KfW Research
Focus on Economics

The coronavirus and foreign trade – the crisis accentuates long-term trends

No. 323, 5 March 2021

Authors: Dr Fritzi Köhler-Geib, phone +49 69-7431-2931, fritzi.koehler@kfw.de
Dr Philipp Scheuermeyer, phone +49 69 7431-4017, philipp.scheuermeyer@kfw.de
Dr Katrin Ullrich, phone +49 69 7431-9791, katrin.ullrich@kfw.de

International trade continues to be a supporting pillar of Germany's economic model. Global economic developments and structural changes in global trade therefore play an important role for the country's growth and prosperity. The economic slump caused by the Corona crisis last year severely affected Germany's foreign trade. Moreover, global trade had already changed since the global economic and financial crisis and the Corona crisis could create further structural shifts. Although Germany is well-positioned in international competition, it is not impervious to such processes.

Particularly in view of the great importance of the production and export of capital goods, the need and urgency for Germany to tackle the structural issues of digitalisation and transformation to a climate-neutral economy is also evident in foreign trade. Putting in place the appropriate frameworks can enable the German economy to adjust to relevant changes. Measures that support innovation and the development of human capital are helpful in this area.

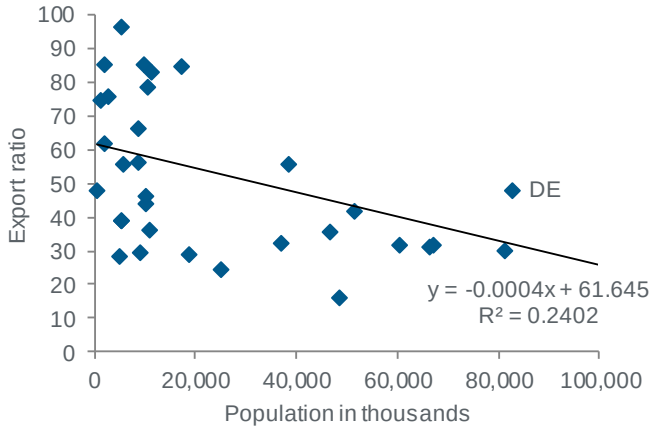
The German economy is dependent on exports

Relative to its size, Germany is an exceptionally open economy. In 2019 the value of its exports was 47% of the country's gross domestic product. Similar export ratios can otherwise be found only in much smaller countries such as Switzerland, the Netherlands and Belgium, which export a larger proportion of the goods and services they produce simply because of the proximity of their borders (Figure 1). This changes only little if we look at the exported value added measured by the OECD instead of just gross exports. This measure deducts imported inputs, for example, and better reflects the services component. Thus, the resulting share of domestic value creation intended for international final demand is 30%, another very high rate in international comparison. The rate for Germany is by far the highest of the G7 economies, for example, which average just 19% without Germany. The export dependency ratio of employment in Germany was around 25% in 2016.[1]

Figure 2 shows the development of Germany's export ratio since unification. Its increase embodies the enormous 430% growth of German exports since 1999, whereas nominal GDP grew by only 217% in the same period. During a phase of accelerated globalisation and simultaneous real depreciation of the deutschmark and later the euro, Germany's export ratio increased by roughly 20 percentage points from the mid-1990s to the financial crisis of 2008.[2] The export surplus began to rise with the introduction of the euro, around the turn of the millennium. Net exports, i.e. the difference between exports and imports, contributed an average 0.6 percentage points to the mean economic growth rate of 1.5% during that period. In the past decade the export ratio then stabilised on a high level from 2012. The contribution of net exports to economic growth has become smaller accordingly (0.2 percentage points on average since 2010). In the years preceding the Corona crisis, economic growth was then carried by domestic demand, while net exports even weighed slightly on growth. The net export ratio as the share of net exports to GDP was 6% in 2019.

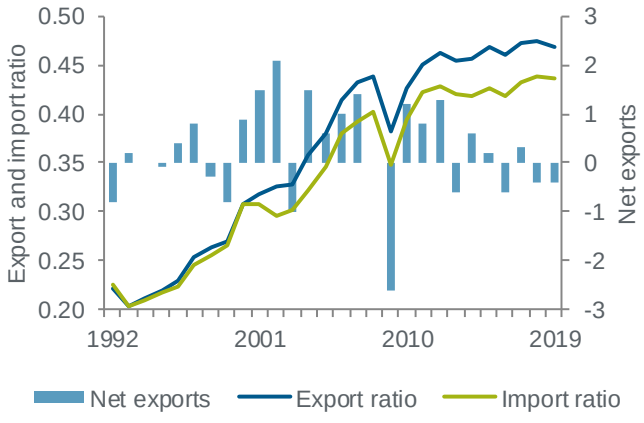
Figure 1: Openness and size – Germany is an outlier

OECD countries <100 million inhabitants and an export ratio of <100%.



Source: OECD, KfW Research

Figure 2: Importance of foreign trade over time



Source: Destatis, KfW Research

Note: This paper contains the opinion of the authors and does not necessarily represent the position of KfW.

Even if external trade has recently become less important for economic growth, its influence remains strong. Over the past decade, Germany's current account surplus in absolute figures has typically been the world's highest and this has been criticised time and time again.[3] After all, Germany's current account and trade surplus also triggered the trade policy confrontations with the US administration under Donald Trump, which saw it primarily as a sign of an unfair competitive advantage. Germany's export prowess is sometimes viewed with suspicion as its access to international sales markets has enabled it to sustain a relatively large manufacturing sector that pays above-average wages thanks to high productivity.[4] Around 60% of gross value added by German industry depends on international final demand, while external demand accounts for merely 20% of gross value added of the service sector.[5]

Foreign trade is relatively well diversified

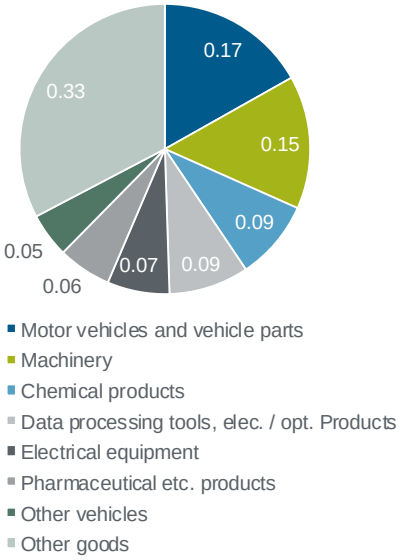
But what is the trade structure that has made Germany successful so far and how vulnerable was it entering the Corona crisis? According to the Ricardian trade theory, in a free trade regime economies specialise in goods in which they have comparative advantages, causing prosperity to rise thanks to more efficient production and lower prices. Comparative advantages can be roughly quantified along the lines of revealed comparative advantages (RCAs) which are based on the relative export and import shares.[6] They show that most of Germany's comparative advantages lie in machinery and transport equipment. It has strong RCAs in passenger vehicles specifically. But there are also some groups of goods with clear RCAs in the categories of chemical products and 'manufactured goods'. In accordance with Germany's comparative productivity advantages, motor vehicles and vehicle parts (17%) have the highest shares of exports, followed by machinery (15%) (Figure 3). Both groups of goods make up one third of exports.[7] Motor vehicles and mechanical engineering contribute 39% to gross value added by the manufacturing sector. In a breakdown by main industrial groupings, exports are clearly dominated by capital goods (45%), which also include motor vehicles, followed by intermediate goods (30%). Consumer goods only come in third with an export share of 15%.

A general problem with very open economies such as Germany could be increased macroeconomic volatility resulting from specialisation.[8] A current study contradicts this hypothesis, however, and shows that it depends on the relation of industry-specific and country-specific economic shocks.[9] As country-specific shocks usually predominate, a high degree of openness can even enhance the stability of an economy. The positive effect of diversified sales and supply markets then predominates over the volatility-increasing effect of specialisation in international trade. In particular, trade openness reduces a country's vulnerability to domestic shocks, which leads to potentially lower overall volatility. It is all the more true, however, that a high diversity of export destinations and export products increases an economy's resilience.[10]

Germany's external trade is actually relatively broadly diversified despite the important role of capital goods such as motor vehicles and machinery (Figure 4) if we look at more narrowly defined groups of goods (3-digit level). This applies to both exports and imports. The diversification of foreign trade has also tended to increase since the 1990s, even if an opposite development occurred temporarily from 2013 to 2016.

Figure 3: Structure of exports by groups of goods in 2019

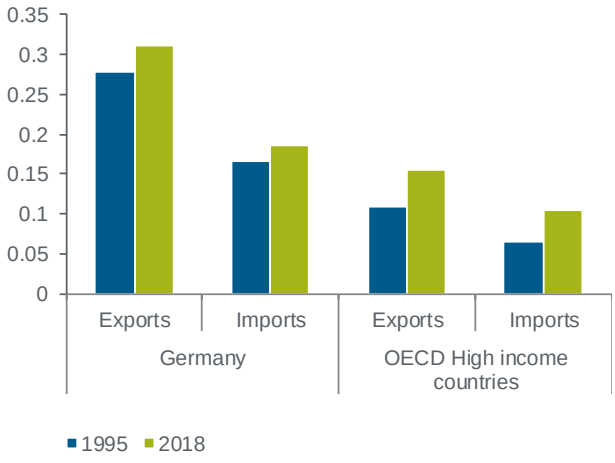
By divisions (2-digit levels)



Source: Destatis, KfW Research

Figure 4: Diversification index by groups of goods

Based on the 3-digit level according to SITC with a maximum product number of 261.

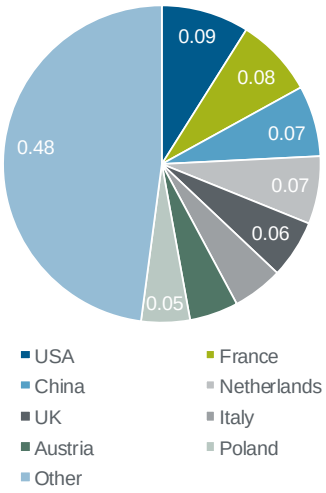


Source: UNCTAD, KfW Research

With respect to its trading partners, Germany is even more broadly diversified. A quick glance at the distribution of export destinations illustrates this. Moderate shares of 5 to 9% of German exports go to eight countries, with the three most important target countries US, France and China each

accounting for 7 to 9% of German exports.[11] Besides, the three most important target markets are spread apart widely, which increases the diversification. Furthermore, the fact that the European internal market provides free access to many important export destinations is also beneficial.

Figure 5: Structure of export destinations in 2019



Source: Destatis, KfW Research

The ranking of the most important trading partners – measured by the sum of exports and imports – provides a similar picture. However, China takes first place here as it is not only far ahead in terms of export destinations but also the main country of origin of German imports. The People's Republic also plays a particular role because its share of Germany's foreign trade has grown strongly since it joined the World Trade Organisation in 2001. Nonetheless, China's share in the total growth of German exports since 1991 is just under 10%. The share in economic gross value added by German exports to China was 2.8% in 2015. China thus plays a very large role for certain enterprises and sectors but Germany's overall economic dependence on China is limited.[12]

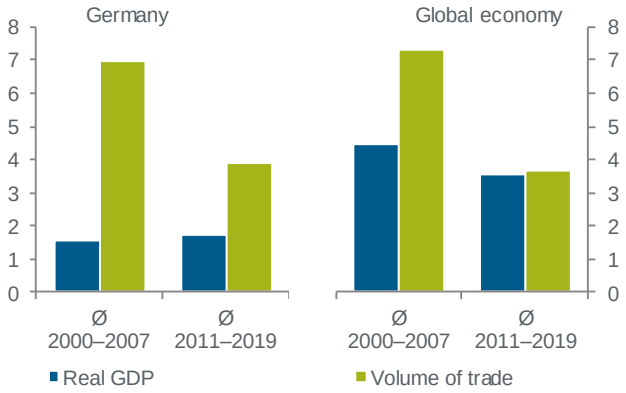
In summary, Germany's external trade is quite well diversified in international comparison. This applies in particular with regard to its trading partners and, with limitations, to the goods it exports. The vulnerability is only substantial if structural shifts in demand occur that affect entire goods categories or even several goods categories. The transition in the automotive industry towards electric mobility is one example.[13] Furthermore, the concentration of German exports on cyclical capital and intermediate goods leads to increased susceptibility to volatility. Empirically, Germany exhibited the broadest variations in economic growth of all G7 states between 1991 and 2019. With a standard deviation of annual growth rates of 1.94, however, its macroeconomic volatility cannot be regarded as excessive.[14]

Global growth was already on its knees before the Corona crisis

Global trade was already in a persistent phase of weakness since the global economic and financial crisis, hardly growing at the rate of global economic output. In the 2000s, on the other hand, it still posted higher growth rates than global gross domestic product. Germany could not shield itself from this development either, especially not from the slower growth of trade volume (see Figure 6).

Figure 6: Volume of trade and GDP

Variation on previous year in per cent

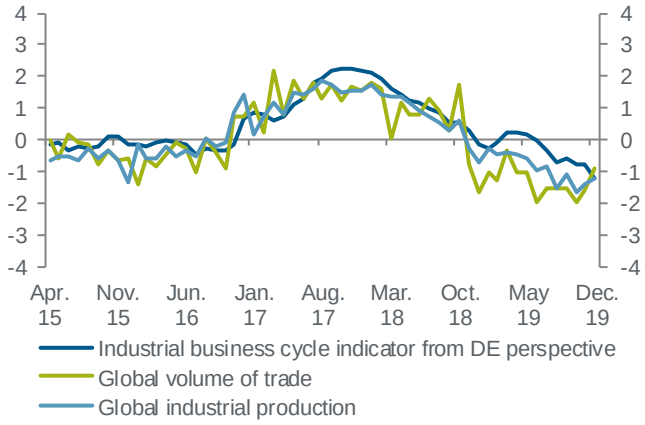


Source: IMF, KfW Research

The year 2019 above all was not a good one for global trade, and it ended on a particularly bad note.[15] The trade conflict with the US as a key actor was one reason for this. Besides, industrial output and investment were weak, affecting trade through capital goods and intermediate goods. Finally, these goods (capital goods including vehicles and intermediate goods) accounted for around one third of global export value in 2019.[16] The problems of the automotive industry and the electronics cycle in Asia exacerbated the situation. The industrial business cycle from Germany's perspective – the rate of variation of industrial output in Germany's trading partners weighted with the share of export value – retraced the global development almost exactly (see Figure 7). This resulted in weak data for Germany's external trade.

Figure 7: Trade and industrial business cycle

Variation on the same month in the previous year in per cent, 0.1 normalised over the period 03/2012–02/2020



Notes: OECD+BRIICS, 3M MA, yoy, export weights.

Source: CPB, KfW Research

Pressure on trade flows from all sides

Particularly in the second quarter of last year, the Corona crisis negatively impacted both international trade and Germany's foreign trade on the supply and demand side, as well as through the introduction of trade barriers and via financing issues.

– Restrictions on movement and border closures as part of containment measures led to a collapse in international tourism and reduced the mobility of workers. Instead of the predicted growth of 0.7 billion passengers in international air travel, a decline between 0.8 and 1.5 billion passengers on 2019 was expected – depending on the scenario – based on the data available at the end of May (2018: 4.2 billion passengers).[17] The drop in seating capacity on international flights was predicted to be between 39 and 71%. Up to the end of November, the number of international passenger flights then indeed decreased by 63%.[18] That affects trade in services directly, first by way of exports and imports, e.g. through tourists, students and patients, and second when services outside the country are provided by natural persons.[19] (Temporary) border closures and controls also impaired cross-border freight movement, even if the latter was often permitted based on exceptional approvals.[20] These effects recently came to light once again from the temporarily closure of the UK border in response to the mutated coronavirus variant.

– With the closure of non-essential business activities – part of the containment strategy in many countries –, international markets ran out of supplies. International trade flows slowed down even if the disruptions to supply and value chains were not directly felt on the demand side, since it was affected at the same time.[21] After all, roughly half of global trade is based on international value chains.[22]

– In addition, demand in international markets has also dropped as a result of behavioural changes of consumers and businesses in the Corona crisis. Income and earnings losses as well as great uncertainty about income and business prospects have reduced the incentive for consumption and investment and, through their import shares, international trade.[23] At the same time, it is evident that international trade in goods is recovering much more quickly than cross-border trade in services. The shift in consumption patterns during the Corona crisis away from services to goods has likely contributed to this.

– Recessions tend to come with greater discrimination against foreign economic interests, which may be reflected in import restrictions and currency devaluation (Great Depression of the 1930s), voluntary export restrictions (global recession of the 1980s) or subsidies and export incentives (global financial crisis).[24] In response to the Corona crisis, a number of countries imposed temporary export restrictions (98 countries as at 7 December), while many countries liberalised imports (102 countries as at 7 December).[25] Germany lifted its export ban on medical equipment of 12 March, as this was replaced by the need for corresponding export permits at EU level.[26] What is encouraging is that international trade in essential medical goods in connection with COVID-19 nonetheless increased by 12% year on year in the first quarter of 2020.[27] In Germany as well, pharmaceutical exports were 14% higher year on year for the March to May period.[28] By November, pharmaceutical products were nearly 6% higher than in the same period of the previous year.[29]

– During the global recession of 2009, a reduction in trade finance also contributed to the decline in international trade on the supply side.[30] As the current crisis originated outside the banking sector, a lower supply of trade loans from the banking side was not expected as a first-order effect, especially since extensive monetary policy measures were taken to prevent a credit crunch.

– What was rather to be expected was that the problems of non-financial enterprises would also adversely affect the banking sector. After all, non-financial enterprises pass a large portion of the risk potential in international trade on to banks and insurance companies.[31] The comprehensive economic policy support measures taken during the Corona crisis prevented a crisis from developing in the international financial system. But a financing gap is still being expected that will widen as a result of the more rapid rebound in the demand for trade financing as the economy recovers.[32]

Corona crisis quickly gripped Germany's trading partners

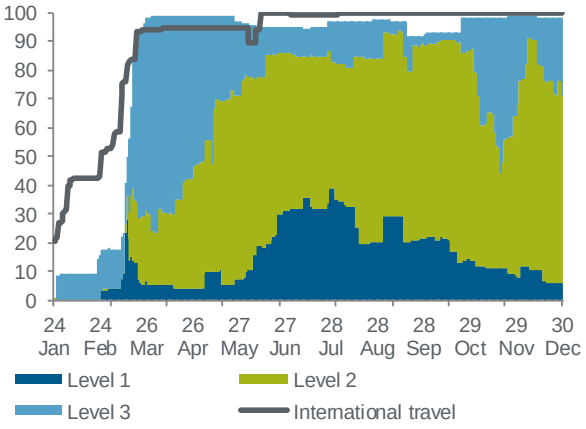
China, where the pandemic originated, was the first country to impose strict containment measures. It is crucial to many international value chains and important for Germany as a trading partner, being the country with the third-highest export value and the most important import country in 2019. Given the rapid spread of the virus and the qualitatively quite similar response of countries around the world, Germany's trading partners also introduced relevant containment measures very quickly. Since then, a more mixed picture has emerged. While the Chinese economy and the economies of other East Asian countries are recovering quickly because they have largely contained the pandemic, rising infection rates since autumn of 2020 and tightened responses in Europe and the US, for example, have interrupted the recovery process.

In Germany's merchandise trade, capital goods and intermediate goods make up 75% of exports and 61% of imports. This requires business activity at home and abroad, as well as open borders so that goods can reach their destination. Two types of containment measures that hamper Germany's trade accordingly are non-essential business closures and border closures. Many trading partners restricted business activities only to those classified as essential, a measure that

affected almost all the trade value of the year 2019 (see Figure 8). Already by mid-April 2020, these measures were expanded to include the closure of specific sectors or regulations that applied to specific groups of workers. With the infection waves of autumn of 2020, containment measures were then tightened again so that a larger portion of Germany's external trade volume was affected by stricter measures.

Figure 8: Germany's trade value affected by business closures in trading partners

Value of trade to destination countries in per cent of total 2019 trade value for which information on the closure of non-essential business activities is available



1 – closure (or remote working) recommended, 2 – closure (or remote working) for specific sectors or groups of workers, 3 – closure (or remote working) for all business activity except essential services such as food shops or healthcare providers.

Restrictions on international travel range from screenings to border closures. On 30 April 2020, countries that account for 36% of Germany's 2019 trade value had closed their borders.

Sources: Federal Statistical Office, Oxford COVID-19 Government Response Tracker, KfW Research.

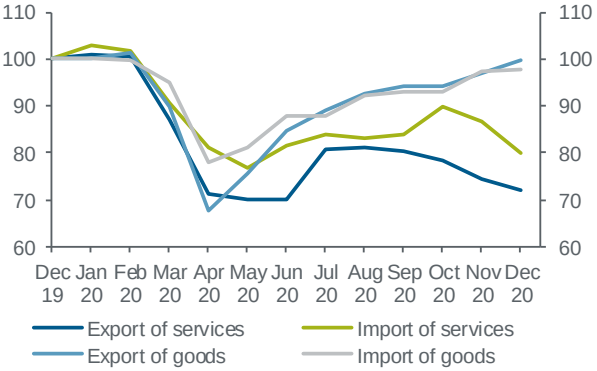
As the main trading partners were affected by the crisis almost simultaneously, Germany's external trade plummeted in April 2020. Total export value dropped by around one third on the same month in the previous year while imports fell by around one quarter (based on US dollar values). That was a different dimension from the drop of around 6% in each of the first three months of the year. The corresponding restrictions were already in place in most trading partners in March 2020 but transit times and stockpiles probably delayed the impact on trade and the effects of the interrupted production of intermediate goods must first run through the value chain to unfold their full impact on trade.

Trade in goods recovering faster than trade in services

The Corona crisis differs from previous recessions in that the services sector has been impacted more heavily than usual. Accordingly, the economic contraction was not caused primarily by the industrial sector, as is usually the case. The reason is that the mandated physical distancing policies, including travel warnings and changes to consumer behaviour, affect primarily service activities that involve person-to-person contact. This affects trade in services, which is recovering significantly more slowly than trade in goods (see Figure 9). At the end of the year, this recovery was even interrupted by the waves of infection in Europe and the US and the associated restrictions.

Figure 9: Germany's trade in services and goods

Index 12/2019=100, based on data of the current account statistics, preliminary value for December 2020



Source: Deutsche Bundesbank, KfW Research.

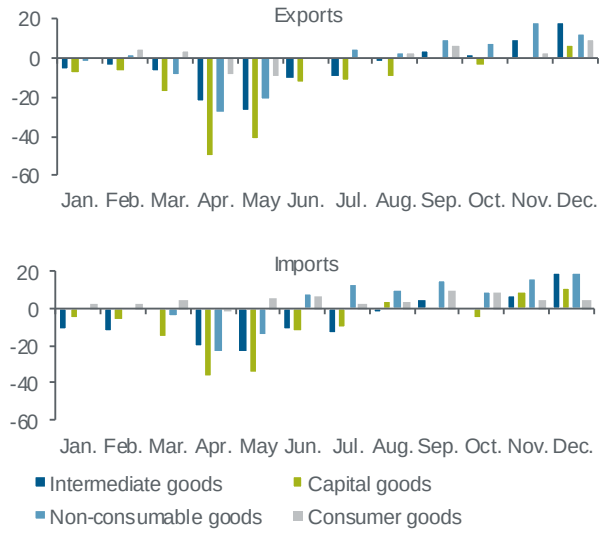
Reinforcement of existing trends may have potential long-term consequences

The relatively swift recovery of trade in goods masks differences between groups of goods. Capital goods and intermediate goods account for a substantial portion of the value of Germany's external trade. While fewer intermediate products in particulr were imported year on year in January and February 2020, both exports and imports of capital goods were negatively affected in March 2020 and hit even harder in April 2020 (see Figure 10). So even with the recovery that began in the summer of 2020, returning to pre-crisis levels is most difficult for trade in intermediate goods. Besides the direct effects of the containment measures on production, the strong increase in uncertainty probably plays a role as well. After all, companies then refrain – at least temporarily – from making investments that are hard to reverse.[33] This applies both to Germany and, thus, to capital goods imports, as well as to other countries, weighing on capital goods exports.

A recovery of global investment activity and, with it, a rebound in demand for German exports of capital goods will first require an economic recovery on the back of a controlled pandemic situation. Structural adjustments accelerated or triggered by the Corona crisis – such as increased digitalisation, diversification or a shift of production locations – can also generate additional investment needs. At the same time, a significant portion of government support for businesses around the world is based on loan programmes and guarantees. Although loans are important for businesses to survive in the crisis, rising corporate and sovereign debt leaves less room for public and debt-financed private investment and can therefore weigh on Germany's capital goods exports.

Figure 10: Trade value by groups of goods

Variation year on year, based on US dollar values

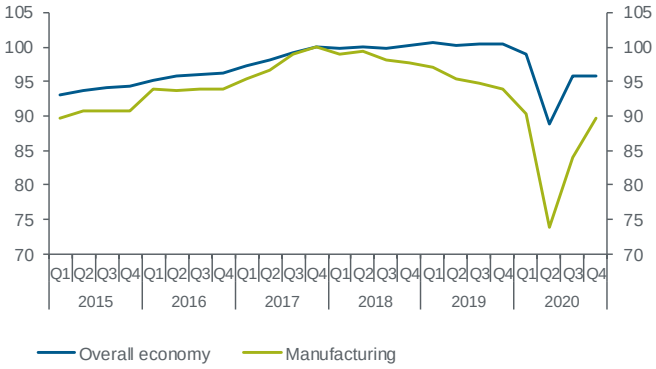


Source: Destatis, KfW Research

A longer-term view of German industry also reveals that even overcoming the direct effects of the Corona crisis gives no reason to give the all-clear (Figure 11). In the final quarter of 2020 industrial value creation, which is closely tied to exports, returned to 95% of the pre-crisis level of the final quarter of 2019 after a strong recovery. However, this production value is only 90% of the level of the final quarter of 2017, which marked the peak of the most recent industrial upturn. This development underscores the need to address structural issues such as digitalisation and the further development of climate protection technologies in order to tap into new export markets.

Figure 11: Gross value added by German industry

Index: Q4 2017=100; manufacturing without construction



Source: Destatis, KfW Research

Conclusions for economic policy

Despite a slightly declining trend in the years before the crisis, international trade continues to be of great importance for Germany. But high openness does not automatically lead to high vulnerability to crises because German exports are relatively well diversified. To be sure, this provided only limited protection in the spring of 2020 because the coronavirus pandemic was initially a global shock. But in the past months, the country's trading partners have coped with the crisis with varying degrees of success, allowing geographic diversification to unfold its beneficial effects. As a diverse range of export goods and export markets usually cushions economic shocks, diversifying external trade further in the future will be helpful – driven by enterprises and supported by economic policymakers.

The European internal market in particular acts as partial insurance against protectionist tendencies. Deepening the internal market is therefore in Germany's interest. But it is also important to further develop institutions which strengthen the crisis resilience of the European Union. Reaching agreement on the EU 'Recovery Fund' was a great step in this direction, especially because the focus is on the sustainable use of funds to promote digitalisation and climate neutrality.

At structural level, digitalisation and the transition to a climate-neutral economy are critical issues particularly for Germany's external trade. Given the growing number of countries committed to climate neutrality and Germany's good starting position as the world's second largest exporter of climate protection goods after China, this offers high potential for growth and employment.[34] But in this area as well, economic policies should be endorsed that promote innovation and human capital development, as opposed to those that are directed at choosing specific winners.[35]

[1] Cf. Trade in Value Added Database der OECD (https://stats.oecd.org/BrandedView.aspx?oecd_bv_id=36ad4f20-en&doi=data-00648-en#) And globalisation indicators of the Federal Statistical Office (https://www.destatis.de/DE/Themen/Wirtschaft/Globalisierungsindikatoren/schluesselindikatoren.html).

[2] Dustmann et al. (2014) explain that the increased international competitiveness since the mid-1990s was mainly due to significant wage restraint on the part of trade unions, which was benefited by particularly flexible industrial relations between employers and unions. The introduction of the euro additionally accelerated the real devaluation vis-a-vis important trading partners. Cf. Dustmann et. al. (2014), From Sick Man of Europe to Economic Superstar: Germany's Resurgent Economy. Journal of Economic Perspectives, Vol. 28, No. 1, pages 167–188.

[3] One example of the criticism levelled against Germany's current account surpluses the IMF's External Balance Assessments. It assessed Germany's current account surplus most recently as being 3.6 to 5.6 percentage points higher than would be justified by medium-term fundamentals such as demographic conditions and desirable policies, for example. The analysis found that the real effective exchange rate was undervalued by 8 to 18%. Cf. IMF, 2019 External Sector Report: The Dynamics of External Adjustment, p. 74: https://www.imf.org/en/Publications/ESR/Issues/2019/07/03/2019-external-sector-report.

[4] In 2019 gross annual earnings of full-time employees in the manufacturing sector were EUR 57,076 compared with EUR 51,676 in the services sectors. https://www.destatis.de/DE/Themen/Arbeit/Verdienste/Verdienste-Verdienstunterschiede/Tabellen/bruttojahresverdienst.html

[5] Cf. Trade in Value Added Database der OECD: https://www.oecd.org/industry/ind/TIVA-2018-Germany.pdf

[6] https://unctadstat.unctad.org/EN/RcaRadar.html

[7] An overview of the dominant role of passenger motor vehicles in Germany's external trade can be found in: Ullrich (2017): German exports are dominated by automobiles. Economics in Brief No. 149, KfW Research.

[8] Cf. Newbery, D. and Stiglitz, J. (1984), Pareto Inferior Trade, Review of Economic Studies, Wiley Blackwell, vol. 51(1), pages 1–12, January.

[9] Cf. Caselli, F., Koren, M., Lisicky, M. and Tenreyro, S., Diversification Through Trade, The Quarterly Journal of Economics, Volume 135, Issue 1, February 2020, pages 449–502.

[10] Cf. Haddad, M., Lim, J.J., Pancaro, C. and Saborowski, C. (2013), Trade openness reduces growth volatility when countries are well diversified. Canadian Journal of Economics/Revue canadienne d'économique, 46: 765–790. doi:10.1111/caje.12031.

[11] This changes only little if we look at the value exports measured by the OECD instead of just gross exports: https://www.oecd.org/industry/ind/TIVA-2018-Germany.pdf.

[12] Cf. Mattes J. (2020), Wie abhängig ist die deutsche Wirtschaft exportseitig von China? (*How much do Germany's exports depend on China?* – our title translation, in German only), ifo Schnelldienst 2 / 2020 73. Year 12, February 2020.

[13] Cf. Mönnig, A. et. Al. (2018), Elektromobilität 2035 - Effekte auf Wirtschaft und Erwerbstätigkeit durch die Elektrifizierung des Antriebsstrangs von Personenkraftwagen (*Electric mobility 2035 – effects of the electrification of drivetrains of passenger vehicles on the economy and employment* – our title translation, in German only). IAB Forschungsbericht 8/2018.

[14] France, the most stable G7 country, recorded a standard deviation of 1.31. The mean is 1.74. In a comparison of all advanced economies according to the IMF definition (1999–2019 period), Germany's growth volatility is below average, however.

[15] Cf. IMF (2019), World Economic Outlook, October 2019.

[16] The calculations are based on Comtrade data according to the BEC classification for 93 countries that account for around ¾ of global export value.

[17] Cf. ICAO (2020), Effects of Novel Coronavirus (COVID-19) on Civil Aviation: Economic Impact Analysis, 26 May 2020, https://www.icao.int/sustainability/Documents/COVID-19/ICAO%20COVID%202020%2005%2026%20Economic%20Impact.pdf.

[18] https://data.icao.int/coVID-19/operational.htm, accessed on 23 Dec. 2020.

[19] Cf. WTO (2020), Basic Purpose and Concepts, 1.3 Definition of Services Trade and Modes of Supply, https://www.wto.org/english/tratop_e/serv_e/cbt_course_e/c1s3p1_e.htm, accessed on 23 July 2020.

[20] Cf. sixfold (2020), COVID-19 impact on logistics — Sixfold publishes real-time information on border crossing times, https://sixfold.com/news/covid-19-impact-on-logistics-sixfold-publishes-real-time-information-on-border-delays, accessed on 23 July 2020;
DHL (2020), Impact of COVID-19 on border closure and global freight movement, https://www.resilience360.dhl.com/resilienceinsights/impact-of-covid-19-outbreak-on-border-closures-and-global-freight-movement/, accessed on 23 July 2020;
IRU (2020), Efficient enforcement in the aftermath of the COVID-19 pandemic, Joint Statement IRU CORTE ECR ETF ROADPOL, https://www.iru.org/system/files/Joint%20Statement%20IRU%20CORTE%20ECR%20ETF%20ROADPOL.PDF, accessed on 23 July 2020.

[21] Cf. Chowdhry, S. G. Felbermayr and Stamer, V. (2020), The Covid-19 trade contraction: A view from global shipping, the EU and China, Kiel Policy Brief, May 2020.

[22] Cf. World Bank (2020), Trading for Development in the Age of Global Value Chains, World Development Report 2020, p. 19.

[23] After all, uncertainty generally makes it difficult to choose activities that require finance, produce sunk costs and generate uncertain income.
Cf. 'Uncertainty, the economy and policy', Speech by Mr Mark Carney, Governor of the Bank of England and Chairman of the Financial Stability Board, at the Bank of England, London, 30 June 2016.
Recessions tend to come with greater discrimination against foreign economic interests, which may be reflected in import restrictions and currency devaluation (Great Depression of the 1930s), voluntary export restrictions (global recession of the 1980s) or subsidies and export incentives (global financial crisis).

[24] Export incentives in particular were applied more broadly in the years after 2008 as well.
Cf. Evenett, S. J. (2020), What's next for protectionism? Watch out for state largesse, especially export incentives, in Baldwin, R.E. and Evenett, S.J. (eds.), COVID-19 and Trade Policy: Why Turning Inward Won't Work, 179–187.

[25] Cf. ITC (2020), Tracking of COVID-19 Temporary Trade Measures, https://www.macmap.org/covid19, accessed on 30 June 2020.

[26] Cf. ITC (2020), Tracking of COVID-19 Temporary Trade Measures, https://www.macmap.org/covid19, accessed on 23 July 2020; German Federal Ministry of Economics and Energy, order to impose restrictions on foreign trade in certain goods dated 12 March 2020, https://www.bundesanzeiger.de/pub/de/amtliche-veroeffentlichung?2; German Federal Ministry for Economic Affairs and Energy, termination of restrictions on foreign trade in certain goods dated 19 March 2020, https://www.bundesanzeiger.de/pub/de/amtliche-veroeffentlichung?3

[27] Cf. Mathei, J. (2020), Tracking trade in COVID-19 medical supplies, https://ihsmarkit.com/research-analysis/tracking-trade-in-covid19-medical-supplies.html, accessed on 23 July 2020.
Bown, C. (2020), China's role in facilitating a COVID-19 trade and transparency agreement, Peterson Institute for International Economics, https://www.piie.com/system/files/documents/bown2020-07-15ppt.pdf, accessed on 23 July 2020.

[28] Cf. German Federal Statistical Office (2020), Pharmaceutical industry defies corona crisis: exports from March to May 2020 up 14.3% year on year, press release #N 038 from 21 July 2020.

[29] Federal Statistical Office (Destatis), 2021, imports and exports (foreign trade): Deutschland, Monate, Warensystematik, As at 8 Jan. 2021

[30] BIS (2014), Trade finance: developments and issues, CGFS Papers No. 50; Chauffour, J.P. and Malouche, M. (2011), Trade finance during the Great Trade Collapse; IFC (2020), Why Trade Finance Matters— Especially Now

[31] Overall, businesses transfer around 80% of their initial cross-border receivables to banks and other intermediaries but only 15% of domestic receivables. Cf. Boissay, F., Patel, N. and Song Shin, H. (2020), Trade credit, trade finance, and the Covid-19 Crisis, BIS Bulletin No. 24.

[32] IFC (2020), Why Trade Finance Matters— Especially Now; ICC (2020), Trade Financing and Covid-19: Priming the market to drive a rapid economic recovery; OECD (2020), Trade Finance in Times of Crisis - Responses from Export Credit Agencies.

[33] Cf. Orthey, M. (2020), Uncertainty and economic activity in Germany, Focus on Economics No. 300, KfW Research.

[34] Cf. German Federal Environment Agency (2020), Die Umweltwirtschaft in Deutschland. Entwicklung, Struktur und internationale Wettbewerbsfähigkeit. (*Germany's environmental industry: development, structure and international competitiveness* – our title translation, in German only), January 2020

[35] Cf. Lederman, D. and Maloney, W. (2012), Does What You Export Matter?: In Search of Empirical Guidance for Industrial Policies, The World Bank.