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## Four decades of German export expansion: An enduring success story?

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**Diskussionspapiere**  
**Discussion Papers**

Discussion Paper No. 130

**Four decades of German export expansion  
- an enduring success story?\***

by

Ludger Lindlar<sup>1</sup> and  
Carl-Ludwig Holtfrerich<sup>2</sup>

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# **Deutsches Institut für Wirtschaftsforschung**

Discussion Paper No. 130

## **Four decades of German export expansion - an enduring success story?\***

by

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# Four decades of German export expansion – an enduring success story? <sup>1</sup>

In a nutshell, West Germany's postwar economic prosperity can be characterized as export-driven. From 1949 onward, exports grew consistently faster than domestic product. Germany's world market share increased from the end of the 1940s to the beginning of the 1970s from 2 percent to well above 10 percent and, until recently, maintained that level. Germany's economic strength became increasingly identified with its ability to compete successfully on the world market. From the very beginning, domestic economic policies were oriented towards creating that success story. During the subsequent decades of slower growth, the importance of exports even increased as the German economy became more and more integrated into the Western European and the world economy.

But Germany's ability to generate an ever increasing income via production for the world market is no longer taken for granted. In the wake of the last recession, a *Standortdebatte* erupted, questioning more vigorously than before the „international competitiveness“ of the German economy.<sup>2</sup> Three major problems were identified: Germany's domestic costs are considered to be much too high, labor costs in particular; Germany has lost attractiveness as a location for foreign direct investment; and Germany is said to export too few high-tech products. Additionally, it is claimed that German firms have as yet failed to take full advantage of the growth dynamics in the Asia-Pacific region. The recent upswing has given rise to some more optimistic assessments of Germany's economic situation, in particular as the Japanese still struggle to escape their prolonged slump. The upswing provides an excellent opportunity to put the *Standortdebatte* into a historical perspective.

Three topics will be addressed: (i) The role of geographical location for Germany's external trade, (ii) the role of Germany as a supplier of investment and chemical goods for the world market, and (iii) the role of domestic and international monetary arrangement for Germany's export performance. The relationship between economic and institutional factors will demand special attention.<sup>3</sup>

## 1. Overview

The export boom of West Germany's economy started in autumn 1949 and proceeded, even after 1973, nearly uninterrupted until unification. Between 1949 and 1994, exports of goods grew consistently faster than domestic commodity production [→ *graph 1*], accounting in 1989 for 30 percent of total output while it was less than 10 percent at the beginning of the

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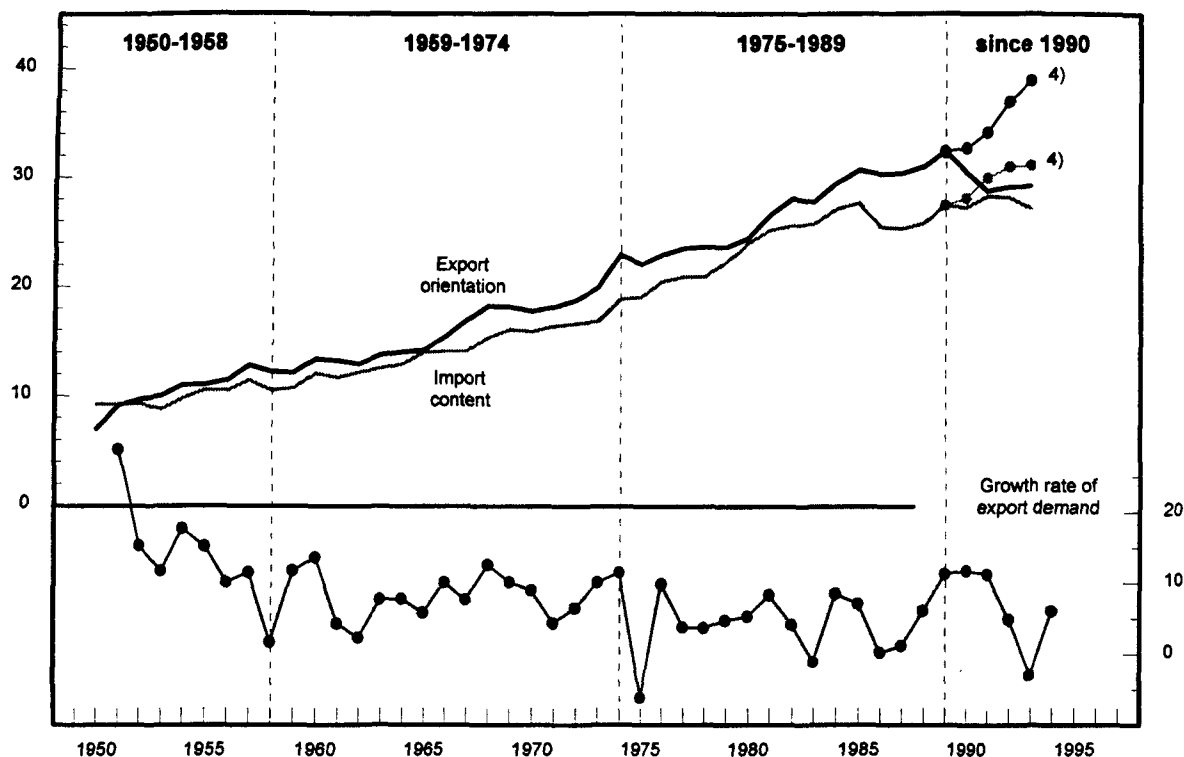
1 For comments on this paper, we would like to thank Rebecca Kaplan, Kathleen Thelen, Ulrich Thießen and Christian Weise.

2 A critical assessment of the debate can be found in Lindlar (1995c).

3 We define institutions as regulations by law or custom which constrain the economic and other choices of people.

Graph 1

Export orientation of domestic production,<sup>1</sup> import content of domestic supply<sup>2</sup> and growth rate of export demand<sup>3</sup> in West Germany, 1950-1994 (in percent)



**Comments.** 1 Share of export in domestic commodity production. 2 Share of imports in domestic commodity supply (domestic commodity production plus imports minus exports). Commodity production refers to agriculture, mining and manufacturing. 3 Goods and services, in constant prices. 1950-1959 without trade with Berlin and the Saarland. 4 Including trade with East Germany. **Sources.** Statistisches Bundesamt, *Fachserie 18: Volkswirtschaftliche Gesamtrechnungen – Reihe S. 15: Revidierte Ergebnisse 1950 bis 1990* (Stuttgart 1991), *Wirtschaft und Statistik, Statistisches Jahrbuch*, various issues, national accounts database of the DIW; calculations by the authors.

1950s. Only in 1975, 1983 and 1993, did exports decline in absolute terms and only in 1951 and 1980 did the balance on current account become negative. On average, exports grew by 9.5 percent p.a., GDP by 4.2 percent.

Four phases can be distinguished:

- *Reconstruction (1949-1958)*. The sustained recovery of the German economy was initiated by the currency reform in 1948, but export demand did not have a major impact on the German economy until autumn 1949 when the Western occupational powers abolished the requirement to pay for German imports with U.S. dollars.<sup>4</sup> During the following years, exports directly contributed to more than a quarter of the overall demand expansion. The export expansion was made possible and facilitated by the reintegration of Germany into the Western World economy. Indeed, the Organization for European Economic Cooperation (OEEC) and the European Payments Union (EPU) were the first international organizations in which Western Germany was allowed to become a member. Export growth was extremely rapid

4 Frequently, the so-called Korea boom is seen as the starting point of West Germany's export-led growth; see, for example, Wallich (1955), pp. 4, 83, Hardach (1976), p. 224; Hennings (1982), p. 480; Abelshauser (1983), pp. 67-68, 70; Carlin (1989), pp. 60-61, 65; and Giersch/Paqué/Schmieding (1992), p. 70. However, Temin (1994) and Lindlar (1995a), pp. 278-280, show that this interpretation is at odds with the actual development.

until the European recession in 1958. An average annual rate of 23.5 percent – in real terms – over the timespan of nearly a decade was never experienced before in German history, and probably will remain unique. The export boom was mainly caused by a tremendous demand for German goods as the European economy entered into the postwar boom and by the ability of the Germany economy to respond to these market signals.

■ *Sustained boom (1959-1974)*. After 1959, the export boom consolidated. Two reasons can be found: (i) International trade and payments were further liberalized, on a multilateral basis within the framework of the GATT and the Bretton Woods system and on a rather discriminatory basis within the newly founded European Economic Community. Exports to the other EEC member states accounted for more than a quarter of the total increase of Germany's export demand, compared to 10 percent in the decade before. (ii) Economic growth in Western Europe continued to be high; in many countries, growth rates even accelerated compared to the 1950s. Since rapid growth also meant booming import demand and, via increasing incomes per capita, a greater potential for intra-industry trade, international trade boomed too. West Germany liberalized its capital account and monetary authorities found it increasingly difficult to isolate their economy from world inflation. Foreign direct investment and other technology imports contributed to West Germany's process of catching-up to the U.S., and substantial immigration from Southern Europe released at least some of the pressure on an extremely tight labor market. Overall, exports grew at an average annual rate of 8.2 percent. This remarkable decade ended as the Western world entered into its first postwar recession.

■ *Adjustment to slower growth (1975-1989)*. In the 1970s and 1980s Germany experienced a further globalization as did the other OECD countries. For the first time, the openness of Germany and other Western European economies went beyond that level already achieved in 1913.<sup>5</sup> The enlargement of the European Community deepened the economic integration of Germany with Western Europe. But times became more turbulent: Three oil price shocks (two negative ones in 1973 and 1979, and a positive one in 1986), substantial instabilities on international capital and currency markets (third world debt crises, the big swing of the dollar in the 1980s), new competitors from newly industrializing countries – just to name a few. In real terms, Germany's exports grew at an average annual rate of 4.0 percent which still compares well in long-run<sup>6</sup> and international comparisons. Many observers claimed that exports grew too fast because in the second half of the 1980s, Germany's surplus on the current account climbed to a remarkable 6 percent of GDP. However, since Germany had a well-established reputation of being an open market economy, its economic policy makers never faced an international critique similar to that directed against Japan's trade surplus.

■ *Unification (1990-1994)*. Unlike in other Western European countries, the export boom in West Germany continued well into 1992. In 1990 and 1991 together, exports increased by nearly 25 percent in real terms. The overwhelming share of those additional exports went to the Eastern part of Germany which, however, paid a high price: the collapse of its economy. The economic and social union between the *Bundesrepublik* and the GDR rendered East Germany's manufacturing sector uncompetitive virtually overnight; the impact of the unfavorable exchange rate of the East German mark upon entering the currency union and the general problems of the transformation process were accentuated by too rapidly rising real wages.

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5 Lindlar (1995a), p. 198.

6 1870-1913, German exports increased on average by 4.1 percent p.a.; see Maddison (1991), table F.2.



During the second half of 1992, the West German economy followed the rest of Western Europe into the recession, Germany's deepest since the war. In 1993, exports declined. The recent upswing is, as in other European countries, disappointingly weak. In 1995, Germany's GDP will increase by 2 instead of the originally projected 3.5 percent. Companies find themselves in a difficult situation because the overshooting appreciation of the German mark invalidated much of their efforts at cost reduction. The impact of the European Single Market, introduced in 1993, is yet difficult to assess. Overall, exports grew at an average annual rate of 6.3 percent in real terms which compares well with the previous period.

## 2. Western Europe's foremost supplier: continuity and change in the geographical structure of exports

Germany is the largest natural trading partner in Continental Europe by virtue of size, degree of industrialization and geographical location. For the entire postwar era, Germany has also been at the center of the institutional integration of the European economy. The opening of the East is likely to strengthen this position. How did the close integration of Germany into the European Economy evolve during the postwar decade? What impact did the market-driven and the institutional integration of Western Europe have on West Germany's postwar export boom? What impact does it have today, in an increasingly globalized world economy? In order to answer these questions, we first analyze the regional trade structures of the leading OECD-economies from the 1950s to the 1990s. Next, we look at regional institutions and their impact on the economic integration of Western Europe since the war. Finally, we test a gravity model for Germany's external trade in order to distinguish between market-driven and institution-driven trade integration.

### 2.1 Regional export integration

There are several methods of measuring foreign trade integration between countries;<sup>7</sup> we find the following method, which we call *relative export integration* between country  $i$  and  $j$  ( $rei_{ij}$ ), to be most useful for our purposes:

$$rei_{ij} = r_{ij}/i_{ij} \quad \text{with } r_{ij} = x_{ij}/X_i \\ i_{ij} = M_j/(M - M_i)$$

where

$x_{ij}$	Exports of country $i$ to country $j$
$X_i$	Total exports $i$
$M_j$	Total imports of country $j$
$M - M_i$	World imports without imports of country $i$

This measure normalizes the regional trade structure of a country by the relative size of the respective trading partner.<sup>8</sup> We choose exports since we are interested in the demand-side in-

7 On methods, see Haas/Peschel (1982), chapter 2, and Anderson/Norheim (1993), pp. 21-26.

8 It is also necessary to adjust the world imports by the total imports of the exporting country since a country cannot export to itself. A simple example illustrates the case: Assume just two countries exist in the world economy. Both are exporting the same amount of goods to each other. Without adjusting the world import share in the denominator, the relative export integration measure would be  $1.0/0.5 = 2$  although, apparently, each country has no alternative but to trade with the other. If the world import share is adjusted by the world imports of the exporting country, the measure becomes  $1.0/1.0 = 1$ . If one country exports into a group of countries to which it belongs, the total imports of that group have to be adjusted by the total imports of the exporting country too.

terdependence of countries and its impact on economic growth. The measure takes the value 1 if a country *i* distributes the same share of its total exports to country *j* as country *j*'s share in world imports; it is larger than 1 if country *j* has a greater importance for country *i*'s trade than what can be explained by its world market share alone. A regional agglomeration of trade flows is indicated by neighboring or proximate countries all having relative export integration values well above 1.<sup>9</sup> We analyze the relative export integration for the 1950s, the late 1960s and the early 1990s.

■ *1953-1959.* Four trade blocs can be distinguished [→ *table 1*]: (i) the continental European core (CEC) and the associated colonial empires, (ii) the Sterling bloc centered around the UK and overlapping with Scandinavia, (iii) North America and (iv) the communist state trading countries in Eastern Europe. Generally, neighboring countries achieved a higher relative export integration, Western European countries in particular. Already in the 1950s, the US and Japan had a regional preference for trade with each other. West Germany was more integrated with the CEC than any other economy;<sup>10</sup> it had values of relative export integration well above one with all countries or country-group of the continental European core. With the exception of Finland, all continental European economies also had a pronounced relative export integration with West Germany. Indeed, West Germany was the *only* country having both values above 1.3 in all rows and columns of the upper-left side bloc. Because of its size, Germany was also the most important trading partner of the CEC: more than 30 percent of intra-regional exports originated in Germany, 25 percent in the Benelux countries, 16 percent in Scandinavia, 13 percent in France, 9 percent in Austria and Switzerland and 7 percent in Italy. Apparently, Germany had already in the 1950s become – again – the most important trading partner of Western Europe.

■ *1967-1973.* Germany remained, unchallenged, the center of the CEC. The relative export integration of the EEC members increased; all values were at that time at least as high as 1 but in most cases above 2 [→ *table 2*]. On the other hand, the relative export integration of the EEC countries with respect to the EFTA countries declined. With exception of the Benelux countries, which already in the 1950s had founded a small customs union, the integration of the natural trading partners increased, most strongly between Austria and Switzerland and the Scandinavian countries.

■ *1992-1994.* For the 1990s, we observe a declining integration of Germany with the CEC but an increasing integration with the UK, the Western European periphery and, strongly, with Eastern Europe [→ *table 3*]. Today, Germany is more than ever before *the* core of the European economic system (all rows and columns with European countries or country groups are set in bold). Britain has lost its special role and is now fully integrated into the Western European economy. We also observe closer regional and subregional blocs like Scandinavia and North America. Only the U.S. and Japan still have a pronounced relative export integration with developing countries.

9 In interpreting the calculated figures, it is important to keep in mind that this measure is not scaled linear-symmetrically around 1; a low value of 0.2 is equivalent to a high value of 5.

10 To the contrary, Herbst (1989), p. 189, and Loth (1990), p. 136.

Table 1

**Relative export integration of leading OECD-countries, 1953-1959**  
(Bilateral exports relative to the adjusted world import share of the trading partners)

From/To	Contin. European Core <sup>1</sup>	West Germany	France	Italy	Benelux	Austria, Switzer- land	Scandi- navia	UK	Western Europe's Periphery	Eastern Europe	USA, Canada	Japan, Australia <sup>2</sup>	Devel- oping countries
West Germany	<b>2.3</b>	—	<b>1.5</b>	<b>1.8</b>	<b>2.4</b>	<b>4.1</b>	<b>2.5</b>	0.4	<b>1.5</b>	0.3	0.5	0.3	0.8
France	<b>1.4</b>	<b>1.6</b>	—	1.3	<b>1.5</b>	<b>1.9</b>	0.8	0.6	1.0	0.3	0.4	0.1	<b>1.5</b>
Italy	<b>1.6</b>	<b>2.2</b>	1.2	—	0.7	<b>4.2</b>	0.9	0.7	<b>2.3</b>	0.4	0.6	0.2	1.0
Belgium-Lux.	<b>2.2</b>	<b>1.8</b>	<b>2.0</b>	0.8	<b>6.3</b>	<b>1.4</b>	<b>1.4</b>	0.6	0.8	0.3	0.7	0.2	0.7
Netherlands	<b>2.2</b>	<b>2.9</b>	1.0	0.8	<b>5.0</b>	1.3	<b>1.9</b>	1.1	0.6	0.2	0.4	0.1	0.8
Austria	<b>2.2</b>	<b>4.0</b>	0.6	<b>5.9</b>	0.8	<b>3.0</b>	0.7	0.3	<b>1.9</b>	1.3	0.3	0.1	0.4
Switzerland	<b>1.9</b>	<b>2.8</b>	<b>1.4</b>	<b>2.8</b>	1.2	<b>3.4</b>	1.3	0.6	1.3	0.5	0.8	0.5	0.7
Denmark	<b>1.6</b>	<b>2.9</b>	0.5	1.5	0.6	0.8	<b>3.3</b>	<b>3.2</b>	0.4	0.4	0.5	0.1	0.4
Norway	<b>1.7</b>	<b>2.0</b>	0.8	0.9	1.1	0.7	<b>4.3</b>	<b>2.0</b>	0.9	0.6	0.6	0.1	0.5
Sweden	<b>2.0</b>	<b>2.2</b>	1.0	1.1	<b>1.6</b>	0.8	<b>5.7</b>	<b>1.8</b>	0.8	0.4	0.4	0.1	0.6
Finland	0.9	1.3	0.9	0.4	1.0	0.3	1.1	<b>1.8</b>	0.5	<b>2.1</b>	0.3	0.1	1.0
U.K.	0.8	0.5	0.5	0.7	0.8	0.6	<b>1.7</b>	—	0.7	0.2	0.7	0.2	<b>1.7</b>
USA	0.5	0.6	0.4	0.8	0.7	0.5	0.4	0.4	0.7	0.0	<b>3.6</b>	<b>1.5</b>	<b>1.5</b>
Canada	0.3	0.4	0.2	0.3	0.4	0.3	0.3	<b>1.6</b>	0.1	0.1	<b>4.9</b>	0.8	0.3
Japan	0.2	0.2	0.1	0.2	0.3	0.2	0.3	0.3	0.3	0.2	<b>1.5</b>	—	<b>2.0</b>

**Comments.** All values above 1.3 are set in bold. <sup>1</sup> West Germany, France, Italy, Benelux, Austria, Switzerland, Scandinavia. <sup>2</sup> Including New Zealand. **Sources.** UN, *Yearbook of International Trade Statistics*, various issues; calculations by the authors.

Table 2

**Relative export integration of leading OECD-countries, 1967-1973**  
(Bilateral exports relative to the adjusted world import share of the trading partners)

From/To	Contin. European Core <sup>1</sup>	West Germany	France	Italy	Benelux	Austria, Switzer- land	Scandi- navia	U.K.	Western Europe's Periphery	Eastern Europe	USA, Canada	Japan, Australia <sup>2</sup>	Devel- oping countries
West Germany	<b>2.0</b>	—	<b>1.9</b>	<b>1.7</b>	<b>2.2</b>	<b>3.1</b>	<b>1.5</b>	0.6	1.1	0,4	0.6	0.3	0,7
France	<b>1.8</b>	<b>2.1</b>	—	<b>2.3</b>	<b>2.1</b>	<b>1.8</b>	0.6	0.7	1.2	0,3	0.3	0.2	1,1
Italy	<b>1.7</b>	<b>2.3</b>	<b>2.2</b>	—	1.1	2.1	0.6	0.6	<b>1.4</b>	0,4	0.6	0.2	1,0
Belgium-Lux.	<b>2.3</b>	<b>2.5</b>	<b>3.2</b>	1.0	<b>4.7</b>	0.9	0.8	0.6	0.6	0,2	0.4	0.1	0,5
Netherlands	<b>2.2</b>	<b>3.4</b>	<b>1.7</b>	1.1	<b>3.8</b>	0.9	1.0	1.1	0.7	0,2	0.3	0.2	0,6
Austria	<b>1.8</b>	<b>2.5</b>	0.4	<b>2.7</b>	0.6	<b>5.4</b>	1.7	1.0	0.3	1,2	0.3	0.1	0,6
Switzerland	<b>1.5</b>	<b>1.6</b>	<b>1.4</b>	<b>1.9</b>	0.6	<b>4.8</b>	1.4	1.1	1.3	0,5	0.6	0.6	0,9
Denmark	<b>1.5</b>	<b>1.4</b>	0.5	0.9	0.5	1.3	<b>6.4</b>	<b>2.9</b>	0.8	0,3	0.5	0.2	0,5
Norway	<b>1.5</b>	<b>1.5</b>	0.5	0.6	0.7	0.6	<b>6.3</b>	<b>2.7</b>	<b>1.4</b>	0,2	0.4	0.2	0,6
Sweden	<b>1.7</b>	1.2	0.8	0.7	1.0	1.4	<b>8.2</b>	<b>2.0</b>	0.9	0,4	0.5	0.3	0,6
Finland	<b>1.4</b>	1.1	0.7	0.5	0.9	0.8	<b>5.0</b>	<b>2.7</b>	0.8	<b>1,5</b>	0.3	0.2	0,4
U.K.	1.0	0.6	0.7	0.6	1.1	1.2	<b>1.9</b>	—	<b>2.1</b>	0,3	0.9	0.9	<b>1,4</b>
USA	0.5	0.5	0.4	0.5	0.6	0.4	0.3	0.6	0.6	0,1	<b>3.9</b>	1.2	<b>2,0</b>
Canada	0.2	0.2	0.1	0.2	0.3	0.1	0.2	1.1	0.2	0,1	<b>5.2</b>	0.8	0,4
Japan	0.2	0.3	0.1	0.2	0.3	0.3	0.2	0.4	0.5	0,2	<b>1.9</b>	<b>2.1</b>	<b>2,2</b>

**Comments.** All values above 1.3 are set in bold. <sup>1</sup> West Germany, France, Italy, Benelux, Austria, Switzerland, Scandinavia. <sup>2</sup> Including New Zealand. **Sources.** UN, *Yearbook of International Trade Statistics*, various issues; calculations by the authors.

Table 3

**Relative export integration of leading OECD-countries, 1992-1994**  
(Bilateral exports relative to the adjusted world import share of the trading partners)

From/To	Contin. European Core <sup>1</sup>	Germany	France	Italy	Benelux	Austria, Switzer- land	Scandi- navia	U.K.	Western Europe's Periphery	Eastern Europe	USA, Canada	Japan, Australia <sup>2</sup>	Devel- oping countries
Germany	<b>1.7</b>	—	<b>2.2</b>	<b>2.1</b>	<b>2.1</b>	<b>3.6</b>	<b>2.2</b>	<b>1.4</b>	<b>1.6</b>	<b>2.2</b>	0.7	0.4	0.3
France	<b>1.5</b>	<b>1.9</b>	—	<b>2.5</b>	<b>1.9</b>	<b>1.4</b>	0.8	<b>1.7</b>	<b>2.2</b>	0.7	0.4	0.3	0.7
Italy	<b>1.5</b>	<b>2.2</b>	<b>2.4</b>	—	0.9	<b>2.0</b>	0.8	1.2	<b>2.1</b>	<b>1.6</b>	0.4	0.4	0.7
Belgium-Lux.	<b>2.0</b>	<b>2.3</b>	<b>3.3</b>	<b>1.5</b>	<b>3.3</b>	1.1	1.1	<b>1.5</b>	1.1	0.6	0.3	0.2	0.5
Netherlands	<b>2.1</b>	<b>3.1</b>	<b>1.9</b>	<b>1.4</b>	<b>4.1</b>	1.0	<b>1.5</b>	<b>1.7</b>	1.2	0.9	0.2	0.2	0.4
Austria	<b>2.1</b>	<b>4.3</b>	0.8	<b>2.1</b>	0.7	<b>3.4</b>	1.1	0.6	0.8	<b>3.8</b>	0.2	0.3	0.3
Switzerland	<b>1.7</b>	<b>2.6</b>	<b>1.6</b>	<b>2.0</b>	0.8	<b>2.8</b>	1.2	1.2	1.0	0.7	0.5	0.7	0.7
Denmark	<b>1.9</b>	<b>2.6</b>	1.0	1.1	0.9	0.9	<b>8.2</b>	<b>1.7</b>	1.0	1.2	0.3	0.6	0.4
Norway	<b>1.6</b>	<b>1.4</b>	<b>1.4</b>	0.7	<b>1.6</b>	0.3	<b>6.8</b>	<b>4.3</b>	0.9	0.5	0.5	0.3	0.2
Sweden	<b>1.8</b>	<b>1.6</b>	1.0	1.0	<b>1.4</b>	1.1	<b>10.3</b>	<b>1.8</b>	0.9	<b>1.7</b>	0.5	0.6	0.3
Finland	<b>1.6</b>	<b>1.5</b>	1.0	0.9	1.0	0.9	<b>7.0</b>	<b>1.9</b>	<b>2.0</b>	<b>1.5</b>	0.4	0.4	0.5
U.K.	<b>1.5</b>	<b>1.4</b>	<b>1.7</b>	1.3	<b>1.7</b>	0.8	<b>1.9</b>	—	<b>2.4</b>	0.6	0.7	0.5	0.7
USA	0.5	0.5	0.5	0.4	0.7	0.5	0.4	1.0	0.6	0.4	<b>6.0</b>	<b>1.8</b>	<b>1.4</b>
Canada	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.1	0.1	<b>5.3</b>	0.7	0.2
Japan	0.4	0.6	0.3	0.2	0.5	0.3	0.4	0.6	0.4	0.2	<b>1.7</b>	<b>1.8</b>	<b>1.6</b>

**Comments.** All values above 1.3 are set in bold. <sup>1</sup> Germany, France, Italy, Benelux, Austria, Switzerland, Scandinavia. <sup>2</sup> Including New Zealand. **Sources.** IMF, *Direction of Trade Statistics* database; calculations by the authors.

## 2.2 Regional Institutions

Three regional economic institutions have shaped West Germany's and Western Europe's external economic development after the war: the „Organization for European Economic Cooperation“ (OEEC), founded in 1948, the European Payments Union (EPU) created shortly thereafter, and the European Economic Community (EEC) created by six continental European countries in 1957, whose predecessor was the European Community for Coal and Steel, founded in 1952. All three institutions had one belief in common: Regional economic integration is a better means to promote postwar economic reconstruction than the solutions provided by the GATT (multilateral, non-discriminatory trade policy) and the Bretton Woods agreement (return to convertibility as soon as possible) alone. While the OEEC and the EPU were explicitly intended as intermediate steps towards an open, non-discriminatory world economy, this was not clear with the EEC. For this reason, it did not remain undisputed, in West Germany as well as in many other Western European countries.

### 2.2.1 OEEC, EPU

In 1947, the institutional framework for a multilateral, non-discriminatory world economy faced difficult times. The tariff cuts agreed upon in Geneva were ineffective because of mounting quantitative restrictions in Europe.<sup>11</sup> The British currency crisis made clear that convertibility was, at the early stage of reconstruction, an elusive goal. Western Europe was in extremely short supply of U.S. dollars, which forced many countries to tighten their trade and payments restrictions. The German economy was badly needed as a supplier of intermediate and investment goods and as a market for the neighboring countries' exports, but political circumstances prevented an early recovery. U.S. policy makers realized that new solutions had to be found, the more so as the relationships with the Soviet Union rapidly deteriorated. The Marshall plan was at the center of these solutions: Its funds allowed the Western European countries to continue their reconstruction even in face of balance of payments difficulties; it paved the way towards the re-integration of the Western part of Germany into the European economy; it allowed the U.S. to put pressure on the Western European countries in order to reduce their trade and payments restrictions; and it created the preconditions for economic cooperation between the Western European countries.

The OEEC and the EPU, both created by the U.S. as part of their Marshall plan program, played a key role in the liberalization of European trade and payments. The U.S. decided to bring up the question of import controls on the agenda of the OEEC, the European counterpart to the U.S. Marshall plan administration, the Economic Cooperation Administration (ECA). In dire need of financial support from the Marshall plan, the Western European partner countries agreed to the U.S. demands for a swift removal of most quantitative restrictions by the early 1950s. The EPU replaced the network of bilateral payments agreements, which since 1945 were created between the Western European countries, by a general clearing mechanism.<sup>12</sup> Under the bilateral clearing system, countries tended to balance their bilateral trade because they did not have enough U.S. dollars to pay for a bilateral trade deficit, or they were not willing to credit a bilateral surplus by the trading partners' inconvertible currency. Under orderly market conditions, trade between two countries is seldom balanced. Hence the European division of labor, already hampered by quantitative controls and high tariffs, was

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11 Irwin (1994).

12 For its history, see Kaplan/Schleiminger (1989), p. 128, 158; an economic assessment can be found in Eichengreen (1993).

further constrained by the payments mechanism. Under EPU, every country opened up an account with the EPU's legal agent, the Bank for International Settlement in Basle. At the end of each month, the bilateral trade balances between the member states were added to a total balance for each country; a trade deficit with one country could therefore be cleared by a trade surplus with another country. Even if the total trade balance was negative, the deficit could be financed up to a specified limit, either by the surplus of other countries or by the start-up capital, provided by Marshall plan funds. Hence, the EPU could also support a country in the face of a deteriorating current account, which was the case with Germany in 1951. The EPU made the currencies of Western Europe *de facto* convertible with each other. In doing so, it discriminated against the rest of the world, the U.S. in particular, because the dollar shortage still required the trade of many EPU members to be balanced with non-member countries. The EPU was dissolved in 1958 as all Western European currencies became convertible externally.

Frequently, it has been claimed that the GATT and the Bretton Woods institutions were responsible for the extraordinarily rapid growth in world trade after the war.<sup>13</sup> This is only partly true. Historical evidence suggests that the GATT and the Bretton Woods agreement would have failed without any substantial progress in the liberalization of trade and payments in Western Europe. This progress was achieved by the OEEC and the EPU. Both regional institutions were designed to solve the reconstruction problems of a traditionally highly integrated regional economic space,<sup>14</sup> where a mutual removal of import controls and payments restrictions would have a strong impact on export growth and reconstruction without straining the currency reserves. However, in the absence of an institutional framework including the former war enemies West Germany, Austria and Italy, progress in regional economic integration would have been slow. It was the U.S. and its financial leverage, the Marshall plan, that speeded up Western Europe's regional economic integration and in doing so gradually released the GATT and the Bretton Woods agreement from its infancy.

## 2.2.2 European Economic Community

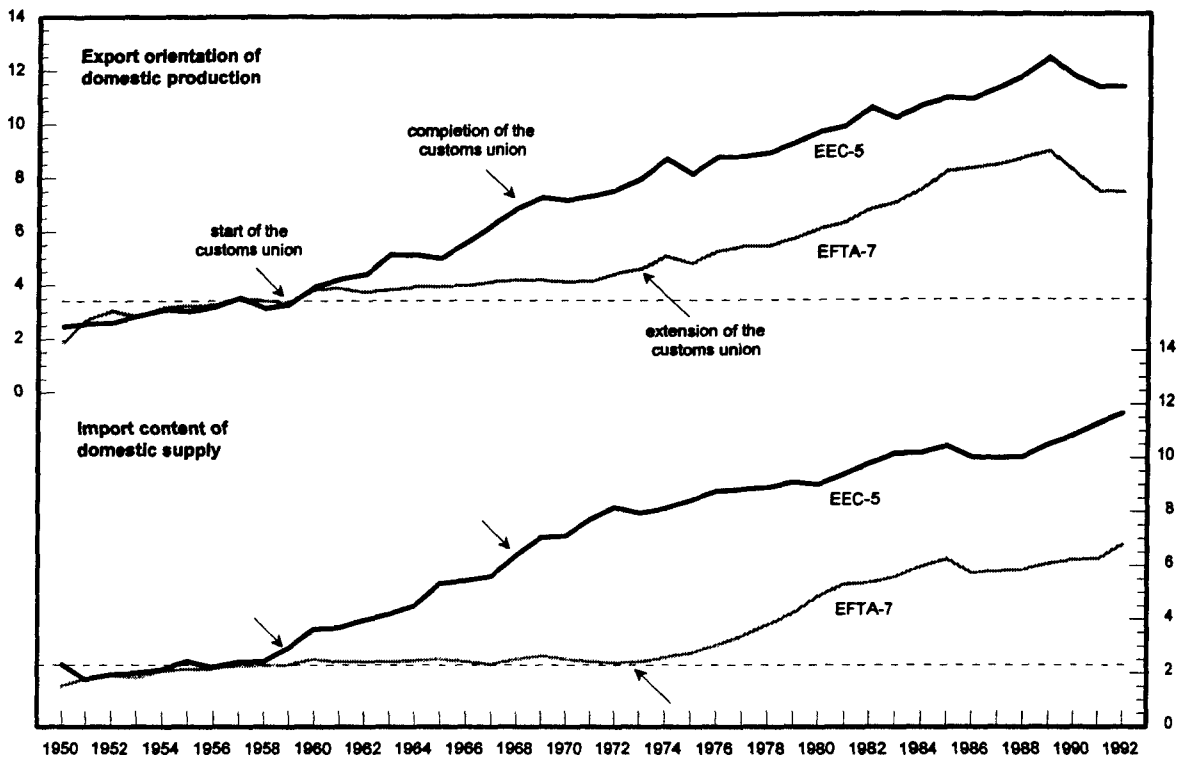
The European Economic Community of 1957 with its original six member states – Germany, France, Italy, Belgium, Luxembourg and the Netherlands – has developed into the historically most profound and stable institution for economic and political integration in Europe. Only a few envisaged this development. The main intention behind the founding treaty of the EEC was the political integration of Germany by economic means. This was particularly in the interest of France. Economically, the treaty of Rome had five goals: the abolition of all trade restrictions on industrial goods and services between the member states; the free movement of capital and labor within the community; the creation of a common market for agricultural goods; the introduction of a common external tariff; and, to some extent, the harmonization of economic and social policies. Those goals were intended to be achieved within a timespan of 12 years, which in case of difficulties could be extended. The common tariff was introduced in 1959. By the end of the 1960s the common agricultural market was completed. The abolition of tariffs on industrial goods proceeded even faster than intended. As

<sup>13</sup> See, for example, Gilpin (1987), pp. 133, 192: „Establishment of the Bretton Woods systems did usher in an era of unprecedented growth in international trade. [...] As a consequence of numerous GATT negotiations in the early postwar period, the merchandise trade of industrial countries grew from 1950 through 1975 at an average of 8 percent a year.“

<sup>14</sup> In eight of the twelve leading Western European economies, between 60 and 76 percent of total exports went to Western Europe; in three, it was between 43 and 54 percent (data refer to 1953-1959 and include Western Europe's periphery).

Graph 2

**Openness of West Germany with respect to EEC and EFTA, 1950-1992<sup>1</sup>**  
 (Export orientation of domestic production<sup>2</sup> and import content of domestic supply<sup>3</sup>)



**Comments.** 1 Due to measurement problems after the introduction of the Single Market, the data on Germany's trade with EU members are not reliable for 1993 and 1994. 2 Share of export in domestic commodity production. 3 Share of imports in domestic commodity supply (domestic commodity production plus imports minus exports). Commodity production refers to agriculture, mining and manufacturing. 1950-1959 without trade with Berlin and the Saarland, 1990-1993 without East Germany. **Sources.** Statistisches Bundesamt, *Fachserie 18: Volkswirtschaftliche Gesamtrechnungen – Reihe S. 15: Revidierte Ergebnisse 1950 bis 1990* (Stuttgart 1991), *Wirtschaft und Statistik, Statistisches Jahrbuch*, various issues; calculations by the authors.

early as 1968, all tariffs between the EEC member were removed. When completed, the EEC customs union accounted, at that time, for 13 percent of world trade and 45 percent of the members' external trade. However, the realization of the treaty's remaining program proved to be far more difficult. The member states did not agree to realize these goals until the Single Market was implemented in 1993.

A customs union has a trade creating and a trade diverting impact: it creates trade if a country starts to import a good from the other member countries which has previously been produced at home; it diverts trade if imports from non-member countries will be replaced by imports from member-countries. One way to distinguish between trade creation and trade diversion is to look at the import content of domestic supply. If the import content increases with respect to the customs union's members, trade is created. If the import content decreases with respect to the rest of the world, trade is diverted. The overall effect of a customs union is positive, if the total import content rises after the customs union becomes realized. For our purpose, it is useful to look only at the impact of the EEC trade policy on Germany's external trade with the other EEC members and the EFTA members. Overall, the economic integration of Germany with both country groups strongly increased from 1950 to 1992, but with a different time profile [→ graph 2]. Generally, trade liberalization had a strong *immediate*



impact on the import content as well as on the export orientation. At the beginning of the 1950s, Germany's trade integration with the eventual EEC and EFTA countries was similar. From 1959 to 1972, import demand from the EEC countries increased much more than total domestic demand, while the import demand of the EFTA expanded in line with it. Hence, the EEC was in Germany's case strongly trade creating but, overall, not trade diverting. That is, even for Germany, the EEC did not only have a political logic, but also an economic one.

The removal of trade restrictions within the original EEC created trade to a substantially greater extent than the eventual removal of trade restriction with the second-round member states of the EEC and the remainder of the EFTA in the 1970s. To some extent, this can be explained by the rapid growth of their domestic products which increased from 1959 to 1973 by 875 billion U.S. dollars, compared to 520 billion dollars in the case of the EFTA.<sup>15</sup> This larger increase in income was partly caused by the customs union itself: by better resource allocation due to increased international specialization, by the increasing returns to scale of a greater market, by more competition on the domestic market and by additional incentives to invest. These growth effects were most important for France and Italy. Since Germany's export industry was strongly specialized in income-elastic goods [→ *part 3*], it particularly gained from import liberalization in France and Italy. But for Germany too, the EEC was most important on the import side where the share of the EEC members increased from 25.5 percent in 1957 to 42.8 percent in 1972, mainly due to rising intra-industry trade. Chemical products, non-electrical and electrical machinery, and transport equipment, Germany's initial specialization in the 1950s, became increasingly important for the export industries of France, Italy and the Netherlands. From 1959 to 1965, those products were at the core of the internal market's growth dynamic.<sup>16</sup> The EEC created an internal market where – like in the U.S. – substantial productivity gains could be obtained by a better division of labor, more competition and mass production. Hence, the rapid increase in regional trade in industrial goods was a necessary condition for the EEC's process of catching-up to the U.S. However, at the end of the 1960s, the extent of inter-regional division of labor within the EEC remained far beyond that within the U.S. domestic market; the degree of specialization in industrial goods between the four main economic regions of the U.S. was four times higher than between the member states of the EEC – despite much larger distances in the U.S.<sup>17</sup>

Recently, it has been claimed that the EEC was an inferior solution compared to a free trade zone for the entire Western Europe, as was initially suggested by the British and other governments.<sup>18</sup> Instead of accelerating trade liberalization, the EEC is held responsible for a temporary economic division of Western Europe and a steadily increasing bureaucratization of Europe. But would *all* tariffs on industrial goods have been abolished until the end of the 1960s within the rather loose framework of a free trade zone? Two arguments indicate the contrary. First, the British free trade proposal originally had a political and not an economic intention. Britain wanted to prevent France from gaining political hegemony over continental Western Europe.<sup>19</sup> Second, Britain's commitment to free trade in Europe was not entirely credible because its economic interests were still deeply rooted in the colonial and post-colonial system of the Commonwealth where 46 percent of all British exports went to (1953-

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15 Measure in constant prices and purchasing power parities.

16 Balassa (1989), p. 114.

17 Hufbauer/Chilas (1974), pp. 9, 32.

18 Giersch/Paqué/Schmieding (1992), pp. 116-124, 166-173

19 Küsters (1984), pp. 302-305.

1959), compared with 24 percent to the continental European core. Both the geo-political differences between Britain and France and its limited economic interests in the Continent do not make it very likely that tariffs for industrial goods would have been removed with a similar speed as actually achieved within the EEC. More likely, trade liberalization in Western Europe would have been shifted to the GATT-level where progress was slow and more painful.<sup>20</sup> Third, the removal of non-tariff barriers (NTBs) would not have been achieved within a free trade zone, as a comparison between the EEC and the EFTA clearly demonstrates. The Ceccini Report (1988) estimated that the removal of the remaining internal NTBs to trade through the creation of a Single market would boost the Community's GDP by about 6 percent. If an effect as significant as this resulted from only the last step in eliminating the internal NTBs, after most of them had already reduced before, it is safe to assume that the additional economic growth from the creation and deepening of the EEC resulted more from the elimination of the non-tariff than of the tariff barriers. Hence, Europe's regional integration had far more to offer than the GATT and the free-trade-zone alternative.

The great success of the EEC/EC rests on the combination of reasonable economic goals, similar political interests and a firm institutional framework. The combination of a community of political interests and an institutional integration did have a strong impact on domestic political decision making: it isolated trade liberalization from nationalistic considerations and from the pressures of domestic interest groups. The EEC's economic success was also a strong incentive for the other Western European states eventually to join the Community, starting with the U.K., Ireland and Denmark in 1973, followed by Spain, Portugal and Greece in the 1980s, and Austria, Finland and Sweden in 1995. The integration of the markets for capital, labor and services, the harmonization of laws and regulations, and the coordination of monetary and fiscal policies have promoted the economic – and political – integration of Europe to an extent not possible under a free trade agreement. State borders as trade restraining forces have increasingly lost importance. However, the Common Agricultural Policy has clearly been a failure, with high costs, i.e. expensive food, for European consumers and lower export opportunities for non-European producers of agricultural goods.

### **2.2.3 Breakdown of the communist rule in Eastern Europe**

The breakdown of the communist rule in Eastern Europe will probably be the most significant institutional change affecting Europe's regional trade structure for the decades ahead. The impact of the break-down of the system of state trading was immediately and strongly felt in the transition economies where, for decades, foreign trade was politically determined and only partly influenced by factor endowments, geographical proximity and the trading partners' market size. The transition to the market economy inaugurated the restructuring of trade, but the transformation crises prevented Eastern Europe fully from utilizing the new trading opportunities. Because of their small and initially declining GDPs, the opening-up of Eastern Europe did not have, up to now, a major economic impact on the West. However, if trade structures are corrected for the size of the trading partner, a substantial re-structuring of regional trade pattern can also be observed in the West [→ *table 4*]. Germany adjusted its exports to the East more so than any other OECD country.

The future impact of trade integration with the East on Western Europe mainly depends on the economic recovery of the Middle and Eastern European economies and their ability to

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20 Küsters (1984), pp. 302, 304.

Table 4  
**Relative export integration of leading OECD-countries with Eastern Europe,  
 1967-1973 and 1992-1994**

	1967-1973	1992-1994	Percentage change	Percent of total exports in 1994
Germany	0.4	2.2	450	7.8
Netherlands	0.2	0.9	350	3.4
Sweden	0.4	1.7	325	3.7
Italy	0.4	1.6	300	6.1
Denmark	0.3	1.2	300	4.3
USA	0.1	0.4	300	1.1
Austria	1.2	3.8	217	13.6
Belgium-Lux.	0.2	0.6	200	2.2
Norway	0.2	0.5	150	1.9
France	0.3	0.7	133	2.2
U.K.	0.3	0.6	100	2.1
Switzerland	0.5	0.7	40	2.8
Finland	1.5	1.5	0	4.4
Japan	0.2	0.2	0	0.5
Canada	0.1	0.1	0	0.2

Sources, see table 2 and table 3.

catch up to the West, hence on the success of their transformation process. Since imports of the EU from Eastern Europe have already been liberalized to a substantial degree, eastern enlargement of the EU will not be a precondition for the further trade integration of Eastern Europe. At the present stage, any eastern enlargement of the EU in the foreseeable future is not realistic anyway, because it demands a redesign of the system of structural funds within the EU. Since the poorer member states in the South will be on the side of the losers, they have a strong incentive to preserve the present, carefully negotiated *status quo*. The gradual integration of at least the *Visegrád* states (Poland, Hungary, Czech and Slovak Republic) will largely depend on Germany's political influence and its willingness to increase its contributions to the EU budget.

### 2.3 A gravity model for Germany's external trade

Another way to assess the impact of institutions on Germany's regional trade is to estimate a so-called gravity model of bilateral trade.<sup>21</sup> The underlying theory assumes that bilateral trade between countries is positively influenced by the size of their domestic products, by their incomes per capita and by a common border. Geographical distance exerts a negative influence. Trade policy might promote or reduce bilateral trade. If two countries have a larger domestic product they tend to trade more because their purchasing power, hence their ability to trade, is larger. A similar income per head means similar demand structures which enhances the potential for intra-industry trade. Distance is a major obstacle to trade because of transportation costs which reduce the gains from international specialization and because entrepreneurs tend to show a limited awareness of the opportunities distant markets offer. The

21 Linnemann (1966), Bergstrand (1985), Hamilton/Winters (1992), Frankel/Stein/Wei (1993).

distance can be measured by the geographical distance between the central industrial agglomerations between two countries. A common border is also a useful indicator for proximity because of cross-border trade. Finally, discriminatory trade policy has a positive influence if two countries reduce tariffs, quantity controls and other restrictions between each other to a greater extent than with most other countries. Here, we use a dummy variable for membership in the EPU in the 1950s and the EEC/EC from the 1960s onwards. Additionally, we have included a variable for the state trading countries of Eastern Europe and Asia.

$$x_{ij} = f(Y_i, Y_j, Y_i^p \times Y_j^p, D_{ij}, B_{ij}, \text{trade policy}_j)$$

where

$x_{ij}$	Trade between country i and j
$Y_i, Y_j$	Domestic product of country i or j
$Y_i^p, Y_j^p$	GDP per capita of country i or j (U.S. = 1)
$D_{ij}$	Distance between country i and j
B	Dummy variable for a common border between country i and j
Trade policy <sub>j</sub>	Dummy variable for discriminatory trade policy of country j

The gravity model is usually tested as a linear equation with logarithmized dependent and independent variables. This has the advantage that the coefficients can be interpreted as elasticities: if the independent variable increases by one percent, the dependent variable is expected to increase by the percentage equivalent to the value of the estimated coefficient. In the literature, the gravity model is frequently tested for a group of countries for a single year. Here, it is estimated for one country but for several years from the early 1950s to the early 1990s. This allows us to test for country-specific variables and to compare the coefficients over time. In this case, the variable „GDP of the exporting country“ has to be excluded. Since the standard approach uses several hundred or even thousand of observations, the t-statistics for the country estimate are most likely to be lower.

The variables of the core gravity model can explain to a large extent Germany's geographical trade pattern [→ *table 5*]. The GDP and, to a somewhat lesser extent, the GDP per head have a consistently strong impact on trade. The value and the significance of GDP per head increases over time, indicating the rising role of intra-industrial trade in regional trade orientation. The influence of distance also increases over time, measured by the coefficient and by the t-statistic. However, this is contrary to what one would expect in view of strongly declining transportation costs over the last decades. The variable common border is insignificant, probably because it is collinear with distance. The inclusion of the trade policy variables enhances the explanatory power of the gravity equation only slightly; the only exception is the variable for state trading countries which is significant for every decade. The fact that the variables for the EPU and the EEC are insignificant, point to a strong collinearity with GDP, GDP per head and distance. An additional dummy variable for common language (Austria and Switzerland) is insignificant.

Table 5

**Institutions and geographical trade structures: a test of the gravity model for West Germany, 1950-1994**

(dependent variable: average value for bilateral exports and imports)

	1950-1952		1960-1962		1970-1972		1980-1982		1992-1994 <sup>1</sup>	
GDP <sup>2</sup>	0.5 (4.2)	0.6 (5.1)	0.6 (9.8)	0.6 (10.9)	0.6 (8.5)	0.6 (8.6)	0.7 (13.7)	0.8 (13.8)	0.7 (9.3)	0.7 (8.7)
GDP per head <sup>2</sup>	0.6 (3.0)	0.4 (2.2)	0.5 (4.8)	0.4 (4.6)	0.6 (5.3)	0.6 (5.1)	0.5 (6.0)	0.5 (5.7)	0.2 (2.2)	0.2 (2.4)
Distance <sup>3</sup>	-0.1 (0.6)	-0.2 (1.0)	-0.2 (1.9)	-0.3 (3.0)	-0.4 (3.8)	-0.5 (4.1)	-0.6 (6.6)	-0.7 (6.7)	-0.6 (5.3)	-0.6 (3.9)
Common border	1.0 (1.7)	0.6 (0.9)	0.8 (2.5)	0.2 (0.6)	0.5 (1.1)	-0.2 (0.3)	0.4 (1.3)	0.1 (0.3)	0.3 (0.7)	0.3 (0.7)
EPU		0.4 (0.8)								
EEC/EC				0.7 (1.7)		0.9 (1.6)		0.04 (0.1)		-0.1 (0.2)
State trading countries		-1.3 (2.4)		-0.8 (3.3)		-0.6 (1.9)		-0.7 (2.4)		0.4 (0.9)
Common language		-0.1 (0.1)		0.6 (1.1)		0.6 (0.8)		0.4 (0.6)		-0.1 (0.1)
Constant	-1.8 (1.2)	-1.2 (0.7)	-1.1 (1.2)	-0.4 (0.5)	1.1 (1.0)	1.6 (1.4)	1.4 (1.6)	1.9 (2.1)	3.7 (3.2)	3.5 (2.6)
Number of countries <sup>4</sup>	71	71	74	74	76	76	76	76	78	78
$\bar{R}^2$	0.491	0.547	0.807	0.844	0.794	0.810	0.891	0.898	0.790	0.785

**Comments.** Estimated with ordinary least squares; all variables except dummies are expressed in natural logarithms; t-statistics in brackets. **1** Germany. **2** Measured at purchasing power parities. **3** Estimated as the distance between Frankfurt and the country's capital city. **4** Some countries were excluded because of missing GDP data for the earlier years. **Sources.** Trade data: Statistisches Bundesamt, *Statistisches Jahrbuch*, various issues; IMF, *Direction of Trade Statistics* database; GDP at current prices and purchasing power parities and population: OECD, *National Accounts*; *Penn World Table 5.5*; missing data were obtained from Maddison (1995), GDP at constant prices and purchasing power parities; all GDPs were normalized to USA = 1 and thereafter multiplied by the U.S.-GDP in current U.S. dollars; distance: calculated on the basis of the degrees of longitude and latitude of the respective capital city; calculations and estimates by the authors.

The gravity model explains more for the 1960s, 1970s and 1980s than for the 1950s. One major reason might be that we have no dummies for the developing countries' trade policies which were particularly restrictive and discriminatory in the 1950s, mainly due to colonial preferences. A somewhat new pattern of regional specialization appears to have emerged in the 1990s: the explanatory power of the overall model declines, particularly with respect to GDP per head. Plausible explanations would be the sharp recession in Western Europe, the re-orientation of West Germany towards the East German market and, probably most important, problems with measuring intra-EU trade accurately after the introduction of the Single Market.

#### **2.4 Institutions and Germany's geographical trade pattern**

On the one hand, cross sectional analysis tends to give the impression that market-driven integration was more important than attempts to enhance regional integration by building institutions. On the other hand, time series analysis suggests that institutions did indeed play an important role in shaping Germany's regional trade, its structure and its dynamics. How do we reconcile this apparently contradictory result? Institutions did have a profound impact on the geographical structure and the dynamics of Germany's external trade in so far as they were intended to restore and deepen the trade structure of Western Europe as a natural trading bloc. In a world of initially mounting quantitative restrictions, high tariffs, inconvertible currencies and a general shortage of U.S. dollars, the regional integration strategy was the only one politically feasible. Later on, the step by step liberalization of trade, foreign direct investment and movement of labor between an ever increasing group of members of the European Community proved to be more successful than the sometimes painfully slow liberalization within the framework of the GATT.

### **3. The world's foremost supplier of investment goods**

In comparison to other industrial countries, Germany's commodity structure shows a remarkable stability over time. For more than four decades, Germany's major export items have been machinery, automobiles and chemicals, despite increasing intra-industrial trade and competition from low cost producers. Germany's strength rests in the ability to upgrade product quality continuously, thus maintaining a leading position in sophisticated market segments. On the other hand, Germany's competitive position in high-tech products, computer and information technology in particular, is rather weak. Is there reason for concern?

#### **3.1 The commodity structure since the 1950s**

From the onset of its postwar boom, Germany was highly specialized in the exports of machinery, transport equipment and chemicals. Already in 1953, those industries contributed about 40 percent of Germany's total exports [→ *table 6*]. The indices for revealed comparative advantage (RCA) show an extremely high specialization for those industries. This sectorial trade pattern was a legacy of the past. As early as the last decades of the Wilhelmine empire, Germany became one of the foremost exporters of technologically advanced goods on the European and the world market.<sup>22</sup> During the interwar period, German export industry was able to strengthen this position. However, the economic difficulties of the 1920s and 1930s – the overall stagnation and the high instability of European and world trade – pre-

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22 Lindlar (1995a), pp. 354-359.

Table 6  
**West Germany's trade structure by sectors, 1953-1973**  
 (goods and services)

	1953	1963	1973	1983	1993 <sup>1</sup>
<b>Export structure (in percent of total exports)</b>					
Agriculture	2.1	1.9	4.0	4.7	4.5
Mining	11.2	7.1	0.9	1.6	0.3
Chemicals	8.8	9.7	9.1	10.7	10.1
Other intermediate goods	21.4	18.7	13.6	10.7	9.0
Machinery	17.8	19.5	15.9	12.3	12.8
Electrical equipment	5.1	6.9	6.8	6.7	8.6
Transport equipment	7.9	13.8	13.8	15.0	15.6
Various finished goods	6.4	7.6	24.7	26.8	25.5
Services <sup>2</sup>	19.4	14.7	11.3	11.5	13.7
Total	100.0	100.0	100.0	100.0	100.0
'Core export industries' <sup>3</sup>	39.5	50.0	45.6	44.7	47.1
<b>Revealed comparative advantage<sup>4</sup></b>					
Agriculture	-267	-229	-138	-83	-56
Mining	-115	-116	-207	-204	-254
Chemicals	140	97	63	48	43
Other intermediate goods	43	1	-9	-1	-8
Machinery	201	127	133	101	81
Electrical equipment	234	120	52	27	-4
Transport equipment	287	179	111	92	48
Various finished goods	131	51	-5	-5	-2
Services <sup>2</sup>	37	-38	-52	-33	-48
Total	0	0	0	0	0
'Core export industries' <sup>3</sup>	197	130	95	70	42

**Comments.** 1 United Germany. 2 Excluding factor incomes. 3 Chemicals, machinery, electrical equipment, transport equipment. 4 Revealed comparative advantage (RCA) is a measure of international specialization, which normalizes the trade balance in each product category by the total trade balance. The measure employed here is normalized to 0, if the country exports the same amount in a commodity group as it imports. Formally:  $\ln[(x_i/m_i)/(i\sum x_i/i\sum m_i)] \cdot 100$ , where  $x_i$  are the exports and  $m_i$  the imports of sector  $i$ . **Sources.** UN, *International Trade Statistics Yearbook*, various issues; Statistisches Bundesamt, *Fachserie 18: Volkswirtschaftliche Gesamtrechnungen – Reihe S. 15: Revidierte Ergebnisse 1950 bis 1990*; IMF, *Balance of Payments Statistics*; calculations by the authors.

vented Germany from fully exploiting this technological lead. The postwar period was entirely different: European and world trade expanded extremely rapid due to import liberalization and the rapid growth of domestic products which, in turn, was fueled by an historically unprecedented investment boom. In the wake of that boom, there was an extraordinarily strong increase in the demand for those goods in which Germany was already specialized.

During the following decades, the revealed comparative advantage in the „core export industries“ strongly declined. This cannot be interpreted as a sign of declining specialization but of rising import penetration. This, in turn, was the result of rising intra-industry trade: that is, of increasing international specialization *within* industries. What has thus changed is the

export structure of most other industrial countries: they caught up to Germany's initial pattern of specialization. But Germany maintained a competitive strength in the core export industries which still account for nearly 50 percent of Germany's total exports. This, in turn, indicates how advanced Germany's trade structure was after the war – much more advanced than what could be expected from the level of overall economic development then.<sup>23</sup>

However, in recent years there has been increasing concern that Germany has lost touch with the leading group of countries regarding technological innovation. German industry, it is conceded, remains strong in the technologies characteristic of the second industrial revolution, but not with respect to the technologies of the third industrial revolution such as micro-electronics, information technology, new materials and biotechnology. Germany, and indeed Western Europe as a whole, is seen as repeatedly losing out in the face of the Japanese-American challenge.<sup>24</sup> The reasons for this, it is claimed, is the path-dependence<sup>25</sup> of the Germany technological system: Being successful in traditional technologies imposes high costs in switching over to key technologies of the future, not only because of heavy and risky investment in R&D but also because it means to sacrifice the well established position on traditional markets without an overwhelming pressure from new competitors. The relatively high returns from investing in and improving upon traditional products prevented German companies from gaining a competitive edge in new growth industries. One might even point to organizational inertias like the tradition of electro-mechanical and anorganical engineering, the risk aversion on behalf of management of the big corporations and the lack of venture capital for start-up companies. But before we further investigate this hypothesis, let us analyze Germany's current pattern of international specialization in comparison to the main competitor countries.

### 3.2 Is Germany weak in high-technology products?<sup>26</sup>

In order to analyze Germany's performance in high technologies, we have to choose a classification of industries according to their technology intensity. During the last years, various attempts have been made; the most widely used classification is that of the OECD which groups industries into high-tech, medium-tech and low-tech according to the share of R&D-expenditure in gross production. If an industry invests heavily into R&D, it is said to produce technologically more advanced goods than other industries.<sup>27</sup> Currently, the OECD classifies the product groups aerospace, computer and office equipment, communications equipment and semiconductors, electrical machinery, pharmaceuticals and scientific instruments as high-tech.<sup>28</sup> The remainder of chemicals, machinery and transportation equipment is classified as medium-tech. The OECD classification is less than ideal because some industries with a rather low R&D-intensity are included in high-tech. We use a refined classification which classifies electrical machinery without telecommunication and professional goods without professional equipment as medium-tech.

The RCAs for industrial goods [→ *table 7*] show that Germany has a clear revealed comparative advantage in medium-tech industries and a clear revealed comparative disadvantage

23 For the relationship between trade structure and development level, see Syrquin/Chenery (1989).

24 Seitz (1992); Staatsministerium Baden-Württemberg (1993), p. 11

25 For the concept, see David (1985) and Arthur (1994).

26 This chapter partly draws on research of the DIW about the technological performance of the German economy which is financed by the Federal Ministry for Education and Research (BMBF).

27 See, for example, OECD (1992), pp. 124-125.

28 OECD (1994), p. 94.



in low-tech and, to a lesser extent, in high-tech industries. The picture is different for the U.S. and Japan, which are strongly specialized in high-tech, and Japan also in medium-tech. France's specialization is rather equally distributed over those three industry groups, Italy is specialized in low-tech and the UK in high-tech, but not as strongly as the U.S. and Japan. This is perfectly in line with the concerns about Germany's weakness in leading-edge technologies.

However, there might be a different possibility of interpretation. It might be the case that the negative assessment of Germany's technological performance is based on misleading empirical methods.

- First, RCAs are traditionally calculated only for trade in the manufacturing sector. But economic theory tells us that *all* industries compete against each other for scarce factors of production. If one industry offers high rates of return for capital owners and workers, it will attract more investment and more and better educated workers. In consequence, the competitive position of all other industries will suffer. For example, the exploration of North sea oil raised the rates of return for the British mining industry. In consequence, the already strong trend towards de-industrialization was pronounced, with low-tech industry suffering in particular. Industry-specific RCAs would indicate an improvement in technological competitiveness which, however, did not happen. Hence, it is necessary to take into account RCAs for the total trade including primary goods and non-factor services. The results show that Germany has only slight revealed comparative disadvantages in high-tech products but strong disadvantages in services, whereas the U.S. has a much stronger competitive position in services than in high-tech products. Japan has an exceptional competitive strength in high- and medium-tech products due to its extreme scarcity in natural resources and its language, which is a major cultural obstacle for exporting services. For France, Italy and the United Kingdom, the RCAs for technology-intensive industries do not strongly change in 1992.

- Second, Germany is generally more specialized in high-quality goods than most other industrial countries regardless of whether those goods are classified as high-tech (optical and precision instruments), medium-tech (machinery) or low-tech (clothing). For example, Germany's major export items have in nearly all product categories higher export unit values than other EC countries.<sup>29</sup> Germany's major export items are, therefore, among the most expensive in the respective product category. Since Germany is doing well in exporting those goods, they must have a higher quality. This is confirmed by the frequently made observation that many of Germany's major export industries produce tailor-made products for sophisticated customers who also expect extensive after-sales service. A higher product quality requires more input of human capital and R&D. This is confirmed by the fact that Germany's wages in industry are generally higher than in most other countries and that major medium-tech industries like chemicals and machinery invest relatively more in R&D in Germany than in other industrial countries. This pattern of specialization seems to have intensified during the last years. For example, the German machinery and electrical machinery industries have, on the one hand, lost substantial market shares to Japanese companies in the mass production business like machine tools, office equipment and consumer electronics but, on the other hand, gained market shares in customer-oriented business like integrated printing streets and

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29 Schumacher/Hornschild/Straßberger/Trabold (1995), p. 11, based on Eurostat foreign trade statistics. The export unit values were calculated on an eight-digit level and aggregated thereafter.

electrical power stations.<sup>30</sup> Internationally standardized classifications of industries according to their technology-content are therefore most likely to underestimate Germany's technological strength.

■ Third, RCAs only tell a story about relative specialization in international trade, but not about the absolute size of the high-tech industries. If one talks about the technological performance of a country, the first question to be answered should be: what is the contribution of technology-intensive industries to value added of the entire economy. In Germany, the U.S. and Japan more than half of the industrial value added is generated in high- and medium-tech industries [→ *table 7*]. In France, Italy and the United Kingdom, low-tech industries have a greater weight. The contribution of high- and medium-tech industries to GDP is in Germany and Japan substantially larger than in the U.S., France, Italy and the U.K. Even high-tech industries in Germany contribute nearly as much to value added of the entire economy as in the U.S. and in Japan.<sup>31</sup> Even more remarkable is the observation that in Germany, besides the U.S., there is an above-average demand for high-tech products on the domestic market; in medium-tech products, Germany and Japan are the leading purchasers. It can be shown that domestic production of and domestic demand for technology-intensive goods are highly correlated. Countries which produce more technology as percentage of GDP also demand more technology as percentage of domestic expenditures and *vice versa*.

We come to the conclusion that Germany is strong in high-tech as well as specialized in medium-tech. How do we explain this phenomenon? We have to consider four characteristics of the German economy: (i) it has an above-average share of manufacturing in GDP; (ii) within manufacturing, it is traditionally specialized in production and export of medium-tech products; (iii) it invests an above-average share of GDP in R&D; and (iv) it has open markets and is – according to its high level of economic development – a strong importer of high-tech products. (i) to (iii) also holds for Japan, but not (iv); hence Japan has also a strong RCA in high-tech products. Only (iii) and (iv) is valid for the U.S. which is expressed in a strong RCA in high-tech products only. Germany's alleged weakness in high-tech products is therefore a corollary of its strength in medium tech, thus a relative and not an absolute disadvantage. A similar pattern emerges if one looks at patent statistics (patents per head and patent specialization). Henceforth, there is no convincing evidence that Germany's technological capabilities are fundamentally weaker than those of the U.S. and Japan.

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<sup>30</sup> For the machinery industry, see Klodt/Stehn et al. (1994), pp. 42-54.

<sup>31</sup> In Germany, telecommunication equipment accounts for nearly half of the value added of the high-tech industries.

Table 7  
**International specialization and domestic production in  
 technology-intensive industries, 1992**

	Germany <sup>1</sup>	USA	Japan	France	Italy	U.K.
<b>RCA<sup>2</sup>, manufacturing trade</b>						
High-tech <sup>3</sup>	-25	35	47	2	-54	17
Medium-tech <sup>4</sup>	42	10	85	10	-8	15
Low-tech <sup>5</sup>	-38	-42	-114	-10	22	-24
Total manufacturing	0	0	0	0	0	0
<b>RCA<sup>2</sup>, total trade</b>						
High-tech <sup>3</sup>	-7	25	105	0	-41	12
Medium-tech <sup>4</sup>	59	0	143	7	5	10
Low-tech <sup>5</sup>	-21	-52	-56	-13	35	-29
Total manufacturing	18	-10	58	-3	13	-5
Primary goods	-178	-43	-494	-50	-184	-36
Services <sup>6</sup>	-35	46	-81	18	-5	26
Total trade	0	0	0	0	0	0
<b>Value added as percent of GDP<sup>7</sup></b>						
High-tech <sup>3</sup>	3.5	3.8	3.9	2.5	1.8	2.9
Medium-tech <sup>4</sup>	9.9	4.7	9.7	6.1	4.9	5.3
Low-tech <sup>5</sup>	14.5	8.6	14.3	12.1	14.4	11.0
Total Manufacturing	27.9	17.0	27.9	20.7	21.1	19.2
<b>Domestic demand as percentage of total domestic expenditure<sup>7,8</sup></b>						
High-tech <sup>3</sup>	4.0	3.9	3.5	2.7	2.2	2.9
Medium-tech <sup>4</sup>	9.2	5.1	9.1	6.0	4.8	5.6
Low-tech <sup>5</sup>	16.8	9.7	15.8	12.8	13.7	12.4
Total Manufacturing	28.9	17.7	26.8	21.0	20.7	19.8
<b>Import penetration<sup>7,9</sup></b>						
High-tech <sup>3</sup>	46.4	23.4	8.6	40.3	43.0	59.5
Medium-tech <sup>4</sup>	27.9	21.1	3.8	41.1	30.0	38.5
Low-tech <sup>5</sup>	23.2	11.4	6.3	23.1	15.3	25.3
Total Manufacturing	27.2	16.0	5.7	30.4	21.9	33.5

**Comments.** 1 The data on industry value added, GDP and total domestic expenditures refer to West Germany. 2  $\ln[(x_i/m_i)/(i\sum x_i/i\sum m_i)] \cdot 100$ , where  $x_i$  are the exports and  $m_i$  the imports of sector  $i$ ; the measure is normalized to be 0, if the adjusted trade balance in that sector is zero. 3 Drugs & medicines (ISIC 3522), office & computing machinery (ISIC 3825), radio, TV & communication equipment (ISIC 3845); aircraft (ISIC 3845), professional equipment (ISIC 3851). 4 Chemicals without drugs & medicines (ISIC 351, 352-3522), non-electrical machinery without office & computing machinery (ISIC 383-3832), electrical machinery without radio, TV & communication equipment (ISIC 382-3825), railroad equipment (ISIC 3842), motor vehicles (ISIC 3843), professional goods without professional equipment (ISIC 385-3851). 5 All other manufacturing industries. 6 Excluding factor incomes. 7 Data for France, Italy and UK refer to 1991. 8 Sectorial value added plus net imports minus net exports as percent of the sum of private consumption, public consumption and gross investment. Net imports and net exports were estimated using the share of value added in total production of the respective sector. 9 Imports as percent of gross production minus exports plus imports. **Sources.** OECD, *STAN Database, Industrial Structure Statistics, National Accounts Statistics*; IMF, *Balance of Payments Statistics*; International trade database of the German Institute for Economic Research; calculations by the authors.

### 3.3 Determinants

The traditional theory of international trade explains the competitive advantages of nations by their relative factor endowment: countries with a relatively rich endowment of physical and human capital tend to export goods whose production require more physical and human capital, whereas countries with a relatively rich endowment of simple labor and natural resources tend to export goods whose production require more labor and natural resources. This theory, associated with Heckscher and Ohlin, explains the international specialization between unequal economies. It does not explain why countries with similar relative factor endowments are internationally competitive within industries and products of the *same* factor content, and why not in others. Porter<sup>32</sup> has suggested four key factors: domestic factor supplies, domestic supplier industries, domestic market structures and domestic demand. Can those variables explain Germany's pattern of international specialization within the group of leading industrial countries?

■ *Domestic factor supplies.* Since Germany is a country short in supply of natural resources, accumulated capital – human, physical and R&D – is its major strength. As to human capital, Germany has a well-developed system of intra-firm human capital formation and high standards in engineering and science at the technical and the general universities. Compared to other industrial countries, German industry employs far more workers with formal, non-university occupational training (*Facharbeiter*); 65 percent of the workforce in German industry has this background, but only 16 percent of the U.S. industry.<sup>33</sup> As to physical capital, German industry invests not less than other OECD countries; physical capital intensity in industry is higher than in the U.K. and in Italy, the same as in Japan, but lower than that of the U.S. and France.<sup>34</sup> Germany has, together with the U.S. and Japan, one of the highest shares of R&D expenditures in GDP. Hence, Germany's international specialization should be, compared to other industrial countries, geared towards human capital- and R&D-intensive industries.

■ *Supplier industries and market structures.* Germany has, measured by its share in GDP, one of the largest manufacturing industries of the OECD. Its structure is broader and more diversified than that of many other industrial countries. Because Germany is very competitive in a wide number of intermediate and investment good industries, many companies have superior access to world class supplier industries. Germany's company structures have a long tradition; many of its major export companies like Siemens, Bayer, BASF, Hoechst and Mannesmann were already among the leading Germany industrial corporations at the turn of this century.<sup>35</sup> Tradition is certainly not a safeguard for economic success. But since those industrial structures did survive in international competition, they must have successfully adapted to new circumstances. Hence, Germany's pattern of international specialization should be rather broadly spread over industries and to a substantial extent shaped by tradition.

■ *Domestic demand.* There are two striking examples for the importance of domestic demand. Germans households are willing to allocate a greater share of their disposable income to high-quality cars than households in most other industrial countries. The automotive industries responds to the demand with an ever increasing quality of cars with respect to engine

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32 Porter (1990), chapter 3.

33 Van Ark/Pilat (1993), pp. 27-30; the data refer to 1987.

34 Lindlar (1995a), p. 374; the data refer to 1992.

35 Chandler (1990), pp. 638-732.

performance, design, comfort, longevity and safety; the development of the air-bag is a telling example. Germany is, together with the U.S., world market leader in environmental technology.<sup>36</sup> Rather stern environmental regulations and substantial public infrastructure investment have been a major incentive for polluting industries and state agencies to demand comparatively cheap and efficient technologies. Hence Germany should be particularly competitive in those industries in which there is an ample and sophisticated domestic demand.

We are not able to test Porter's theory but we believe that these factors are most likely to explain Germany's international specialization in those industries where technology differences and innovative activity determine competitiveness.

### **3.4 Institutions and Germany's sectorial pattern of specialization**

We do not need a theory about the causes of Germany's alleged weakness in high technology but a theory about the vitality of Germany's national system of innovation. Important elements of this theory would be a dense network of private and public R&D laboratories, a highly-developed system of intra-firm human capital formation, an engineering-oriented management in many German companies and certainly the historical evolution of the German manufacturing as the major supplier of investment goods for the European market.

## **4. Wages, prices, and exchange rates: the role of price competitiveness for West Germany's export success**

For many decades, Germany's domestic economic actors – the central bank and the collective bargaining parties in particular – have shown a greater preference for price stability than those of most other industrial countries. What impact did this have on export expansion? In order to answer this question, it is necessary to distinguish between two international monetary regimes: the fixed exchange rate regime of Bretton Woods (1949-1973) and the hybrid regime of increasingly fixed exchange rates within Western Europe and freely fluctuating exchange rates *vis-à-vis* the rest of the world economy (since 1973).

Under the Bretton Woods system of fixed exchange rates, the rate of inflation of a small open economy was, at least in theory, entirely determined by world inflation. All currencies were linked to the dollar while only the dollar was linked to gold. Monetary policy in the United States, therefore, largely determined money supply and interest rates abroad. If domestic costs and prices increased less than those abroad, the international competitiveness improved, causing the international demand for domestically produced tradable goods to rise which, in turn, increased the demand for the local currency. In order to defend the exchange rate, the central bank had to supply more money. An increased supply of money fueled domestic inflation up to the point where the inflation differential to the major competitor countries was equalized. In the absence of controls on international capital transfers, monetary policy was even more limited. A restrictive monetary policy would push up the domestic interest rates which would immediately cause an inflow of foreign capital searching for higher returns. Within a few days or even hours, the currency would come under strong pressure to appreciate. In order to defend the exchange rate, the central bank would be forced to buy up the inflowing dollars thus inflate the liquidity of the banks as well as to increase the overall money supply and lowering interest rates again.

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36 Gehrke/Grupp (1994), pp. 174-182.

„economic miracle“ in 1950s, before full employment was reached in 1957, Germany could, albeit temporarily, improve its competitiveness. Under the post-Bretton Woods system, Germany could and did pursue an independent monetary policy; hence unit labor costs in national currency increased consistently slower than those of the major trading partners. Only the years 1987, 1992 and 1993 were an exception. This overall much lower cost increase was the driving force behind the substantial appreciation of the German mark *vis-à-vis* the U.S. dollar and most other currencies. As more and more countries decided to join the European Monetary System (EMS), the member states had to adjust their inflation rate to the German one. The real exchange rate fluctuated substantially, but until the end of the 1980s it largely followed those of the competitor countries. For the unit labor costs of the total economy, this even holds until 1993 [→ *graph 4*]. This is precisely what open economy macroeconomics predicts.

The exchange rate system also had an important impact on wage and fiscal policies. Under the Bretton Woods system, the collective bargaining parties and fiscal policy makers knew that the central bank had to defend the exchange rate. Hence nominal claims on real income per labor input could not increase faster than in the competitor countries. As the Bretton Woods system broke down, wage and fiscal policies no longer had to take the stability of the exchange rate into consideration. Inflation rates accelerated, as did unemployment; the Phillips curve shifted outwards. The acceleration of inflation rates was accentuated by unions not willing to reduce their wage claims in face of rising oil prices and deteriorating terms of trade.<sup>37</sup> In Germany, the Phillips curve first emerged,<sup>38</sup> while it shifted outwards in the other industrial countries. After the painful recession of 1975, unions learned to adjust their wage claims to the stability orientation of the *Bundesbank*. Public households, legally deprived of any opportunity to monetize their deficits, were constrained anyway.

The high wage level, which nowadays has given rise to much public concern in Germany, is primarily the outcome of an appreciated German mark and not of expansionary union wage policies and an excessive growth of social security contributions, as it is frequently claimed. Henceforth, attempts of monetary and wage policies to increase the *long-run* price competitiveness via lower wage cost increases and domestic inflation can be regarded as unsuccessful under both regimes. In the short-run, however, there is an important difference. Under the fixed exchange rate system, a wage restraint and a lower rate of inflation meant, at least in the short-run, an *improvement* in competitiveness. This, in turn, allowed for a surplus on the current account which prevented monetary policy from being overly restrictive in the face of a deteriorating balance of payments. Under the flexible exchange rate system, wage restraint and lower inflation frequently give rise to an overly optimistic assessment of a country's standing on the international capital markets, causing an overshooting of the currency which results in a short-run *deterioration* of international competitiveness.

#### 4.2 Price competitiveness and export performance

For the 1950s and 1960s, it is frequently claimed that the extraordinary rapid growth of the German export demand and the increasing surplus on the current account was to a substantial extent promoted, if not caused, by a favorable development of Germany's labor unit costs and

37 Flanagan/Soskice/Ulman (1983), p. 654.

38 Holtfrerich (1982).

export prices, compared to the major competitor countries.<sup>39</sup> Starting with an already low level of unit labor costs in international currency, a comparatively weak pressure on domestic costs and a lower rate of inflation at home perpetuated this initial competitive edge by an ever increasing competitiveness on the world market, boosting the under-valuation of the German mark that already existed in 1949. Although other factors like the liberalization of world trade and the high income elasticity of German export products were stressed too, there seems to be a consensus that the extraordinary increase of Germany's world market share and, indeed, much of the entire export-driven growth dynamic of West Germany, has been caused to a substantial, if not exactly quantified and quantifiable degree by favorable supply side conditions.<sup>40</sup>

Unfortunately, the literature has yet failed to prove the point. It was merely shown that the rate of inflation in Germany, measured by the consumer price index or the GDP deflator, was lower than in a number of competitor countries, that the wage share declined in the 1950s, that public budgets had a structural surplus and that exports increased faster than imports. It was not proven that German price competitiveness in international trade, measured by export prices or unit labor costs in manufacturing, improved in comparison to the main competitor countries. Usually, the *real effective exchange rate* (REER) is used to measure this. The REER is a cost- or price-adjusted nominal exchange rate divided by a weighted average of the main export economies on the world market. Only one study has tested the relationship between REER and export performance for the major industrial countries for the 1950s and early 1960s.<sup>41</sup> The results for Germany are, however, inconclusive.<sup>42</sup> Lindlar has tested the relationship between price competitiveness and export performance for all major industrial countries for 1950 to 1973;<sup>43</sup> he finds that Italy's and Japan's increasing world market share were positively correlated with increasing price competitiveness and that the declining world market share of the U.S. and the UK were also positively correlated with a decreasing price competitiveness.

The evidence for Germany looks different [ $\rightarrow$  *graph 4*]: from 1950s to the end of the 1960s, the real effective exchange rate remained stable in trend while the world market share increased from 7.3 to 19.0 percent. The REER on the basis of export unit values did not even fluctuate substantially in subperiods, whereas the REER on the basis of unit labor cost declined from 1952 to 1958, when Germany had reached full employment. From 1959 to 1962, the REER on the basis of unit labor cost increased substantially faster than those of the competitor countries, only in part due to the revaluation of the German mark in 1961. Overall, Germany was not able to improve permanently its relative competitiveness via restrictive monetary and wage policies. And it is even doubtful whether the temporary improvement in competitiveness during the first half of the 1950s did have a strong impact on export performance since this was the time when Germany, driven by a surge of demand for its traditional export goods, returned to its prewar position in the international division of labor.

39 Among others: Borchardt (1966), pp. 281-283; Kindleberger (1967); Hardach (1976a), pp. 224-225; Riese (1978), p. 156; Altwater/Hoffmann/Semmler (1979), pp. 34, 161-162; Hennings (1982); Llewellyn/Potter (1982), pp. 139; Markovits/Allen (1984), p. 103; Ambrosius (1984), p. 274; Carlin (1989), pp. 60-65; Hanrieder (1989), pp. 278-281; Giersch/Paqué/Schmieding (1992), pp. 108-116, 176-184; Owen Smith (1994), pp. 503-504.

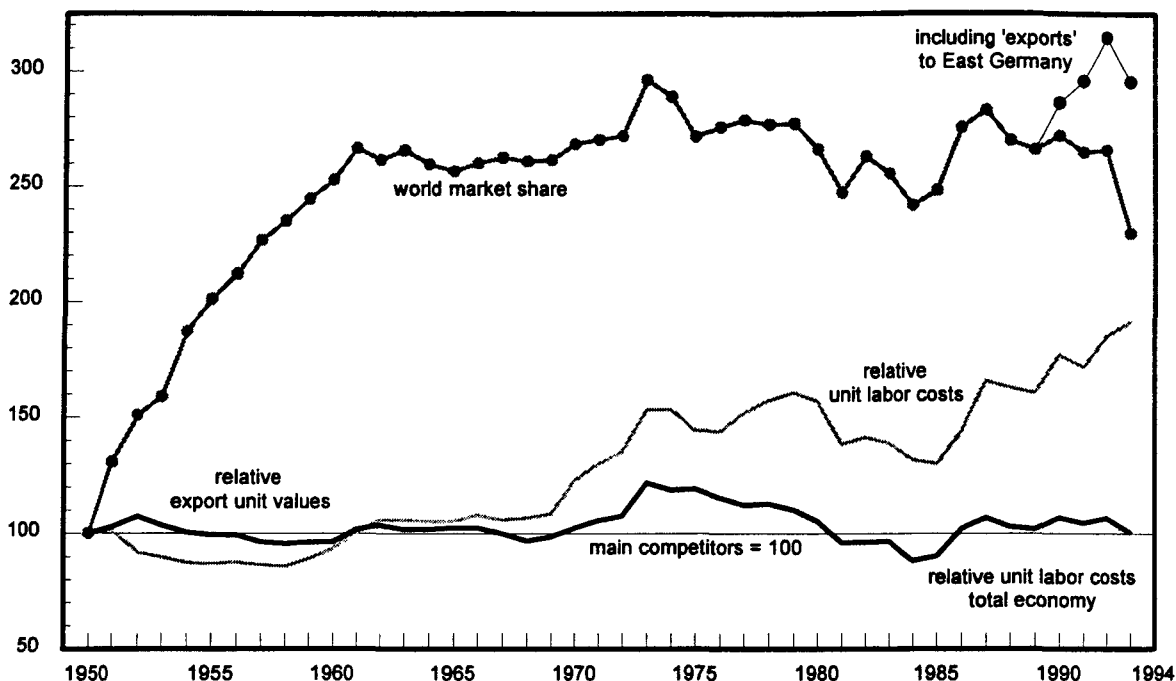
40 Giersch/Paqué/Schmieding (1992), pp. 68-71.

41 Junz/Rhomberg (1965).

42 As shown in Lindlar (1995a), p. 300.

43 Lindlar (1995a), pp. 291-299.

Graph 4  
**Price competitiveness and export performance in manufacturing, 1950-1993**  
 (1950 = 100)



**Comments.** 'World' trade in manufacturing refers to the exports of 13 leading OECD-countries. The real effective exchange rate is calculated using Germany's export unit values and labor unit costs in national currency, multiplying them with Germany's nominal effective (i.e. trade share-weighted) exchange rate and dividing them with a weighted average of the respective indices of the competitors countries. As weights, the share of the competitor's countries in the manufacturing exports of their total group in each year was used. **Sources.** Exports of industrial goods and export unit values: UN, *Yearbook of International Trade Statistics*, *Monthly Bulletin of Statistics*, various issues; exchange rates: IMF, *International Financial Statistics*, *Yearbook*; unit labor costs in national currency: United States Department of Labor, Bureau of Labor Statistics, *Comparative Growth in Manufacturing Productivity and Labor Unit Costs in Selected Industrialized Countries* (Washington DC, 1977), *Monthly Labor Review*, various issues; unit labor costs for the total economy (1970 = 100): OECD, *Main Economic Indicators*; calculations and estimates by the authors.

What remains is a competitiveness puzzle: Why could Germany nearly triple its world market share between 1950 and 1960 despite the fact that the real effective exchange rate remained constant in trend? Why did Germany's world market share remain stable despite a 23 percent appreciation<sup>44</sup> between 1969 and 1973? And why did Germany's world market share not decline until fairly recently despite a loss in price competitiveness, measured by unit labor costs in manufacturing? Under the Bretton Woods system, there is clear evidence against the widespread belief that an undervalued currency and a below average increase in costs and prices was a driving force behind the enormous rise in Germany's world market share. The German mark might have been undervalued in 1949. But it remains unclear why this was not corrected in the following years. Was the *Bundesbank* able to sterilize the additional inflationary pressure via an ever increasing holding of gold and U.S. dollars? If not, when did the undervaluation of the German mark start to build up? For the post-Bretton Woods era, the argument would be that relative unit labor costs in manufacturing are an unreliable indicator for international competitiveness,<sup>45</sup> compared to export unit values, consumer

44 This refers to export unit values.

45 See also Deutsche Bundesbank (1994); OECD (1995), pp. 31-37.



price indices or unit labor costs of the total economy which indicate an improvement in competitiveness from 1973 to 1984, but a return to the long-run stability thereafter.

### 4.3 Institutions and Germany's monetary regime

Under the Bretton Woods system, international institutions shaped Germany's monetary regime. Under the post-Bretton Woods system, the opposite was true: domestic institutions shaped Germany's monetary regime and, by virtue of their increasing reputation as a safeguard for low inflation, became adopted in other European countries as more and more countries decided to join the EMS or otherwise to use the parities to the German mark as a nominal anchor. Under the Bretton Woods system, public preferences in the West were generally more growth- than stability-oriented. Germany was forced to follow the – albeit moderate – inflationary trend of the Western world economy. As the Bretton Woods system broke down, German economic policy makers could, for the first time since 1950, pursue a monetary and wage policy independent of that of the major competitor countries. Because Keynesian demand policies were increasingly considered to be unable to cope with rising inflation and unemployment in the West, economic policy makers and the general public in Germany's Western European neighboring countries became more and more convinced of putting price stability at the top of their priorities, thus adjusting their preferences to Germany. However, this strategy clearly had a price. The unwillingness of the *Bundesbank* to make sacrifices in their fight against domestic inflation in order to preserve the stability of the EMS has been one of the driving forces in its *de facto* dissolution.

The German currency is the key currency in Western Europe and increasingly beyond. But in Germany, there is a widespread belief that only non-German countries have to adjust. The *Bundesbank*, in particular, is unwilling to orient its monetary policy at the stability requirement of the whole German mark bloc but targets its measures narrowly at domestic price stability. It takes no responsibility for the prolonged recession and rising unemployment all over Europe since 1992. As to monetary policy, there is a *certain* resemblance between the lack of responsibility and leadership in the world economy by the United States in the interwar period<sup>46</sup> and in the European economy by the *Bundesbank* at the present time. In both cases policies were or are geared to national goals while their effects are international to such an extent that the national orientation must be regarded as a symptom of irresponsibility.

## 5. Summary and outlook

The paper has addressed the question of whether Germany's export expansion over the last four decades can be interpreted as an enduring success story. The answer is: yes, if the yardstick is not the exceptional *Wirtschaftswunder* years but the economic performance of other OECD countries. Exports still grow consistently faster than domestic product and imports still follow, at least until unification, with a lag. Germany has maintained strength in its traditional export industries instead of facing a trade-induced process of de-industrialization and massive structural change. Germany is among the most open of the large OECD economies, which allows for greater gains from international specialization.

Three factors have continued to shape Germany's external trade over the last forty years:

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46 Kindleberger (1973), Eichengreen (1990).

■ *Geography.* Germany was and still is at the center of the European economic system. During the 1950s and 1960s, Germany took advantage of the extremely rapid recovery and eventual process of catching up of the neighboring economies in continental Western Europe. During the 1970s and 1980s, Germany was at the center of the deepening economic integration within Western Europe. Today, Germany has successfully adjusted to the emerging new markets in Eastern Europe, more so than almost any other OECD-country. Indeed, the unification and the transition of Eastern Europe to the market economy as well as the greater trading potential due to lower transportation costs, fewer trade restrictions and similar incomes per head have made Germany, more so than ever before, the center of the European economy as a natural trading bloc. Regional institutional arrangements – the OEEC, the European Payments Union and the European Economic Community – made possible and facilitated the re-integration of Germany into the European economic space and its eventual return as the dominant economy.

■ *Pattern of specialization.* From the onset of the postwar boom, Germany was highly specialized in the exports of machinery, transport equipment and chemicals. This pattern of specialization was a legacy of the past. It became one of Germany's key assets during the 1950s and 1960s as the major trading partners experienced rapidly rising incomes and a historically unprecedented investment boom. Rising intra-industry trade lessened Germany's initial specialization but its major export industries have managed to maintain a competitive edge in the high-quality market segments. Germany has also become a major supplier of the newly emerging high-technology products. Measured by their contribution to GDP, Germany's high-technology industries are nearly as strong as those of the U.S. and Japan. Hence, Germany's alleged weakness in key technologies of the future is the corollary to its still prevailing specialization in medium-tech products.

■ *Monetary arrangements.* Monetary and wage policies were, for most of the postwar era, more stability-oriented than abroad. A lower rate of inflation than abroad („price stability“) and a surplus on the current account („external equilibrium“) have been among the most important macroeconomic goals in Germany. However, under the Bretton Woods system Germany was not able to isolate itself effectively from international inflation. German domestic costs increased largely in line with the major competitors; until 1967 the trend of the real effective exchange rate remained stable while the world market share nearly tripled. As the Bretton Woods system gradually disintegrated, the German mark experienced a substantial real appreciation. However, this was not accompanied by a loss of export markets. During the post-Bretton Woods era, German labor unit cost in national currency increased substantially more slowly than those of the major competitors. But no enduring competitive advantages could be obtained since the German mark appreciated in nominal terms. Germany's relatively high wage costs in manufacturing today are predominantly the outcome of a consistently appreciating German mark.

Will Germany also be able to meet the challenges of the future in an increasingly globalized world economy? We have, as indicated above, good reason to believe so. But not everybody shares this view, at least not in Germany. The manufacturing industry is currently experiencing a massive structural change. Its share in GDP declined from 31 percent in 1990 to 27 percent in 1994, including East Germany even to 26 percent. Since the onset of the recession, more than one million jobs were lost in West Germany's manufacturing sector. It is widely feared that the present upswing will be characterized by jobless growth. These are facts not

easy to ignore. But we believe that they do not indicate a fundamental „competitiveness problem“. They are rather a sign of delayed structural change and a too restrictive monetary policy. (i) The western part of Germany is increasingly becoming a service economy. This process was delayed by the European export boom of the late 1980s and the unification boom of the early 1990s. The recession made apparent that West Germany's industrial capacities are oversized. (ii) The *Bundesbank* is currently seizing the opportunity to bring down the rate of inflation even further. A recent re-calculation of the consumer price index has revealed that the rate of inflation is already well below the targeted 2 percent; money demand (M3) even declined in the first half of 1995, compared to 1994. But the *Bundesbank*, recently supported by the German Council of Economic Experts, does not feel the need for action. Under these circumstances, it is hardly surprising that companies have fewer incentives to invest and that the German mark further appreciates beyond the purchasing power parity exchange rate. We believe a sustained economic upswing needs a more favorable macroeconomic environment. The U.S. monetary policy since the mid 1980s proves the case.

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