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THE CREATION OF THE EC INTERNAL MARKET AND ITS EFFECTS ON THE COMPETITIVENESS OF PRODUCERS IN OTHER INDUSTRIAL ECONOMIES

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Gunnar Eliasson and Lars Lundberg

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by Gunnar Eliasson and Lars Lundberg,
The Industrial Institute for Economic and Social Research (IUI), Stockholm.

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Content

1 Background and Problem Formulation

This paper deals with the economic effects on non–member industrialized countries of the establishment of the EC internal market in 1992. The consequences for the outside countries will, however, to a large extent depend on the effects within the Common Market itself.[1]

Basically, the effects of 1992 depend on
— to what extent existing internal barriers between the member countries are eliminated and markets are opened to competition
— the relative performance of producers within and outside the common market
— the kind and size of the structural effects of these changes
— the extent to which restructuring initiated by the integration of markets is allowed to work itself out or is counteracted by economic policy, and
— to what extent deregulation is extended to non–member countries or new barriers to trade and competition are created and/or old ones raised (the "Fortress Europe" scenario).

The stated objectives of the proposed integration program is to increase the international competitiveness of EC producers visavi non–member firms. This is to be accomplished by eliminating barriers to an efficient EC–wide use of resources, thus increasing the efficiency of EC firms. This introduces an element of discrimination towards imports from non–member countries. Thus the general presumption seems to be that outside producers should suffer in terms of market shares and profits. We will, however, argue that the outcome will depend crucially on the factors mentioned above. This background presentation therefore raises the following four questions, to be addressed in this paper.

The consequences for the outside countries will depend, first on the effects of the internal market on the member countries themselves through traditional trade links. We address this issue in the next section. We will argue, however,

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[1] Or rather, how these effects are appreciated by the decision makers outside the EC.

that the effects on competition and the role of innovative efficiency for economic growth within the EC internal market and the markets of the non member countries may be even more important. The next section includes a survey of results from trade theory and empirical research on the issue of economic integration. The following sections will be devoted to the presentation of a somewhat wider and more dynamic view on European economic integration based on firm behavior, rather than aggregate sector analysis.

This issue, however, is related to the nature of the rapidly evolving new global technologies, and which regions – EC, EFTA or other industrial nations – are leading this development (section 4). How will regions that do not have technological leaders in some fields cope with new competition? Apparently the ambitions behind the Internal Market proposal is to make a laggard European industry more dynamic and to foster technically leading firms in global markets. The question is, however, if EC firms will ever become competent enough to compete in external markets, if they do not learn from competing with the best global competitors in their home market (Eliasson, 1988b).

An assessment of the consequences of one or the other EC-internal market scenarios requires information about the distribution of industrial competence in the whole area over which market forces will have a free play. A not insignificant element of this analysis concerns the accumulation of industrial competence in firms and the "migration" of industrial knowledge across national borders, changing the structure of comparative advantage of nations.

This requires, (section 5) that we take a close look at the nature of the multinational firms based in Europe to understand where the competitive potential is and what the options for the non–EC firms are. Multinational firms operate across national borders and have access to the financial system of many nations. This means that the deregulation of the European financial system becomes decisive for the results of our analysis.

2 European Economic Integration: Theory and Facts

2.1 Theories of economic integration

The effects of economic integration depends on the nature of markets involved, the distribution of competitive advantages, the kind of trade affected and the kind of barriers eliminated. In classical and neo–classical trade theory, international trade is a consequence of the unequal (exogenous) geographical distribution of productive resources. Elimination of barriers to trade enables countries to specialize in production according to exogeneously given comparative advantages. For a small country, unilateral trade liberalization leads to a more efficient use of resources, which increases real income and welfare. This was the economic theory on which European economic integration was originally conceived.

In the case of regional economic integration, the effects on members and outsiders depend on whether the union includes the most efficient producer. If this is not the case, the result might be trade diversion, leading to a welfare loss for members as well as outsiders, reflecting a less efficient international distribution of labor. In addition, the non–member country might suffer a terms of trade loss, thus increasing the adverse real income effect. On top of this, there is the effect of changes in the external tariffs of the union. A rise in external tariffs will hurt the outside country, because of decreasing trade and specialization as well as a worsening of the terms of trade.

On the other hand, the increase in real income in the union, emerging as a consequence of the beneficial integration effects on resource allocation, will increase demand for imports from outside countries. This effect, presumably of a more long run character, might eventually counteract, or even reverse, the initial, unfavourable impact on outside producers.

Another cause of international trade is economies of scale. Increasing firm size and/or length of production runs could lower unit costs in production or product development. The existence of economies of scale might lead to two types of inefficient resource allocation in small protected national markets. First, there will be too few firms, i.e competition will be limited, so that

prices exceed marginal costs, leading to a welfare loss. Second, firms will be to small, which implies high unit costs.

Economic integration means an expansion of the market. The actual outcome depends critically on the assumptions made about consumer preferences, production techniques and competitive behaviour (Flam & Horn 1989), so that "pure theory" gives no clear–cut answers. In numerical model simulations, however, the typical result of integration is that the number of firms operating in the common market increases, so that competition increases. On the other hand, production in each member country will tend to become more concentrated, and the increase in firm size will lower unit costs (Richardson 1988). Increased competition may improve not only market efficiency, by forcing prices down towards marginal costs, but also the internal efficiency of firms, thus raising so called "x–efficiency".[2]

These effects imply static, once and for all welfare gains by improved utilization of given resources. They may be illustrated by a parallel upward shift of the time path of real income, where the long run rate of growth is constant. The adjustment to integration in the form of a reallocation of resources will show up as a temporary increase in real income growth.

Dynamic integration effects, however, generate a long run increase in the rate of growth of real income. This requires either an increased rate of capital formation, or an increase in the rate of technological progress, by increasing the rate of new product or process innovations, or by accelerating the rate of diffusion of innovations. A dynamic analysis thus requires an account of how technical progress and capital formation affect economic growth, as well as an analysis of innovative behaviour, the rate of product and process innovations and the diffusion of innovations.

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[2] Efficiency of competition, however, is not necessarily proportional to the number of firms. If economies of scale prevail, a small number of efficient producers may still be the most competitive and efficient market solution (Eliasson 1989, see also below).

2.2. European integration – empirical evidence

There are a number of studies of the effects on trade of the creation of the EC in the 1960s. A general conclusion seems to be that, as a result of integration, there was a substantial increase in intra–EC trade – up 40% according to some studies – and that the trade creation effects dominated strongly over trade diversion (Williamson & Bottrill 1971, Balassa 1975, Hine 1985). The proportion of intra–EC trade increased up to the beginning of the 1970, and has been constant or slightly declining since then (Jaquemin & Sapir 1988). It has thus been argued that the trade creation effects of forming the EC had mostly petered out by the middle of the 1970s.

With respect to the pattern of specialization of production, the result was expected to be a far–reaching inter–industry specialization and an increased utilization of comparative advantage, leading to a large reallocation of labor and capital among industries. However, the increase in intra–EC trade mainly took the form of intra–industry trade (Balassa 1975). This indicates that the major driving force behind the trade increase among the EC countries in the 1960s might have been an improved utilization of economies of scale rather than comparative advantage.

The same tendency holds for the expansion of the (non–member) Nordic countries trade with the EC during the 70s when the free trade agreements with the EC were established. This trade, which in the 1960s consisted mainly of inter–industry (computed on the 4 digit level of the ISIC) exchange of capital intensive products based on domestic natural resources for skill intensive and R&D intensive goods, increased strongly. However, most of the increase consisted of intra–industry trade.

Empirical results concerning historical integration effects on the efficiency of resource allocation, productivity and real income are less clearcut. Early calculations of the welfare effects of European integration, based on models assuming perfect competition and no economies of scale (Scitovsky 1958, Johnson 1958) arrived at very small effects – a fraction of one percent of GDP. Adding terms of trade effects produced larger figures: Burenstam

Linder (1962) estimated the loss for Sweden to be outside the EC to 4% of GDP, mainly consisting of a terms of trade loss.

There seems to be only indirect evidence for integration effects via economies of scale and increased competition. An increase in the size of the domestic market (Scherer 1975) as well as an increase in exports (Schwalbach 1988, Helg & Ranci 1988) seems to increase firm size, and would thus open the possibility of gains from economies of scale. There is some evidence that increasing import competition tends to lower price–cost margins (Zimmermann 1987). The effects of integration on x–efficiency and technological progress are less clear–cut. We will return to this point.

2.3. Effects of economic integration in imperfectly competitive markets with increasing returns to scale

In order to assess the welfare gains that the creation of the Internal Market would bring, one needs, first, a comprehensive survey of non–tariff barriers to trade, expressed in cost–price terms. To the direct gains of eliminating extra costs on production or trade, however, must be added the indirect effects in the form of cost and price reductions stemming from economies of scale and increased competition. A number of such models have been constructed (for a survey see Richardson 1989). A well known example is the Smith–Venables (1988) model.

The model describes a sector where firms from several countries, including third countries, compete on all markets. Each firm produces in its home country several differentiated products − there are no multinationals. There are increasing returns to production of each product as well as to the number of products. Markets are segmented, so that prices on the same product may differ both because of transaction costs − tariffs etc − and because of different elasticities of demand.

The effects of integration are evaluated in three steps. First, the model is solved for a given reduction in transaction costs, representing the elimination of barriers to trade, under the assumption that markets remain segmented, and there is no entry or exit of firms. This produces the direct effects in the

form of cost and price reductions.

Second, free exit and entry is assumed. The restructuring results in a decrease in costs through concentration and increased average firm size, thus exploiting economies of scale. On the other hand, the opening up of markets stimulates competition. This leads to a further reduction in prices through decreasing cost–price margins. In the third step, market segmentation is eliminated, so that the price of any product will be the same in all markets; this corresponds to the strict definition of a common market.

As it turns out, the indirect effects as evaluated in steps 2 and 3 are generally larger, and in some cases much larger, than the direct effects in step 1. This is especially true for concentrated industries where there are large and unexploited economies of scale.

The results of the second and third steps are sensitive to the assumptions in the model about cost curves: on this point empirical estimates are bound to leave large margins of error. More interesting, in our opinion, is that the model is entirely static. By assuming identical production and cost functions it is not possible to take into account the competitive effects of a large spread among high– and low–performing firms. Neither can the dynamic effects of the intensity of competition on the rate of improvement of efficiency over time be dealt with. We will return to this point in section 3.

2.4 Existing non–tariff barriers to trade and restrictions on competition within the EC

Economic integration in Europe in the 1960s and 1970s eliminated tariffs and import quotas on virtually all intra–European trade in industrial products. However, it did not create a common market for goods and services. A number of non–tariff barriers and regulations still remain, restricting the flow of goods, services, labor and capital within Europe. Such impediments tend to segment the national markets, limit competition and specialization of production among European firms and thus reduce economic growth.

According to a survey among EC firms (Nerb 1988), the most restrictive of

the non—tariff barriers to trade that still remain between the EC countries are border costs, technical barriers to trade and discrimination against imports in public procurement. The existence of frontier controls may increase administrative and transport costs.

Technical barriers to trade are caused by product standards that differ among nations. Sectors where technical barriers were perceived as important obstacles to intra—Community trade include the car industry and industries for electrical machinery, telecommunication equipment, pharmaceutical products, building materials and foodstuffs. In general one would expect technical barriers to be important in technologically advanced industries, producing highly sophisticated and differentiated products, where considerations about user health and safety are important. In this respect technical standards imposed by governments influence trade patterns in the same way as national characteristics of consumer preferences in the sense of Burenstam—Linder (1961).

Public procurement in EC countries has remained virtually closed to competition from firms in other member states. The share of imports in public procurement is generally much lower than the import share for private buyers for the same goods. Discrimination against imports sometimes takes the form of a price margin for domestic firms, being then equivalent to a tariff. This form of trade barrier is significant only in industries where sales to the public sector or to state owned or controlled companies are a large part of total sales, like defense equipment, civilian aircraft, public transportation, telecommunications equipment, electrical machinery and building and construction.

During the 70s most European countries introduced industrial subsidies on a substantial scale. These subsidies took different forms: 'soft' loans below market rates, additions to capital or contributions to cover losses; they were concentrated to mature industries like steel mills and shipyards, which were subjected in the 1970s to stagnating demand and intense international competition. Through the arguments for state aid has sometimes been to stimulate local technological development, the motives have mostly been to prevent negative effects on local employment through the closing down of

large firms. If industrial subsidies differ among countries, competition will be distorted. Total industrial subsidies in per cent of value added in industry in 1978–80 ranged from 3.6% in the UK and 4.0% in Germany to 7.1% in Italy (Carlsson 1983).

By eliminating frontier controls and mutual acceptance of product standards among member states, and by equal treatment of EC firms in public purchasing, the internal European market will be established in 1992. With respect to subsidies, the goal seems to be an equalization of subsidy levels among members — decisions have been taken on a maximum subsidy to shipyards and R&D — rather than to abolish state aid altogether. A common subsidy in EC countries will clearly distort resource allocation, even if it does not discriminate among EC firms.

The increased competition created by the Internal Market program is likely to increase structural change, which may lead to adjustment problems. This may raise the issue of state aid to local firms. We return to this question in Section 6.

Restrictions on entry and competition are frequent in the services sector. In civil aviation, restrictions tend to create a duopoly on most intra–European traffic routes. This limited competition is reflected in substantially higher fares than in the U.S. Competition in road transports is restricted by licenses. In banking and insurance there are restrictions for transactions across borders (The economics of 1992).

Direct barriers to migration of workers have been largely eliminated among EC member countries. However, completely free mobility of labor would require further work on mutual recognition of qualifications and the right of establishment, thus eliminating barriers to the flow of human capital across national borders.

Free mobility of capital and entrepreneurship requires that restrictions on the emission of securities across borders, as well as on direct investment, are eliminated. Since in principle freedom of establishment in the form of direct investment in new production capacity already exists in manufacturing, the

main issue appears to be that of take—overs of existing firms across borders, in particular with regard to measures which firms have adopted in order to protect themselves from such take—overs.

In contrast to other capital movements, which are likely to be liberalized on a global scale, the free flow of direct investment may be limited to EC members. Thus future EC rules and/or practice might well discriminate against take—overs of existing EC firms, especially of large firms in the high—technology sector, by firms from non—member states. It is perhaps less likely that the rules will restrict establishment of new affiliates by non—EC firms (Ohlsson 1989).

In a perfectly integrated market, prices for the same product could only differ among member countries because of transport costs. However, studies have found a price dispersion among EC countries, in many cases substantially larger than could be explained by transaction costs, including known barriers to trade. (The economics of 1992). The cause of such large differentials seem to be price discrimination, based on a segmentation of markets. This may be upheld by some system of selective distribution, where consumers and independent traders are prevented from making transactions across borders. It is by no means clear that an elimination of non—tariff barriers to trade would automatically achieve an elimination of market segmentation. This stresses the need for an active competition policy for implementing the Internal Market. In this context, anti—trust policy is important.

3. Deregulating Europe or Fortress Europe: Economic Integration within a Dynamic Framework

3.1 Relative productivity, investment and diffusion of technology

Most analysis of economic integration has been conducted in a comparative static framework. The benefits of integration take the form of an improved allocation of given productive resources. In this section we would like to develop a more dynamic view of market integration.[3]

The reasoning is based on the simple concept of Salter distributions by firms of labor productivities or rates of return on capital. For simplicity, we hold all other factors constant, so that cost differences among firms are accounted for entirely by differences in labor productivity (for a mathematical presentation see Appendix). At any point in time, the realized productivity of a firm is some fraction of the potential productivity, the difference being explained by slack or x–inefficiency. Assuming that at least some part of technical progress is embodied in the stock of capital, potential productivity is a function of the time of investment. However, it is also affected by the skills of labor and management.

A firms position on the Salter curve and hence its competitiveness is based on its unique industrial competence. The existence of firm specific technology associates competitiveness with firms rather than with industries or countries. This stresses the role of the multinational or transnational firm discussed in section 5.

We associate the spread of the Salter distributions with the concept of potential competition. Since the position on the Salter curve reflects the unique competence of the firm, this approach recognizes that intensity of competition may not simply be proportional to the number of firms. A high competitive efficiency may prevail with a small number of efficient firms at

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[3] The reasoning reflects the economics of the Swedish micro–to–macro model, extended to allow for international trade (Eliasson 1984, 1985, 1989).

the upper left of the curve in fig. 1 competing for improved positions
(Eliasson 1989).

In a time perspective, firms expand by investment, accumulate technological
knowledge by research and development, increase their realized productivity
by reducing slack or go out of business. This competitive, innovating, learning
and adjustment process affects each firms position on the Salter curve, and
these curves are changing over time. Firms compete for labor and capital on
the labor and capital markets. The outcome of the process is affected by
various kinds of restrictions on the mobility of capital, labor, goods and
services, as well as by restrictions on competition, in particular on exit and
entry.

On the other hand, the intensity of firms' competitive activities depends in
turn on its place in the Salter distribution. Obviously the firms that invest
most heavily will in general be those with high rates of return on capital.
Since those firms in our model have the most efficient technology and thus
the highest labor productivity, the rate of investment determines the diffusion
of best practice techniques and thus influences the aggregate productivity
growth of the industry. In the other end of the distribution, low productivity
firms with insufficient returns on capital will go out of business.

If the slope of the Salter curve temporarily increases, reflecting an increased
spread among firms of labor productivity, we would expect the rate of
turnover of firms to increase, because of increasing exit of low performers as
well as more investment by profitable firms. This would increase the average
level of efficiency in the industry. If the effects of competition are permitted
to be realized, the spread in productivity will again decrease, as will the slope
of the Salter curve. On the other hand, the rate of industrial restructuring
will be kept low, given the slope of the Salter curve, if firms markets are
segmented, or if inefficient firms are allowed to survive by means of subsidies.

The form of the Salter distributions are constantly affected by the
competitive process through its effects on the underlying labor productivities.
Diffusion of technological know–how and industrial competence in general
will reduce the spread in efficiency among firms and thus the Salter curve

slopes. This could be accomplished through hiring workers with previous experience in high performing firms, if all firms have access to the same labor market, and if superior performance to some extent is embodied in skilled labor.

Another way of raising the efficiency of low performing firms is through take—overs. This could be the case when actual efficiency is very low compared to potential efficiency or to best practice, and where the cause of this is incompetent management. Another requirement for take—overs to have large efficiency effects is that the firm is sheltered from competition in the output market by some form of market segmentation.

3.2 Integration, competition and innovations

Integration of markets may be described as a horisontal aggregation of the national Salter structures to one single curve. If there are large differences in average levels of productivity among the member countries, the resulting Salter curve for the common market will be steeper than the original national curves. This is illustrated in fig. 1, where the vertical axis measures labor productivity in volume terms, and the horisontal axis percentages of aggregate output. The common market curve C is steeper than the curves for member countries A and B.

If curves A and B instead depict the firm structure of rates of return on capital, the "steepening" effect will be reinforced. The reason is that the rates of return depend on prices of output and inputs, in addition to physical productivity. When output markets are integrated and output prices equalized, we would expect the price level in the country where producers are efficient (A) to rise, and to fall in the other country (B). This will ceteris paribus shift the Salter distributions of rates of returns in A and B further apart, thus increasing the slope of the aggregated curve C.

The same effect could be created by the integration of factor markets, implying the equalization of wages and return to capital. One could object that the model is partial, and there is no reason to assume a generally lower level of wages in B, where producers in this particular industry happen to be
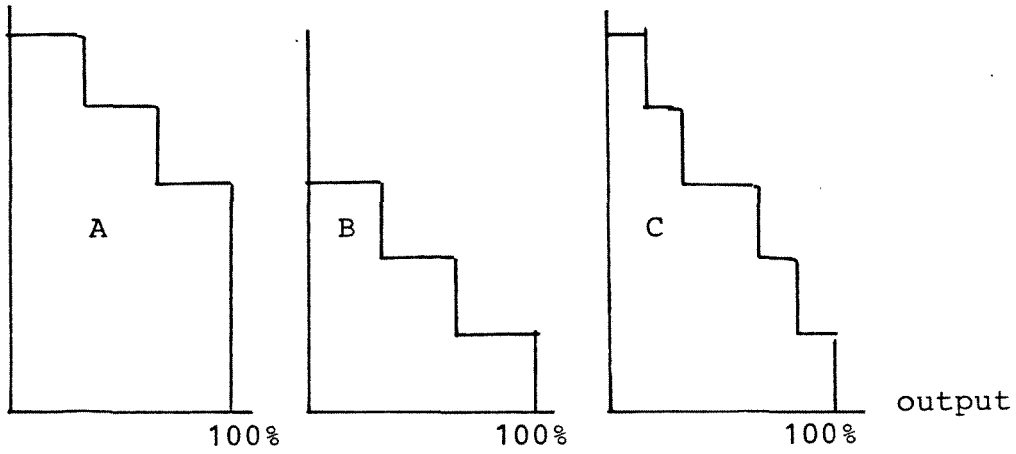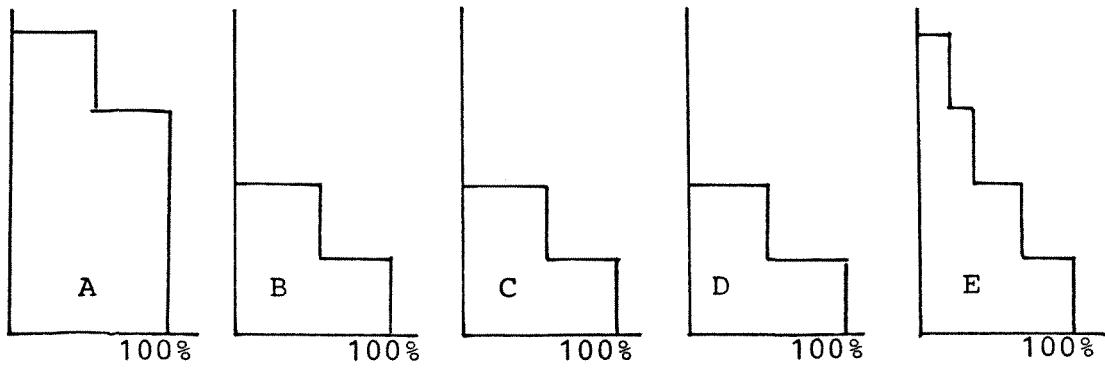
Figure 1

labor
productivity

output

Figure 2

labor
productivity

inefficient, if labor is mobile among industries. However, for a specific factor, e.g a particular kind of skilled labor only employed in that industry, it is not unreasonable to assume that wages might initially be low in B. In that case labor market integration means mobility of labor from B to A and thus a wage increase in B. The same reasoning may be applied to capital.

It is important to note that in the case of a discriminating integration, i.e. some countries form an economic union with free mobility of goods and factors, the resulting increase in competition will not be large, if the country containing the best producers is left out. This is illustrated in fig. 2, where the markets of B and C are integrated, thus forming a common market D, where supply is forthcoming only from the mediocre firms in B and C. If the union would include A as well, we obtain for the common market the Salter curve in E. Here the dispersion in productivity and rates of return between high and low performers will be much larger, and thus the competitive process will be stronger and the resulting industrial restructuring larger.

So far we have not dealt with the question what determines the rate of process and product innovations, i.e the rate of accumulation of new technology. The question whether innovations are positively or negatively associated with the size of firms, the market structure or the intensity of competition, has been widely disputed on theoretical as well as empirical grounds, without any clear–cut answers emerging. However, there is some empirical evidence (Geroski 1988) for the view that increased competition ceteris paribus induces firms to devote more resources to R&D, and/or that it increases the efficiency of R&D activity, and that the effect is large enough to outweight the negative effect on R&D of the decline in expected returns and/or increased uncertainty of returns on innovations that occurs for a former monopolist exposed to competition.

Thus it is not unreasonable to assume that economic integration via increased competition might stimulate innovative activity. However, it is possible that this effect occurs only when the common market is opened to a number of high–performing firms, each capable to respond to competition with innovation. It seems reasonable to believe that the currently most efficient firms are the leaders of the technology race and thus the major producers of

new technology. If regional integration creates a common market, where a number of mediocre firms are competing with one single high–performer, while other highly efficient firms are excluded, innovative activity may even fall.

We have argued that the positive effects on efficiency and productivity of market integration, both in the short and the long run (i.e both the static and dynamic effects) depend crucially on whether the common market includes the best performers or not. If the most efficient firms are excluded, the resulting Salter distribution of labor productivity for the market will be less steep, which leads to a slower rate of restructuring by less investment and exit, thereby lowering the rate of diffusion of best technology. In addition, the effects via an equalization of output prices, wages and rates of return will be less. Finally, the effects on innovative activity might largely be absent.

High efficiency might spread from the superior performers to other firms within a common market in various ways. To the extent that the leading position of a firm depends on the skills of its labor force, human capital can be disseminated via the labor markets. Management competence may be reallocated via take–overs. However, this requires integrated markets with a high rate of mobility of capital and labor, across national boundaries as well as within.

The main dynamic effects from this type of analysis originate in the potential shifts of the Salter curves through innovations, the rate at which innovations are introduced into the economy through new entry and new investment, the rate at which markets direct resources to the most profitable uses and the rate at which new technology force less competent producers to stop investing, contract or exit.

Even in the narrow context of a small economy like the Swedish, the long–term affects on economic growth rates from varying market regime characteristics only, holding potential technology constant, are significant. According to model simulations they imply more than one percent faster growth in manufacturing output per annum on the average, in a fifty year perspective (Eliasson 1981, 1978b). The suggestion is that the dynamic effects

of deregulating Europe may be large, but strongly dependent on the form this process takes.

We have argued that the question whether the EC Internal Market will include the most efficient firms in different sectors is thus crucial for the results. This is, however, an empirical matter, to which we turn in Section 4.

4 Evolving New Technology and the Global Competitive Situation

The long–run competitive situation of EC and EFTA producers depends on the future development of industrial technology and the ability of local producers to innovate. This section will look at potential future global Salter distributions. The next section will place the local EC and EFTA situation into that perspective under two alternative market regimes; Fortress Europe, i.e an internally deregulated EC market that is heavily protected against competition from the outside, and a globally deregulated Europe.

4.1 Global opportunities and the potential for economic growth

It is natural that subgroups of industrial countries, such as the EC, the EFTA, Japan or North America, would lack many of the supreme performers in various markets. Since the interaction between the best performers in a market defines the potential for technological competition, excluding supreme performers from competing in the internal EC market would necessarily reduce its potential for innovation and economic growth and reduce the capacity of local producers from ever learning to catch up.

We argue that adding external competition from superior non–EC competitors, i.e the global deregulation scenario, would significantly raise the potential from a deregulated EC internal market, and make it more similar to the US internal market. In many markets the superior performers are to be found outside the EC countries. By choosing one particular regime of market intergration and regulation, one determines both the potential for internal EC competition and the vulnerability of existing industrial structures.

4.2 Effects of new technology

New technology shifts the left upper end of the Salter distributions upwards and forces the tail members to do something about their situation or exit. But technology is much more than machines and manufacturing production of tradeable goods.

First, the attention paid to the manufacture and trade of goods, notably simple goods for bulk markets, mean that we neglect the welfare and employment effects originating in a larger and more rapidly expanding part of the economy. The emerging industries of advanced countries are increasingly oriented towards the production of high quality goods or knowledge intensive but less easily tradable services for specialist niche markets.

Second, traditional economies of scale in the processing of goods appears to be of rapdly diminishing importance (Carlsson, 1988), reducing the relevance of the new theory of international trade as conventionally formulated. However, "economies of scale" in other dimensions appear to gain in importance, especially economies of scale that stretch across national boundaries, as in R&D, marketing and distribution, (Eliasson, 1987a). It appears as if the supreme performers in this respect very much reside outside the EC. Finally, an obvious scale factor is industrial competence itself, manifesting itself both in innovating firms and in the competence to build, run and constantly revitalize giant international firms (Eliasson 1988a,b).

Modern industrial nations tend to have less than one third of their total resource use in manufacturing. Any study on the industrial competitiveness of a nation has to take a account of activities that are not statistically classified as manufacturing or goods production. The reason is that industrial competiveness is strongly affected by the efficiency of certain service producing activities, whose output is used as inputs in the industry sector. (Eliasson & al., 1989). It appears that in a small open advanced economy like Sweden, manufacturing goods production together with related service production makes up about 50 percent of GNP, and that this sector, in contrast to the frequent talk of de–industrialization, has not been decreasing at all.

A closer look at the manufacturing sector reveals that the share of unskilled labor has been on a steady decrease, and that more than half of labor input goes into knowledge intensive service production (information processing) oriented towards raising the quality of goods produced. This mean that technological change in the firm and all the way up to the national level is closely related to the advance of information technologies in a broad sense,

including organization technique (Carlsson, 1981, Eliasson 1989).

International comparisons of levels of technology are not without relevance and certainly conjures up and reinforces the kind of worries reflected in the Europe 1992 initiative – a laggard Western Europe, in need of technological revitalization. However, the focus is too strongly on production of traditional manufacturing products. The question is wether this is really important for the future of industrial Europe, or wether the emergence of new industries and products is really what will matter.

The most advanced stages of automation are more typical of non–traditional manufacturing industries, like electronics, aircraft industries etc than of mechanical engineering industries manned with blue collar workers. These new industries are much more dominant in the US than they are in both Japan and in Western Europe. Perhaps the absence of these firms in large numbers is what really constitutes the European problems, rather than the absence of sophisticated automation techniques.

One could argue that the slow restructuring of Western Europe has (after the oil crises) slowed the introduction of new types of industries. It seems likely that traditional European firms, protected from outside competition, have been reluctant to engage in extensive risk taking associated with the introduction of radically new industries.

A central question, we belive, is wether a Fortress Europe with continued protection of the European firms, will allow them time to work up their learning curves, as the advocates for "the new protection" suggest for US industry? Will internal deregulation combined with an open 1992 market policy force European firms to perform up to Japanese and US standards, or will it force them out of business, moving the industrial heartland out of Europe?

4.3   Innovation, competition and technological performance

Empirical studies of innovation are mostly restricted to technology in hardware. Some studies indicate that innovation may increase with competition (Geroski 1988). The ability to learn and be innovative depends on diversity of competence exhibited in competitive markets. Studies made on the variety and distribution of industrial competence tend to show a change in favor of the outside, non — EC world, which could be expected from the relative size and industrial wealth of the EC and and the rest of the world. However, as Patel & Pavitt(1987) argue, there are many sophisticated producers in Western Europe being superior to non European firms in their areas. Hence, Western Europe is not necessarily inferior neither in R&D, innovativeness or in the ability to introduce technology into industrial scale even through the sophisticated producers appear to be relatively more freqvent (Pavitt & Soete, 1981) in some EFTA countries, e.g Switzerland and Sweden, than in the EC.

4.4   The composition of firms, technology and competitiveness

Studying growth of firms brings in the size composition of firms. While the large firms of an industrially advanced economy dominates the volumes behind economic growth and standards of living, small firms are often said to include the innovators from which the larger volume producers of the future will be selected. Hence, the links over time have traditionally been thought of

Table 1A   Industrial R&D in various countries

a) percent of value added

EC	1967	1975	1985
West Germany	1.3	1.7	2.4
France	1.4	1.4	1.8
U.K	2.0	1.7	2.0
Italy	0.4	0.6	0.9
The Nether-lands	1.5	1.5	1.5
EC & EFTA	1.3	1.4	1.8
Sweden	1.3	1.6	3.1
WORLD			
Japan	0.9	1.3	2.1
U.S.	2.4	1.8	2.3

Tabell 1B   Industrial R&D in various countries

b) percent of investment in machines and buildings

EC	1964	1967	1975	1985
West Germany	11.0	19.1	16.3	(20.0)
U.K.	31.6	38.0	13.8	19.9
Italy	—	—	4.1	(9.0)
The Nether-lands	—	15.2	9.7	(8,0)
Sweden	16.6	18.4	17.1	19.7
Japan	7.8	8.2	—	—
U.S.	61.0	56.0	16.9	22.8

Note: Figures include both privately and publicly financed R&D in manufacturing.

Source: Eliasson (1971), Patel–Pavitt (1988a)

as the dynamic evolution of a group of differently sized business organizations.

Patel & Pavitt (1989) present an interesting analysis of the large firms as developers, carriers and diffusers of technology. They look at R&D spending and patenting. They find — as we have already observed — that Europe tends to lag behind U.S. and Japanese firms technologically (in patenting), and especially so if Europe is restricted to the EC members. They also find, however, that supreme performers exist everywhere. Europe may have an edge in chemicals and mechanical engineering, and is weak where Japan and the U.S. are strong, in electronics. Swedish performance appears rather exceptional for a small nation, and some larger European firms show up as internationally supreme technological patenters (Bosch, Philips, Siemens and Thomson). These conclusions are also consistent with the statistics on industrial R&D.

The problem with studies of the Patel—Pavitt type is the focus on measurable inputs in hardware technology development. This neglects non—formalized innovative research in small firms or startup firms. Above all it neglects the real competence of the giant business organizations, namely the competence to manage all the dimensions of industrial activity involved in developing a business to industrial scale, running it efficiently, and successfully reorganizing it as markets change (Eliasson 1988b). In this picture, being technologically innovative is not the key issue, it is the ability to acquire the necessary technology at the right time and to bring it into markets on an industrial scale. This is more a matter of advanced management technology than of creating hightech products. Here large Japanese, Swedish and Swiss firms have often been more successful than EC firms, and this may partly explain the relative shrinking of average firm and establishment size in the large EC countries observed by Carlsson, (1988), while a contrary development can be observed in e.g Sweden.

4.5   Conclusions on technology

Our conclusions on technology are straightforward. The classical firm — a maker of goods for basic markets — is rapidly diminishing in importance in the advanced industrial economies. The contraction of the share in total production of such industries has initiated a debate on deindustrialization. Our conclusion is that deindustrialization is a non—issue. Neglecting private service production, however, means neglecting the essence of industrial development during both the past decades and the future when it comes to content of production.The modern manufacturing corporation is becoming very similar to the sophisticated service producers, having often an internal service production, made up of different forms of knowledge based information processing.

Much of the output of the modern firms will be either "quality" of tradable goods, services produced domestically, or sophisticated services produced where demanded, altogether increasing the importance of specialized niche—markets. The ability to compete successfully in these markets will be determined by the ability of local firms to keep abreast of the technology race through internal competence accumulation. Such competitive competence accumulation in the evolving advanced industries is impossible without direct engagement in competition in the most sophisticated markets, making the new "protected classroom" argument of the industrial targeting school for industrial revival misleading.

5 Multinationals as Intermediators of Resources and Competence

The classical explanation of the multinational firm is exploitation of economies of scale through widening of markets, thus overcoming barriers to trade. The multinational firm, however, cannot be understood if not introduced as well as a learning organization, i.e as a particular organizational solution to accumulate and keep competence.

Since the EC and EFTA countries are differently endowed with international firms and since the rapid evolution of new technology on a global scale makes "learning" increasingly important, the structural effects on EC and non–EC countries will be very different depending upon whether we believe in a "Fortress Europe", where direct investment from third countries is restricted, or if mobility of capital and entrepreneurship is allowed within the scenario of an "Open 1992 Europe". But the conclusions will also differ significantly depending on whether we think in terms of the traditional, national, goods producing firm, or in terms of the emerging new type of international, knowledge intensive, service producing manufacturing firm.

5.1 The multinational firm as a global competence organization

In the modern manufacturing firm only a rather small part of total resources is devoted to factory production, increasing shares being spent on developing (R&D), marketing and distributing products. These activities are largely organizational and involve typical information processing techniques. Economies of scale appear to be of diminishing importance in factory production but growing in importance in product development and distribution. This is probably the main reason for the emergence of successful international firms.

The firms we are observing as successful global competitors (Eliasson 1988a) are partly recognized as based on production and distribution scale in mature markets (Electrolux, SKF, Philips etc.). All international firms, however, to an increasing extent compete technologically with product quality, being subjected to unexpected new product technology development in competing

firms. Many of these innovations are not direct qualities of the good being traded, but related qualities like distribution form, availability, reliability of maintenance, instruction facilities etc; qualities that are sometimes not even produced in the manufacturing sector. Indeed, a very important part of the unique competence whereby large firms compete with one another globally has to do with the competence to operate large international organizations that integrate all these dimensions of the product successfully (Eliasson 1988b).

Developing such competence is not possible in isolation in unsophisticated markets. It is no coincidence that all advanced manufacturing firms compete in the same markets for industrial goods in the industrialized world. Advanced firms not engaging directly in markets with the best global producers will not be efficient learning organizations. The fortress Europe scenario will shut out non–EC firms from EC markets and shield EC firms from their most important learning experience; head on competition from the best producers on their home market. In this case the transmission of new industrial competence across borders has become perhaps the most important information technique for long–run industrial survival (Eliasson 1988a). This transnational mobility of entrepreneurial and industrial competence within the multinational firms makes the traditional trade model less useful for analyzing the consequences of economic integration.

Three circumstances related to this are of importance for understanding the effects of European integration directly on the EC and indirectly on other economies. First, the international firm is increasingly seen as an intermediator of industrial competence also among the industrial nations.

Second, many of the most sophisticated international firms reside outside the EC economies, constituting – so to speak – the perceived problem of European competitiveness, voiced by the Cecchini report. Several of these important firms, are based in potential member countries of an enlarged European community.

Third, the industrial competence necessary for long run survival of industrial firms is embodied in a relatively small group of executive professionals. The

rapid growth of multinational firms is making this group increasingly, internationally mobile in the internal labor markets within these large firms. Industrial nations concerned with continued competitive performance from a domestic base and economic growth will increasingly have to pay attention to the importance of keeping their domestic environment attractive for this group (Eliasson 1988a).

The more rapid the transformation of industrial firms into knowledge based information processors operating in global market is, the more important is this factor. The expansion of production and distribution networks abroad, amounting to more than 30 percent of value added in Swedish industry, illustrates this.

Sophisticated producers, being excluded from the internal market of Fortress Europe, will enter the EC through direct investment or acquisitions, even though they would prefer, for cost and efficiency reasons, to expand at their home localization and export. This is apparently already taken place in large scale for e.g Swedish firms. Expansion abroad will probably be in production and distribution, while more sophisticated activities will continue to be carried out locally, as long as sufficient competent labor is available. This means that non–EC producers may introduce rather unsophisticated production into the EC, thus increasing employment there, reducing similar employment in their country of origin.

5.2 A financially deregulated Europe

The outcome of competition is reflected in rates of return of companies. Some of the differences in rates of return are nationally determined through country specific comparative advantages or national economic policies, including exchange rate policies. But most of the differences between firms have to do with unique firm competence endowments, that exercise a decisive influence on intra sector trade between countries. This firm competence is synonymous with the positions of firms on the Salter curves. Such competence is to some extent imitable and its economic value depends on the rate at which competitors learn or come up with better ideas . As long as this competence is

unique and commercially viable it generates a temporary Schumpeterian rent to its "owner".

The opening up of competition on a broader international base will change the distributions of rents from unique firm competence within the international market. Such changes will first affect the flows of financing in capital markets, forcing low end performers to contract or shut down, and stimulating profitable producers. Second, financial markets, notably the agents of the stock market, will also take a more active part in restructuring industrial Europe through acquiring, recombining, splitting up or closing down low performing firms. A standard method of improving firms taken over is to replace its top executive team, thereby reorganizing the allocation of industrial competence.

Where, in between a segmented, classical European market for entrepreneurial and industrial competence and the dramatically free U.S. market for ownership and control Europe will eventually wind up, is an open question. On the surface Europe appears rather free from restrictions on external or domestic raiding activity, even though some nations, i.e. Sweden, exercise foreign establishment controls. There are, however, more subtle factors and rules that rein in foreign raiders. The most important rules may the protective shields of cross ownership, tacit ownership groups, controlling holding companies and dual shares arrangements introduced by firm owners themselves, to protect them from hostile take overs in the capital market. Another reason for the absence of U.S. raiding in Europe may simply be a slow and not very innovative financial system.

Empirical studies of the "internationalization" of industrial raiding and takeovers within Japanese trading houses, German or Swedish industrial banks or market structures where manufacturing firms dominate raider activity show a different technique that compares favorably with the pure financial wealth reshuffling activities in the U.S. market. These studies, however, really do not carry enough information to pass judgment on these issues, but the fact that Europe senses that it has a structural problem may have its roots in the organization of its financial markets.

Our analysis of the relative competitive advantages of different regions suggests that Europe will offer great opportunities for outside hostile raiding if financial markets can be reorganized to support such activity. Our conclusion will be that if the European market for ownership and control is not opened up, there will be no viable Europe 1992, as intended, and comparable to Japan and the U.S. Since many of the superior performers are to be found in EFTA, in North America and in Japan, the issue around which the whole discussion should turn is whether outside firms will be allowed in the future to launch competitive attacks on sluggish European competitors. Let us go through the argument.

First, on the efficiency of financial markets per see and the ability of Europeans to raise capital, we see no particular problem. An innovative international capital market is already in place and available, drawing financial resources from the European economies. The financial capacity to pool large financial resources for takeover activity exists.

The question is (second) to what extent these resources will be freely available to remodel European industrial structures according to potential returns to investment. The most important restrictive legislation and practices appears to be arranged by the firms themselves, i.e. protective devices that in many cases are being outlawed in the U.S. In the spirit of the Internal Market proposal, many of these practices will have to be banned as well in the EC area.

We argue that the main reasons for the absence of viable takeover activity on the European scene are two. First, much of it is already going on through acquisitions by firms (competent insider) rather than by agents in the finance markets. Second, we still have to see the common European financial system come to life.

6 Consequences for Firms in Non–Member Countries

6.1 Short run static effects of eliminating non–tariff barriers

After discussing the effects of the Internal Market on the member countries themselves, we now turn to the effects on industrialized third countries.

Eliminating barriers to trade among members of the Common Market will reduce prices on imports from other member countries, reflecting reductions in costs of production, transport or development.In the case of a competitive industry with constant or increasing costs, the elimination of a barrier that increases costs on trade, such as border controls, will shift the import supply curve from member countries downward on the market of each EC country. This will in general increase imports from member states, at the expense of domestic producers and/or non–member producers.

These negative effects on outside producers occur only if there is trade diversion. To the extent that trade creation dominates, outside producers will not be much affected. If external imports are restricted by quotas, a customs union, or indeed any form of liberalization of non–tariff barriers, gives no trade diversion effects at all.

Empirical studies of trade flows (cf section 2.2) show that the creation of the EC in the 1960s resulted in very limited trade diversion effects. Since the share of the current EC countries of world manufacturing in the 1990s will scarcely be less than the corresponding share of the six original members in the 1960s, and since external tariffs and other external non–tariff barriers (except for quotas) on average seem to be less restrictive than in the 1960s, trade theory predicts that trade diversion will not occur to any greater extent in the 1990s than it did in the 1960s. However, this does not exclude that substantial trade diversion effects may occur in certain markets and product groups and for particular suppliers.

Elimination of extra costs on trade will change the market shares in the EC. If the trade barrier in question is of the kind affecting costs of production, such as technical barriers to trade, the effect might be a downward shift of

the supply curve, and thus an increase in market share, of member countries on all markets, including non—EC countries.

However, the elimination of some internal barriers to trade among EC countries might also benefit non—member producers. Furthermore, the outcome will not necessarily be that members gain more than non—members. Consider the case where different national product standards in an industry are harmonized among EC members. This will enable EC producers to sell one single product in all member countries, instead of many different varieties, thus lowering costs by utilizing economies of scale in production and product development. However, this option is also available for outside producers. It is conceivable that the cost reductions could be even larger for non—EC than for EC firms, even though the product norms of the non—member countries are not harmonized with those of the EC. Thus, harmonization need not necessarily hurt non—member firms.

The same argument could be made for the elimination of border controls. Each border crossing means increases in costs of administration and transports. Thus firms in third countries, whose exports have to cross several national borders within the Common Market in order to reach their destination will also gain when the EC countries abolish national border controls among themselves, even if border controls towards goods entering the Internal Market from third countries remain.

To the extent that some barriers are reduced more for internal than for external trade, and external barriers are raised — we will return to this point — some discrimination against third country producers is inevitable. The question is, however, how important this discrimination will be, compared to the discriminatory effects of the external tariffs of the EC and EFTA countries in the 1960s and 1970s.

The average nominal tariff for manufactures for the EC and EFTA member countries in the late 1950s ranged between 6 and 16% (Lundberg 1976). The (unweighted) average post—Kennedy Round tariff in 1972 in the EC for industrial goods was 6.4% (ibid.).

Non—tariff barriers are notoriously difficult to quantify. However, the average increase in costs imposed by border controls among the EC countries have been estimated to around 2% of the value of internal EC trade (Ernst & Whinney 1988, Pelkmans & Winters 1988). The cost increasing effects of technical barriers to trade and discrimination in public procurement are still more complicated to estimate. It has been shown (Reseach on the costs of non—Europe 1988) that these costs for certain products could be substantial, and probably much higher than the tariffs. However, on average for manufactured goods, these barriers are scarcely higher than the tariff barriers in the 1970s (Lundberg 1989). Thus one could argue that the discriminating effects of eliminating this kind of non—tariff barriers to trade among the EC countries, while keeping them unchanged towards imports from third countries, would not be any larger than the corresponding effects of the EC external tariffs in the 1960s and 1970s.

6.2 Long run restructuring effects

In industries where firms are engaged in oligopolistic competition and where strong economies of scale prevail, an elimination of trade barriers will most likely affect the firm structure. In general, one may expect a move towards higher concentration of producers in each country and fewer products in longer series, which will reduce costs through economies of scale (Smith & Venables 1988). Increased competition by the opening up of markets to producers from other member countries will result in downward pressure on prices by reducing price—cost margins. In addition, costs will be reduced further by an improvement in x—efficiency. However, the restructuring effects will take some time to materialize.

Cost reductions due to industrial restructuring will increase competitiveness of all remaining EC firms compared to outside producers. It will thus reinforce the short run negative effects via relative costs and prices. However, these effects will not be equally important in all sectors.

The long—run impact on non—member firms of the creation of the Internal Market of the EC will be concentrated to those industries where the integration effects within the EC are large. There are several criteria for

identifying such industries. The first is that there should be large and restrictive barriers to trade among the EC countries or restrictions on competition among EC firms. If current barriers are already low or non—existent, the integration effects will be negligible.

Other criteria of segmented markets are the size of intra—EC trade and the size of price differentials among EC countries for the same products. Large price dispersion and small trade among member countries indicate severe barriers to trade and hence large integration effects.

Second, there should be large and unexploited economies of scale. In concentrated industries, with few firms, where national markets are small compared to the optimal firm scale, the effects on costs of structural change will be large.

In some sectors, the effects of a deeper integration of markets for goods and services in the EC, in the sense of removing barriers to trade in goods and services, are likely to be small or negligible. This will be the case for sectors where markets for natural reasons are local or regional, such as retail trade, hotels and restaurants and repair shops.

Another group of industries whith small integration effects are those where barriers to trade are low and intra—EC trade is large. This group includes consumer goods such as textiles, wearing apparel and shoes, but also industrial input goods such as paper and plastics. The markets for those products groups may be seen as well integrated. Another indicator is the generally low price dispersion among EC countries for these products. (The economics of 1992).

The largest effects of integration can be expected in industries where remaining non—tariff barriers and regulations of competition are restrictive, intra—EC trade low, economies of scale substantial and concentration high. One example is the industry for collective means of transportation, e.g railway cars and buses. In this case, the dominating trade barrier has been discrimination against imports in public purchasing. Another case is the pharmaceutical industry. The fragmentation of this market in the EC is

caused by the requirements that new pharmaceutical products must be tested and accepted in each member country separately. A high degree of fragmentation is indicated by a large price dispersion for pharmaceutical products. (The economics of 1992).

In the services sector, the largest effects of deregulation will appear in civil aviation, road transports and banking and insurance. These effects will occur through the utilization of economies of scale and by reductions in x–inefficiency through increased competition.

Another group of industries where large integration effects can be expected consists of products where national markets in the EC are separated, and where EC producers, thus confined within their national markets, suffer a competitive disadvantage in relation to American and Japanese producers due to small scale production and insufficient or ineffective R&D. In these product groups, intra–EC trade is small, and trade is dominated by imports from third countries. Among such product groups we find telecommunications equipment, in particular telephone exchanges, computers and office machines and medical instruments. These industries are characterized by a high R&D intensity and substantial economies of scale, mainly in product development. Up to now, the integration of EC markets has been restricted by discrimination in public procurement. Economic integration can be expected to increase concentration and firm size and thus improve the competitiveness of EC firms relative to non–member producers.

6.3 Integration and the growth of demand for imports

In the long run, the most important factors determining the consequences of the establishment of the Internal Market on third countries and outside firms are the effects on the rate of growth of EC import demand, and the effect on technological progress in the outside firms. The rate of growth of demand of imports from the rest of the world depends on the rate of growth of real income in the EC, on the import elasticity and on the external trade policy.

The effects of economic integration on the rate of growth of real income depend on allocation policy as well as stabilization policy – the latter will not

be dealt with here. With respect to allocation policy, the critical point appears to be to what extent the competitive process initiated by integration is allowed to work itself out in the form of industrial restructuring, or whether political reactions to adjustment problems will create obstacles to structural change.

Unemployment will result if a shift in relative competitivness among industries and firms leads to changes in the relative demand for different groups of labor, with different skills and localized in different regions, when intersectoral and interregional mobility is limited and the structure of relative wages rigid. However, in a fast growing economy, industrial structure may change without creating adjustment problems.

As mentioned in section 2.2, most of the increase in trade among the EC countries in the 1960s was in the form of intra–industry trade, implying a specialization within rather then between industries. It may be argued that a redistribution of labor and capital among firms within a given industry, or even within the same firm, will give rise to less problems than would a massive reallocation of resources between industries. This is based on the assumption that the specificity of factors is related more to industry than to firm, i.e that the skill of a given worker is more useful in another firm in the same industry than outside the industry.

It is reasonable to assume that adjustment problems leading to unemployment, even if local and temporary, will increase the demand for assistance and/or protection. Since the rules of the Internal Market exclude the possibility of restricting access to the market for other EC firms, protection has to be given either as (national) subsidies or as (common) restrictions on imports from non–members.

Most of the inter–industry trade and specialization created in 1992 will occur between the original 9 members and the new South European members. If this would generate adjustment problems and demand for protection especially in Spain, Portugal and Greece, restrictions would probably be directed primarily against developing countries and the NICs, from which direc competition with South European producers is strongest.

6.4 Strategies of firms from non–member countries

The reactions of firms localized in non–EC countries to the repercussions from the effects of the establishment of the Internal Market on the EC countries themselves will presumably be different, depending on which one of the possible scenarios that the integration process will follow. In one variant of Fortress Europe, i.e. a protective scenario where the EC raises protectionist barriers towards the import of goods from third countries, outside exporting firms would probably react by direct investment, thus overcoming the trade barriers. This is likely to be investment mainly in production and distribution facilities, while other activities, such as R&D would be kept at home. The main effects would be an increased demand for labor of low or medium skill in the EC labor market, while employment at home is reduced to the same extent.

In another version of Fortress Europe, the EC would rise barriers to direct investment as well. As we have argued, this would to a large extent eliminate the potential benefits that could be obtained in a deregulated Europe, thus lowering static as well as dynamic efficiency. The loss to exporters in third countries through a reduced long–run rate of growth of demand in the EC for imports from third countries could, as we have argued, be substantial. On the other hand, import competing small firms in third countries should benefit from an inward looking EC.

The scenario of an Europe in 1992 open to competition from outside on the goods and services markets as well as on the capital market by a far–reaching process of deregulation could, as we have argued, have an important positive effect on economic growth in the EC. The effects would appear through an increase in the rates of production and diffusion of new technology. This, of course, would stimulate exports from firms in third countries. However, there could well be some stimulus to direct investment as well. Such investment would in this case be induced by the motive to be close to an advanced and expanding market, and would thus concern other industries (e.g. products in early phases of the life cycle) and other activities (e.g. R&D) than in the previous case.

An important but difficult issue concerns the effect of a dynamic and innovative EC on innovativeness and diffusion of technology in the industry in third countries. A possible outcome might be a general increase in the intensity of global technological competition. This could have important positive effects on economic growth in the non–EC world.

Appendix. A model for analysis of effecs of competition.

This is a formal elaboration of the graphical analysis in section 3. We introduce so called Salter curves representing the performance characteristics of the economy; productivity, or rate of return distrubutions over firms.

The intensity of potential competition in each market is directly related to the spread of the Salter curves of the firms allowed to operate in each market. The actual intensity of competition will decide which firms generate profits, invest and grow and also the rate of competitive exit at the right end of the distribution.

Mathematically Figures 1 can be represented as follows (see Eliasson 1984).

Introduce the real rate of return:

$$R = M\alpha - \rho \tag{1}$$

where α is the inverted capital output ratio, and ρ is the rate of depreciation of capital. The gross profit margin (M) on value added can be decomposed into:

$$M = 1 - \frac{w}{p} \cdot \frac{1}{\beta} \tag{2}$$

where

w   = wage cost per unit of labour input (L)
p   = the value added (=Q) deflator
β = Q/L, labor productivity.

The Salter distributions in Figures 1 are β rankings over firms expressed in

the current (local, regional) price level.[4] The horizontal lines show the real wage cost levels (w/p).

Suppose for the sake of graphical simplicity that capital coefficients (α, ρ) are equal across firms and regions and that the labor market in each region is perfect (there is only one wage cost level). We can then carry on our productivity argument in terms of labor productivities only. This is of course not correct, but it saves one dimension in the graphical presentation.[5] The rankings in each region then transform monotonically into M rankings (= differences between Q/L and w/p) and again into rate of return rankings R. Different ranking positions correspond to differences in unique firm competence expressed analogously to rankings of Ricardian rents.

In the Swedish micro–to–macro model the capital market imposes rate or return targets (R) on firms. Investment behaviour of each firm is determined by the expected difference between R and the real interest rate. Short term production decisions are controlled by short term targets on M derived from targets on R and expectations on w and p. As a consequance labor productivity becomes a short term adjustment parameter of the firm. In the short run, x–inefficiency (slack) can be reduced. In the long run, R and Q/L distributions can be improved through innovation and investment. This is more or less the way we have phrased the verbal discussion in earlier sections.

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[4] Since trade between areas is not (yet) free neither relative nor absolute, price levels are the same, expressed in the same currency. Furthermore, both product and factor prices may vary across the firm population of each region.

[5] The analysis would not become more relevant if we add capital, since the productivity difference we compare originate in a number of different factor input. Choosing two instead of one won't help. If we desire to be really relevant we should express ourselves in terms of direct measures of competence. We would then, however, get involved in a host of new, very relevant problems (Eliasson, 1988a,b) that we will discuss verbally in section 4.

References

Balassa, B., 1975, <u>European Economic Integration</u>. North-Holland.

Burenstam Linder, S., 1961, <u>An Essay on Trade and Transformation</u>. Wiley & Sons.

Burenstam Linder, S., 1962, Sveriges handelspolitiska alternativ: den ekonomiska innebörden. <u>Ekonomisk Revy</u>.

Carlsson, B., 1983, "Industrial Subsidies in Sweden: Macroeconomic Effects and an International Comparison. <u>Journal of Industrial Economics</u>, Vol. 32.

Carlsson, B., 1988, <u>The Evolution of Manufacturing Technology and Its Impact on Industrial Structure – An International Study</u>. IUI WP 203.

Eliasson, G., 1971, Forskning, investeringar och utveckling (R&D Investment and Development), <u>Affärsvärlden/Finanstidningen</u> nr 47.

Eliasson, G., 1981, Electronics, Economic Growth and Employment – Revolution or Evolution? in Giersch (ed.). <u>Emerging Technologies: Consequences for Economic Growth, Structural Change and Employment</u>. Reprint from Emerging Technologies: Consequences for Economic Growth, Structural Change, and Employment. Symposium 1981 Institut für Weltwirtschaft an der Universität Kiel. IUI Booklet No. 131.

Eliasson, G., 1984, Micro Heterogeneity of Firms and the Stability of Industrial Growth IUI Booklet No. 183, reprint from <u>Journal of Economic Behavior & Organization</u>, Vol. 5, 1984.

Eliasson, G., 1985, <u>The Firm and Financial Markets in the Swedish Micro–to-Macro Model – Theory Model and Verification</u>, IUI, Stockholm.

Eliasson, G., 1987, Industrial Targeting: Defensive and Offensive Strategies in a Neo-Schumpeterian Perspective in Giersch (ed.). <u>Free Trade in the World Economy – towards an Opening of Markets</u>, Tübingen 1987.

Eliasson, G., 1988a, <u>The International Firm: A Vehicle for Overcoming Barriers to Trade and a Global Intelligence Organization Diffusing the Notion of a Nation</u>, IUI WP No. 201. Paper prepared for the Prince Bertil Symposium at Stockholm School of Economics, November 9–11, 1988.

Eliasson, G., 1988b, <u>The Firm as a Competent Team</u>, IUI WP No. 207.

Eliasson, G., 1989, <u>Modeling Long–Term Macroeconomic Growth as a Micro-Based Path Dependent, Experimentally Organized Economic Process</u>. Paper presented at the OECD International seminar on Science Technology and Economic Growth, Paris June 5–8, 1989, also IUI WP No. 220.

Eliasson–Fölster–Lindberg–Pousette, 1989, <u>The Knowledge–Based Information Economy</u>. Forthcoming.

Ernst & Whinney, 1988, The Cost of Non-Europe: Border Related Controls and Administrative Formalities. Research on the cost of non-Europe. Basic findings, Vol. 1.

Flam, H. and H. Horn, 1989, Ekonomiska konsekvenser för Sverige av EGs inre marknad. En översikt av tillämplig ekonomisk teori och empiri. Svensk ekonomi och Europaintegrationen. Bilaga 2 till LU 90.

Geroski, P., 1988, Competition and Innovation. Research on the cost of non-Europe. Basic findings. Vol. 2.

Helg, R., and P. Ranci, 1988, Economies of Scale and the Integration of the European Economy: The Case of Italy. Research on the cost of non-Europe. Basic findings. Vol. 2.

Hine, R.C., 1985, The Political Economy of European Trade: An Introduction to the Trade Policies of the OECD. Wheatsheaf Books.

Jaquemin, A. and A. Sapir, 1988, European Integration or World Integration?, Weltwirtschaftliches Archiv 124.

Johnson, H.G., 1958, The Gains from Freer Trade with Europe: An Estimate. Manchester School of Economic and Social Studies.

Lundberg, L., 1976, Handelshinder och handelspolitik, IUI, Stockholm.

Lundberg, L., 1989, Svenskt näringsliv och den europeiska integrationen, in Svensk ekonomi och Europaintegrationen, Bilaga 2–5, LU 90.

Nerb, G., 1988, The completion of the internal market. A survey of European industry's perception of the likely effects. Research on the cost of non-Europe. Basic findings, Vol. 3. Commission of the European Communities.

Patel, P. – Pavitt, K., 1987, Is Western Europe Losing the Technological Race? Research Policy, Vol. 16, Nos. 2–4 (August), pp. 59–86.

Patel, P. – Pavitt, K., 1988a, The International Distribution and Determinants of Technological Activities, Oxford Review of Economic Policy, Vol. 4, No. 4, pp. 35 ff.

Patel, P. – Pavitt, K., 1988b, Large Firms in Western Europe's Technological Competition. Paper presented to the Prince Bertil Symposium on Corporate and Industry Strategies in Europe, Stockholm, Nov. 9–11, 1988.

Pavitt, K. – Soete, L., 1981, International Differences in Economic Growth and the Multinational Locations of Innovations (mimeo) Science Policy Research, University of Sussex.

Pelkmans, J. and L.A. Winters, 1988, Europe's Domestic Market. Chatham House Papers – 43, Routledge, London.

Pratten, C., 1988, A Survey of Economies of Scale. Research on the cost of non-Europe. Basic findings, Vol. 2. Commission of the European Communities.

Richardson, J.D., 1989, Empirical Research on Trade Liberalization with Imperfect Competition: A Survey. OECD Economic Studies No. 12, pp. 7–50.

Scherer, F., 1975, The Economics of Multiplant Operation. Harvard University Press.

Schwalbach, J., 1988, Economies of Scale and Intra-Community Trade. Research on the Cost of non-Europe. Basic findings. Vol. 2.

Scitovsky, T., 1958, Economic Theory and Western Economic Integration. Stanford.

Smith, A. and T. Venables, 1988, The costs of non-Europe: An assessment based on a formal model of imperfect competition and economies of scale. Research on the cost of non-Euorpe. Basic findings, Vol. 2. Commission of the European Communities.

Williamson, J., and A. Bottrill, 1971, The Impact of Customs Unions on Trade in Manufactures. Oxford Economic Papers, Vol. 23.

Zimmermann, K.F., 1987, Trade and Dynamic Efficiency. Kyklos 40.