

# Weekly Report

## German Exports on the Rise— Domestic Demand Should Follow

*German exports suffered a sharp decline during the international economic and financial crisis. But recently a strong turnaround has taken place. Macroeconomic stimulus measures in numerous countries have likely contributed to this export recovery. Germany's manufacturers are at the forefront of the resurgence in exports. The mechanical engineering, chemicals, and automotive industries in particular have realized remarkable export surpluses.*

*Germany's current account surplus has risen considerably over the last ten years. As a result, Germany has cemented its position as a net creditor and investor in the international financial market.*

*The challenge now is to link the strength of Germany's exporting industries to the domestic demand. In doing so, long-term and stable growth for the overall economy could be reached. In short, Germany must overcome the dichotomy between its strong export economy and weak domestic demand. One strategy for strengthening domestic demand could be to relax the policy of wage restraint pursued in the years prior to the crisis.*

The decrease in foreign demand for German goods during the 2008/2009 crisis strongly dampened Germany's overall economic development. In 2009, goods exports fell by 18.4%. Until 2008, Germany was the world's leading exporter of goods (as opposed to services). In the meantime, China took over the top ranking (Table 1). When goods and services are combined, however, the US is traditionally the world's largest export economy.<sup>1</sup>

In recent months, Germany's export economy has once again been a major driver of overall economic development. In the first and second quarters of 2010, Germany's exports amounted to 458.4 billion Euros. This represents a nominal increase of 18% over the same period in the previous year.<sup>2</sup> Economic stimulus measures undertaken in many countries are likely to have encouraged the demand for German export goods. There are many signs that the German economy is continuing its

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<sup>1</sup> Schrooten, M., König, P.: Exportnation Deutschland—Zukunftsfähigkeit sichern. DIW Wochenbericht 41/2006.

<sup>2</sup> Preliminary figures. Imports in the first and second quarters of 2010 amounted to 383.4 billion Euros. According to the German Federal Statistical Office, German exports in June 2010 were 28.5% higher than in June 2009.

Table 1

**World's Leading Exporters of Goods and Services in 2009**

Rank	Goods			Services		
		In billions of US dollars	As a % of all goods exports		In billions of US dollars	As a % of all services exports
1	China	1 202	9.6	US	470	14.2
2	Germany	1 121	9.0	UK	240	7.2
3	US	1 057	8.5	Germany	215	6.5
4	Japan	581	4.7	France	140	4.2
5	Netherlands	499	4.0	China <sup>1</sup>	129	3.9
6	France	475	3.8	Japan	124	3.8
7	Italy	405	3.2	Spain	122	3.7
8	Belgium	370	3.0	Italy	101	3.0
9	South Korea	364	2.9	Ireland	95	2.9
10	UK	351	2.8	Netherlands	92	2.8

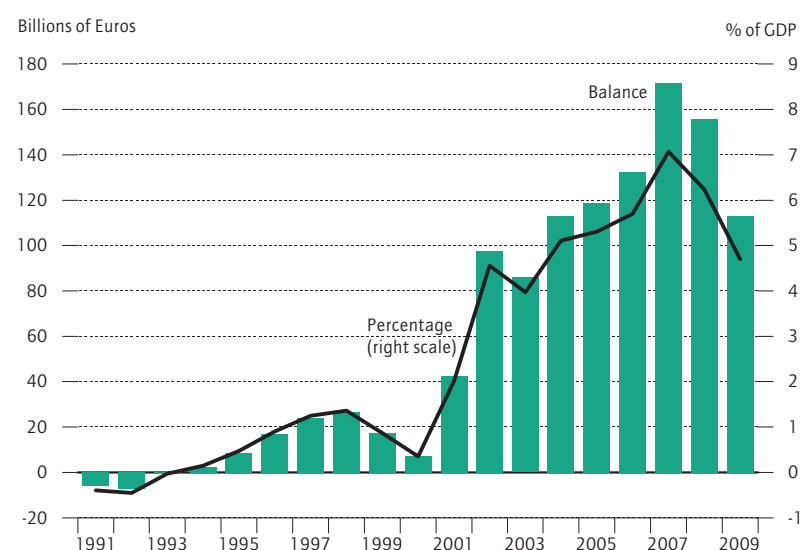
<sup>1</sup> Preliminary estimate.

Source: WTO.

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In 2009, Germany was dethroned by China as the world's largest exporter of goods. In terms of services exports, Germany continued to be ranked third after the US and UK.

Figure 1

**Germany's Balance of Trade**

Sources: German Federal Statistical Office; calculations by DIW Berlin.

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In 2007, Germany's trade surplus reached an all time high of 7% of GDP, equivalent to 170 billion Euros.

export-oriented growth strategy pursued prior to the crisis, a strategy that led to a massive increase in the current account surplus in the first decade of the 21st century. While the country's average trade surplus, during the 1990s, was less than 1% of GDP, it amounted to 4.5% of GDP between 2000 and 2009. A record level of 7% of GDP was reached in

2007 (Figure 1). Even in the year of the most severe economic downturn of the post-war era—2009—Germany's trade surplus decreased only slightly, to approximately 5% of GDP—a percentage that few economies achieve on a regular basis.

**Germany's Trade Openness is High—EU Countries Are Germany's Most Important Trading Partners**

An important measure of the international integration of an economy is its *trade openness*, which is the sum of exports and imports as a ratio of GDP. In Germany, this figure nearly doubled between 1993 and 2008 (Figure 2). In 2008, Germany's trade openness reached nearly 90%. In comparison to other large economies, this high degree of openness has long made Germany's economy exceptional. In 2008, trade openness in Japan and the US was approximately 35% and 30%, respectively. Although Germany's trade openness fell significantly during the 2008/2009 crisis, it remains considerably above the corresponding figures for Japan and the US.

EU member states are important buyers of German exports (Table 2). Over 60% of German merchandise exports in 2009 were destined for EU countries; more than 40% were sold to euro-zone countries. Since the end of the 1990s, German exporters have profited from their increasing price competitiveness as cost and price increases in Germany have been lower than in other euro-zone countries. This, in turn, is primarily attributable to the policy of wage

restraint pursued in Germany for many years.<sup>3</sup> In the euro-zone, moreover, there is no exchange rate risk. France is by far the most important destination for German exports within the EU and euro-zone. Outside of Europe, the US and China are the most important buyers of German exports. Yet, the share of German exports attributable to these countries—6.7% and 4.5%, respectively—is significantly lower than that attributable to France.

In terms of imports, as well, Germany's most important trading partners are within the EU. Of the goods imported into Germany in 2009, approximately 60% originated from EU countries, and nearly 40% from the euro-zone. By contrast, only 14% of Germany's total imports of goods originated from China and the US combined.

The US accounts for a fairly substantial share of Germany's merchandise trade surplus. In 2009, Germany's net export position for goods traded with the US was approximately 14 billion Euros. This is a significant decline from 2005, when the bilateral trade surplus with the US stood at 30 billion Euros. However, the basic debtor-creditor structure of world trade has not changed, even during the international economic and financial crisis. There remains a significant German trade deficit with China, which amounted to almost 20 billion Euros in 2009. Thus, there has been no appreciable change in the geographic structure of Germany's foreign trade as a result of the crisis.

### Small Number of Sectors Responsible for Lion's Share of Germany's Foreign Trade

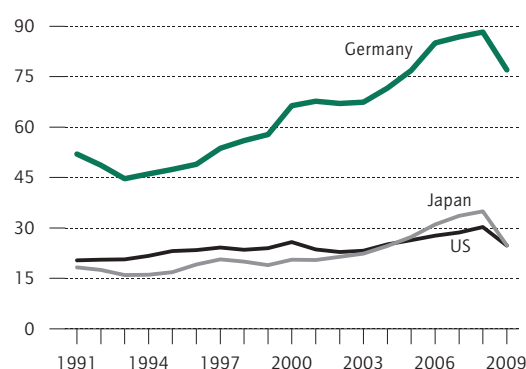
A considerable percentage of Germany's foreign trade is attributable to the manufacturing sector, although the share of this sector in overall production has tended to decline for some time. In 2009, the German mechanical engineering, automotive and chemicals industries (the latter including pharmaceuticals) accounted for 45% of German exports. This reflects that the weight of these branches, taken together, has remained relatively constant, even during the crisis. Examined under the microscope, though, the automotive industry is suffering considerably. The manufacturing industry as a whole continues to record export surpluses, even after a year-over-year surplus decline of approximately 35% in 2009. Manufacturing sector output fell by 17% in 2009. When balance of trade statistics are

<sup>3</sup> Belitz, H., Clemens, M., Gornig, M., Schiersch, A., Schumacher, D.: Wirtschaftsstrukturen, Produktivität und Außenhandel im internationalen Vergleich. Studien zum deutschen Innovationssystem Nr. 5-2010.

Figure 2

### Trade Openness<sup>1</sup> of Germany, Japan, and the US

In percent



<sup>1</sup> Sum of exports and imports as a ratio of GDP.

Sources: IMF; calculations by DIW Berlin.

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The trade openness of Germany is much higher than that of Japan or the US.

broken down by branch, the largest branches of the manufacturing sector—which account for a considerable share of German GDP—have historically recorded trade surpluses (Table 3).

Comparative cost advantages are typically cited as the reason for foreign trade and an international division of labor. These comparative advantages are based on differences in the opportunity costs occurring in the production of individual goods. As such, comparative cost advantages cannot be directly observed and quantified. These are analyzed on the basis of derived indicators, known as *revealed*

Table 2

### Germany's Top Merchandise Trading Partners in 2009

Rank	Exports			Imports		
		In billions of Euros	Percentage of total exports		In billions of Euros	Percentage of total imports
1	France	81.9	10.1	Netherlands	58.0	8.6
2	Netherlands	54.1	6.7	China	55.4	8.2
3	US	53.8	6.7	France	54.6	8.1
4	UK	53.2	6.6	US	39.9	5.9
5	Italy	51.1	6.3	Italy	39.7	5.9
6	Austria	48.2	6.0	UK	33.2	4.9
7	Belgium	42.2	5.2	Belgium	29.2	4.3
8	China	36.5	4.5	Austria	29.1	4.3
9	Switzerland	35.3	4.4	Switzerland	28.1	4.2
10	Poland	31.6	3.9	Czech Republic	24.9	3.7

Sources: German Federal Statistical Office; calculations by DIW Berlin.

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Most of Germany's important trading partners are members of the EU.

Table 3

**Trade Balances and Comparative Cost Advantages in Important Sectors in Germany**

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
<b>Trade balances in billions of US dollars</b>										
Textiles industry	-1,97	-1,57	-0,94	-1,29	-1,43	-1,85	-1,95	-2,15	-2,29	-3,59
Chemicals industry	20,56	20,20	20,94	28,49	37,23	37,53	42,78	49,13	61,96	44,78
Thereof: Pharmaceuticals industry	4,84	7,80	-0,01	3,11	7,85	7,64	9,75	12,46	19,69	16,12
Mechanical Engineering	45,90	48,99	55,26	63,47	81,47	85,62	96,94	112,66	128,22	95,36
Office machinery	-12,35	-12,41	-11,27	-11,02	-7,73	-9,60	-10,94	-7,01	-7,83	-6,20
Electrical machinery	6,35	6,75	8,16	9,93	14,41	16,49	19,24	23,56	28,56	22,11
Radio, television and communication technologies	-1,74	-2,52	-0,17	-0,83	-1,90	-3,46	-9,18	-7,78	-12,32	-16,76
Medical, precision and optical instruments, watches and clocks	6,86	7,84	10,27	12,67	16,84	19,67	21,32	24,31	25,43	20,31
Automotive industry	53,03	58,93	68,12	81,18	93,60	105,83	112,25	139,59	143,88	86,84
Other transport equipment	-1,22	4,48	7,26	5,72	4,38	-0,33	-4,26	7,55	5,02	5,09
<b>RCA<sup>1</sup> Values</b>										
Textiles industry	-38	-40	-42	-44	-47	-47	-45	-50	-49	-54
Chemicals industry	11	5	-2	1	0	-2	-1	-5	-1	-1
Thereof: Pharmaceuticals industry	14	23	-35	-23	-14	-15	-12	-14	-5	-5
Mechanical Engineering	59	58	58	56	60	56	55	44	45	50
Office machinery	-78	-86	-87	-81	-64	-65	-65	-65	-69	-65
Electrical machinery	1	-2	-3	-4	0	3	6	5	9	13
Radio, television and communication technologies	-29	-36	-35	-38	-43	-43	-52	-53	-61	-73
Medical, precision and optical instruments, watches and clocks	14	13	17	19	22	27	23	20	19	19
Automotive industry	54	53	48	46	43	49	47	49	49	40
Other transport equipment	-29	-11	-5	-15	-24	-37	-45	-18	-27	-22

<sup>1</sup> RCA values measure comparative cost advantages.

Sources: OECD; calculations by DIW Berlin.

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The automotive, mechanical engineering, and chemicals industries have the highest trade surpluses. Trade surpluses – albeit of a smaller scale – are also recorded in the categories of electrical machinery and medical, precision and optical instruments, watches and clocks.

*comparative advantages* or RCAs (Box). A positive RCA value indicates that the investigated branch enjoys a comparative cost advantage. One can also examine the development of RCAs over time.

Germany's mechanical engineering and automotive sectors enjoy significant comparative cost advantages over the rest of the world.<sup>4</sup> While the RCA value for the automotive industry fell during the 2008/2009 crisis, it rose considerably for the mechanical engineering sector.

The chemicals industry, by contrast, has a negative RCA, despite its importance to the export economy. This negative value is due to developments in the pharmaceuticals branch. The RCA of the pharmaceuticals branch dropped sharply in 2002, and has remained negative since then. Various legal

<sup>4</sup> Comparative cost advantages explain why relatively few branches account for the bulk of exports in many countries. Countries focus on those branches in which they can produce at relatively low cost in international comparison. In Germany, these branches are traditionally the mechanical engineering, automotive, and chemicals industries. In Japan, as well, most exports are attributable to just a few branches, including the computer industry—a branch in which Germany has a comparative cost disadvantage.

changes in Germany, including requirements for reimports, were partially responsible for this loss of cost competitiveness. Additional factors were increased outsourcing and a wave of mergers in the pharmaceuticals industry that led to increased production by foreign firms. However, also countervailing factors have been at work since 2002. For this reason, the comparative cost disadvantage of the German pharmaceuticals industry has become less pronounced over time. In accordance with the predictions of trade theory, branch-specific trade deficits are accompanied by negative RCAs in the sectors textiles, office machinery, and radio, television and communication technologies. With the exception of the office machinery sector, the comparative cost disadvantages in all of these branches have increased over the last ten years, particularly during the 2008/2009 crisis. The sector “other transport equipment” (which includes railway vehicles and aircraft) is another special case. Although there is a branch-specific trade surplus in this sector, it is associated with comparative cost disadvantages. Therefore, this branch can be expected to shrink in coming years. When reading the data, however, it

Box

### Comparative Cost Advantages and RCA Values

In the academic literature, comparative cost advantages and disadvantages are based on a comparison of opportunity costs. Opportunity costs – that is, the *costs of a foregone opportunity* – result from the fact that the decision to produce a specific good directly restricts the possibility of producing another good, as any production decision implies the usage of resources that are no longer available for the production of something else. Therefore, a country should specialize in the production and export of those goods that it can produce relatively cheaply with its available technology and resource endowments, thereby, keeping the production loss of other goods relatively small. Likewise, goods that can only be produced at high opportunity costs should be imported.

As opportunity costs cannot be directly observed in the real world, empirical economists rely on an indicator known as *revealed comparative advantage*, or RCA, which measures the relative advantage or disadvantage that a country has in producing certain types of goods or services over other countries. In this way, RCAs are an indicator to determine the international competitiveness of individual branches of a country. To calculate the RCAs of the present analysis, exports (X) and imports (M) in individual branches (j) have been related to the exports and imports of the entire manufacturing sector.<sup>1</sup>

$$RCA_j = 100 * \ln[(X_j/M_j) / (\sum X_j / \sum M_j)] = 100 * \ln[(X_j / \sum X_j) / (M_j / \sum M_j)]$$

<sup>1</sup> The logarithmic formulation makes the RCA value both symmetric and continuous. See Wolter, F.: Factor Proportions, Technology and West-German Industry's International Trade Patterns. *Weltwirtschaftliches Archiv*, 1977, vol. 113, 250–267.

For our calculations, Germany's economic branches are specified using the two-digit codes found under category D (manufacturing) of the UN's ISIC (Rev. 3) classification.<sup>2</sup> The exports and imports for each branch reflect trade activity with the entire world.<sup>3</sup>

A positive RCA value is indicative of a comparative advantage, and a negative RCA value of a comparative disadvantage. In the case of a comparative advantage, the relative share of exports exceeds that of imports in the respective branch. This means that foreign competitors have apparently not been as successful in obtaining a foothold in Germany's domestic market as German firms have been in penetrating foreign markets.<sup>4</sup> The opposite is true in the case of a comparative disadvantage.

Despite the frequency with which RCA values are employed, one should keep in mind that they are based on observed trade data – that is, on trade flows that have arisen under the presence of taxes, tariffs, and other barriers to trade. The informative value of RCA figures may be distorted by such exogenous factors, as they can influence the actual competitiveness of an economic branch.

<sup>2</sup> For additional information on the industry classification, see <http://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=2>.

<sup>3</sup> In addition to that, it would also be possible to compare the competitiveness of a German branch against the respective branch of another country. In this case, the exports and imports of a specific branch would have to be based on Germany's trade activity with this respective country.

<sup>4</sup> Gehrke, B., Legler, H., Schumacher, D.: Marktergebnisse bei forschungsintensiven Waren und wissensintensiven Dienstleistungen: Außenhandel, Produktion und Beschäftigung. DIW Materialien 25, Berlin 2003.

is important to remember that even if a branch as a whole has a negative RCA, individual firms within the branch may engage in robust export activity and profit from comparative advantages in their specific sub-branches.

On the whole, the figures show that Germany's export economy is specialized in particular in the production of research-intensive goods, reflecting the fact that the share of gross value added attributable to research- and knowledge-intensive industries in Germany has increased considerably in recent years.<sup>5</sup> Accordingly, the strong international com-

petitiveness of German export goods is also based on human capital investment.

### Germany's Current Account Balance Remains Positive

It is difficult to measure the international competitiveness of an economy. Often, indicators such as the current account balance are used. While a permanent current account surplus is, indeed, the consequence of a strong position in world markets, the mere existence of a surplus does not reveal its underlying causes, which may include a head start in the innovation of certain technologies, exchange rate dynamics, as well as wage restraints or low

<sup>5</sup> Belitz, H., Gorning, M., Schiersch, A.: Deutsche Industrie durch forschungsintensive Güter erfolgreich. DIW Wochenbericht 9/2010.



environmental standards. Yet, a lasting current account surplus necessarily means that a country's domestic consumption and investment opportunities are not fully exhausted. Indeed, in Germany's case, the export boom of recent years has come with weak domestic demand. Consumption, in particular, has not kept pace with exports even in years of comparably dynamic overall economic development. While the wage restraint pursued in Germany for many years has helped to improve Germany's international competitiveness, it apparently dampened the growth of the domestic economy. The relaxation of the policy of pronounced wage restraint could make an important contribution to the strengthening of domestic demand.

The current account balance, however, does not just reflect real economic activity. It also plays a considerable role in relation to the international integration of financial markets. When running a current account surplus, a country increases its foreign assets. Germany's net foreign assets even grew considerably during the international financial crisis, reaching 1.2 trillion US dollars in the third quarter of 2009.<sup>6</sup> Yet, as the international financial crisis has revealed, foreign assets are subject to specific risks that go far beyond mere exchange rate risks depending on the structure of the assets.

The danger of a debt crisis is particularly acute when countries that run chronic current account surpluses face countries that run chronic deficits. From a macroeconomic point of view, this is one reason why persistent current account surpluses can have destabilizing effects.

Indeed, over the last decade, Germany, China and Japan all recorded significant current account surpluses, while the US continuously ran large deficits. Long before the outbreak of the international financial crisis, the dangers associated with this imbalance had been addressed. When a country experiences a debt crisis, creditors are typically forced to take a partial or total loss. Consequently, in times of crises, the creditors' asset values decrease. In Germany, financial service providers have been impacted, first and foremost, by the depreciated value of their financial investments on the international market. Only through government intervention has it been possible to stabilize the financial sector during the crisis. Yet, it is the domestic economy that bears the costs of stabilizing the economic imbalances resulting from foreign trade activities.

The current economic and financial crisis shows that the interrelationships between the domestic economy and foreign trade are of particular importance for sustained economic growth. The same is true of the specification of legal frameworks, such as those pertaining to international financial transactions.

## Conclusion

The current economic recovery in Germany is largely attributable to the export sector. Germany's exports and current account surpluses are once again on the rise. The continued relatively strong price competitiveness of important economic sectors is likely contributing to this export growth. Within the euro-zone, Germany is known for its policy of wage restraint. Moreover, the depreciation of the euro in recent quarters stimulated foreign demand outside the euro-zone. Exchange rate effects are, thus, supporting price competitiveness.

During the 2008/2009 crisis, the mechanical engineering and automotive industries, in particular, suffered from the sharp decline in German exports. Yet, the three pillars of the German export economy—the mechanical engineering, automotive, and chemicals industries—continue to record branch-specific trade surpluses. Overall, the structure of the German export economy has hardly been affected by the crisis. Indeed, the analysis indicates that the key export sectors continue to reveal stable comparative cost advantages over their foreign competitors.

The resurging export activity and the international competitiveness of important economic sectors combine to make an important contribution to Germany's overall economic development. Yet, Germany's extremely large and chronic current account surpluses could have destabilizing effects over the long term. These surpluses lead to a substantial amount of foreign assets. The market price of these assets, however, depends on numerous factors that can barely be influenced by creditors. If a debt crisis takes place, this will have far-reaching negative asset-price effects for creditor countries, which typically impact both on the domestic financial system and the real economy. For this reason, Germany must overcome the dichotomy between its strong export economy and weak domestic demand. By strengthening domestic demand, imports would increase and the chronic current account surpluses would be reduced.

*(First published as "Export wieder auf Touren—Binnennachfrage muss nachziehen", in: Wochenbericht des DIW Berlin Nr. 35/2010.)*

<sup>6</sup> International Monetary Fund: International Financial Statistics. For comparison, the net foreign liabilities of the US amounted to 3.5 trillion US dollars at the end of 2008.



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