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Dieter Schumacher*

Employment Effects of the European Internal Market

The completion of the European internal market is generally expected to have beneficial welfare and growth effects. To what extent will they lead to a change in employment? How will the employment effects be distributed among countries, industries and social groups?

By the end of 1992 a market without internal frontiers should have come into being within the EC, allowing freedom of movement of labour, goods, services and capital. The removal of the many trade restrictions that still exist between member countries should make it possible to exploit the advantages of international specialisation more fully. For example, improved resource allocation, higher returns to scale and keener competition are expected to lead to reductions in costs and prices. This should generate faster growth if the fall in prices improves the Community's competitive position in world markets and stimulates greater domestic demand and the resulting rise in tax revenues is used to increase government expenditure. Finally, the stimulus to growth is expected to have a positive effect on employment and therefore help reduce unemployment.

Probably no-one will dispute the underlying positive impact of market integration on welfare and growth. The question is how great the effects will be and to what extent they will translate into changes in employment. Completion of the internal market will have a positive employment effect only if the additional economic growth is greater than the additional rise in productivity due to rationalisation. The question is also how the effects will be distributed between countries, industries and social groups.

These questions are examined in the following article, which takes as its point of departure the Cecchini Report, a study of the economic effects of completing the internal market presented by the EC Commission. For questions concerning structural employment, we have evaluated our own calculations relating to merchandise trade.

The empirical findings of the Cecchini Report¹ are based on both micro-economic studies and macro-economic model simulations. Information from business surveys and partial analyses were suitably aggregated and input to macro-economic models and the effects over a six-year period from the assumed completion of the internal market at the end of 1992 were monitored.

The Report's first model produces the conclusion that the removal of all barriers to movements of people, goods, services and capital between EC countries will increase the GDP of the Community by 4.5% and the number of jobs by 1.8 million. Prices will fall by 6%, budget deficits will decline and the balance of payments on current account will improve, so that the scope for an expansionary economic policy will increase significantly. In the second model it is assumed that this scope is fully exploited; in that case real GDP might rise as much as 7% and the number of jobs by 5 million, while the reduction in prices would narrow only slightly to 4.5%.

The employment effect will not be distributed evenly over the six-year period, however, since the relationship between growth effects and rationalisation effects on employment will alter. In the short term there will be a net reduction in employment owing to the elimination of jobs in the area of frontier controls, a rise in labour productivity in the business sector and the substitution

¹ Cf. P. Cecchini et al.: The European Challenge. The Benefits of a Single Market, Aldershot 1988; EC Commission: The Economics of 1992. An assessment of the potential economic effects of completing the internal market of the European Community, European Economy No. 35; for a description of the effects and a critique of the findings, see also F. Franzmeyer: Was wird der europäische Binnenmarkt für die Entwicklung auf dem Arbeitsmarkt der EG bedeuten?, published by epd Dokumentation, No. 9/89, pp. 33-47.

² See also F. Franzmeyer, op. cit., p. 41; and F. Franzmeyer: Gesamtwirtschaftliche und strukturelle Aspekte der Vollendung des europäischen Binnenmarktes, in: Arbeitskreis Außenpolitik der SPD-Bundestagsfraktion, Horst Ehmke (ed.): Europäischer Binnenmarkt – Europäischer Sozialraum, Zusammenfassung der Redebeiträge der Anhörung vom 2. Mai 1988, pp. 37-44, here p. 41.

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of labour by capital, the cost of which will decrease as a result of the removal of restrictions on trade in financial services. Only after the third year will the employment-creation effect of faster growth gain momentum, generating rising additional demand for labour, and the maximum effect will be reached after six years.

The question, however, is whether the Cecchini Report has generally overestimated the additional demand for labour in the economy.² In the first model higher trade surpluses at unchanged exchange rates contribute to the acceleration in growth of 4.5%. In practice, however, the direct gain in price competitiveness in world markets is likely to be offset by a change in exchange rates, thus reducing the impact on growth and employment. The 5 million additional jobs calculated in the second model represent 4% of total employment in the EC, which currently stands at around 125 million persons. This scenario would mean that macro-economic labour productivity increased by 3%, the same percentage as achieved in the first model with lower stimulus to growth. The faster 7% acceleration in growth would be bound to imply higher productivity gains, however; the greater the growth stimulus from completion of the internal market, the smaller the positive employment effects per unit of growth. Moreover, a comparison between the calculated reduction in consumer prices (by between 4.5 and 6%) and the much smaller decrease in costs by around 2%, which a survey conducted as part of the Cecchini study found that businesses expected to result from the completion of the internal market, suggests that the reduction in prices and hence also the associated expansion in demand have been overestimated or that enterprises will rationalise to an even greater extent. In either case, employment growth would be smaller.

The EC Commission's optimistic medium-term projections of employment must therefore be scaled down. However, no consistent model based on more realistic assumptions and disaggregated by country and sector is available. Obviously, such calculations cannot be carried out within the limited confines of this article. Partial quantifications will therefore be presented, from which indications of the employment effects of a further reduction in intra-Community trade barriers can be deduced. The economic effects of the internal market stem primarily from the expansion and diversion of trade flows. The factor content of intra-Community trade will

therefore be examined first; this will indicate the employment effects of intensifying internal trade on the basis of the current pattern of specialisation. The employment implications of the increases in turnover that enterprises expect as a result of the completion of the internal market will then be analysed. The calculations are confined to manufacturing industry; the reference year is 1985, the latest year for which all the necessary data could be assembled.

Intra-industry Division of Labour

Merchandise trade within the EC totalled around US\$ 340 billion in 1985, more than half the EC countries' total foreign trade. Among the countries belonging to the Community before the southward enlargement³ the Netherlands, Belgium and Ireland are the most dependent on internal trade and Italy, the United Kingdom and Denmark the least.

Manufactured goods account for around 85% of merchandise trade between EC countries. A particularly high percentage of total exports of office machines and EDP equipment, wood and wooden products, food, paper and paper products, petroleum products and tobacco (between 65 and 75%) goes to other EC countries. The proportion is particularly low (between 35 and 45%) in the case of musical instruments, toys, mechanical engineering products, vehicles (excluding motor vehicles), precision engineering and optics and fine ceramics; here the greater part of exports are to non-member countries. On the import side an above-average share of fine ceramics, glass and glassware, rubber products, motor vehicles, non-metallic mineral products, beverages and tobacco originates within the EC (between 75 and 95%) but a relatively small proportion of imports of wood and wooden products, paper and paper products, precision engineering and optics, musical instruments and toys (30 to 45%).

Trade within the EC is characterised by a high degree of intra-industry division of labour owing to the similarity in levels of development and the geographic proximity of member countries. The following index numbers for the

	Trade with:	
	EC (12)	Non-member countries
Germany	79	64
France	89	70
Italy	64	58
Netherlands	68	70
Belgium	87	72
United Kingdom	80	69
Denmark	65	63
Ireland	64	63

³ The analysis concentrates here on the countries belonging to the EC before the last round of enlargements, since the necessary data on sectoral employment in Greece, Spain and Portugal were not available. The trade data on Belgium include those for Luxembourg.

similarity of the product composition of exports and imports indicate the extent of intra-industry division of labour.⁴

In intra-Community trade the index figures therefore range from about 65 (Italy, Ireland, Denmark) to almost 90 (France, Belgium). As a rule the intra-Community figures are higher than the corresponding index numbers for trade with non-member countries, especially in the case of the large member countries. There is nevertheless considerable scope for intersectoral specialisation even within the EC, as reflected primarily in bilateral trade flows.

Intersectoral Specialisation Pattern

In order to describe the pattern of intersectoral specialisation, the product composition of exports was compared with that of imports and the ratio of each product group's export share to its import share was calculated. These specialisation indices are a simple indicator of Revealed Comparative Advantage (RCA). If the RCA value is greater than 1, this indicates a comparative advantage in the production of the product group concerned in the country in question, whereas indices of less than 1 indicate a comparative disadvantage.

Table 1 shows the pattern of intersectoral specialisation for individual member countries in their trade with the other EC countries. For example, it shows that Germany is particularly specialised in tobacco, motor vehicles, printing products, mechanical engineering products, precision engineering and optics and metal products in trade within the EC; it exports relatively large amounts of goods in these product groups to other EC countries but imports relatively little. The intersectoral specialisation pattern tends to be "flatter" for intra-Community trade than for trade with non-member countries owing to the higher proportion of

intrasectoral specialisation. This means that in the form selected here the RCA values for EC trade are closer to 1 than those for trade with third countries (closer to zero in the logarithmic form). Moreover, in some cases the comparative advantages lie in different areas. Correlation analysis shows that the basic pattern of intersectoral specialisation for Italy, Denmark, Germany and the United Kingdom is broadly the same for EC and non-EC trade. The similarity is less marked in the case of Ireland and Belgium and does not apply at all to the trade of France and the Netherlands.

Labour Requirements

The labour content per unit of \$ 1 million of exports and imports was calculated in order to estimate the effects of intra-Community trade on the structure of employment. This makes it possible to compare the number of workers needed in a country to produce the basket of exported goods with the labour required for the hypothetical domestic production of the basket of imported goods. The calculations were made both for total employment and for women and unskilled workers in order to be able to judge the effect on these structurally disadvantaged groups of workers.

The labour requirement for the export goods is calculated using the formula:

$$(1) L^X = \sum_{i=1}^n l_i x_i, \text{ where } \sum_{i=1}^n x_i = 1.$$

In this equation, x_i represents the goods of industry i as a proportion of total exports and l_i the average labour-output ratio in this industry ($i = 1, \dots, n$). The demand for female labour (LF) and unskilled labour (LU) is similarly calculated for export production as:

$$(2) LF^X = \sum_{i=1}^n l_i^F x_i$$

and

$$(3) LU^X = \sum_{i=1}^n l_i^U x_i$$

where l_i^F and l_i^U indicate respectively the female and unskilled labour required per unit of industrial output. In this way the direct labour input in export industries is measured while the indirect labour requirement for the production of the necessary intermediate goods is disregarded.⁵

The labour content of imports is calculated in a similar manner by replacing x_i by m_i in formulae (1) to (3), where m_i stands for the imports of commodity group i as a proportion of total (competing) imports. This implies the assumptions that the imported goods can also be produced domestically, that the average sectoral

⁴ Calculated as $I = \sum_{i=1}^n \min(x_i, m_i)$, where x_i and m_i represent the product group i as a percentage of respectively total exports and imports of manufactured goods in trade with the country group in question. The index number is therefore equal to the sum of the smaller values of each pair of values and can be between 0 (completely different structures) and 100 (completely identical structures). This index of similarity is a measure of the scale of intra-industry trade based on the structure of exports and imports and not on their absolute values. The level of the index number also depends on the degree of disaggregation according to product group; it tends to decline as the breakdown becomes finer. Here the breakdown was into 29 product groups in accordance with Table 1.

⁵ For studies using similar methods, see for example A. Sapir and D. Schumacher: The Employment Impact of Shifts in the Composition of Commodity and Services Trade, in: OECD: Employment Growth and Structural Change, Paris 1985, pp. 115-127; B. Balassa: The Employment Effects of Trade in Manufactured Products Between Developed and Developing Countries, in: Journal of Policy Modeling, Vol. 8, pp. 371-390; or D. Schumacher: Employment Impact in the European Economic Community (EC) Countries of East-West Trade Flows, International Employment Policies Working Paper No. 24, International Labour Office, Geneva 1989.

production functions apply (as was assumed for export production) and that one unit of value of imports exactly replaces one unit of value of domestic production. Under these conditions, the figures give the employment equivalent of imports L^M , LF^M and LU^M and can be interpreted as foregone employment if domestic production is replaced by imports. The ratios of the calculated labour content of exports to that of imports indicate the changes in employment resulting solely from the changed sectoral composition of domestic production if exports and imports are increased in the same proportion under otherwise unchanged conditions. The greater the differences in the product composition of exports and imports and the more pronounced the differences in sectoral production functions, the greater these changes will be.

The data used are drawn from international sources. They allow manufacturing industry to be divided into 29 branches, defined according to the ISIC nomenclature. The OECD foreign trade figures were aggregated in accordance with the chosen sectoral breakdown, as were the output and employment data based on Eurostat figures. The sectoral labour-output ratios were

calculated from data for 1982/83 and updated using more recent national accounts data to reflect the productivity, price and exchange rate levels of 1985; they give the number of workers per \$1 million of gross output value. The breakdown according to sex and level of training is based on census data for 1978/79. The proportion of unskilled labour was based on the number of unskilled and semi-skilled workers. The complement to this is the proportion of skilled workers (including white-collar workers), which can be taken as an indicator of the human-capital intensity of output.

According to census data gathered at the end of the seventies, 29% of those employed in manufacturing in the nine EC countries were women and 43% unskilled or semi-skilled workers. The proportion of women was comparable in all the EC countries, although slightly lower in Belgium and lowest in the Netherlands (16%). The proportion of unskilled workers was particularly high in Denmark, Italy, Belgium and Ireland. At the other end of the scale, the lowest proportions were recorded in France and Germany, in other words these countries had the highest level of training in their manufacturing sector.

Table 1
Intersectoral Specialisation of some EC Countries in Trade with the EC of 12¹

ISIC No.	Product groups	Germany	France	Italy	Netherlands	Belgium	United Kingdom	Denmark	Ireland
311/2	Food	0.74	1.05	0.31	1.99	1.22	0.58	4.62	2.16
313	Beverages	0.34	3.61	1.54	0.33	0.53	0.78	0.53	1.35
314	Tobacco	2.53	0.09	0.01	2.85	1.77	2.65	6.23	0.84
321	Textiles	0.84	0.98	1.64	0.74	1.49	0.63	0.49	0.80
322	Clothing	0.40	0.75	8.07	0.40	0.54	0.90	0.52	0.46
323	Leather & leather goods	0.49	0.70	2.62	0.88	0.92	1.02	0.83	1.42
324	Footwear	0.14	0.45	22.17	0.29	0.12	0.30	0.39	0.19
331	Wood & wooden products	0.92	1.03	1.59	0.48	1.37	0.21	2.31	0.64
332	Furniture	1.04	0.32	11.59	0.39	1.28	0.36	3.89	0.48
341	Paper & paper products	1.24	1.00	0.77	0.79	0.77	0.63	1.07	0.29
342	Printing	1.98	0.53	2.19	0.87	0.73	1.07	1.23	0.58
351	Industrial chemicals	0.98	1.02	0.47	1.27	0.98	1.23	0.29	1.07
352	Other chemicals ²	0.94	1.53	0.42	0.81	1.14	1.74	0.97	0.80
353/4	Petroleum products	0.15	0.95	1.50	5.61	0.84	1.50	0.67	0.12
355	Rubber products	0.71	1.44	1.29	0.54	1.16	1.03	0.32	0.88
356	Plastic products	1.26	0.69	3.21	0.59	0.78	0.76	1.72	0.48
361	Fine ceramics	0.70	0.36	1.86	0.43	0.61	1.22	0.61	0.08
362	Glass & glassware	1.06	1.22	1.39	0.46	2.02	0.50	0.40	0.81
369	Other non-metallic mineral products	0.76	0.78	3.30	0.52	1.19	0.98	1.04	1.77
371	Iron & steel	0.90	1.06	0.81	0.61	2.10	0.96	0.33	0.30
372	Non-ferrous metals	0.85	0.99	0.43	1.18	1.25	1.27	0.53	0.14
381	Metal products	1.58	0.61	2.22	0.54	1.08	0.90	0.95	0.71
382R	Mechanical Engineering	1.92	0.67	1.85	0.49	0.61	0.88	0.95	0.50
3825	Office machines, EDP equipment	0.97	1.22	0.80	0.74	0.49	1.83	0.32	5.23
383	Electrical engineering	1.38	1.25	0.67	0.38	0.89	1.21	0.81	1.14
3843	Motor vehicles	1.99	1.15	0.53	0.36	1.06	0.46	0.27	0.23
384R	Vehicles (excl. motor vehicles)	0.98	2.16	1.15	0.68	0.62	2.37	2.02	0.43
385	Precision engineering, optics	1.62	0.88	0.55	0.93	0.53	1.48	1.47	2.31
390	Other manufacturing ³	1.00	0.86	2.66	0.63	0.58	2.74	0.69	1.19
Total manufacturing industry		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

¹ Specialisation index for product group i calculated as $RCA_i = x_i / m_i$ ($i = 1, \dots, n$), where x_i and m_i represent respectively exports and imports of product group i as a proportion of total exports and imports of manufactured goods in trade with the EC of 12. ² Pharmaceutical products, cosmetics, dyes, etc. ³ Musical instruments, toys and sports articles, jewellery, etc.

Source: Own calculations using data from OECD: Foreign Trade by Commodities, Series C.

The labour-output ratios and the proportions of women and unskilled workers differed widely from one sector to another. In general, the production of clothing, footwear, fine ceramics and precision engineering and optical products required the largest number of workers per unit of output, whereas the labour-output ratios for petroleum products, industrial chemicals, non-ferrous metals, food, beverages and tobacco were lowest. The highest proportion of women was to be found in textiles, clothing, leather and leather goods, footwear, and musical instruments, toys, etc.; the lowest proportion was recorded in non-metallic mineral products, iron and steel, non-ferrous metals, motor vehicles and other

vehicles. The proportion of unskilled and semi-skilled workers was generally highest in textiles, clothing, leather and leather goods, footwear, fine ceramics, tobacco and plastic products and lowest in printing products, petroleum products, mechanical engineering, office machines and EDP equipment and vehicles (excluding motor vehicles).

The sectoral patterns of labour demand are very similar in all the EC countries. The correlation coefficients (R^2) for each pair of vectors of labour-output ratios work out at 0.6 or more; lower coefficients are obtained only for the correlation between Ireland on the one hand and Denmark and the Netherlands on the

Table 2
Employment Content of Intra-Community Trade Flows

(Factor content of exports in relation to factor content of imports in trade in manufactured goods, 1985)¹

Trade of	Germany	France	Italy	Nether-lands	Belgium	United Kingdom	Denmark	Ireland
Trade with								
Workers per \$ 1 million								
Germany	.	0.95	1.19	0.55	0.89	0.92	0.89	0.81
France	1.06	.	1.17	0.80	0.92	0.98	0.96	0.80
Italy	0.79	0.77	.	0.57	0.64	0.80	0.56	0.53
Netherlands	1.71	1.30	1.26	.	1.20	1.03	1.27	0.84
Belgium	1.11	1.08	1.21	0.79	.	1.08	1.03	0.79
United Kingdom	1.12	1.07	1.19	0.86	0.96	.	0.80	0.90
Denmark	1.06	0.97	1.58	0.71	0.87	1.07	.	0.72
Ireland	1.03	0.97	1.32	1.06	0.93	1.01	0.97	.
Greece, Spain, Portugal	0.90	0.85	1.09	0.77	0.89	0.88	0.76	0.51
EC (12)	1.10	0.95	1.19	0.68	0.95	0.95	0.87	0.81
Proportion of women								
Germany	.	1.14	1.59	0.99	0.96	1.09	1.10	1.19
France	0.95	.	1.28	1.02	0.83	1.07	0.94	1.08
Italy	0.67	0.80	.	0.62	0.55	0.78	0.80	0.83
Netherlands	0.99	0.93	1.29	.	0.92	0.96	1.02	1.27
Belgium	1.03	1.16	1.58	1.18	.	1.18	1.06	1.22
United Kingdom	0.91	0.93	1.21	0.93	0.96	.	0.91	1.00
Denmark	0.89	0.99	1.16	0.97	1.06	0.90	.	1.19
Ireland	0.93	0.95	1.17	0.92	0.86	1.01	0.66	.
Greece, Spain, Portugal	0.63	0.76	0.93	0.59	0.57	0.72	0.56	0.67
EC (12)	0.84	0.96	1.37	0.95	0.86	1.01	0.96	1.02
Proportion of unskilled & semi-skilled workers								
Germany	.	1.05	1.12	0.95	1.07	0.92	1.10	1.06
France	0.96	.	1.05	0.96	1.01	0.94	0.94	1.01
Italy	0.82	0.89	.	0.86	0.91	0.87	1.01	1.10
Netherlands	1.00	0.99	1.10	.	1.03	0.91	0.99	1.03
Belgium	0.95	1.01	1.10	0.96	.	1.04	1.02	0.99
United Kingdom	1.00	1.08	1.13	1.10	1.22	.	1.04	1.01
Denmark	0.95	0.97	1.05	1.01	1.11	0.90	.	1.06
Ireland	0.98	1.09	1.17	1.11	1.11	1.03	0.83	.
Greece, Spain, Portugal	0.79	0.83	0.90	0.84	0.84	0.82	0.78	1.03
EC (12)	0.92	0.97	1.08	0.96	1.03	0.94	1.03	1.03
For comparison: employment in manufacturing as a whole								
Workers per \$ 1 million of gross output value ²	15.0	13.1	14.8	11.0	12.7	16.4	15.0	13.5
Proportion of women ³	28.6	30.8	28.6	15.8	23.8	29.3	28.1	29.5
Proportion of unskilled & semi-skilled workers ³	40.2	35.0	50.2	43.9	49.6	45.1	54.4	49.2

¹ Direct factor content of exports and imports according to the sectoral labour-output ratios of the exporting and importing countries; see text for details of methodology. ² 1985. ³ 1978/79.

Source: Own calculations using OECD and Eurostat data.

other. Correlation is greatest between Germany, France and the United Kingdom. The sectoral proportions for women display even greater similarity; here the bilateral R^2 values are at least 0.7. The similarity is greatest between the four large EC countries and least between Ireland and the other EC countries. The sectoral profiles are less uniform in the case of the proportion of unskilled workers. The correlation is again least between Ireland and the other EC countries, with an R^2 of between 0.2 and 0.4, and is no higher between Denmark on the one hand and France and Italy on the other; in all other cases, however, an R^2 of 0.5 or more is achieved. Here, the greatest similarity is between the Netherlands and Belgium, between Denmark and the United Kingdom and between France and Italy.

In general, there is a positive correlation between the proportion of women and the proportion of unskilled workers; the relationship is significant in the four large EC countries, with a probability of error of 1%, and in Belgium and Denmark, with a probability of error of 5%. In some countries the total number of workers per unit of output tends to be higher where the proportion of unskilled workers is higher; this correlation is significant in France and the Netherlands with a probability of error of 1% and in Germany, Italy and Belgium with a probability of error of 5%.

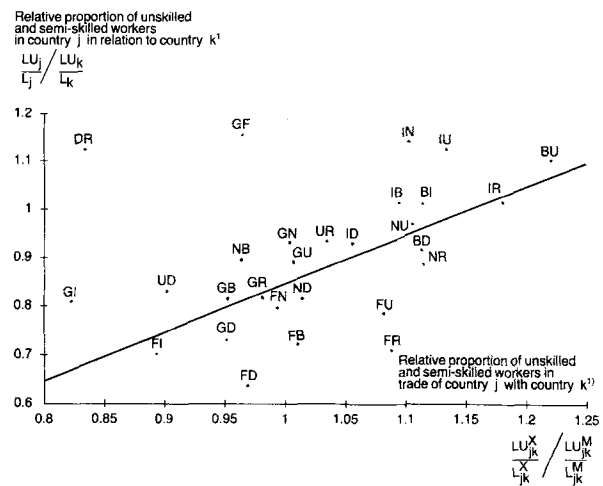
Employment Content of Trade Flows

If the labour content of intra-Community trade flows is now calculated using the formulae given above, the picture portrayed in Table 2 is obtained. It shows for each EC country the ratios between the factor content of exports and the factor content of an equal volume of imports in trade with all EC countries together and in trade with individual member countries. The export and import statistics and the sectoral production functions of the country from whose point of view the trade was being considered were used. Since an identical production function was assumed on both the export and import sides for each product group, the differences in factor requirements only reflect differences in the composition of exports and imports. The ratios therefore indicate the changes in employment resulting solely from the structural shift in domestic production owing to heightened specialisation between EC countries in accordance with the given specialisation pattern and with unchanged total demand in all product groups and countries. Figures greater than unity indicate that total employment, female employment and the employment of unskilled workers will benefit from greater intra-Community specialisation; the opposite applies if the figures are less than unity.

On the basis of the findings for trade with all EC countries, an intensified division of labour within the EC has a positive effect on employment in Germany and Italy but a negative effect in the other countries, especially the Netherlands, Ireland and Denmark. Increased EC trade boosts the employment of women in Italy and to a lesser extent in the United Kingdom and Ireland but reduces it in the other countries, especially Germany and Belgium. The employment of unskilled workers is increased in Italy, Belgium, Denmark and Ireland but harmed in the other countries, the strongest negative effect being registered in Germany and the United Kingdom. Put another way, the comparative advantages enjoyed in intra-Community trade by Germany and the United Kingdom, but also by the Netherlands and France, lie primarily in the production of goods requiring a high proportion of skilled workers, in other words in goods with a high human-capital intensity.

The results for individual partner countries show that total employment and the employment of women and unskilled workers would be adversely affected particularly by increased trade with Italy and with Greece, Spain and Portugal. For Italy, by contrast, trade with the other EC countries individually has a positive effect on employment; except for trade with Greece, Spain and Portugal, the same applies to the employment of women and unskilled workers. Accordingly, the comparative advantages of Greece, Spain and Portugal in trade with all other EC countries lie in goods that can be produced with a high proportion

Figure 1
Labour Endowment and Labour Intensity
in Trade between EC Countries



¹ j, k = G, F, I, N, B, U, D, R; j ≠ k (G = Germany, F = France, I = Italy, N = Netherlands, B = Belgium, U = United Kingdom, D = Denmark and R = Ireland); see the text for details regarding the indicators.
Source: Own calculations based on OECD and Eurostat data.

of unskilled labour; for Italy this applies to trade with the Northern members of the Community.

As regards bilateral trade between the eighth countries shown individually in Table 2, the values in the triangle above the diagonals marked by dots tend to be the reciprocals of the corresponding values below the diagonals. In each case the figures relate to the same bilateral trade, considered first from the viewpoint of one country and then from that of the second. Hence as a rule the ratios for bilateral trade are greater than unity for one country if they are less than unity from the standpoint of the other. Deviations from the precise reciprocal are explained by differences between the export statistics of one country and the import statistics of the other and differences between the two countries' sectoral production functions.⁶

⁶ A comparison of the relevant export and import statistics shows that in general they correspond very closely. A number of conspicuous differences are evident in vehicles (excluding motor vehicles), due primarily to different methods of recording the transactions of Airbus Industry. In particular, deliveries of aircraft from Germany to France are shown at a much higher value in the German export statistics (gross recording) than in the corresponding French import statistics (net recording).

⁷ The 28 bilateral ratios for the proportion of unskilled and semi-skilled workers shown below the diagonal in Table 2.

The ratios calculated for the proportion of unskilled labour in bilateral trade flows are in line with the ratios of the proportion of such labour in manufacturing industry as a whole in the two countries involved. This emerges from Figure 1, in which the proportion of unskilled and semi-skilled labour in country j in relation to the proportion in country k is measured on the vertical axis and the corresponding relative labour intensities of trade between the two countries on the horizontal axis.⁷ Excluding the three pairs of values that show the greatest deviation, the R^2 for the correlation between the relative labour endowment and the relative labour intensity of trade works out at 0.54. The corresponding regression line is indicated in the diagram.

The greatest deviations from the line are in trade between Denmark and Ireland (DR), which is very small in any case, between France and Ireland (FR) and between Germany and France (GF). In the last instance the gross recording of German Airbus deliveries to France plays a role; without this, the proportion of unskilled labour in German exports to France would be higher. The proportion of unskilled labour for France appears to be systematically too low by comparison with

Table 3
Percentage Change in Turnover expected by Businesses as a Result of Completion of the Internal Market

ISIC No.	Branch of activity	Germany	France	Italy	Netherlands	Belgium	United Kingdom	Denmark	Ireland	Greece	Spain	Portugal	EC of 12
311/2/3/4	Food, beverages & tobacco	4	.	8	.	4	6	8	8	1	11	3	6
321	Textiles	8	4	7	7	4	5	8	2	6	10	11	7
322/4	Clothing & footwear	4	3	8	7	12	6	8	4	9	14	10	7
323	Leather & leather goods	7	4	7	8	.	5	14	.	.	5	6	6
331/2	Wood & wooden products, furniture	5	2	8	9	9	3	7	2	6	12	4	7
341/2	Paper & paper products, printing	4	6	7	7	6	4	2	1	10	3	2	5
351/2	Chemicals	5	2	3	6	6	4	4	5	2	7	5	4
	Synthetic fibres	.	2	0	1	5	2	.	20	.	5	-4	3
353/4	Petroleum refining	.	0	6	0	7	2	0	.	-8	8	.	3
355	Processing of rubber products	.	4	2	4	0	10	0	5	20	6	17	5
356	Processing of plastics	6	2	9	7	8	1	3	3	-2	12	8	6
361/2/9	Non-metallic mineral products	3	4	6	8	2	3	4	-3	0	11	7	5
371/2	Production and initial processing of metals	4	0	5	5	9	2	3	15	0	6	13	4
381	Manufacture of metal products	5	5	6	9	5	3	8	17	3	10	14	6
382R	Mechanical engineering	5	5	6	7	10	5	3	9	11	9	8	6
382S	Office machines, EDP equipment	.	6	4	7	7	3	16	9	.	15	15	6
383	Electrical engineering	5	4	13	9	10	8	5	7	-14	8	5	7
384S	Manufacture of motor vehicles	3	0	9	8	5	5	0	.	-30	13	7	4
384R	Other vehicle manufacture	8	3	10	11	5	4	12	.	1	0	13	5
385	Precision engineering & optics	6	4	7	7	0	6	11	9	.	0	-10	6
	Total manufacturing industry	5	3	7	7	7	5	6	7	1	9	7	5

Source: Compiled from G. Nerb: 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, Luxembourg 1988.

the labour intensity of the country's trade; with a proportion similar to those of the Netherlands or the United Kingdom, the French values would fit the postulated correlation far better.

Statistically significant relationships between labour endowment and the labour intensity of trade are also found if the calculations are carried out on the basis of the trade statistics and sectoral production functions of the other country in question (values above the diagonals in Table 2). The same applies if the export data of the two countries in question and the production functions of the exporting country are used in each case. To summarise, it can be shown that in intra-Community trade as well specialisation is determined very strongly by the endowment with human capital – as the complement to the proportion of unskilled labour – and affects employment accordingly if internal trade is intensified. This finding holds good even without considering the more backward countries of Greece, Spain and Portugal, whose inclusion would make the correlation even clearer.

Implications of Changes in Turnover

The approach adopted above should reveal the impact of a heightening of the division of labour between the EC countries on the structure of employment. Upon completion of the internal market demand will not however remain unchanged, as assumed above; it is rightly expected to rise as a result of a fall in prices. The question is only how large the increase in demand will be and the extent to which firms in individual countries and industries will benefit. Information on the expectations of firms themselves can be taken from a

business survey carried out in connection with the Cecchini Report.⁸

According to the findings of the survey, firms generally expect their domestic sales to increase only slightly but their exports to rise substantially, especially those to other EC countries. This means, conversely, that the expected increase in demand will be met chiefly by imports from other EC countries. Turnover is expected to increase by 5% overall; the rate of growth varies between 3% in chemicals and 7% in textiles, clothing and footwear, wood and wooden furniture and electrical engineering. In the various countries the expected increase in the turnover of manufacturing industry as a whole ranges from 1% in Greece and 3% in France⁹ to 9% in Spain. If one looks at the individual sectors in the various countries, the expected changes in turnover differ even more widely, ranging from a fall of 30% in motor vehicle construction in Greece to an increase of 20% in man-made fibres in Ireland and rubber products in Greece. The findings are presented in detail in Table 3.

We have now converted the expected percentage changes in turnover into absolute changes in output on the basis of the sectoral gross output values for 1985.¹⁰ By multiplying this by the labour-output ratios we then obtain the changes in employment at unchanged

⁸ For details of the findings, see G. Nerb: 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, Luxembourg 1988; G. Nerb: Was erwartet die europäische Industrie vom EG-Binnenmarkt?, in: ifo-schnelldienst, No. 16, 1988, pp. 14-23.

⁹ Although in the case of France and the Netherlands the highly competitive food industry is not included.

¹⁰ Taken from the COMTAP data base of the OECD; see C. Berthet-Bondet, D. Blades and A. Pin: The OECD Compatible Trade and Production Data Base 1970-1985, OECD Department of Economics and Statistics, Working Paper No. 60, Paris 1988.

Table 4
Labour Content of Output and Exports to EC Countries¹

EC countries	Workers per US\$ 1 million			Proportion of women, in %			Proportion of unskilled and semi-skilled workers, in %		
	Output 1985	Exports to EC12 1985	Expected change in output	Output 1985	Exports to EC12 1985	Expected change in output	Output 1985	Exports to EC12 1985	Expected change in output
Germany	15.4	15.7	16.4	27.3	27.8	28.4	39.8	39.3	39.8
France	12.7	13.4	16.7	32.2	31.6	33.1	34.9	34.5	33.3
Italy	14.8	16.9	15.6	28.7	35.0	30.5	49.5	51.9	50.5
Netherlands	9.1	8.8	13.5	14.9	16.8	13.7	43.2	44.5	42.4
Belgium	13.1	12.5	13.7	21.8	22.9	22.9	50.4	50.6	50.2
United Kingdom	16.6	16.5	17.5	31.1	30.1	32.7	44.9	42.9	45.3
Denmark	15.4	15.3	14.8	27.2	28.2	28.4	53.4	53.9	56.1
Ireland	14.0	13.2	12.7	31.2	35.2	30.0	50.3	50.7	50.9
Greece ²	13.3	-	42.9	33.8	-	59.5	53.2	-	59.7
Portugal ²	13.1	-	16.8	32.9	-	35.7	52.4	-	54.7
Spain ²	13.3	-	13.6	26.1	-	27.8	50.1	-	52.9
EC of 12	14.3	-	15.7	28.7	-	29.5	43.3	-	45.5

¹ Direct labour content of manufactured goods; see text for details of methodology. ² Using the sectoral labour-output ratios for Italy.
Source: Own calculations using OECD and Eurostat data.

sectoral production functions. The indicators obtained (workers per \$1 million, proportions of women and unskilled workers) for the expected increase in output in manufacturing industry as a whole are shown in Table 4.¹¹

The labour content of the expected increase in output differs from that of current exports to other EC countries owing to differences in sectoral structure. If the pattern of these differences for the eight countries examined above is compared with the ratios of the labour content of exports to that of imports in Table 2, it will be seen that in some cases the existing degree of specialisation is reinforced while in others it is attenuated. Most of the differences are small, however, so that we shall not pursue the matter further here. Suffice it to say that for Italy the expected increase in output requires less labour per unit and a smaller proportion of both women and unskilled workers than existing exports, so that from this point of view the existing differences between the labour content of exports and imports diminish.

If the labour requirement for the expected increase in output is compared with that of existing output (on the basis of 1985 figures for manufacturing), the EC as a whole shows a higher number of workers per unit (15.7 per \$1 million, compared with 14.3), a higher proportion of women (29.5% against 28.7%) and a higher proportion of unskilled workers (45.5% against 43.3%). The expected increase in output therefore shifts the sectoral composition of the Community's manufacturing industry towards labour-intensive branches and thus checks the rise in macro-economic labour productivity. It also favours the employment of groups of workers who otherwise tend to be disadvantaged in the general process of structural change. The only exceptions to this pattern are Denmark and Ireland, which have a lower labour requirement for the increase in output, the Netherlands and Ireland, where the increase in output has a negative effect on the proportion of women, and France, the Netherlands and Belgium, where the proportion of unskilled workers is adversely affected.

With sectoral production functions unchanged, the employment effects described arise simply as a result of the alteration in the relative importance of individual sectors. The productivity gains resulting from lower

production costs in the completed internal market must now be taken into account. On the basis of the findings of the survey on the expected reduction in costs, Nerb arrives at an overall increase in labour productivity of over 3%, so that if output rises by 5% employment in EC manufacturing industry will rise by just under 2%.¹² If productivity growth of this magnitude were assumed for all sectors in all countries, the expected changes in output shown in Table 3 would lead to a fall in employment in several cases, namely wherever the increase in output is less than 3%. For example, this would occur in France with wood and wooden furniture, chemicals, petroleum refining, plastics, metals and motor vehicles. If these instances in the various EC countries are collated, it can be seen that the completion of the internal market will cause a substantial structural shift in employment. This will not be achieved solely through increases in employment; it will also imply a substantial reduction in jobs in certain sectors and therefore cause corresponding structural adjustment costs. On balance, the increased turnover expected by businesses against the background of the assumed productivity gain of 3% will lead to an increase in employment in all countries except Greece and France.

Conclusions

The considerations presented above show first that the increase in aggregate employment as a result of completing the EC internal market cannot yet be determined with certainty. A number of factors suggest that the EC Commission has taken an overoptimistic view of the likely employment effects. It seems more realistic to see the advantages of the internal market as lying in the improvement in economic efficiency it will produce rather than in increases in employment. Secondly, calculations carried out for this article indicate that removal of the remaining trade barriers within the EC are likely to lead to a substantial structural change in employment in which there will be winners and losers. There is still need for more accurate quantification in this regard.

Whether the positive employment effect of the increase in demand and output will outweigh the negative effect of the rise in productivity depends on the strength of rationalisation and price and income elasticities, and is therefore an empirical question. Suitable model calculations would also show the extent to which the findings of business surveys of turnover expectations are reliable. The expected increases in turnover should take account of the key influences, provided firms are really able correctly to estimate the relevant variables affecting their market.

¹¹ The Italian production functions were used for Greece, Spain and Portugal. For the other countries there are disparities between the labour content shown in Table 4 for 1985 output and the average values for employment in manufacturing industry shown by way of comparison in Table 2; they are due to the fact that the output data stem from different sources and the averages in Table 1 represent the output structure of earlier years (1982/83 or 1978/79).

¹² Cf. G. Nerb: Was erwartet die europäische Industrie vom EG-Binnenmarkt?, op. cit., p. 23.