INDUSTRIAL EFFECTS OF THE EUROPEAN COMMUNITY INTEGRATION

Costas Christou*
and
Douglas Nyhus*

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* *INFORUM, Department of Economics, University of Maryland, College Park, MD 20742.*

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Abstract

This paper examines the potential effects of the European Community (EC) integration. It develops a number of assumptions representing the EC directives, and introduces them in the Inforum system of models, which links together interindustry dynamic macro-economic models of ten countries. Those assumptions include the deregulation of financial services, abolition of border controls, increased competition, economies of scale and opening up of government procurement. According to the system results, the European economies will experience higher economic growth and per capita income with lower prices and higher labor productivity. It is expected that the rest of the world economies will not be affected significantly by the integration. Finally, the integration process will generate diverse results across sectors in different countries.

INFORUM
Department of Economics
University of Maryland
College Park, MD 20742

I. Introduction

In the beginning of 1993, the European single market will materialize. It will bring to fruition years of enthusiastic work inspired by an ambitious vision of a unified Europe. The estimation of the potential effects of the integration has been the main area of research for many economists of both sides of the Atlantic [Cecchini (1988), Commission of the European Communities (1988) and (1990), Catinat and Italianer (1988) for the micro aspects of the integration and Economic Policy (1989) and Coffey (1990) for the major macro and growth related issues]. Most of the 1992 integration of Europe studies deal mainly with the aggregate macroeconomic effects of the integration, without paying a lot of attention to the industrial - or sectoral - impacts of it.

The objective of this paper is to examine the potential effects with an internationally linked system of models, namely the Inforum system. It includes the interindustry dynamic macro-economic models of five European countries (Belgium, France, Germany, Italy and Spain) and models of Canada, Japan, Mexico, South Korea and the United States; the models are annual and sectorally linked through merchandise trade and prices. Information regarding trade flows and prices is exchanged between each of the sectors of the national models. The expression "interindustry macro-economic" means that the models deal with all of the usual concerns of macroeconomics -- but build up macro totals from industry detail. The basic structure is more or less common to all of the models and is described in Nyhus (1988) and (1991). Both national models and the linking mechanisms

are described in *Economic Systems Research* (1991).

Two scenarios were developed. One represents the current situation, that is *Europe with borders.* For the other, a number of assumptions representing the European Community (EC) directives were quantified and entered into the models, to produce the *Europe without borders* scenario. They represent major supply shocks in the form of deregulation of financial services, abolition of border controls, opening up of government procurement, increased competition and economies of scale. The first three were implemented in 1993 while the latter two in 1995, as the adjustment process is expected to be longer. Since the assumptions for the Europe 1992 program pertain to only four of the twelve European Community countries, the results are probably biased downwards. The lack of repercussions deriving from both the income and the price side of the other European economies limits the favorable results of the integration.

According to the system results, the integration process will boost the European economies but produce slightly negative results for the other economies considered. Because of the 1992 program, output in the year 2000 is expected to be 9.74% higher in Belgium, 5.53% higher in France, 6.14% higher in Germany and 2.94% higher in Italy than it would be without the program. The corresponding increases in exports will be 9.74%, 10.59%, 7.31% and 5.65% while employment is expected to increase by 0.35% in Belgium, 0.38% in France and 0.45% in Germany. In Italy a significant number of workers will be displaced by higher rates of productivity growth; and, as a result, employment will be lower by 2.20%. For the Republic of

Korea and the United States, the results on output growth are negligible (reductions of 0.49% and 0.16% respectively by 2000). Export reductions are 2.11% and 1.04%, while the effects on employment are again very small; reductions of 0.32% and 0.05% respectively.

The rest of the paper is organized in the following manner. Section II discusses each of the assumptions that were made, together with the methodology followed for their implementation. Section III continues with the results of the simulations and a comparison of them with the ones obtained by the Cecchini study. Finally, section IV summarizes and concludes.

II. Assumptions

The assumptions of the *Europe without borders* scenario appear in Figure 1. Those can be regarded as a sequence of major supply-side shocks that are expected to have both micro and macroeconomic effects on the economies of the member countries as well as on the rest of the world.

At the micro level, after the removal of barriers and regulations, the drop in consumer prices together with a larger choice of products of better quality will result in substantial gains for the consumers. In other words, there will be welfare gains as measured by the consumer surplus. For the producer, there might be short-run losses which will be outweighed by the creation of long-run profits. Because of the immediate elimination of protectionism and the monopolies that currently exist, profits are expected to drop. Increased competition, though, will induce firms to adjust their

behavior and exploit economies of scale in production, reduce X-inefficiencies and internalize externalities in learning and innovation. Those will provide the foundations for potential long-term profits.

At the macro level, the immediate outcomes of the internal market program will be the reduction in production costs and significant gains in productivity. Prices will drop and increase the competitiveness of the EC economies and thus the purchasing power of their residents. That rise will in turn stimulate final demand -- both domestic and foreign -- giving companies the opportunity to exploit resources better and increase their level of activity and production. Inflation and unemployment will then be reduced; new perspectives for growth will improve the confidence of businessmen and consumers in those economies.

The rest of this section examines in detail the assumptions about the European integration, which appear in Figure 1. In the course of quantifying them, information was drawn from a number of existing studies and especially from the Cecchini report (1988) and the study by Catinat and Italianer (1988). They both contain specific estimates of the expected shocks across countries and sectors.

(i) Deregulation of financial services

It is well known that vitality of an economy requires a financial sector with the smallest possible imperfections. In most of the European Community countries, though, government regulations, standards, and controls have restricted market entry in many financial sectors and implicitly

abolished free competition. As a result, there are big differences in the prices of standard financial products across the EC. Price differentials between the cheapest and the most expensive provider range from 46% for obtaining travellers cheques to 254% for insurance against commercial fire and theft [Cecchini (1988)].

The Commission directives for the deregulation of financial services involve a two-phase plan, the first stage of which was implemented in 1987. The main idea of the plan is the elimination of controls on capital movements. The potential benefits affect both the micro and the macro side of the economy. On the micro side, because of increased competition there will be efficiency gains which will lead to a reduction in the price of financial services and to an increase in labor productivity while on the macro side the elimination of controls and regulations will make it easier for both the country and the EC policymakers to coordinate their policies.

The Cecchini report estimated that the reductions in the price of financial services could be as high as 11 percent for Belgium, 12 percent for France, 10 percent for Germany, and 14 percent for Italy. It is expected that those savings will be reflected in lower value-added components for the financial sectors. Thus, the value of their output (in current prices) will be lower. The above reductions were introduced into the European models in the form of savings in total labor compensation and profits of the above sectors.

(ii) Removal of border-related controls

The existence of border controls and administrative formalities makes businesses suffer massive customs-related paperwork which creates long delays in the dispatch of goods to other Community markets. Small and middle-sized companies are hurt the most. According to Cecchini, customs costs per consignment can be up to 30 to 45 percent higher for companies with under 250 employees than for larger companies. Thus, the impacts of the removal of border controls will be uneven across countries. An additional unevenness will arise because of the different geographical location of the EC countries.

A number of measures aiming at reducing border checks have already been taken by the European governments, with the objective of having all border controls eliminated and administrative formalities reduced by the end of 1992. The potential effects of those measures will be two-fold. First, government employment will be cut down as a result of the elimination of customs officers. In order to implement that effect, public employment in our models was reduced by 0.41 percent for Belgium, 0.21 percent for France, and 0.06 percent for Germany and Italy [Catinat and Italianer (1988)]. Second, the price of the intra-Community trade will be reduced, since the extra costs of delays and administrative formalities are paid either directly or indirectly by importing firms. Catinat and Italianer have estimated the share of the cost of administrative formalities borne by the firms in the value of the bilateral trade flows. Those shares are based on estimates of the administrative costs per consignment for the importers and the exporters of each of the countries analyzed and for different products. Figure 2

presents the matrix of the above shares.

The rows represent the exporting countries and the columns the importing. For modeling purposes, it was assumed that the elimination of customs related controls would result in a reduction of the bilateral export prices. In order to come up with the appropriate price reductions for each country's exports, the structure of its trade was taken into consideration. For a given country, let $\mathbf{s_{ij}}$ be the share of sector i's exports to country j in the total value of exports to country j; and, $\mathbf{RF_j}$ the export price reduction factor for exports to country j (presented in Figure 2). Then, the weighted-average reduction factors (WARF) are calculated according to the following formula:

$$WARF_i = \sum_j (s_{ij} * RF_j)$$

(By definition, $\sum_i s_{ij} = 1$ for all j.) That procedure gave vectors with the WARF's for the exporting sectors of each of the countries considered. Finally, multiplicative fixes were applied in order to reduce sectoral export prices by the WARF's.

(iii) Increased competition

A larger internal market will boost competition and reduce monopoly power and rents as well as X-inefficiencies, that is, management inefficiencies. The drop in the unit costs and profit margins will result in lower producer and consumer prices. Those effects are expected to be different across sectors.

(a) Wholesale and retail trade sectors

After the removal of the trade restrictions, it is expected that the average size of the wholesale and retail trade companies will increase -- by means of the establishment of big chains of stores. That will result in the reduction or even the elimination of price discrimination among the EC countries.

The reduction in trade margins will lead to increases in labor productivity in trade and consequently to lower consumer prices. The whole adjustment process requires that companies make all necessary changes in order to bear increased competition, and thus it is expected to be gradual.

That expectation is reflected in the way this potential effect was implemented. It was assumed that labor productivity in both the wholesale and the retail trade sectors will increase by 8 percent by 1995, above that of the Europe with borders scenario, and then steadily move up to a 15 percent increase by 2000 and remain the same until 2010. All of those increases are in addition to the trend increases assumed in the Europe with borders scenario.

(b) Industrial sectors and Services

The elimination of X-inefficiencies together with improvements in management, by reorganizing managerial teams, will result in reductions in the unit costs of production. Those estimates, as they appear in Figure 3, were derived by using the differences in prices now observed between member states as an indicator of future competitive pressures (for details see Catinat and Italianer). It was assumed that the adjustment of the firms will be gradual, starting in 1995 and the assumed cost reductions were

implemented as labor productivity increases.

(iv) Exploitation of the economies of scale

Increased competition will induce firms to organize their production processes more efficiently and exploit economies of scale. Production costs will drop and labor productivity will increase. Additional production possibilities are expected to lead to an increase in the market share of the EC industries with the rest of the world.

For modeling purposes, it was assumed that the average size of the establishments will converge towards the minimum efficient technical scale (which differs across industries). Estimates of those appear in Catinat and Italianer. The reductions in the unit costs of production were assumed to be identical across all countries due to lack of country specific information on cost savings. Cost reductions as they appear in Figure 4 were translated into labor productivity increases. Again, the adjustment process is expected to be gradual starting in 1993.

(v) Opening up of government procurement

In 1986 public sector purchases in the EC accounted for 15 percent of the Community's gross domestic product. However, only a small fraction of those purchases was awarded to companies from other EC countries. Sectors like telecommunications, defense and transportation are the ones that are guarded the most by government protectionism in procurement markets. The costs associated with these policies are enormous. They start

from higher prices that governments pay for products that they could otherwise get more cheaply, and they end up creating a non-competitive and sub-optimal market mechanism.

The internal market program aims to end every kind of protectionism that currently exists and to encourage competition. The effects will initially be static, in the sense that governments will be buying from the cheapest supplier. Dynamic effects will arise because of increased competition as well as because of the exploitation of the economies of scale in many high technology sectors. The result again will be downward pressure on prices. The price reduction effect by sector of this increased competition was estimated by the following formula for all countries:

$$(GOVP_{it} / Y_{it}) * GOVEF_t$$

where $GOVP_{it}$ represents government purchases of sector i products in year t, Y_{it} gross output of sector i in year t, and finally, $GOVEF_t$ the price reduction coefficients which were assumed to be 0.1 in 1993, 0.25 in 1995 and 0.3 after 2000.

III. Simulation Results

The Inforum international system of models was simulated for the period 1992 to 2010. According to the system results, Europe appears on the verge of a very strong growth path. The source of that growth is generally higher productivity growth, which is different across countries at the sectoral level.

(i) Aggregate macroeconomic effects

Tables 1 to 4 show the results for the four Community countries in the Inforum system. Each line represents percentage deviations of the "Europe without borders" variables (in real terms) from the ones of "Europe with borders" for the years of 1993 through 2010. All four countries show significant increases in real GDP, per capital real income and consumption, exports, investment and imports. Germany, France and Belgium show increases in employment as well. The Italian model has Italy failing to employ all of the workers displaced by higher rates of productivity growth. Prices were also considerably lower with economic integration. In the three models with price sides, consumer prices in 2000 were 6.2% lower in Germany, 4.3% lower in France and 7.1% lower in Italy. The effects build over time and competition and labor efficiencies increase relative to the no integration scenario. The graphs at the bottom of each table are to illustrate the effects of integration over time for gross domestic product and an other macroeconomic variable which is different for each country.

For non-community countries the results tended to be slightly negative. Tables 5, 6 and 7 show the results for the United States, the Republic of Korea and Japan respectively. For all countries the initial effects are positive as exports increase because of greater import demands in Europe but later fall as increased European competitiveness squeezes them out of foreign markets. The graphs for gross domestic product and exports are shown for the United States and Korea together with their respective tables, while for Japan the graphs for exports and relative Japanese export is

presented. Real incomes tend to increase because of lower import prices.

(ii) Industrial effects

Although the aggregate results are more or less uniform across all four European countries considered, that is not true for the industrial effects. The differences are due to the different sectoral structure of the economies and to the fact that the implemented assumptions involve different treatment of each of the sectors across countries.

A tabulation of sectors in Belgium, France, Germany and Italy where the increases in output are greater than ten percent for the year 2000, yields the following:

Figure 5 Industrial sectors in Belgium, France, Germany and Italy with increases in output greater than ten percent -- Year 2000.

Belgium	
Fishery	Coal
Milk	Tobacco
Clothing	Wood & Furniture
Paper	Printing
Non-motor Repair	Coastal Transport
Ocean Transport	
France	
Glass	Household Appliances
Castings	Motor Vehicles
Machine Tools	Precision Instruments
Industrial Equipment	Synthetic Fibers
Ordnance	Ocean Transportation Services
Office Equipment	Miscellaneous Transportation Services
Industrial Electrical Equipment	
Germany	
Non-ferrous Metals	Clothing
Non-road Vehicles	Dairy Products
Textiles	

Inspection of the lists for France and Germany leads to the following curious result: Germany, a large capital equipment producer, has relatively larger gains in consumer type sectors while more agricultural France sees relatively larger gains in the capital goods industries. Please note that capital spending rises more in Germany than in France (see Tables 1 and 2 respectively), so the reason is not domestically induced spending but rather export/import related. For Belgium, consumption related sectors grow significantly, while no Italian sector experiences a change greater than ten percent.

The industrial effects on the US, Canada, Japan and Korea are summarized in Figure 6 below.

Figure 6 Industrial sectors in the USA, Canada, Japan and Korea with decreases in output greater than one percent and increases greater than a quarter of a percent -- Year 2000.

USA

Output decreases greater than one percent

Ferrous metals	Copper
Other non-ferrous	Engines and turbines
Metalworking machinery	Special Industrial machinery
Office equipment	Electrical industrial apparatus
Communications equipment & electronic components	
Construction, Mining & oilfield machinery	
Miscellaneous non-electrical machinery	

Output increases greater than a quarter of a percent

Shoes	Computers

Canada

Output decreases greater than one percent

Iron ore	Plastic fabricated products
Yarn and manmade fibers	Furniture and fixtures
Iron and steel products	Aluminum products
Structural metal products	Other fabricated metal products
Agricultural machinery	Other industrial machinery
Motor vehicles	Motor vehicle parts
Electrical products ex. radio, TV	Non-cement non-metallic minerals

Industrial chemicals	Scientific equipment
Pipeline transport	

Output increases greater than a quarter of a percent

Agricultural products excl. animal & grain	
Fish landings	Coal
Crude mineral oils	Fish products
Misc food products	Leather & leather products
Pulp	Non-motor vehicle transport equipment
Imputed rent occupied homes	Amusement and recreation

Japan

Output decreases greater than one percent

Pig iron, crude steel	Electrical machinery
Leather & fur products	

Output increases greater than a quarter of a percent

Synthetic fiber yarns	Synthetic fibers

Korea

Output decreases greater than one percent

Forestry products	Metal ores
Non-metallic ores	Fiber yarn
Textile fabrics	Fabricated textiles
Leather & leather products	Basic chemicals
Synthetic resins	Chemical fibers
Other chemicals	Petroleum products
Rubber products	Non-metallic mineral products
Iron and steel	Primary non-ferrous metals
Fabricated metal products	Non-electrical machinery
Electrical equipment	Household electronics
Electronic appliances	Semi-conductors
Other electronic components	Measuring,medical & optical instruments

Output increases greater than a quarter of a percent

Fishery	Shipbuilding
Transport & warehousing	Education and research

For the United States, only three industrial sectors showed increases in exports of more than one percent with European integration: Coal, Textiles and Computers. Nineteen of the remaining forty-five goods sectors showed export losses of more than one percent. With respect to the output changes, most of the sectors gave negligible increases or decreases. The same is the case for Japan, while for Canada and Korea the magnitude of the effects by

industrial sector seems to be bigger but still not very significant.

Tables 8, 9 and 10 show cross country comparisons for three industries: electrical machinery and equipment (including computers), primary metals and ores, and chemicals and plastic products. The results vary significantly by country but in almost all cases, European countries are the gainers and non-European the losers. Specifically, for electrical machinery and equipment, French and Italian output grows the most as export growth surpasses import growth, while United States, Canada, Japan and Korea loose in terms of output. Italy experiences a significant increase in the output of primary metals and ores, which is derived from higher export penetration. Finally, the output of chemicals increases in all European countries together with exports.

(iii) Comparison of the results with the Cecchini report

A set of assumptions similar to ours was implemented and simulated by Cecchini (1988) using the HERMES and INTERLINK macroeconometric models. Table 11 compares some of the main aggregate macro results of that study with the ones reported above. In general, the results seem to be in the same direction, although the magnitudes differ in some cases. That could be due to a different set of assumptions (like in the case of Belgium) or to the way the models respond to economic shocks. For all countries, GDP is expected to increase, prices to decline and labor productivity to increase. Employment moves in different directions in France, Germany and Italy. The reason for that is the different way the models react to supply shocks in the

short, medium and long run.

IV. Summary

The objective of this paper was to address the economic aspects of the 1992 European integration and to estimate its potential effects on the economies of Europe and the rest of the world. A set of assumptions representing the EC directives was developed and introduced in the Inforum interindustry models of Belgium, France, Germany and Italy. Those assumptions include the deregulation of financial services, abolition of border related controls, increased competition, economies of scale and opening up of government procurement.

The results showed that the European economies will experience higher economic growth and per capita income with lower prices and higher labor productivity. For the economies of the rest of the world the integration process is not expected to bring about any significant results. Initially the effects will be positive due mainly to increased exports which will later fall. Moreover, the integration process will generate diverse results across sectors in different countries.

ENDNOTES

1. Throughout the paper when we talk about Germany we refer to the Federal Republic of Germany.

2. The Spanish model is part of the system, but not fully operational. As a result, the assumptions for Europe 1992 were not incorporated in it. Also, the model of Belgium does not have a price side, thus it does not produce forecasts for prices.

3. Chapter six of the Cecchini report contains a detailed discussion of the costs of non-Europe for the service sectors.

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Table 1: Germany
Aggregate macroeconomic results
(percentage deviations from the Europe with borders case)

	1993	1994	1995	1996	1997	1998	2000	2010
Real Gross Product	3.02	4.38	3.83	3.80	3.80	4.99	6.14	6.12
Private Consumption	3.68	6.24	5.46	4.09	4.99	6.15	6.22	7.04
Exports	2.19	2.94	3.95	4.66	4.84	6.28	7.31	8.35
Imports	5.41	7.60	6.83	6.40	5.83	6.54	6.74	8.26
Equipment Investment	7.89	8.55	11.25	8.28	8.94	5.23	5.96	9.76
Employment	0.38	0.07	0.61	1.00	0.22	0.23	0.45	-0.15
Aggregate Productivity	6.22	2.62	4.32	3.17	2.77	3.57	4.76	5.70
GNP Deflator	-2.85	-1.71	-1.64	-2.86	-4.97	-7.35	-4.58	-4.31
Consumer Price Deflator	-3.74	-3.71	-3.72	-4.43	-6.04	-8.19	-6.19	-6.29
Real Income per capita	6.9	4.0	6.3	6.2	5.1	5.2	6.3	6.7

Table 2: France
Aggregate macroeconomic results
(percentage deviations from the Europe with borders case)

	1993	1994	1995	1996	1997	1998	2000	2010
Real Gross Product	1.70	2.56	3.41	3.73	3.99	4.84	5.53	6.51
Private Consumption	0.74	1.36	2.31	2.75	3.37	3.68	4.19	4.32
Exports	3.01	4.50	5.30	6.03	6.41	8.68	10.59	13.57
Imports	3.63	4.84	6.36	6.42	6.58	7.62	7.71	7.95
Equipment Investment		4.68	6.45	8.57	8.04	7.18	7.96	7.21
5.20								
Employment	0.65	0.57	0.48	0.40	0.28	0.60	0.38	0.74
Aggregate Productivity		0.97	1.97	2.87	3.33	3.72	4.21	5.09
5.74								
GNP Deflator	-1.88	-2.53	-3.24	-3.30	-3.45	-4.17	-4.46	-4.14
Consumer Price Deflator	-1.84	-2.47	-3.23	-3.35	-3.60	-4.22	-4.29	-4.05
Real Income per capita		1.4	1.9	2.8	3.2	3.6	4.2	4.5
4.9								

Table 3: Italy
Aggregate macroeconomic results
(percentage deviations from the Europe with borders case)

	1993	1994	1995	1996	1997	1998	2000	2010
Real Gross Product	1.58	1.88	1.94	2.58	1.82	3.16	2.87	4.58
Private Consumption	1.92	2.75	3.43	4.00	3.91	6.05	5.89	5.86
Exports	1.68	2.47	2.77	3.03	3.26	3.91	5.36	9.37
Imports	4.29	5.22	6.00	6.87	5.96	9.32	8.52	8.66
Equipment Investment		4.00	4.34	4.19	6.19	2.83	5.37	3.41
5.11								
Employment	0.36	0.14	-0.80	-0.77	-1.52	-1.00	-1.77	-0.68
Aggregate Productivity		1.22	1.73	2.76	3.38	3.40	4.21	4.73
5.29								
GNP Deflator	0.53	-0.67	-2.06	-3.09	-3.88	-3.29	-5.15	-7.83
Consumer Price Deflator	-0.55	-1.92	-3.54	-4.79	-5.52	-6.11	-7.26	-9.88
Real Income per capita		2.10	2.75	2.88	3.19	2.52	4.74	3.53
4.12								

Table 4: Belgium
Aggregate macroeconomic results
(percentage deviations from the Europe with borders case)

	1993	1994	1995	1996	1997	1998	2000	2010
Real Gross Product	2.85	4.40	5.54	5.56	5.08	5.35	5.66	5.81
Private Consumption	0.59	1.99	3.01	3.47	3.60	3.65	4.32	3.75
Exports	5.45	7.60	8.31	8.36	8.38	9.46	9.74	11.85
Imports	5.77	7.94	8.86	8.26	7.72	8.55	8.88	10.12
Equipment Investment		6.91	10.06	14.64	12.96	9.06	7.96	7.93
5.70								
Employment	0.61	1.62	1.82	2.01	1.32	0.81	0.35	0.49
Aggregate Productivity		2.17	2.68	3.71	3.49	3.80	4.60	5.29
5.33								
Real Income per capita		0.88	2.77	3.94	4.47	4.30	4.06	4.49
3.98								

Table 5: United States
Aggregate macroeconomic results
(percentage deviations from the Europe with borders case)

	1993	1994	1995	1996	1997	1998	2000	2010
Real Gross Product	0.15	0.20	0.07	-0.09	-0.10	-0.04	-0.16	-0.01
Private Consumption	0.10	0.21	0.14	0.09	0.16	0.22	0.17	0.26
Exports	0.41	0.41	0.14	-0.23	-0.56	-0.63	-1.04	-0.78
Imports	0.31	0.43	0.30	0.22	0.34	0.53	0.45	0.70
Equipment Investment		0.62	0.78	0.19	-0.52	-0.54	-0.08	-0.24
0.55								
Employment	0.08	0.16	0.11	-0.01	-0.04	0.00	-0.05	-0.00
Aggregate Productivity		0.06	0.04	-0.03	-0.06	-0.04	-0.03	-0.09
0.01								
GNP Deflator	0.00	0.00	0.04	0.04	0.00	-0.08	-0.04	-0.25
Consumer Price Deflator	-0.03	-0.02	0.02	0.00	-0.10	-0.19	-0.17	-0.37
Real Income per capita		0.13	0.23	0.12	-0.01	-0.02	0.09	0.02
0.09								

Table 6: Republic of Korea
Aggregate macroeconomic results
(percentage deviations from the Europe with borders case)

	1993	1994	1995	1996	1997	1998	2000	2010
Real Gross Product	0.05	0.02	-0.10	-0.20	-0.29	-0.36	-0.49	-0.47
Private Consumption	0.04	0.07	0.24	0.40	0.41	0.43	0.45	0.43
Exports	0.11	-0.01	-0.54	-1.08	-1.42	-1.63	-2.11	-2.03
Imports	0.10	0.02	-0.19	-0.33	-0.36	-0.39	-0.47	-0.21
Equipment Investment		0.06	-0.01	-0.20	-0.35	-0.35	-0.45	-0.49 -0.35
Employment	0.03	0.02	-0.04	-0.11	-0.18	-0.23	-0.32	-0.28
Aggregate Productivity		0.00	0.00	-0.07	-0.07	-0.07	-0.13	-0.18 -0.18
GNP Deflator	-0.06	-0.06	-0.05	0.05	0.05	0.09	0.16	0.18
Consumer Price Deflator	-0.13	-0.12	-0.17	-0.10	-0.14	-0.09	-0.04	-0.05
Real Income per capita		0.10	0.11	0.13	0.12	0.17	0.14	0.06 0.10

Table 7: Japan

Aggregate macroeconomic results

(percentage deviations from the Europe with borders case)

	1993	1994	1995	1996	1997	1998	2000	2010
Real Gross Product	0.02	0.01	-0.07	-0.09	-0.11	-0.12	-0.21	-0.08
Private Consumption	-0.04	0.03	0.12	0.14	0.20	0.22	0.16	0.30
Exports	0.27	0.06	-0.61	-0.83	-1.16	-1.25	-1.59	-0.80
Imports	0.07	0.11	0.05	0.02	0.03	0.08	0.02	0.57
Equipment Investment		0.00	0.02	0.02	-0.01	0.01	0.01	-0.02
0.02								
Employment	0.01	0.02	-0.05	-0.06	-0.08	-0.08	-0.18	-0.03
Aggregate Productivity		0.00	-0.01	-0.02	-0.03	-0.04	-0.04	-0.03 -
0.05								
GNP Deflator	0.00	0.00	-0.09	-0.18	-0.26	-0.34	-0.48	0.00
Consumer Price Deflator	0.09	0.00	-0.18	-0.27	-0.35	-0.42	-0.32	-0.12
Real Income per capita		-0.04	0.04	0.10	0.12	0.18	0.19	0.13
0.29								

Table 8: All system countries
Industrial effects - Electrical goods (including computers)
(Percentage deviations from the Europe with borders case)

	1993	1994	1995	1996	1997	1998	2000	2010
				OUTPUTS				
Germany	3.60	4.87	4.62	5.75	3.97	5.19	8.14	6.99
France	2.20	3.24	4.24	5.03	4.86	6.65	8.40	9.95
Italy	2.77	2.08	2.09	3.51	1.46	4.20	3.61	9.17
Belgium	4.94	6.38	7.11	4.79	3.13	3.94	4.09	3.14
United States	0.54	0.58	0.16	-0.38	-0.61	-0.44	-0.76	-0.26
Canada	0.00	-0.38	-1.38	-1.78	-2.15	-2.23	-3.07	-2.13
Japan	0.14	-0.06	-0.54	-0.63	-0.81	-0.85	-1.13	-0.67
South Korea		0.08	-0.25	-0.85	-1.38	-1.64	-1.81	-2.20
	-1.66							
				EXPORTS				
Germany	2.02	2.60	3.48	4.55	3.77	4.78	5.55	6.63
France	2.96	4.31	5.05	5.84	5.70	8.04	9.28	11.79
Italy	1.82	2.80	3.41	3.91	4.23	5.38	7.63	13.81
Belgium	3.05	4.23	4.53	4.79	4.30	5.03	4.96	4.71
United States	0.78	0.76	0.45	-0.11	-0.67	-0.67	-1.18	-0.88
Canada	-0.10	-0.62	-2.10	-2.74	-3.41	-3.52	-4.42	-3.22
Japan	0.28	-0.07	-0.93	-1.14	-1.52	-1.62	-2.14	-1.19
South Korea		0.12	-0.30	-1.10	-1.89	-2.31	-2.52	-3.12
	-2.47							
				IMPORTS				
Germany	6.52	8.34	6.39	6.32	4.70	6.00	6.02	7.48
France	4.21	5.88	8.25	8.63	8.41	9.52	9.70	8.54
Italy	8.53	6.99	7.63	10.81	4.41	10.80	5.67	10.13
Belgium	7.16	9.27	10.62	7.62	5.38	6.36	6.65	6.00
United States	0.37	0.52	0.33	0.17	0.22	0.47	0.46	0.79
Canada	-0.10	-0.62	-2.10	-2.74	-3.41	-3.52	-4.42	-3.22

Japan	0.20	0.25	0.11	-0.00	-0.13	-0.08	-0.10	0.89
South Korea		0.11	-0.14	-0.59	-0.89	-0.99	-1.05	-1.28
-0.81								

Table 9: All system countries
Industrial effects - Primary metals and ores
(Percentage deviations from the Europe with borders case)

	1993	1994	1995	1996	1997	1998	2000	2010
				OUTPUTS				
Germany	3.16	3.83	3.62	4.03	3.73	5.89	8.26	7.05
France	1.77	2.31	2.62	2.78	2.46	3.43	4.35	6.08
Italy	5.31	5.44	4.67	7.41	4.37	7.63	7.85	19.07
Belgium	3.99	5.31	5.88	5.40	3.89	4.20	4.44	3.92
United States	0.26	0.19	-0.14	-0.47	-0.53	-0.48	-0.77	-0.34
Canada	0.28	0.30	-0.21	-0.46	-0.79	-0.74	-1.13	-0.78
Japan	0.04	0.01	-0.15	-0.26	-0.36	-0.44	-0.57	-0.55
South Korea		0.08	-0.25	-0.85	-1.38	-1.64	-1.81	-2.20
	-1.66							
				EXPORTS				
Germany	1.97	2.57	3.58	4.10	4.35	5.83	6.87	7.43
France	2.08	3.20	3.46	4.04	3.89	4.79	5.83	8.24
Italy	2.25	3.16	3.60	4.21	4.35	5.34	6.79	10.61
Belgium	4.46	6.18	6.49	6.89	5.61	5.92	6.47	6.58
United States	0.48	0.46	0.35	0.05	-0.33	-0.43	-0.68	-0.48
Canada	0.35	0.39	0.11	-0.13	-0.34	-0.27	-0.24	-0.05
Japan	0.05	-0.14	-0.47	-1.01	-1.29	-1.62	-1.88	-1.50
South Korea		0.34	0.36	-0.04	-0.59	-0.86	-0.94	-1.42
	-1.12							
				IMPORTS				
Germany	4.57	6.66	5.97	6.39	5.48	5.32	5.53	7.79
France	4.39	5.98	7.81	7.78	7.76	9.41	10.22	11.78
Italy	0.00	0.00	0.00	0.01	0.01	0.01	0.01	-0.07
Belgium	7.02	9.32	10.50	9.97	7.91	8.61	9.12	9.08
United States	0.55	0.86	0.79	0.52	0.55	0.82	0.76	1.38
Canada	0.35	0.39	0.11	-0.13	-0.34	-0.27	-0.24	-0.05

Japan	0.06	-0.09	-0.44	-0.47	-0.43	-0.31	-0.48	0.21
South Korea		0.17	0.14	0.05	0.02	0.18	0.30	0.37
	1.02							

Table 10: All system countries
Industrial effects - Chemicals and plastic products
(Percentage deviations from the Europe with borders case)

	1993	1994	1995	1996	1997	1998	2000	2010
				OUTPUTS				
Germany	1.91	2.33	2.95	3.88	4.57	7.01	9.37	9.33
France	1.71	2.86	3.68	4.09	4.43	5.36	5.99	7.53
Italy	1.34	1.48	1.48	2.24	1.74	3.54	3.74	6.85
Belgium	3.86	5.48	6.32	6.26	5.90	6.57	6.69	6.79
United States	0.13	0.13	-0.13	-0.39	-0.48	-0.49	-0.71	-0.50
Canada	0.08	-0.26	-0.77	-1.05	-1.25	-1.37	-1.76	-0.87
Japan	0.02	-0.06	-0.21	-0.23	-0.31	-0.31	-0.46	-0.42
South Korea		0.12	0.07	-0.52	-1.10	-1.52	-1.83	-2.32
	-2.15							
				EXPORTS				
Germany	2.25	3.09	5.29	6.49	7.18	9.17	11.19	10.96
France	2.94	4.30	5.11	5.54	5.87	7.19	7.65	9.72
Italy	1.25	2.09	2.71	3.27	4.06	5.29	7.48	13.55
Belgium	4.79	6.77	7.70	7.91	7.70	8.59	8.66	9.27
United States	0.31	0.38	-0.22	-0.75	-1.22	-1.48	-1.98	-1.48
Canada	-0.08	-0.65	-1.39	-1.93	-2.29	-2.55	-3.11	-2.11
Japan	0.20	0.12	-0.10	-0.11	-0.43	-0.41	-0.62	0.61
South Korea		0.33	0.28	-1.02	-2.61	-3.72	-4.61	-5.74
	-5.13							
				IMPORTS				
Germany	5.89	8.15	8.69	8.47	7.96	8.53	8.26	9.04
France	3.05	4.05	5.17	5.62	6.20	7.45	7.99	9.06
Italy	4.58	6.04	7.25	8.14	7.10	9.34	8.64	9.93
Belgium	4.31	6.07	7.09	7.15	6.97	7.76	7.96	8.86
United States	0.48	0.78	0.85	0.89	1.06	1.34	1.29	1.52
Canada	-0.08	-0.65	-1.39	-1.93	-2.29	-2.55	-3.11	-2.11

Japan	0.07	0.14	0.11	0.08	0.06	0.10	-0.01	0.72
South Korea		0.09	0.07	-0.23	-0.44	-0.57	-0.64	-0.85
-0.80								

Table 11: Comparison of our results with the Cecchini report
Aggregate macroeconomic results
(percentage deviations from the Europe with borders case)

	1993		1995		1998	
	This study	Cecchini	This study	Cecchini	This study	Cecchini
BELGIUM*						
GDP	2.85	1.23	5.54	2.25	5.35	2.34
Labor productivity	2.17	0.85	3.71	0.85	4.60	0.66
Employment	0.61	0.16	1.82	1.00	0.81	1.31
FRANCE						
GDP	1.70	1.09	3.41	2.88	4.84	5.05
Consumpt. deflat.	-1.84	-1.00	-3.23	-2.43	-4.22	-4.89
Labor productivity	0.97	1.37	2.87	2.56	4.21	3.54
Employment	0.65	-0.28	0.48	0.34	0.60	1.57
GERMANY						
GDP	3.02	1.22	3.83	2.57	4.99	4.20
Consumpt. deflat.	-3.74	-0.74	-3.72	-2.30	-8.19	-6.16
Labor productivity	2.62	1.53	3.17	2.07	4.76	2.51
Employment	0.38	-0.31	0.61	0.50	0.23	1.68
ITALY						
GDP	2.04	1.35	2.27	4.54	3.47	5.46
Consumpt. deflat.	-0.91	-2.30	-3.94	-5.55	-5.52	-7.07
Labor productivity	1.44	1.94	3.05	4.20	4.81	3.89
Employment	0.59	-0.62	-0.76	0.26	-1.28	1.40

* The Cecchini results for Belgium do not include assumptions (iii) and (iv) i.e. increased competition and economies of scale.