise that such a state is attainable. I argue on the basis of several empirical inquiries - my own in particular - that this limit occurs at a quite early stage and that business organizations as a rule are replete with pockets of considerable slack. The existence of this slack as well as its extent is known to top management, but not its exact localization within the organization (Eliasson, 1976). There is no central knowledge from which to calculate a reference from which to measure the potential efficiency improvement. Hence, both static efficiency and the idea that firms minimize costs by searching across a well-known interior structure has to give way for some more pragmatic way of relating actual performance to something that is "better".

The solution is to set tough but reasonable targets on the basis of previously achieved performance. I have called this "Maintain or Improve Profit (MIP") targeting (Eliasson, 1976, pp. 236 ff.). Targets that are too high or impossible to achieve are not taken seriously. If targets are below what is feasible, performance soon adjusts downward. The art is to be just right without knowing why. A good reference for a minimum target is what has been achieved before. This and a little bit more should be reasonable to exhort from the organization, if slack of some magnitude exists within it. How to achieve it is left with the lower level management. If a simple, distant enforcement system can be organized within a firm, then top level management will be relieved of much knitty-gritty control work and worrying. Systematic use of comprehensive budgeting, targeting and control devices is the key tool in this part of the management process. I would argue that most large western firms have more or less adopted central management systems of this kind during the 70s. U.S. firms were leading the way already in the 60s (Eliasson, 1976).¹

¹ It is obvious already here that these are very delicate balanced systems. Explicit, quantified trade-offs between target variables are not possible if top level management has to be involved, not even trade-offs in timing. Hence, targeting is restricted to short-term operating management. Long-term decisions are organizationally separated.

If new target variables are added, the targeting system breaks down for the same reason. For instance, if government industrial policy people want to raise or pay for the attainment of higher employment targets at the expense of profitability and if this policy is fed through the central monitoring system, it invariably impairs the efficiency of the targeting system, and hence lowers the global "static efficiency" of the entire firm.

Similarly, if other support to ailing businesses - like subsidies - is fed through the central monitor, it softens up the targeting function. Reasonable profit targets can be achieved anyhow because of subsidies. Top-down pressure diminishes and bottom-up willingness to comply diminishes, if it is known that generous crisis relief will be administered anyhow.

There is one way to intellectually salvage the classical concept of a planned system as an information exchange device as developed on the basis of Walras' general equilibrium concept by Lange (1936-37), Marglin (1969), Weitzman (1970), Malinvaud (1967) and many others. This possibility should be mentioned here, but then be rejected since the authors mentioned conceptualize a centrally fully informed decision as possible in principle. Use of such arguments would lead to misconceived policy conclusions.

In an abstract way the MIP type target setting device that we discuss could be seen as a time consuming (iterative) exchange of information. Top management imposes a rate of return requirement. Lower level management respond "in action". "Central planners" learn from actual performance and adjust targets and so on. If time stops and nothing else changes this process would "eventually" lead to an optimum solution. In practice this is normally an annual procedure. In some large American companies it is partially repeated by quarters. The classical planning cycle, on the other hand, is a hypothetical, static (timeless) device. Central planners offer a price vector and lower level management come up with hypothetical, but true, performance data on their (known) production functions. Central planners change the price vector etc. until markets have been cleared or a solution has been reached.

In the live firms that we are discussing such a negotiating sequence hardly even approaches a solid foundation of fixed facts to be fed into the super master plan at the top. Rather it is likely that if top management pushes too far in being knowledgeable about lower level affairs, lower level responses and/or higher level deficiencies in using the information leads to a lowering of overall corporate performance.

Hence, improving the general level of knowledge in a (business) organization means a marginal improvement up to a point, and that point strikes the optimal combination of delegation and centralization of decision making.

6. Efficiency and Productivity in a Modern Firm

A great controversy exists over the question why productivity growth has slowed down during the 70s. Practically all debate and empirical analysis has been carried on in terms of aggregate growth accounting which leaves few openings for explicit policy discussion.

Growth accounting is static in nature. It relies on stable aggregation functions which require all requisites of a static equilibrium. Within such a framework efficiency concepts will be in terms of departures from static efficiency.

Using a different set of glasses - a dynamic micro-to-macro economy with interacting price and quantity structures - very different results on the nature of productivity change appear. Essentially one can demonstrate a very large organizational factor behind total factor productivity growth (Carlsson, 1981). The technological factor fades into insignificance as the measurement grid is made finer and finer (Eliasson, 1982). Restated somewhat, new investment and new technologies do not yield productivity increments per se. Only if entered into the production process in the right way do productivity increases occur. In the right way always means being accompanied by organizational change between sectors, between firms, and within firms.

Within firms "in the right way" is synonymous with management competence. If the necessary organizational adjustment does not occur, new investment and new technologies do not yield productivity improvements. At the sector level this is nicely illustrated by comparing the manufacturing sectors in the Netherlands and in Sweden during the 70s. In the Netherlands, manufacturing investment ratios declined and employment declined very much after 1973. In Swedish manufacturing, investment ratios increased considerably for several years and employment decreased only moderately. Despite this, manufacturing output grew at a rate of 1.4 percent per year from 1973 through 1980, while it declined in

Swedish manufacturing. The reason for the relatively good industrial performance in the Netherlands - among other things - was a reduction in investment in heavy, basic industries, notably heavy chemicals. On the other hand, the increases in the Swedish investment ratio was in basic industries, notably in the government operated basic industries, that later turned into crisis industries¹ (Fries, 1982).

At the shop floor level several case investigations reveal how new, sophisticated machinery has been installed at the wrong place or at the wrong time in the production flow with no productivity increases. At the same time significant productivity increases have often been achieved simply by changing the production flow patterns using the same equipment (Eliasson 1981, Nilsson 1981).

If this is correct, which is our maintained hypothesis, the ways industrial policies are enacted become crucial for the policy results, not the expenses incurred.

¹ It belongs to the story that this investment boom in Sweden, stimulated by the government, was praised by the OECD at the time.

7. The Innovative Function

The innovative function of a company is the most problematic one when it comes to management. This activity is there by definition to change the business organization in ways that cannot easily be planned ahead. All short-run functions 3 through 6 (in Figure 1) are operated according to well structured targets and rules of thumb to achieve static efficiency each period within current capacity constraints. The investment function is similarly organized to move capacity constraints outwards on the basis of perceived market growth rates in prices and quantities. The innovative function is fundamentally different. It aims at changing the rules and roles of the other functions if need be, i.e., creating a larger and more complex body of targets and decision rules that incorporates the routine set of rules but that also allows top management to see how and to leave the current operating domain of the firm.

R&D activities are normally subject to a cost budget and organized in many different ways and at different levels in large companies. It appears (Eliasson-Granstrand, 1981, 1982) that most of the internal R&D activities either mean search for external technological information or routine development activities (like designing a new automobile) or are close to the commercial stage, like getting from the first prototype into commercially viable volume production. Much of such "innovative activity" can be incorporated in fairly tightly run management systems.

A second innovative activity has to do with the combinatorial talent exercised in restructuring existing activities, finding new organizational solutions to old problems, buying and selling parts to and from the firm. Success here requires both talent in seeing the solutions and capacity to enforce change. This is practically always a top management task with little formalized management attached. This is the typical activity top management should have both talent and time to pursue, and it appears - as mentioned - that efficiently run management systems are designed to achieve just that (Eliasson, 1976, Ch. XI).

A third innovative function that typically belongs to the top executive echelons has to do with the current reshaping of the firm organization. Part of this involves restructuring management systems as such. Part of it means changing the content and limits (size) of the organization. Mergers and divestment of parts of the firm into a new and commercially more viable entity have been characteristic activities of many successful firms during the seventies. Electrolux corporation, the world's largest producer of vacuum cleaners, is a case in point. It has acquired Facit (office equipment) and Husqvarna partly to obtain additional production capacity and partly to achieve market dominance (e.g., kitchen equipment). Its negotiations with the ailing AEG group of West Germany in 1982 further illustrates this strategy. Cooperation arrangements in technology is another example, as for instance between Renault, Peugeot and Volvo in 1971 in developing and building an automobile engine, between Lancia and Saab-Scania in developing a new automobile and between Ericsson and Philips in installing a new digitally based telephone system, e.g., in Saudi-Arabia. Such cooperative deals that involve legislation and transnational contracts are always open to national policy designs, especially when it comes to preventing agreements. The U.S., European "conflict" over the Soviet pipe-line is a case in point, and it appears that companies are seldom well prepared to cope with such "unexpected" interventions on the part of national authorities etc. (Jagrén-Pousette, 1982).

The main top executive job, finally, is concerned with shaping the right corporate culture. It appears again that the increasing extent of government direct involvement in firms affects this function in many ways. It may be difficult, for instance, to push hard for strict profitability achievements and tough internal reorganizations in ailing companies, when employees know that generous government subsidisers are watching on the side of the road (Eliasson-Ysander, 1981).

8. The Investment Decision

The investment decision within an existing production activity is a well structured procedure subjected to a trail of formal administrative routines. Investments (in hardware) climb to the top for approval in order of size and financial demands. A screening of financial demands takes place at the corporate top. The principles behind that screening is a top level priority. This is illustrated by the fact that major investment decisions and mergers are always prepared outside the strategic planners department and enter formal plans as a fact (Eliasson, 1976). An important fact to consider in the context of industrial policy making is that major projects seldom become public before being decided. Neither central policy, nor other, bodies will ever have a chance to argue with firms for target changes on the basis of explicit corporate plans. This is not the way plans are drawn up or used in well run companies.

Literature and the management education process, however, abound in formal rules for monitoring the investment and growth decision within a firm through a formal planning procedure. The message is that criteria are there to stem a steady flow of ideas from below and to constrain spending on capital account within a financial frame - the investment budget. Thus - and this has been a basis for government policy making throughout the industrialized world - if that financial frame could somehow be expanded, more investment and faster economic growth will follow. Means to achieve this have been accelerated fiscal depreciation, investment funds systems, regulated access to capital markets or low interest rate policies.

9. Industrial Policy Making

a) Industrial Policies in a European Perspective

The 50s and the 60s were characterized both by high and increasing growth rates among western industrial countries and by a gradual dismantling of restrictions to free international and domestic trade. A slow development in the opposite direction has prevailed since the beginning of the 70s. It is undoubtedly so that fast, aggregate economic growth facilitates and eases the social burden associated with the fast structural change that always accompanies growth. Hence, so goes the argument, fast structural change cannot as easily be accommodated when growth is down, since there are no job openings for all those people that loose their jobs. The argument appears compelling, but it misses the simultaneity of the economic process. Growth makes it politically easy to accept structural change and to dismantle regulations and restrictions to trade. But the causality also runs the other way; increasing trade stimulates economic growth. Hence, the very fact that a reversal of the positive process of the 60s has been initiated is very unlucky for the industrialized world. It is reinforcing, and once started the international cooperation needed to stop it may take decades to organize. It is very difficult to argue or demonstrate convincingly that concerted economic policy action will produce the desired end result, and it won't immediately. There is a considerable time lag, as there was to reverse the growth momentum.

In this dynamic process of the 70s some countries appear to have been more exposed than others; those with a large proportion of basic industries or old, outmoded capital, and those with short, employment oriented political horizons. The two political handicaps seem to come together with extra force on the European scene, where the structural adjustment need in the wake of the so-called "oil crisis" has been large, and the political ability to do something, or allow the markets to work, is smaller than appears to be the case in the U.S. and (probably) Japan.

Deindustrialization has been a catchword in the policy debate, the implication being that industries representing the public conception of industry ("Smoke stack industries") are contracting or closing down. New industries, on the other hand, tend to go undetected for a long time, barring spectacular activities within the information industry, which for many does not belong to the popular concept of a real manufacturing industry. Multinationals is another industrial phenomenon that poses a threat to the national state and its policy makers through their ability to choose location and activities from a global, rather than a national menu.

With a nationally confined objective function of policy makers and a severely restricted, or incomplete, knowledge of the ongoing industrial transformation process "fear of the markets" and an inclination to preserve past industrial structures will be the typical trait of political ambitions. The first nationalistic factor is there by definition. The second conservationist tendency follows logically from the nature of industrial action, being typically a massive ongoing search process for new combinations and solutions with a high failure rate as a normal characteristic. To be well informed will be a very unusual state in a game where structural change mostly consists of exit and entry of institutions or parts of institutions. To be uninformed and unaware will be typical of those not directly involved in the action. There is very little that can be done to improve the situation for central policy makers in this respect. This circumstance perhaps explains the strategic orientation of most industrial policies enacted in most countries so far, to slow down change and to attempt reconstruction of institutions from within, rather than through the creation of new activities and the scrapping of old ones.

European industrial policies also originated in attempts to save the old basic industries first to suffer from new competition from other parts of the world, and from the wage driving (cost driving) effects of new, fast growing industries that were able to

absorb higher factor costs. There is no mention of an "industrial policy" in the Treaty of Rome - the term wasn't invented at the time - but structural policies directed towards agriculture and competition - in particular - are presented. At least in Scandinavia we find a parallel discussion of so-called "selective policies". Even more important, perhaps, was the creation of a common business strategy, or a supranational management body in the coal and steel sectors already in the 1950s (Jaquemin, 1979, p. 35).

A parallel and also typical evolution of industrial policies on the European scene was to encourage, stimulate or subsidize industrial research and even operate detached industrial research centers. The European Atomic Energy Commission is an instance of this. The main ambition this time has been to promote industrial innovation and competitiveness.

b) Policy Approaches

Industrial policy making among the various industrial countries has departed along four widely differing paths. One positive approach has been concerned with supporting and stimulating new, technological industrial activities by direct involvement in the How process in companies. A second policy path trodden is the subsidy way. It has been directed towards either reorganizing commercially failing businesses or simply, perhaps unintentionally, prolonging their lives in order to attend to certain social variables, like employment.

A third industrial policy approach is the classical planning approach. The central policy agency may see itself as possessing a superior overview of the business environment and, hence, should interact with all the firms to achieve an orderly and efficient group action. The theory behind this is that improved information and overview make possible an analytically explicit optimal solution. This is the way French planning has often been presented (Malinvaud, 1967). In Japan, MITI has been regarded as combining the third planning task with the first positive one of stimulating innovative activities.

The fourth and final industrial policy approach is that of non-interference in the internal management process of firms. Using different terminology we would call the first three kinds of policy mentioned selective, and the fourth general or market oriented. Policy action this time is only through the business environment of the firms, either by making it more competitive (free trade, antitrust etc), by building the right infrastructure (schooling, transport) or by providing the right cultural climate and political preference structure (stimulating entrepreneurial attitudes, honoring property rights, etc.).

Swiss, U.S. and Danish industrial policy making may be roughly said to belong to this latter category (Eliasson-Ysander, 1981). Swedish industrial policy also did to the end of the 60s, then diverted onto an interference track.

The most convenient way to discuss and evaluate industrial policy action is to deal with each of the above four types of policy in turn and to relate the policy specification back to the firm management system as described above. When evaluating the efficiency of policy action we will emphasize the view stated above, that productivity change at all levels of aggregation down to our finest measurement grid is a matter of structural or organizational change within the aggregate. Without the accompanying structural change there will be little (total factor) productivity growth regardless of the state of technical knowledge or hardware installed.

I. Positive Policies¹

A key mercantilistic notion among European policy makers in particular has been direct government technological support of industry

¹ This section draws on a report of the Swedish Computers and Electronics Commission that surveys computer technology and industrial policy making among the industrialized countries ("Datateknik och industripolitik", SOU 1980:17).

to improve, for instance, international competitiveness. Practically all countries have instituted government committees to investigate and propose remedial action on the perceived "electronics gap" vis-à-vis the U.S. The Japanese government support program to leapfrog the U.S. in certain areas (e.g., a new generation of computers) is a case in point.

Computer and electronics together with nuclear and aircraft industries have the highest priority in French industrial policy and the main reasons for a domestic computer industry seems to be national independence in the field. Direct subsidies and government research are means and the government is pushing both to establish a viable micro electronics hardware industry and to educate the population to be capable and willing to enter the new technological world. The electronic telephone directory is an illustration of this ambition. The expected spin-offs from this venture, however, so far have not materialized (Business Week, July 4, 1983, pp. 32 ff.).

Similarly, the British Government is supporting British firms in developing their own "very large scale integration (VLSI)" capabilities and also to support the use of micro electronics in industry.

The Germans as well have poured vast amounts of money into a select group of companies, notably Siemens, to achieve a catch-up effect in microelectronics hardware production. In one important field - telecommunications - the government purchasing agency has been laying down domestic specifications that virtually exclude foreign competitors. Similar stories could be told of nuclear programs, especially breeder reactor programs and aircraft industry programs.

What are the options to succeed? Not so good and there are three basic reasons:

- 1) Government-supported technological ventures where government agencies specify what to do and how to do it, tend to leap

beyond what the market is prepared to absorb. Projects tend to come down technologically ambitious but economically unviable. Government-supported nuclear programs, Concorde and some other more or less grandiose commercial failures are cases in point. Such ventures, if ever designed, would soon have been stopped by the internal targeting and control procedures of a normal, profit concerned, commercial company.

2) Government support tends to introduce slack or commercial sloppiness in internal operating procedures of firms. Development departments grow into academic institutions. If there is sufficient funding, technically "interesting" projects are not terminated on commercial grounds etc.

Government protection from outside competition does similar harm to efficiency. It also diverts attention away from foreign markets. It is impossible to market sophisticated systems products that do not adhere to international standards. It is costly to maintain double product designs. Swedish Ericsson openly argues that German post office specifications on telecommunications equipment have efficiently kept an otherwise formidable competitor out of their markets.

3) Government intervention and guidance of industrial technological development in an advanced industrial economy may be a policy trail towards obsolescence.

The argument is that central government agencies will never be as informed about the commercial and technological frontiers, as are the advanced companies actively operating in the field. Furthermore, our introductory presentation of the modern firm tells us that success and sophistication may have as much or more to do with non-technical matters, like marketing. In this field, no competence at all resides in government bodies. The AXE telephone exchange, developed - in fact in cooperation with the Swedish Telecommunications agency - by Ericsson in Sweden was a techno-

logical design ("a concept") break-through that captured a large part of the world market. The new venture by Ericsson to enter the "information market" is very much a marketing investment.

The Boston Consulting Group¹ was hired jointly by the Swedish Government, Volvo and some other bodies to carry out a "crisis study on Swedish industry". On the basis of the perceived Japanese success in supporting so-called "feeder industries," like steel and shipbuilding, that fed cheap industrial inputs (steel and transport) into Japanese engineering industries, the Boston Group argued for concerted government action to close down crisis, basic industries and push firms into new, technologically advanced sectors.

There is, however, a tremendous difference in planning to mimic and speed up an industrialization process that other countries had already been through - as was the policy situation for Japan in the 50s - and to push into new, unknown commercial and technological terrain. The upper crust of Swedish, German, Dutch, English and French industries are already on the frontier. If such industries have abstained from going in one particular direction, it may be a good reason to stay out. A government push to get domestic firms into very large scale, very sophisticated and heavy investment hardware production in micro electronics - as for instance in France, the U.K. and Western Germany - and with a considerable time lag compared to U.S. and Japanese manufacturers, may easily get its industries stuck with producing the previous technology generation of products.

It is interesting to note that the "Grand Project" carried out for the Swedish Government by the Swedish Academy of Engineering Sciences², where engineers, economists, business leaders and poli-

¹ Boston Consulting Group, A Framework for Swedish Industrial Policy, Boston and Stockholm, 1978.

² Kunskap och konkurrenskraft (Knowledge and Competitiveness), Swedish Academy of Engineering Sciences, Stockholm, 1979.

ticians met had great difficulties in achieving a concensus on how exactly the Government should get involved in stimulating a structural adjustment path out of the economic crisis. Agreement was easy to reach on the need for a steadily improving infrastructure (e.g., education and basic research) and - barring all social problems - to allow crisis industries to die. Besides that, an extensive survey of literature and world experience demonstrated that risk sharing between the Government and firms in sophisticated new product developments was one of the few industrial policy activities that were agreeable to most participants. In fact, the existence of competent and curious public and private buyers was considered important for technological progress in general. Defence contracting, however, was not generally recommended industrial policy by a majority. Strict commercial control of development projects was a key word that often appeared in the proceedings and in the publications.

It is interesting to take note in this context of Vogel's (1979) argument, that a key reason for Japanese industrial development successes is that they have not had a large part of human and other industrial resources tied up in non-commercial defence and space R&D work. In Japan almost all industrial R&D spending has passed the market test.

II. The subsidy approach

The bulk of industrial policy action - unintentionally or deliberately - has been directed towards supporting the losers.¹

¹ Carlsson (1982) estimates that subsidies for direct "rescue" operations in manufacturing in the U.K, Italy, Norway, Sweden and West Germany amounted to 1.3, 3.5, 3.6 and .6 percent of value added in manufacturing, respectively. Including also general subsidies these figures increase to 3.6, 7.1, 7.6, 16.0 and 4.0 percent of value added, respectively. It turned out impossible, despite considerable effort, to obtain similar figures of comparable quality and known content on French manufacturing.

Steel and shipbuilding are the recipients of enormous Government support throughout Western Europe and indirectly, through defense spending, in the U.S. These basic industries and other supported industries as a rule do not engage in sophisticated forms of production by present western standards. Product design and marketing are small parts of total value added. In general, crisis industries appear to draw relatively little on human capital inputs and hence are subjected to early competition from developing countries where the most important human capital input - industrial competence, experience and skilled workers - is extremely scarce.

It appears as if the bulk of state-operated companies among the European countries exists as a result of Governments having to bail out ailing industrial firms to support employment (Hindley, 1983). Such policies also seem to be extremely costly in terms of misallocated resources and lost growth in output (Carlsson, 1982). I would argue that the extremely costly industrial subsidy program - up from one of the lowest rates in the industrial world in the early 70s to a record breaking 16 percent of value added in manufacturing 1982, and in practice all structure conserving - is the major explanation to the complete collapse of manufacturing output growth in Sweden after 1973 through (so far) 1982.

With few exceptions the stated ambitions of these rescue operations have been expressed in terms of positive reconstruction of companies from within, indicating that business units once in trouble can be reorganized where they happen to be located, using the same human resources and causing a minimum of intermediate unemployment. We have already indicated above why the odds are heavily weighed against success in such ventures. Entry and exit is the normal vehicle for rejuvenation of industries and for those business units that have succeeded to do it from within a major change of human resources as a rule has been the key to success.

One particular instance of industrial subsidizing should, however, be mentioned. If the government is solely concerned with dampening the unavoidable unemployment consequences of a crisis situation, it should be rational to attempt to minimize costs associated with the rescue operation. Looked at from this end there are several different solutions available. One is to put the operation in the market and give the job to the "lowest bidder". More or less explicit arrangements of this type have been tried in Sweden. Electrolux has been involved in several rescue operations (Facit, Gränges, etc.). Contracts to do just that have, in fact, been signed between the Swedish Government and its own "State Operated Company" (see Eliasson-Ysander, 1981).

III. The Planning Approach - Picking the Winners or Bailing Out the Losers

The classical approach to industrial policy making is that of the government planner. His central position gives him an overview. By communicating back and forth with the producers, his "visible hand" directs the economy at large to an optimal solution that can incorporate desired aspects of the social welfare function.

As mentioned in the theoretical overview above, this requires three things; that the necessary information can be obtained, that it can be interpreted in terms of a policy and that the economy adjusts when the informed policy hand waves.

Much motivation for government interference in business decisions have been argued on the basis of this overview potential, an argument that has also been associated with the forming of large conglomerate manufacturing firms or with more loosely knitted together groups of firms around an "industrial bank" of the continental type.

One quoted aspect is the overview capability to spot and to pick the winners. The other is to spot a tendency in time to prevent overinvestment in one particular area. The classical and often cited example of the latter is the boom and overextension in forest industries in the early sixties. Global steel investment and allocation is an even better example today. The Swedish State Operated Company was instituted on this premise and the overview argument has been the basic one for "branch type planning" or "guidance" tried in some western economies.

As mentioned above, even though ambitions have been high, the end result has usually been that of bailing out losers. The main political reason for the bail out has been to avoid local unemployment. An important side effect has been to bail out as well the associated owners, covering at least some of their capital losses, while the positive employment effects have been at best temporary (Eliasson-Ysander, 1981).

Overview is seldom the main reason for success in business companies, except in simple product markets. As argued above the whole idea of picking well defined ventures from a given population, the characteristics of which we can learn by simply allocating time and money, is wrong from the start. The main reason for success among the not so many conglomerate successes has been the ability to direct cashflows away from mediocre and ailing production, forcing them eventually to exit. "Scrapping" has never been the typical trait of state operated companies (see the various country essays in Hindley, 1983).

IV. The Invisible Hand - the Market

During the last few years the market solution has become a catch word in the debate of the structural problems of western economies; an alternative to direct central involvement in business operations. At a high level of abstraction the current discus-

sion echoes the more than 40-year-old debate of Lange and von Hayek. At lower levels of abstraction it is, however, much more difficult to come to grips with a meaningful definition of what a market solution to industrial policy really is. For one thing, one needs a well developed micro-based and dynamic theory to discuss at all such distinctions. In the absence of this theory one has to make do either with more loose language, or listings of policy measures of a more general nature, that are arbitrarily labelled general! One criterion for generality is that the measure leaves choices to the micro decision units (firms). Examples are variously designed and calibrated tax incentives to move investments; for instance, to stimulate R&D investments. Had subsidies been a "generally available right" for all firms beyond a minimum, well defined state of distress, subsidies would also belong here.

Capital market policies, securing a low, long-term interest rate level would also be a general policy, were it not for the fact that the low market interest rate means excess demand for such credits, and regulation has to be imposed to take care of the lines of unsatisfied potential borrowers. Administrative selection procedures will always be arbitrary and selective.

As we go through the list of policy "candidates" we find that they mostly work through affecting the price system, albeit leaving a choice at the micro level to adjust activities to the manipulated price system.

In a sense then, we are back full circle to our original problem. Industrial policies by definition - we agreed - are enacted to correct long-term structural problems in the economy. Structural problems in turn depend on, and originate in a malfunctioning of the price system. Then industrial policies concerned with getting the economy on a long-term stable, maximum growth track should be concerned with getting the price structure of the economy right, which means compatible with that long-run "equilibrium" - if I may use that word - growth trajectory. Part of this problem is

to enforce the corresponding quantity adjustment in the economy. To do this one has to know roughly which long-term price, quantity and growth spectrum to aim for.

Theoretically this requires that we have a full-fledged, dynamic micro-macro theory of the economy within which technical change is either explained or imposed exogenously in a consistent manner (Eliasson, 1983). I believe that research in economic theory should be directed towards accomplishing something of that kind, if economic theory is to be useful in understanding the growth process of an economy, but so far we have to make do with an - for this problem - irrelevant body of static theory.

There are, however, indications that the choice of market regime may have an enormous effect on the long-run growth performance of the economy (Eliasson, 1983); and the choice of industrial policy action is certainly the important part of the choice of market regime.

We cannot even determine on theoretical grounds whether or not a market-oriented industrial policy is compatible with the subsidy approach above, although I am inclined to argue that it is, in the sense of determining a political or social discount rate of the country. If high, one trades in less short-term adjustment for less long-term growth. Sweden clearly has made that kind of a choice over the 70s. If one believes in long-term positive supply effects of Mrs. Thatcher's policies in England, then one can say that England has chosen the policy track just opposite to that of Sweden. The sad thing is that professional economics currently provides no means of assessing the ultimate outcome of either policy. What should we say today - as policy makers - if we knew for sure that the current British policy program enacted through the 80s with continued consequences, would create an industrial success story by the middle of the 90s?

On the positive industrial policy side there is no real compatibility. Either central policy bodies know the operating technologies and skills better than actual business performers at the micro level, or they do not. This is an empirical question.

In the overview, planning, case the central government body tries to beat the market. The answer whether it can is 100 percent empirical. It is partly an institutional problem. Is the economy organized in an institutionally efficient manner; the right size of firms, the right degree of specialization, the right labor and capital mobility etc. Partly, however, existing institutional structures are dependent upon the kind and extent of central interferences in the market. According to our earlier arguments we think we have found that such interferences have not benefited market efficiency.

A particular kind of market conforming, general industrial policies aims at supplying low cost basic services to the entire economy, or building an infrastructure. The most important examples are schooling at all levels, health care, transport systems and also retirement schemes. One key characteristic to these schemes is that there exist both private market and collective (non-market) solutions to such infrastructure investment activities. On the retirement sides both private and public insurance schemes run parallel in most western countries. Schooling and health services are predominantly run by public bodies in most European countries, but almost everywhere private alternatives exist, notably in the U.S. If we look back into the past, we observe that - excluding the military side - the "industrial policy" of supplying educated, healthy and confident workers to industry and supplying a low cost transportation and communication system to firms was the main public activity well into the 60s.

10. Large and Small

One particular, practical problem associated with the "overview" possibilities in industrial policy making concerns the number of business units that can be monitored. A few decision units pose only small problems of communication, a few hundred create a difficult management situation (Electrolux corporation is composed of about 400 subsidiary operations), several thousand units make life impossible for the industrial policy maker. The practical solution has been a heavy orientation towards the large corporations - some even argue that this is the most efficient approach (Bray, 1982) - together with a more scattered attention to the multitude, represented by many "small business programs" in most industrialized countries.

It is educational to recall - in this context - Schumpeter's (1942) dismal prediction that a small group of large firms, by virtue of their superior technologies would eventually dominate all markets. Identification with the central government would then become natural and basic democratic values would be jeopardized.

The rationale for running policies through a small set of large firms is the presumed pull effect on the rest of the economy through vertical purchasing and subcontracting. The importance for the entire industry of a few large firms can certainly be demonstrated for the small industrial economies. The danger, associated with running industrial policies through the large firms are, however, apparent. Besides the threat to democratic principles posed by a close cooperation of industrial and political power centers, large firms tend to operate in mature markets, with mature products and (perhaps) a dominant market position.

A typical problem of top management in such firms is to find new, profitable activities in which to invest the cash proceeds from the mature product range to create a new base for long-run survival.

The mature product range is often managed quite efficiently on the short-term production side with a view to maximize the cash flow as long as the product is viable.

Policy interference based on the presumption of strong backward links to the production and delivery side hence is very likely to be structure preserving all the way down, especially if it has been initiated by early problems of the mature product range. This effect may be worsened, if management attention is also turned away from a concern about profit and efficient production, to be concerned as well with added policy objectives as available subsidies - a new "Government market" is, so to speak, created.

If size at all should matter, the case for being concerned with the small firms appears more well founded. There is evidence indicating that truly innovative, and efficient industrial R&D occurs in very small, newly founded business units, despite the fact that large corporations carry out the bulk of industrial R&D spending. Small business units certainly do not possess the large scale and risk spreading potential in the financial dimension associated with big business. It is, hence, quite easy to present a logically coherent case for financial support to small business ventures, and such programs abound in industrial countries. The problem again is to decide how to choose among the large number of small firms; do you pick those who "apply", do you look for candidates, etc.? Looked at from that end you are reformulating the well known problem of how to manage innovative activities within large corporations (Eliasson-Granstrand, 1982). The case heard for Government to be involved often is that industry is not doing a good job in its own specialities, or that since we have the resources it doesn't hurt to do more of a good thing. The logical sequel to such an argument, however, would be for policy makers also to do all they can to facilitate the institutionalization of efficient equity or venture capital markets for small businesses. This has, in fact, been done in some countries, but it has not been a typical trait of industrial policies directed towards small businesses.

From mentioning venture capital the argument leads naturally up to a vaguely defined distinction popularly referred to in discussing the industrial finance systems of the west; the industrial bank system, usually associated with continental Europe and the market system of London City and the U.S. The industrial bank integrates industrial and banking competence. In the market system the two skills are more specialized and separated. If size is of any consequence at all, there would be an indication in favor of arrangements of the industrial bank type, within which three different functions would become more efficient. First, the financial economies of scale associated with the banking function would reduce the overall financial risk of the industrial activities brought together. Second, industrial competence and suppliers of finance are very differently endowed with information. Joining them would certainly reduce the overall risk associated with the industrial activities for the suppliers of funds and hence lower the cost of finance. In this particular context long-term funding of risky investments with very long gestation periods can be arranged "internally" and in situations where the small firm might be reluctant to take on external finance at market interest rates. The third reason is the enhanced potential for "internal" reshuffling of funds, taking resources out of stagnating activities and plowing them into prospective, new ventures. In the market finance system the market, on the other hand, would so to speak impose too high rate of return requirements and force an unduly short planning horizon on investment. Small firms would encounter difficulties. An indirect evidence of this might be that the "market systems", U.S. in particular, are also populated by the really large corporations of the world, of a size comparable to the banking groups of Europe. These large, often conglomerate, business units typically internalize the banking and investment institute functions within the same corporate body. This evidence together appears to suggest that government-supported financing arrangements to small and medium-sized industrial firms should be beneficial. But this would not be a correct inference. The rationale for both the industrial banking and market systems of indus-

trial finance is to make the exercising of the profit motive more efficient both in the short and the long term through internal risk reduction and more efficient channelling of funds out of loss making activities and into profit generating investments - speeding up structural change and scrapping of obsolete capital in the process. Only if this were the primary objective, not the provision of funds as such, would government policies directed towards small firms be beneficial to their growth.

11. Concluding Remarks

Classical macroeconomic theory endows the central policy-making authority with the supreme power of pulling the economy along by simply manipulating demand. There is little place in such an intellectual scheme for micro level skills to influence the supply process. No distinction is made between differential qualities associated with factor inputs depending upon where they happen to be allocated. Once these aspects are introduced our policy discussion has tended to come down with a negative verdict on selective policies interfering with internal operating rules of firms. The reason for this conclusion can be summarized as insufficient information or skill endowments with the policy bodies.

Part of this has to do with lack of business skills and experience. Part of it has to do with the ability to access, digest and transform into informed decisions the mass of complex data that resides in the business sector. This argument or fact contradicts the classical planning approach in selective industrial policy making and it takes care of all dimensions; within firms, across business units and over time. One way of bypassing this problem has been to concentrate policy ambitions on a select group of very large companies that can be monitored, where personal contacts can be established and so forth.

If a few large business organizations make up a large share of manufacturing value added and employment and if they tend to connect backwards through extensive subcontracting arrangements to a large number of small firms, the information requirements are thought to be smaller. Technically a semi aggregate approach to planning thus appears feasible. But a viable firm is never managed as a production scheduling problem, and large firms tend to represent mature industries. Hence, such organization of industrial policies is likely to be structure conserving. It will not stimulate innovative behavior and it will direct high level attention away from markets towards government coffers. This cannot be

desired effects of industrial policies. A high concentration of value added to a small number of firms and a heavy subcontracting pull effect is characteristic of the small, but highly advanced industrial nations like the Netherlands and Sweden, where an advanced stage of specialization has been achieved. Simultaneously, however, the large firms of these countries have also become sophisticated and highly specialized by growing international. So the heavy pull effect also has to do with the large firms being in a significant way large, international marketing and trading firms. Such firms are, of course, difficult or impossible to influence through direct industrial policy action of the positive or visible hand type that we have discussed.

In the large industrial countries with the mass of industrial activity being domestic, a bureaucratic symbiosis between policy makers and business may perhaps work. In the small industrial country, where the large groups are more internationally established than domestically, this symbiosis ceases to be operational. The only workable scheme for industrial policy action seems to be the "old Swedish policy model" (Eliasson, 1981b), which means milking the business sector of value added to finance public sector growth and egalitarian schemes to the maximum extent possible, leaving all technical and commercial decisions to firm leaders and managers and (nota bene) industrial ownership in private hands. The old Swedish policy model developed over several decades as a joint, and partially documented understanding between the unions, business and a durable social democratic government. In this policy model, no action was allowed to help firms in distress, or to support regional problem areas. No political concern was voiced about labor that did not want to move or adjust. This is an almost one hundred percent market policy solution. The important question is why its abandonment towards the end of the 60s occurred parallel with an extreme stagnation of the Swedish economy much beyond what can be explained by the parallel world recession. Was this the result of the abandonment of the market policy solution and/or the destruction of incentives that came with it (Eliasson 1982, Schwartz 1980)? My personal answer would be yes.

Gigantism in the business world appears to be the result of economics of scale in a broad sense, production not being the most important instance.¹ Being large financially and differentiated in many markets means protection both from the erratic behavior of capital markets and monetary policies from an insurance point of view. However, extensive exploitation of the "insurance" potential tends to - as we have argued - generate inefficiencies.

Our proposition would, hence, be that the mixing of public policies and business management is an extremely dangerous scheme in the longer term. The empirical evidence suggests that large business firms managing to reach large size and protection from the vagaries of outside markets tend to experience a gradual collapse of efficiency from within. They become bureaucratic and organizationally rigid. Business instincts never breed in such a climate. Symbiosis with a government bureaucracy and indirect access to the finance system of the public sector multiply the same dangers.

Not only does pressure to perform diminish as does the ability to measure and monitor internal performance. Also attention tends to be diverted away from commercial activities, if a growing part of income comes directly from public coffers. The problems tend to become more and more similar to those associated with public bodies that have been discussed extensively in literature.

It appears that the major vehicle for successful industrial transformation in a world characterized by dynamic and intense international competition is a sufficient flow of new entrants to guarantee a sufficient number of technological and commercial successes and an exit of industrial activities of large enough a mag-

¹ Pratten (1976) observes that while Swedish firms are small compared to British firms by financial standards, they are large on an establishment basis, much more productive, and generally enjoy relatively more of economies of scale because they are operating in "small" international markets that they dominate.

nitude to free resources for commercially viable activities. If industrial policy makers should be involved in this process they have a natural task in providing a good infrastructure for the creation of the entry flow (efficient education, good basic research and (!) a positive political climate for entrepreneurship). There is a lot of work to be done here throughout the industrialized world. If, nevertheless, central industrial policy makers want to get involved in the real business activities, there is a suitably demanding task that has been badly managed in the recent past, namely to create an efficient and orderly "scrapping" or exit function of the economy. This task does not require the particular industrial skills that can only be distilled out after a long, personal experiment in the market. Exits can be planned, and it is extremely important for the macro behavior of the economy that they in fact occur. This function was once termed "creative destruction" by Joseph Schumpeter and it was the key ingredient of the old Swedish (industrial) policy model, applied for some 20 years during a period of prosperous industrial growth.

Bibliography

- Arrow, K. 1974, The Limits of Organization, New York.
- Bray, J., 1982, Production Purpose and Structure, Oxford.
- Carlsson, B., 1981, The Content of Productivity Growth in Swedish Manufacturing, in The Firm in the Market Economy, IUI Yearbook 1979/80.
- Carlsson, B., 1982, Industrial Subsidies in Sweden: Macroeconomic Effects and an International Comparison, IUI Working Paper No. 58, 1982.
- Coase, R.H., 1937, The Nature of the Firm, Economica.
- Corden, W.M.-Fels, G., 1976, Public Assistance to Industry, Protection and Subsidies in Britain and Germany, London.
- Cyert, R.M.-March, J.G., 1963, A Behavioral Theory of the Firm, Englewood Cliffs, N.J.
- de Jong, H.W.-Spierenburg, R.-J., 1980, The Maintenance of Employment as a Primary Objective, in Hindley, 1983.
- Dearden, J., 1972, MIS is a Mirage, Harvard Business Review (Jan-Feb).
- Eliasson, G., 1976, Business Economic Planning - Theory, Practice and Comparison, John Wiley & Sons.
- Eliasson, G., 1980, Företag, marknader och ekonomisk utveckling, in Industriell utveckling i Sverige, IUI, Stockholm.
- Eliasson, G., 1981, Elektronik, teknisk förändring och ekonomisk utveckling, IUI Booklet No. 110.
- Eliasson, G., 1981b, The Firms in the Market Economy - 40 Years of Research at IUI, in The Firms in the Market Economy, IUI 40 Years 1979/80, Stockholm.
- Eliasson, G., 1982, Electronics, Economic Growth and Employment - Revolution or Evolution, from Giersch, H., Emerging Technologies: Consequences for Economic Growth, Structural Change, and Employment, Kieler Kurzberichte, Nr 9, 1982.

- Eliasson, G., 1982b, The End of Welfare, Review article in Journal of Economic Literature, Vol. X, No. 1 (March) pp. 102-105.
- Eliasson, G., 1983, On the Optimal Rate of Structural Adjustment, from Eliasson-Sharefin-Ysander (eds.) Policy Making in a Disorderly World Economy, IUI Conference Report 1983:1.
- Eliasson, G.-Granstrand, O., 1981, The Financing of New Technological Investments, IUI Booklet No. 121.
- Eliasson, G.-Granstrand, O., 1982, Venture Capital and Management, Forthcoming IUI Working Paper.
- Eliasson, G.-Ysander, B.-C., 1981, Picking Winners or Bailing Out Losers, IUI Working Paper No. 37.
- Encaoua, D.-Jaquemin, A., 1982, "Organizational Efficiency and Monopoly Power - the Case of French Industrial Groups", European Economic Review 19 (1982).
- Fries, H., 1982, "Structural Change and Industry Performance in Four Western European Countries", in Eliasson-Sharefkin-Ysander (eds.) Policy Making in a Disorderly World Economy, IUI Research Reports 1983:1.
- Hayes, R.H.-Abernathy, W.J., 1980, Managing our Way to Economic Decline, Harvard Business Review, July-August.
- Heal, G.M., 1973, The Theory of Economic Planning, Amsterdam-London.
- Hindley, B., 1983, Picking Winners or Backing Losers, London.
- Jacquemin, A.P., 1979, European Industrial Policies and Competition, in Coffey (ed.), Economic Policies of the Common Market, London.
- Jagrén, L.-Pousette, T., 1982, Industriföretagets sårbarhet, IUI Research Reports No. 15.
- Jüttemeier, K.H.-Lammers, K.-Schatz, K.W.-Willius, E.F., 1977, Auswirkungen der Öffentlichen Haushalte auf Sektorale Investitionsentscheidungen in Industrie, Kiel, Mimeo.
- Lange, O., 1936-37, On the Economic Theory of Socialism, Review of Economic Studies.
- Lundgren, N.-Ståhl, I., 1981, Industripolitikens spelregler, Stockholm.

- Malinvaud, E., 1967, Decentralized Procedure for Planning, from Malinvaud-Bacharach (eds.), Activity Analysis in the Theory of Growth and Planning (MacMillan).
- Marglin, S.A., 1969, Information in Price and Command Systems of Planning, in Guitton-Margoliz (eds.) Public Economics, London.
- Nelson, R.-Winter, S.G., 1982, An Evolutionary Theory of Economic Change, Cambridge, Mass. and London.
- Nilsson, S., 1981, Förändrad tillverkningsorganisation och dess återverkningar på kapitalbindningen. En studie vid ASEA, IUI Booklet No. 115.
- Pratten, C., 1976, A Comparison of the Performance of Swedish and U.K. Companies, Cambridge University, U.K.
- Schumpeter, J., 1942, Capitalism, Socialism and Democracy, London.
- Schwartz, E., 1980, Trouble in Eden, A Comparison of the British and Swedish Economies, Praeson, New York.
- Simon, H.A., 1959, Theories of Decision Making in Economic and Behavioral Science, AER (June).
- Simon, H.A., 1979, Rational Decision Making in Business Organizations, AER (Sept).
- Stigler, G., 1971, The Theory of Economic Regulation, Bell Journal of Economics and Management Science (Spring).
- Teigen, R., Financial Development and Stabilization Policy: A Study of the Scandinavian Economies, Economic Research Report No. 19, Federation of Swedish Industries, Stockholm.
- Vogel, E.F., 1979, Japan as Number One - Lessons for America, Cambridge, Mass.
- Weitzman, M., 1970, Iterative Multi Level Planning with Production Targets, Econometrica, Vol. 38.
- Winter, S.G., 1964, Economic "National Selection" and the Theory of the Firm, Yale Economic Essays (Spring).
- Ysander, B-C., 1981, "Local Government and Economic Growth", in The Firms in The Market Economy, IUI 40 Years 1979/80, Stockholm.

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