



European Integration

Eastern Europe and the Swedish Regions

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European Integration: Eastern Europe and the Swedish Regions*

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Abstract

The integration of Eastern with Western Europe will induce strong pressure on the regional restructuring process in these two parts of Europe. In Scandinavia, the new trade with the east is forced by large differences in factor earnings, technology, and social systems. Although there are similarities, which may stimulate intra-industry trade, large differences in close proximity create incentives for both trade and regional structural change based on absolute and comparative advantages. Since the pattern of regional specialisation in Sweden is highly diversified, some regions will be able to explore the opportunities resulting from this, while others will face intensified competition. In this paper, a newly developed industrial classification based on factor intensities is used to reveal the Swedish pattern of regional specialisation. After the regional picture has been presented, this is followed by a discussion of regional vulnerability based on comparative advantages at the national level.

JEL classification: F14, F15, O18, R12

Keywords: Economic integration, Sweden, Regional structural change, EU, Eastern Europe, Trade, Intra-industry trade, Absolute advantages, Comparative advantages

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1 Introduction

The fall of the USSR revived many relations existing in the pre-revolutionary Russian - Scandinavian network of trade and personal interaction. A sixty-year deadlock on east-west interaction in the north of Europe was abolished. During this time, the development on both sides of the iron curtain has demonstrated essential differences. What remains is a situation quite unique in a global context. Few regions in the world within such close proximity show similar disparities regarding economies in terms of factor endowments, factor incomes, technology, demand patterns, etc. With reference to the possible pattern of trade in such a situation, it may clearly be categorised as a typical Ricardian trade situation of comparative advantages. On the other hand, the close proximity may also foster a development that includes factor mobility and intra-industry specialisation.

It is difficult today to forecast, in more detail, the speed and direction of the emerging Scandinavian - Russian trade, but the planned expansion of the European Union to include most of Eastern and Central Europe, will guarantee a certain steady pace in the integration of Eastern with Western Europe. As a consequence, the changing prerequisites for trade due to economic integration in general and Eastern Europe's administrative integration with Western Europe in particular will not only alter the pattern of specialisation among the nations, but it will also change the positions of the regions within these nations.

In the case of Sweden, we expect the new situation to have a large impact on the regional development during the twentieth century. Furthermore, large differences in factor endowments and specialisation between Sweden and the developing market economies of Central and Eastern Europe will affect Swedish regions quite differently. In the short run the dominating force ought to be the exploration of the respective comparative advantages of the nations and regions which will cause pressure on prevailing specialisation patterns. In the longer term, the expanded market will create opportunities for the exploitation of increasing returns to scale and product differentiation. Needless to say, this programme with its aim of identifying threats and opportunities created by the new situation receives a positive response. Nevertheless, our research task is constrained by two given facts. First, there is a lack of regionalised data on trade in Sweden. Second, there are quality considerations concerning the data from the new market economies. In this paper, we introduce a framework for analysis, which tackles these problems by connecting national trade figures with regional employment statistics.

The close proximity of the eastern states may induce factor movements (actually more capital than labour movements) between states, but the focus of this paper is directed mainly towards the reallocation impacts within states in general and between Swedish regions in particular. There is also reason to expect labour migration to be restrained by policy regulations concerning free mobility of people between the new market economies and the EU. Moreover, we expect language differences, cultural and social differences, etc to have a hampering effect on short-term factor movements between the nations.

The current political and economic situation in most eastern economies makes it hard to forecast in detail the speed of economic growth. The purpose of this paper is rather to reveal a structural picture, which may give ground for further studies of the dynamics of integration. Primarily, we will focus on possible directions of regional employment effects. Especially the connection between sectoral and regional reallocation of resources is of great interest. Should we expect a reallocation of resources to regions already relatively highly specialised in a sector, or will internal and external economies of scale induce further pressure on locations far from the larger agglomerations along the East Coast of Sweden?

In the following section, the current Swedish pattern of regional specialisation will be presented. Section three gives a summary of prevailing theories on economic integration. Section four is devoted to comparative advantages and the Swedish trade pattern. Section five discusses regional impacts in Sweden, while conclusions are drawn in section 6.

2 Regional specialisation in Sweden

In order to reveal the pattern of regional specialisation, a new classification of the Swedish industry has been developed. The classification divides the economy into twelve sectors, five of which are commodity producing, and the remaining seven are service oriented. The primary criterion for this division, among the four sectors within the manufacturing industry, is their factor intensity. This is in line with earlier work by, for example Ohlsson and Vinell (1987), but this new classification has been constructed around different and more reliable data, which makes it easier to compare with international data. Our new classification has been thoroughly presented in Eliasson, Johansson and, Westin (1998).

In this paper, a slightly modified classification is used. To simplify the analysis and make it more in line with trade considerations and theories around factor proportions only one of the seven service sectors will be used to reveal regional specialisation, namely the sector of producer services. Taken together, this gives a division of the Swedish economy into six sectors. The characteristics of these are shown in Table 1 below:

TABLE 1

Swedish employment sectors according to factor intensity. The sectors characterised by their attributes in the year 1995.

Sector	Number of employees (% total workforce)	Average annual wages per employee	Average gross labour productivity*
Labour-intensive	426 944 (11.4)	195 021	402 071
Capital-intensive	82 064 (2.2)	228 981	891 221
Knowledge-intensive	149 654 (4.0)	219 423	463 601
Research-intensive	97 295 (2.6)	231 393	519 642
Producer services	440 019 (11.8)	n.a.	n.a.
Primary sector	97 354 (2.6)	n.a.	n.a.
Others	2 443 027 (65.4)	n.a.	n.a.

Note: Labour productivity has been defined as real value added per employee.

Source: Statistics Sweden.

Within the manufacturing industry, the labour-intensive sector is the largest in employment terms but it scores low both on wages and labour productivity. As expected, the capital-intensive sector does well in both categories. The knowledge- and research-intensive sectors both pay higher wages and show higher productivity than the labour-

intensive sector. Due to the lack of data, producer services and the primary sector had to be excluded.

The classification is based on a more detailed division of the Swedish economy into 222 sub-industries according to the three-digit SNI 92 code given by Statistics Sweden 1995. Initially, the capital-intensive sector is identified as the set of sub-industries that uses twice as much capital per output as the manufacturing industry taken together. The remaining sub-industries are thereafter divided into three sectors in accordance with their demand for human capital.

Two sets of estimates have been used to divide the non-capital intensive industry into labour, knowledge, and research intensive sectors. The first estimate is the quotient between the shares of well-educated personnel and personnel of limited education, while the second is the total share of well-educated engineers and natural scientists employed in each sub-industry. Well-educated employees are defined as those with at least three years of university studies, while people of limited education are those with less than two years in upper secondary school.

The research-intensive sector is made up of sub-industries which have twice as large shares as the rest of the manufacturing industry in each of those categories whilst the labour intensive sector contains production units that score under average in both categories. The remaining part of the manufacturing industry, according to this definition those sub-industries that have either a large quota of well-educated employees or a large share of key personnel, has then been aggregated into the knowledge intensive sector.

Producer services have been defined as services primarily directed towards companies and financial institutions. Like our classification of the primary sector, our aggregation of services follows the definitions given in the Swedish Standard of Industrial Classification. Beside financial institutions, this sector contains consultants, advertising bureau's, bookkeepers, etc. By considering only producer services, regional specialisation patterns may be analysed without being influenced by the size of non-tradable services, and particularly the public sector. However, the introduction of the sector of producer services as a sector of tradable services is by no means self-evident since it excludes for instance subsets of tourism. This does not mean that the development of the specialisation pattern is independent of the size of the public and non-tradable sectors, but it will make the picture of the regions' competitive advantages clearer. We will thus extend the analysis and use the original twelve-sector classification to discuss the type of regional restructuring process intensified trade and interaction with Eastern Europe might induce.

To visualise the spatial specialisation pattern an index of regional specialisation based on regional employment in the six sectors has been created. The index relates regional employment shares to national employment shares in the following way:

$$S_i^r = \frac{E_i^r / E^r}{E_i / E} \cdot 100$$

where E_i^r is the number of employees in sector i and region r . As usual, an index of 100 indicates that a sector is as concentrated in the region as it is in the nation, while an index over 100 tells us that a particular sector is more important for the region than it is for the nation in terms of employment.

Moreover, in a structural regional analysis, it is important to consider the type of regional division to work with. In some instances, administrative regions are preferable, while functional regions are most appropriate in other instances. The ideal situation, of course, is when they coincide. The spatial units of analysis in this paper are the local labour market areas (LMAs) as defined by Statistics Sweden and the Swedish Institute for Regional Research (Carlsson et.al., 1993). The division into LMAs is made in two stages and rests upon gross commuting streams between the 286 municipalities in Sweden. The first stage of the procedure decides which municipalities are to be considered as independent in terms of employment opportunities within the municipality (i.e. having a low out-commuting rate), whereas the second stage determines to which of the independent municipalities the remaining ones belong. Through this procedure, the 286 Swedish municipalities are aggregated into 108 LMAs.

Given these criteria, according to which the LMAs have been constructed, one obtains a spatial division in which, for the majority of households, the region of work coincides with the region of residence. The fact that the LMAs consist of integrated housing and working areas also give rise to interesting adjustment processes when the regions are going through periods of economic restructuring. A reduction in demand for a specific category of work must be followed by employees either changing their sectors of employment, an activity that usually necessitates some kind of re-education, or migrating to a new LMA. Both activities will have important dynamic impacts on the regions and on the spatial pattern of activities within the nation.

The comparison between regional and national employment shares in the index of specialisation gives a somewhat distorted picture of regional absolute advantages given the national comparative advantages. There are few chances for a region in Sweden to have a real wage rate that compensates for absolute deficits in order to obtain comparative advantages though these chances are increasing. Hence, the index does not reveal absolute advantages vis-à-vis the eastern economies.

Finally, since this is a multisector comparison, nothing excludes the possibility that a region is specialised in more than one sector, while no region can obviously be specialised in all sectors. To analyse the amount of single and multi-specialisation, Table 2 below has been constructed. Along the diagonal, the number of regions specialised in

only one category is given. The rest of the matrix shows the number of regions specialised in two sectors. To complete the picture, a column containing the number of regions specialised in more than two sectors has been added. The last column gives the actual number of specialised regions within each category.

TABLE 2

The number of single and multi-specialised local labour market areas in Sweden in 1995.

	Primary	Labour	Capital	Knowledge	Research	Prod. Services	Triplets or more	Actual
Primary	9	43	14	7	9	0	18	64
Labour	43	11	15	7	5	0	14	67
Capital	14	15	8	8	8	0	15	38
Knowledge	7	7	8	0	4	1	9	18
Research	9	5	8	4	0	1	9	18
Prod. Serv.	0	0	0	1	1	0	0	2

Source: Statistics Sweden.

It is noticeable how none of our regions are specialised in research- and knowledge-intensive production only. On the other hand the labour- and capital intensive regions tend, to a higher degree, to be specialised in one sector only. This indicates that regions specialised in either knowledge- or research-intensive sectors have a more diversified labour market. The risk of encountering multiples is considerably less given that one of the sectors is either primary or labour-intensive, which indicates that if the labour-intensive and the primary sector were to be analysed together many of those merged regions would be specialised in one sector only.

We will now present the picture of regional specialisation in Sweden as it was in 1995. A region specialised within a sector is defined as a region with at least a 20 per cent larger share of the sector as compared with the national share. Regions with little specialisation are defined as regions with less than 80 per cent of the national share. Figure 1 shows the specialisation pattern of the primary sector. Regions specialised in primary production, indicated by the darkest shaded areas, are found in the northern parts of Sweden but also in a belt across mid-Sweden and in the southernmost parts of Sweden. The ten most highly specialised regions have employment shares ranging from 6 to 20 per cent with an average of 11 per cent. This sector holds 3 per cent of the Swedish workforce.

As shown in Figure 2, regions specialised in labour intensive production are found in the southern highland part of Sweden but to a large extent also in the rest of inland Sweden. It should be observed that Table 2 indicate that 67 of the 108 local labour market areas are specialised in labour intensive production. The ten most highly specialised regions have sectoral employment shares ranging from about 27 up to 61 per cent, with an average of 45 per cent, of total regional

employment. At the national level, the labour intensive sector holds around 11 per cent of Sweden's workforce. Out of those, 47 per cent are located in labour specialised regions.

FIGURE 1 Regional specialisation in primary production in 1995

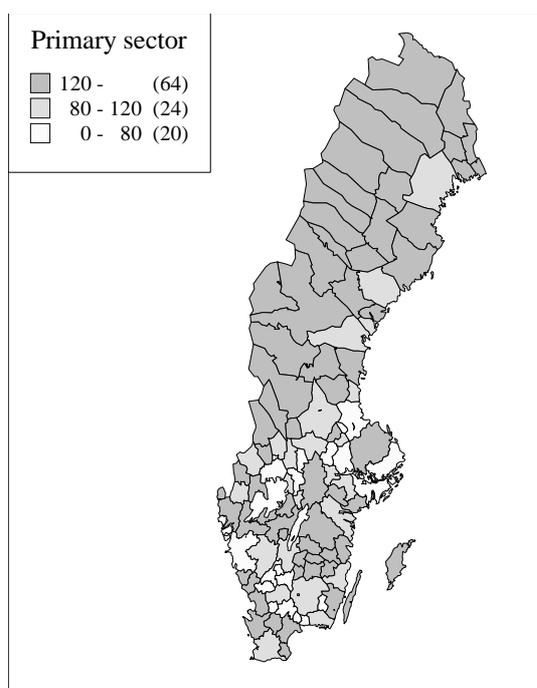
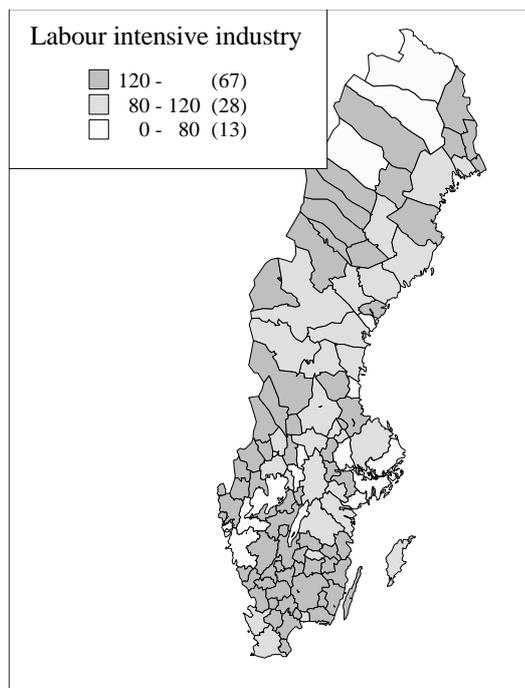


FIGURE 2 Regional specialisation in labour intensive production in 1995



The capital-intensive sector employs two per cent of the Swedish workforce. Regions specialised in capital intensive production, as shown in Figure 3, are found along the eastern coast of Sweden (mainly pulp and paper industries), but also in mid-Sweden where steel works are located. Among the ten regions with the largest shares, we find employment shares between 7 and 33 per cent with an average of 11 per cent. Regions with large shares in capital intensive production units also run the risk of having a large share of their employment resources tied up in just a few production plants. These regions could therefore be vulnerable to structural changes and economic fluctuation.

FIGURE 3 Regional specialisation in capital intensive production, 1995

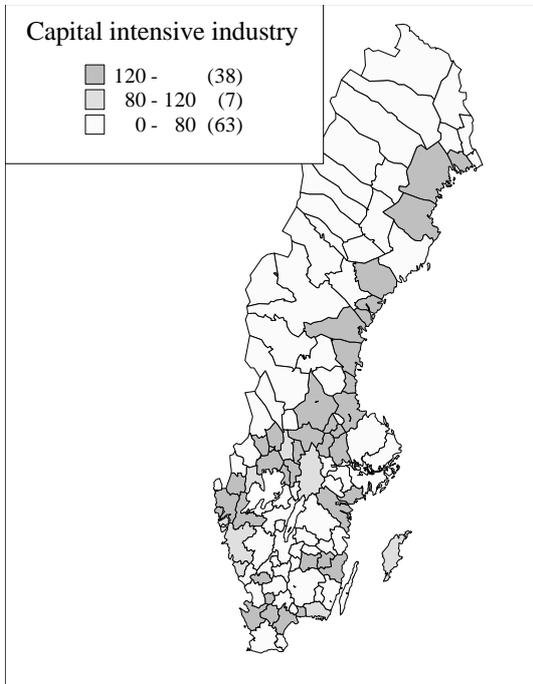


FIGURE 4 Regional specialisation in knowledge intensive production, 1995

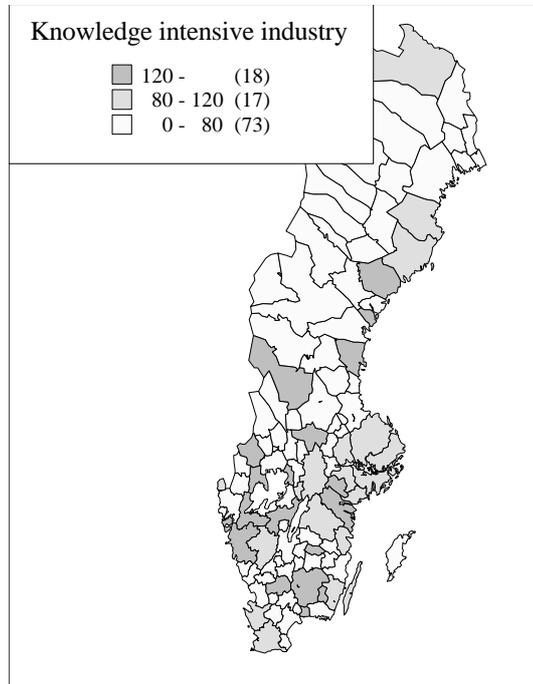


FIGURE 5 Regional specialisation in research intensive production, 1995

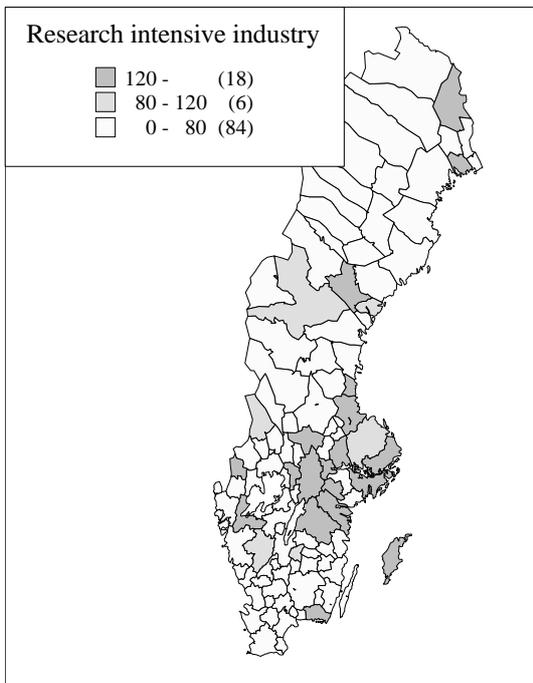
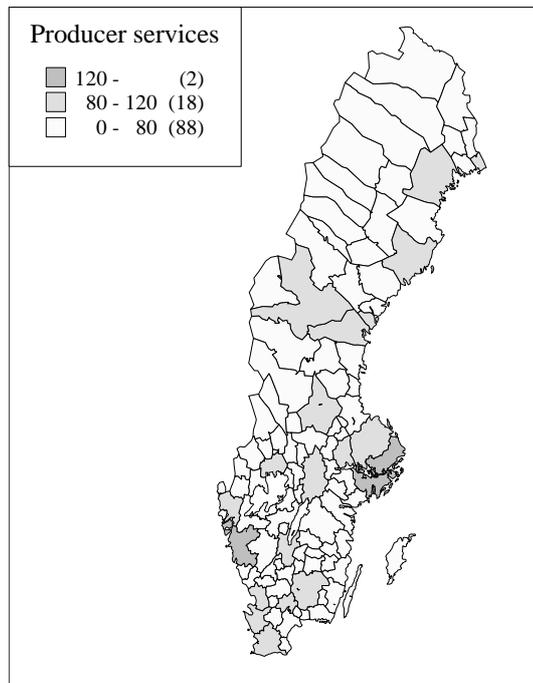


FIGURE 6 Regional specialisation in producer service, 1995



As regards the knowledge intensive sector it may be observed that the number of specialised regions is smaller compared with regions specialised in labour and capital intensive production. We find a high degree of specialisation in the industry belt from Gothenburg to Stockholm, in some regions along the north coast, and in the southern highland (Figure 4). The knowledge intensive sector employs 4 per cent of the workforce and the ten most highly specialised regions have employment shares ranging from 5 to 26 per cent with an average of 9 per cent.

Regions specialised in research intensive production are even more concentrated in the eastern part of mid-Sweden (Figure 5). The ten most highly specialised regions have employment shares between 4 and 16 per cent with an average of 5 per cent. The sector itself employs 3 per cent of the workforce.

Given the criteria that a sector's employment share in a certain region normalised by the nation's share should be 20 per cent higher than the national average, only two regions, Stockholm and Gothenburg, are specialised in producer services (Figure 6). As expected, regions with very little specialisation in producer services are found in the rural parts of Sweden. The ten most highly specialised regions have shares between 6 and 21 per cent with an average of 16 per cent. The sector employs 12 per cent of the workforce.

Naturally, the pattern of specialisation given in the above figures is, to some extent, sensitive to the defined limits for a high and a low degree of specialisation. This sensitivity will, moreover, differ from sector to sector. There is also a trade-off between finding sector specific levels of specialisation and choosing one level for all sectors. Pinpointing extremely specialised regions means losing the possibility of comparing sectors.

So far, we have made some comments on the spatial localisation pattern connected with each sector. It seems that regional size is a strong factor when it comes to explaining the regional specialisation pattern. As Table 3 below demonstrates, research- and knowledge-intensive industries as well as producer services, are located primarily in large agglomerations, while labour and capital intensive industries instead are located in more sparsely populated regions where also the primary sector is well represented.

The figures in Table 3 give some support to the notion of product cycles. In this view, the labour- and capital-intensive sectors ought to contain more mature industries in the sense that their products are standardised and more sensitive to changes in factor as well as in product prices. Karlsson and Larsson (1989) confirm that the labour- and capital-intensive sectors, as defined by Ohlsson and Vinell (1987), indeed include more mature products than other sectors.

TABLE 3

Specialisation indices of six groups of local labour market areas. The national average is 100. Arranged by the index of the group of labour market areas with more than 300 000 inhabitants in 1995.

Sector	Population in local labour markets (1 000nds)					
	>300	>100	>50	>25	>10	<10
Producer services	155	79	68	46	35	31
Research intensive industry	121	103	59	90	21	34
Knowledge intensive industry	120	99	66	87	51	30
Labour intensive industry	58	111	118	152	165	164
Capital intensive industry	39	131	189	106	172	186
Primary sector	36	118	181	142	202	230
Number of LMAs	3	21	10	28	30	16
Total population	3 248	3 347	704	981	456	101

Source: Statistics Sweden.

The conclusion that may be drawn from this section is that functional regions in Sweden have large structural differences. Regional specialisation is related to regional size with more mature products being produced in smaller regions. These differences mean that LMAs have different prerequisites in their coping with the ongoing economic integration in general, and the opening up of Central and Eastern Europe in particular.

3 Predicting impacts of economic integration

Traditional trade theories assume factors to be internationally immobile and may thus revolve around the concept of comparative advantages. In the classical Ricardian model, trade is due to differences in labour productivity. A country will export the goods its labour produces relatively efficiently and import goods produced relatively inefficiently. There are, however, incentives to trade even if products could be produced with the same degree of efficiency in every country. According to the factor proportion theory, the so called “modern” trade theory developed by Heckscher and Ohlin, countries with similar technologies and demand patterns, will tend to export goods whose production is intensive in the use of factors with which they are abundantly supplied. Those trade theories emphasise the fact that trade is generally mutually beneficial. This is due to the positive impact of specialisation in production and more efficient use of the factors inside each country.

Since trade has an impact on both relative factor prices and relative commodity prices, international trade has large income distribution effects inside each country. Exploitation of comparative advantages will therefore induce pressure on certain industrial sectors and on certain factor owners, while other sectors and factor owners will benefit from trade. Total welfare effects of specialisation, within each country, are dependent of factor movements from the sectors of loss to sectors of gain. Obstacles to mobility, such as differences between private and social incentives to overcome imbalances caused by the location of new and old jobs, reduces the possible benefits to trade.

Transportation costs and other barriers to trade between countries will also hinder them to realise their comparative advantages. Hence, in traditional theory, economic integration and reduction of all types of internal and external barriers allow countries to exploit their comparative advantages and increase their welfare.

Traditional trade theories lead us to expect trade to be of an inter-industry type and the amount of trade to be positively correlated with differences in factor abundance, technology, and demand patterns among countries with otherwise similar levels of internal and external barriers. In reality this is not the case. There is a huge amount of trade between well-developed countries with similar factor supply, technology, and demand patterns. Moreover, an enormous amount of this trade takes place within industries. There must be other forces than cross-border trades in transport sensitive commodities, or statistical aggregation of trade over time and sectors, etc., behind this intra-industry trade. Therefore, more recent trade theories focus on the

concepts of economies of scale and demand for variation. Internal scale economies give rise to monopolistic and oligopolistic market structures often modelled as monopolistic competition. In this view, trade creates integrated markets that may support more firms, each producing at a larger scale and selling at a lower price than within each domestic market. Hence, firms are able to produce more efficiently and consumers benefit from a wider choice of products.

Still, there is no general solution to the location problem in this type of models. Although the integrated market supports more firms than each domestic market, some or all of the firms in one country might be wiped out by the competition. Clearly, increasing returns to scale create opportunities for more extreme specialisation. Comparing for example the USA with the EU makes it clear that many industries carry fewer plants in the USA. The explanation may be the heritage of strong national states in Europe, which creates barriers to flows and mobility. Another explanation would be a more diversified demand pattern in Europe than in the USA.

To shed some light on possible location patterns of industries in a more integrated market we must turn to the field of economic geography. By assessing optimal market areas for firms, optimal location patterns can be calculated. In fact, Krugman (1991) formally shows how transport costs and plant-level scale economies may explain the formation of cities. Furthermore, Krugman and Livas (1992) show that size and location of cities are conditioned by the openness of an economy. If internal scale economies make it optimal for production to take place in fewer but larger plants, economic integration will alter the reference market for firms to locations with low-cost access to foreign markets given that the internal market is small.

Another important feature affecting regions' reactions to economic integration is that of external economies of scale. There are several examples of how industries benefit from concentrating production to one or a few locations. Several explanations of this have been suggested. A localised industrial cluster might form a big enough market to keep certain specialised suppliers in business. It might also give rise to a pooled market for highly specialised workers (c.f. Malecki, 1991). Positive external effects in the form of knowledge spillover and infrastructure investments are also part of the explanation. Externalities, in the form of knowledge spillover or learning by doing, etc., figure in recent theories on economic growth (Romer 1986 and 1990; Lucas 1988; Young 1990).

Internal and external economies of scale tend to create positive feedback and path-dependence, which conserves existing patterns of trade. It is thus not clear when trade based on economies of scale gives rise to local and global welfare gains. Concentrating production might realise external economies and positive welfare effects but there is no guarantee that such a locked-in cluster is optimally located after a process of structural adjustment. However, the existence of returns to scale has cast light on the strategic behaviour of firms as well as of

the public sector at meso, national, and regional levels. A wide set of policies has developed in the search of rents and benefits from trade, for instance, various measures to favour investments within a specific sector at the beginning of a new product cycle are well known. Other measures are public guaranties and various barriers in order to foster growth in a given location until an adequate scale has been reached to lock-in an activity.

Clearly this has changed the view on the benefits of trade. Traditional trade theory leads to the conclusion that if only the compensation process within each country as a response to international specialisation is treated well, trade is beneficial to everybody. However, as regional scientists we are aware that intra-national mobility, improved competence and skills, and negotiations regarding compensation schemes are the most problematic parts of international trade.

In the current East-West integration process of drastically reduced barriers to trade between countries with radically different economies we may clearly foresee a development of mutually beneficial specialisation due to comparative advantages on both sides. The connected adjustment within Sweden is thus, to a large extent, to be seen as an increased specialisation in sectors and locations where Sweden's comparative advantages are strongest. The reverse side of the coin is the reduction of activities in sectors and locations where Sweden has comparative disadvantages. If the latter locations are also connected with absolute disadvantages within Sweden, mobility of capital and labour may be expected from the latter to the former. At this structural level, and in a medium to long-term view, the process may, to some extent, be predictable.

However, Sweden will simultaneously be developing its intra-industrial trade with central Europe and the rest of the world. In few places in history has this type of integrated dynamics with strong elements of both inter-industry and intra-industry adjustments been witnessed within such close proximity. The question then is if the stochastic nature of the dynamics of imperfect market structures makes it impossible to predict in which sectors and locations employment will be created.

Intra-industry trade in open economies may be characterised as trade with a higher degree of complexity. The room for shortsighted spatial policies at any level to gain control of global benefits of trade will then also be drastically reduced. Opportunities to create locations with public goods such as attractive environments, good educational possibilities, and clusters of externalities will, to some extent, still remain. This makes out a case for a spatial analysis of the integration process in order to formulate a normative location policy.

4 Revealed comparative advantages and specialisation in trade

As mentioned above, the large differences in factor earnings, technology, and social systems, together with the close geographical proximity between the Swedish markets and North Eastern Europe should induce strong structural pressure on the regions of Sweden. In this section, we will try to identify industrial sectors in Sweden that currently holds strong or weak positions in relation to the international economy. Ideally this analysis should be made at the regional level, but the lack of regional trade statistics forces us to make the analysis at the national level.

One way to measure international specialisation is to measure the relation between total production and domestic consumption in each sector. As the trade specialisation index in Table 4 reveals, Sweden is specialised in capital- and knowledge intensive sectors. These two sectors have also strengthened their positions between the years 1985 and 1994. During this period, the research-intensive sector has also established itself as a strong sector while the labour-intensive sector seems to have lost ground.

TABLE 4

Specialisation in trade in Swedish manufacturing sectors in the years 1985 and 1994. Specialisation measured as the share between total production and domestic consumption in each sector.

Year	Labour-intensive	Capital-intensive	Knowledge-intensive	Research-intensive
1985	0,94	1,22	1,24	0,99
1994	0,92	1,40	1,42	1,13
Change	-0,02	+0,18	+0,18	+0,14

Source: Statistics Sweden.

Another measure of specialisation is the relation between exports and imports. This makes it possible to analyse differences in specialisation in relation to different countries and country groups. Looking at the Swedish export-import quotas in Table 5 for the fourteen countries within the European Union, EU 14, we find that the general pattern of specialisation given by Table 4 is in line with actual trade figures. This is not surprising since about 60 per cent of Swedish trade is directed towards the European Union.

TABLE 5

Country group specific export-import indices. Five Swedish sectors in the year 1994. Index 100 implies balanced trade.

Trade partners	Primary sector	Labour-intensive	Capital-intensive	Knowledge-intensive	Research-intensive
EU14	49	91	175	112	103
Spain	2	130	392	176	391
Portugal	8	18	301	147	483
Greece	16	115	226	2 074	2 710
EU applicants	6	65	189	401	575
Poland	22	78	267	270	259
Russia	12	97	14	4 000	2 673

Source: Statistics Sweden.

When we consider the ten Eastern European countries that have applied for EU membership, we notice a similar pattern, but the Swedish trade surplus in the knowledge- and research-intensive sectors is strongly enhanced. Even though the figures result from a low level of trade, only about three per cent of Swedish imports and exports are directed towards the EU applicants as a group, they do indeed indicate that Sweden has comparative advantages vis-à-vis Eastern Europe in capital-, knowledge- and research-intensive production.

Assessing comparative advantages in Central and Eastern Europe is more troublesome. This is partly due to data problems but also to difficulties in treating Eastern Europe as a group. The individual countries differ substantially in factor endowment and also in specialisation. In a recent study by Torstensson et al, (SOU 1997:156) some evidence that Central and Eastern Europe is specialised in labour-intensive production is given. Looking at capital-intensive production they find the pattern indecisive. During the period 1981 to 1994, they confirm that most Eastern European countries had a net import of products that was knowledge- and research-intensive in their production. Further evidence is given in Neven (1995) and Graziani (1995). Graziani also points out that Central and Eastern European imports are largely made up of new and not standardised products.

Some studies have been made on relative factor endowments in Central- and Eastern Europe. These studies give a somewhat different picture. Hamilton and Winter (1992) argue that Central and Eastern European countries have a relatively large supply of well trained and skilled workers. They show that several upper secondary school students from Hungary and Poland score well in international tests in natural sciences. Halpern (1995) points out that according to available data Central and Eastern European countries seem to have a relatively large share of researchers in the population. Contrary to actual trade figures, these findings give some support to potential compara-

tive advantages in production that is intensive in the use of human capital. Torstensson et al (SOU 1997:156) also affirm a reasonably good access to physical capital in the countries applying for EU membership. Whether these capital assets are commercially viable or not remain to be proven.

Studies by Rosefield (1974), Hellvin and Torstensson (1991), and Neven and Röller (1991) address the question of comparative advantages as a means of explaining east-west trade before 1989. This is of importance since structures from the time of economic planning might influence today's trade patterns. With the exception of Neven and Röller, these studies give support to the hypothesis that trade is forced by relative factor proportions. Torstensson et al sum up these studies by concluding that Central and Eastern European trade, before 1989, to some extent, was concentrated towards products produced with relatively large shares of unskilled workers. This tendency was, however, weaker than expected, which they explain as an effect of a deliberate price reduction in physical capital.

A more formal treatment of comparative advantages would have led us to examine demand patterns, differences in supply of production factors, technology, and productivity in each of the countries. Some of the troubles and quality problems connected with this type of data have been mentioned above, which gives reason to believe that actual trade and industry structure considerations may be a fairly reliable way of assessing comparative advantages.

Hence, in this section we have found some evidence that Sweden has comparative advantages mainly in research- and knowledge-intensive production. There is also some evidence that Central and Eastern Europe has its comparative advantages in labour- and, to some extent, capital-intensive production.

The low level of trade today assures us that the short-term impacts on the spatial economic structure will be limited, but there is great potential in the trade with Central and Eastern Europe. Several authors have pointed out that relative economic size, transport costs, and different barriers to trade can explain the volume of trade within and between countries. Eliasson, Johansson, and Westin (1998) estimate that Sweden's trade with the countries applying for membership in the EU may have increased fivefold by the year 2004. Baldwin (1994) estimates an annual east-west growth rate between 10 and 15 per cent up to the year 2010. These results must, however, be interpreted rather carefully since they assume favourable economic growth in Eastern Europe and further reductions in trade barriers, but the close proximity and the will in east to take part in Europe's internal market still give reason to expect great potential in east-west trade.

5 A scenario for regional development in Sweden

Previous attempts have been made to model the variation in regional welfare impacts from the European integration process. Among those, Bröcker (1998) is especially interesting. In his paper, the impacts from an enlargement of EU are estimated through a SCGE model. One of his conclusions is that regional variations within nations are surprisingly small. The reason is that the distance impact on trade in his model does not seem to be strong enough to have a non-uniform impact on different regions. However, it is also observed that the model does not treat regional specialisation extensively. It is concluded that regional variation, if any, may primarily be due to differences in regional specialisation and, to a lesser extent, to geographical location. However, this conclusion is critically dependent on the way accessibility is measured and regions defined in the model.

The comments made by Bröcker make our current analysis of regional specialisation interesting, though. Above, it was shown, considering functional regions in the form of labour market areas and a sectoral division based on factor intensities, that the regional specialisation pattern in Sweden is highly diversified. Furthermore, the use of labour markets reduces the level of short-term interregional factor movements in the form of commuting, a circumstance that will increase the reliability of the factor proportions approach.

In section 4, support was given for the idea that regions with large shares of labour-intensive, and, to some extent, capital-intensive production may face increased competition from Central and Eastern Europe. Instead, Sweden seems to have comparative advantages in research- and knowledge-intensive production. Hence, regions with high employment shares in these sectors would consequently be favoured.

According to Table 6 below, the Swedish manufacturing industry has undergone large structural shifts during the period from 1968 to 1990. Labour- and capital-intensive industries have lost employment shares to knowledge- and research-intensive firms. A pattern that will be further enhanced by a continued specialisation along the lines of Sweden's comparative advantages. The expected regional impacts of the integration of the east with the west are, in other words, largely in line with actual employment changes between 1968 and 1990.

TABLE 6

Changes in employment rates within industrial sectors in Sweden between 1968 and 1990. (Number of employees in thousands.)

Sector	1968		1990		Changes 1968-1990	
	Employees	Share	Employees	Share	Absolute	Per cent
Research	64	8	94	11	29	45
Knowledge	221	26	293	36	72	33
Capital	128	15	110	14	-18	-14
Labour	427	51	319	39	-108	-25
Total	840	100	815	100	-25	-3

Source: Statistics Sweden

So far, we have focused on manufacturing industries. In the analysis of regional development, it is increasingly important, though to take into account the growing significance of services. Reductions in physical interaction costs have, together with a positive development of income levels, changed the prerequisites for companies in terms of products and organisation. In order to gain market shares companies are forced to find own market segments by introducing new and, in one way or another, unique products at an increasing pace. This has led to an intensified demand for services such as market analysis, design, marketing and sales strategies, etc. In line with this reasoning, the localisation of producer services can be expected to play a vital role in the promotion of spatial growth.

Another type of services that is crucial for coping with structural changes and which gives support primarily to the research-intensive sector is contained in the public provision of educational and research institutions. The primary objective here is to develop and maintain the stock of human capital. During the last decade, municipalities with universities are among the few places that have shown a positive increase in population.

In contrast to the overall negative development of the manufacturing sector as shown in Table 6, these two non-manufacturing sectors have gained employment shares during the period between 1986 and 1990 by approximately 4 and 9 per cent, respectively. Along with the knowledge- and research-intensive part of the manufacturing industry, we expect these sectors to take advantage of the highly fluctuating but, in the long run, growing eastern market. On the other hand, we expect regions specialised in labour- and capital-intensive production and, to some extent, regions with high employment shares in the primary sector to face intensified competition from the east.

FIGURE 7 Regions with large employment shares in losing sectors 1995

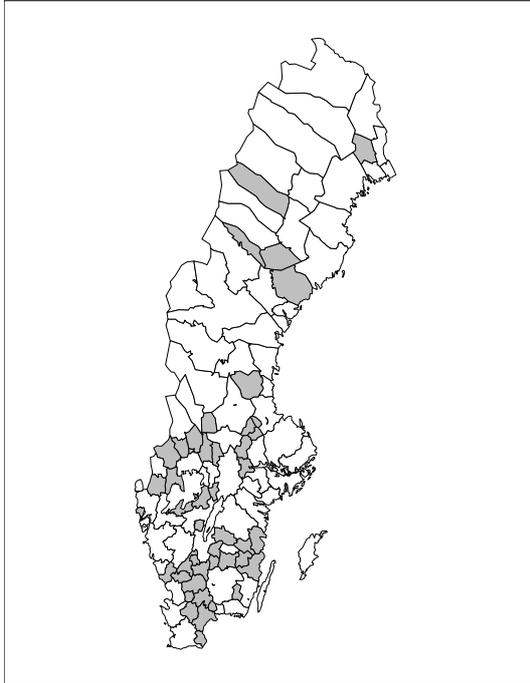
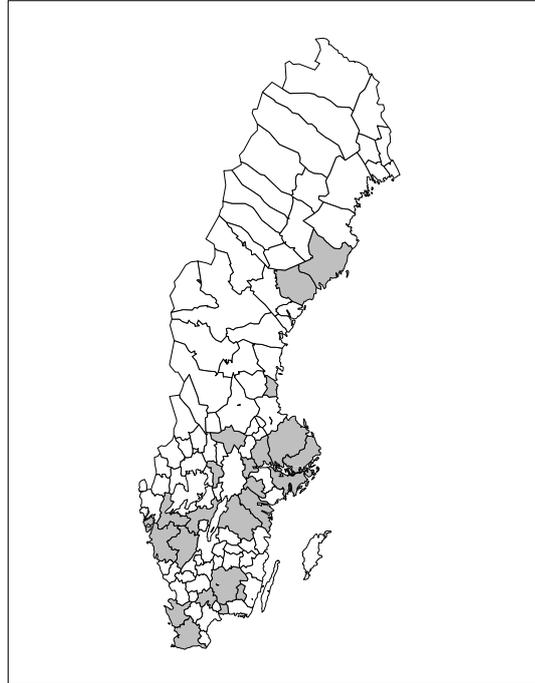


FIGURE 8 Regions with large employment shares in gaining sectors 1995



To visualise the regional outcome of the scenario outlined above we have constructed two maps illustrating regions with large employment shares in losing and gaining sectors, respectively. Losing sectors are defined as the labour and capital intensive industries plus the primary sector, while gaining sectors comprise knowledge and research intensive industries plus producer services and the part of the public services engaged in the development of human capital. Regions with 25 per cent of their employment tied up in losing sectors are presented in Figure 7, whilst regions that have 15 per cent of their employment in gaining sectors are presented in Figure 8.

The spatial pattern developed in Figures 7 and 8 should naturally be interpreted with the usual reservations. Some local labour markets are extremely specialised and dependent on one or a few industries. A closedown of a single factory may thus change the position of such a region and place it on the other map instead. Some regions are found in both maps which, of course, indicates strong dual specialisation in a few sectors. Furthermore, the position of regions that are specialised in businesses that may be on the classification border between, for example, labour and knowledge intensive sectors, will be sensitive to changes in the definitions of sectors.

However, the overall pattern lays the basis of some interesting observations. It is thus interesting to notice that in the southern parts of Sweden, regions are either winners or losers. On the other hand, regions in the northern parts seem to be unaffected by increased competition from east. This may be explained by the fact that northern

regions generally have large employment shares in the public sector. These regions would instead be affected by changes in the public budget, a budget that will in turn be affected by the outcome of changing competitive prerequisites and their subsequent impacts on regional growth and decline.

Secondly, it should be observed that internal economies of scale favour locations with low cost access to foreign markets. In Figures 7 and 8, we find part of Sweden's potentially gaining regions along the east coast. Even if most of the Swedish trade will be directed towards the present EU, a growing eastern market may once again give the east coast a favourable location, as was the case prior to the Russian revolution.

Agglomeration economies will still motivate locations in the densely populated regions around Malmö in the south and Gothenburg in the southwest, though. Moreover, during the last century, the diagonal between Gothenburg and Stockholm has developed into a fragmentary though still industrial belt with the help of railways and roads. It will thus be very interesting to follow the development and see if the east coast, with the help of innovations in shipping, the general attraction of this coast as an environment for housing, and the previously mentioned proximity to eastern Europe will constitute a new attractive region.

6 Conclusion

In this paper, we have given clear indications of a regional pattern of specialisation among Swedish regions. This pattern provides regions with different prerequisites as to their possibilities to cope with the continued European integration in general and the east-west integration in particular. Given the large disparities in economic structure between Eastern and Western Europe, we have argued that the close proximity between Sweden and the larger eastern European states will mean that the short-term direction of trade will follow the current comparative advantages of the countries in the region.

From earlier studies in the field and our own inquiries, we have been led to conclude that regions with large shares in labour-, capital-intensive, and in primary production will face increased competition from Central and Eastern Europe. On the other hand, Sweden seems to have comparative advantages in research- and knowledge-intensive production when compared with those countries. Among the service sectors, we have identified two sectors of major importance to the dynamic adjustment process in an increasingly global setting; producer services and activities that develop and maintain human capital. By aggregating losing and gaining sectors we have been able to reveal a spatial pattern of possible regional employment impacts in Sweden that might result from an integration of Eastern and Western Europe. The idea of this paper is to introduce some interesting aspects of economic integration which can be found if one considers differences in spatial impacts due to differences in regional specialisation. Further studies in this subject are needed, though. A more complete set of data as well as a more formal modelling of inter-regional trade in a multi-sectoral framework is called for. There is also a need to develop the methods for sensitivity analysis in relation to sectoral and regional subdivisions.

Other influences beside the trade related ones are also of interest in the assessment of regional effects of an integrated Europe. One important aspect is that of migration inside and between countries. If the magnitude of migration is different between sectors it will affect relative wages, which, in turn, will affect comparative advantages and the welfare of different factor owners. As pointed out in Eliasson (1997), large disparities in standards of living between Sweden and Eastern Europe suggest that migration flows may be quite substantial. However, so far, differences in language, culture, politics, and religion have had a hampering effect on the migration between Sweden and the eastern countries. The result has been that the flows of migrants inside Sweden have increased.

Other issues are related to direct investments, technology transfers, regional policies, etc., which also affect the pattern of trade. When it comes to investment issues it might be important for regions within Sweden to avoid employment being tied up in more standardised production. The reason for this is twofold. First of all, standardised production in the labour- and capital-intensive sectors will face downward pressure on wage levels. Regions tied up in those sectors will have their income growth hampered. Secondly, it is important to release production factors to avoid bottlenecks in sectors facing a larger market in the new Europe.

Another important factor often discussed in relation to sparsely populated regions is that of information technologies. This type of technology makes it possible to force the division of labour between spatially separated production units even further. There is need to analyse this further to find out if it will give rural areas any advantage as compared with more dense locations in the competition for growing sectors.

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