German balance of payments in 2022

In 2022, the German economy's current account surplus decreased by 3½ percentage points to 4¼% of nominal gross domestic product (GDP). This represents the largest decline since German reunification and the lowest figure for the balance since 2003. The main driver of this was the considerable decline in the surplus on the goods account, which was a result of the massive deterioration in the terms of trade. This was caused by the sharp rises in the prices of energy and other imported commodities. The German services account likewise deteriorated. Here, a contribution was made by cross-border travel expenditure, which rose back to its level from before the COVID-19 pandemic. The balance of primary and secondary income remained more or less unchanged. Aggregate net lending/net borrowing fell relative to GDP, as there was a sharp reduction in aggregate savings. The reason for this was the decline in the saving ratios of households and non-financial corporations, which had risen during the pandemic. The general government deficit decreased somewhat. On the one hand, many of the fiscal measures related to the COVID-19 pandemic came to an end. On the other hand, however, extensive new support measures were introduced in response to the energy crisis and high inflation.

Russia's war of aggression against Ukraine as well as the high rates of inflation and the monetary policy response to inflation were also reflected in Germany's capital flows with other countries. In the financial markets, the more difficult environment led to lower turnover and a greater desire for safety amongst investors. All in all, Germany's net external assets rose by €220 billion last year resulting from transactions.

Significant changes were observed, above all, in German portfolio investment. Cross-border demand for shares and mutual fund shares declined markedly in both directions. In net terms, German investors sold off foreign shares and non-residents also parted with German shares. By contrast, bonds again attracted greater mutual interest. In addition to lower risk, higher yields are likely to have played a role here. Tighter monetary policy on both sides of the Atlantic had a major impact on these developments. For example, the Eurosystem discontinued net purchases under its asset purchase programmes, which had a direct impact on German portfolio transactions.

Last year, it was confirmed once again that direct investment does not respond to burdens as quickly as portfolio investment. Cross-border exposures involving German investors were remarkably robust in this segment. By contrast, the other investment account partly reflected the major changes in securities: the considerable decline in new investment in securities was offset to a not insignificant degree by higher net claims on non-residents.

Current account

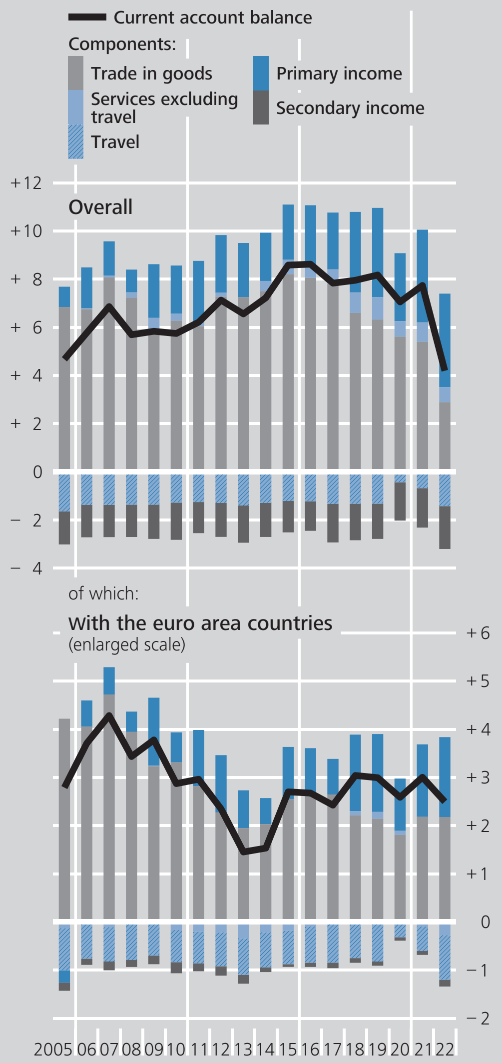
Underlying trends in the current account

Current account surplus down considerably …

The German current account surplus declined considerably in 2022. It fell by €116½ billion to €162 billion. At 3½ percentage points, this also represented the largest decrease in relation to nominal GDP since German reunification. As a result, the balance stood at 4¼% of GDP, which is the lowest value since 2003. Over the course of the year, changes in energy prices related to the war against Ukraine led to exceptionally strong fluctuations in Germany's current account. In the third quarter, as a result of the energy price shock, the current account surplus plummeted to 2¼% of GDP in seasonally adjusted terms, after having stood at 6½% at the end of the previous year. In the fourth quarter, however, the balance rose rapidly again to more than 4¾% of GDP.

Germany's current account

As a percentage of GDP



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… due to energy price-related decline in goods trade balance and normalised services balance

In 2022, the main driver of developments in the German current account was the considerable decline in the goods trade balance. This was a result of the massive deterioration in the terms of trade caused by the sharp rises in the prices of energy and other imported commodities. The services balance likewise deteriorated. This was attributable to the normalisation of German residents' cross-border travel following two years of low activity due to the COVID-19 pandemic. Combined, the balance of primary and secondary income remained more or less unchanged.

Unfavourable global environment in light of subdued demand and large rises in energy costs

In 2022, German enterprises were faced with a turbulent global environment. The high rates of inflation and tighter monetary policy in many regions, the Russian war of aggression against Ukraine, and some persistent effects of the COVID-19 pandemic all weighed on global economic developments. Developments in global trade were rather muted, owing especially to the weak contributions from emerging market economies. Furthermore, in Germany, the rise in energy prices was comparatively sharp. The prices of imports to Germany increased due, in particular, to the relatively strong depreciation of the euro.[1] From a macroeconomic perspective, this depreciation improved German price competitiveness to some extent. However, energy-intensive enterprises are likely to have suffered significantly in terms of price competitiveness, as they are affected by the energy price shock to a greater degree.

1 On average over 2022, the euro's nominal effective exchange rate against the currencies of the euro area's 41 most important trading partners was 3½% lower than in the previous year. The euro depreciated against the US dollar, the Chinese renminbi, and the Swiss franc in particular, whilst it appreciated against the Japanese yen.

Price effects significantly reduce German foreign trade surplus

Germany's foreign trade surplus declined significantly. This was mainly due to strong, negative price effects, which were only marginally offset by positive volume effects. The lower foreign trade balance was therefore a result of sharply higher import prices. In terms of volume, imports decreased to a somewhat greater extent than exports. The German terms of trade fell by around 9¼% on the year, as import prices rose significantly more sharply than export prices (+26% compared with +14½%).

Surplus position in decline, especially vis-à-vis non-euro area countries

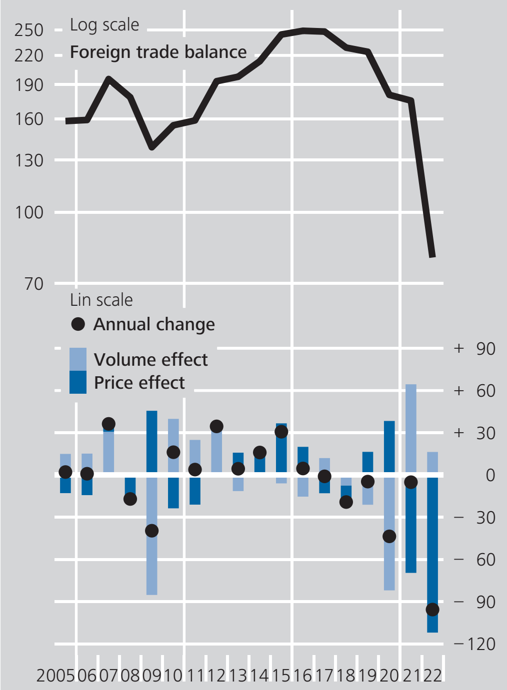
In regional terms, the current account surplus declined particularly vis-à-vis non-euro area countries, falling by 3 percentage points to 1¾% of GDP. This was chiefly attributable to the smaller surplus on the goods account. The high import prices for energy were a major factor in this context. In addition, the decline in the services balance also contributed to this result. This reflects the strong increase in travel vis-à-vis both the rest of the euro area and the rest of the world.

Significant declines in saving among households and non-financial corporations

From the perspective of savings and investment, aggregate net lending/net borrowing fell considerably, in line with the current account balance. In this context, net investment relative to GDP increased only marginally. Enterprises' investment in machinery and equipment continued to see robust growth in 2022 as a result of catch-up effects. Housing investment likewise grew substantially in nominal terms due to the sharp rises in construction costs. A more significant factor behind the decline in net lending/net borrowing was the strong decrease in domestic saving. With households needing to compensate for their loss of purchasing power and with the normalisation of previously subdued consumption, the household saving ratio returned roughly to its pre-pandemic level. Corporate saving declined as well. This was attributable partly to higher distributions and partly to lower transfers received. In 2022, the government started to wind down its assistance measures related to the COVID-19 pandemic. Over the course of the year, comprehensive new support measures were gradually introduced in response to the energy crisis and the high rates of inflation, but, on the whole, these measures were smaller in scale than those of previous years. Overall, net lending/net borrowing among households and non-financial corporations fell quite sharply, while general government's deficit position decreased. Compared with pre-pandemic levels, aggregate net lending/net borrowing relative to GDP was lower in 2022. This is attributable primarily to general government posting a deficit while households and enterprises made a broadly similar contribution to what they had in 2019.

Price and volume effects on the German foreign trade balance*

€ billion



Source of unadjusted figures: Federal Statistical Office. * Decomposed using the Shapley-Siegel index.
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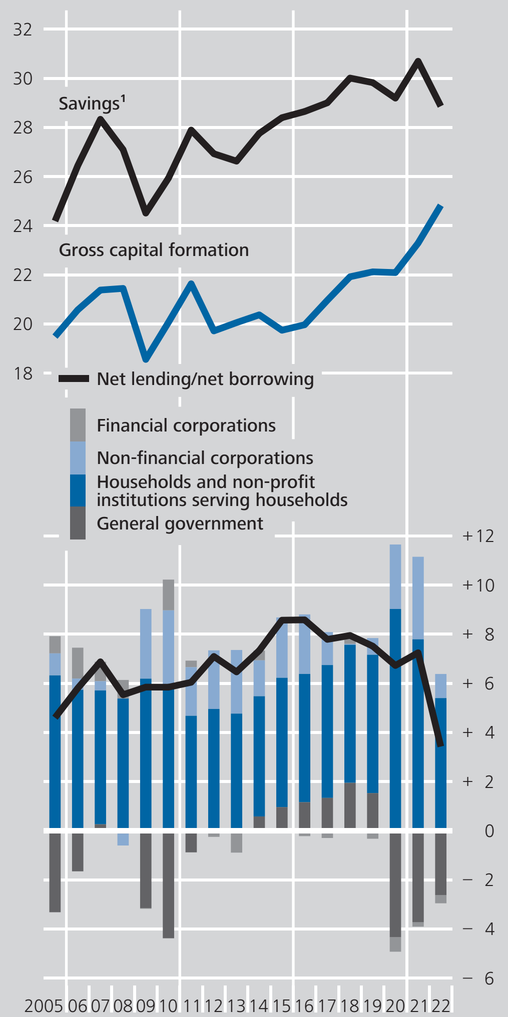
Goods flows and balance of trade

In 2022, exports saw very strong year-on-year growth in terms of value, but imports grew considerably more sharply. Particularly for imports, a role was played by the massive rises in

Savings and investment in the German economy

As a percentage of GDP



1 Including consumption of fixed capital.
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On annual average, foreign trade activity subdued in real terms but massively increased in nominal terms due to price rises

the prices of energy products. As a result, the foreign trade surplus narrowed by €95½ billion to €79½ billion. In price-adjusted terms, however, exports were down ½% on the previous year and imports saw a somewhat stronger dip of 1¾% on the year.[2]

Export revenue from euro area countries rose as sharply as that from non-euro area sales regions

In regional terms, nominal exports to the euro area countries grew almost as strongly as those to non-euro area countries. Sales to the United States saw very significant expansion. This was supported by the depreciation of the euro against the US dollar. In addition, German exporters recorded very sharp rises in revenues from major sales regions in South and East Asia as well as Europe. However, business with China, which had been particularly booming in many of the preceding years, saw below average growth. This was due to the relatively moderate growth of the Chinese economy, which had also felt the impact of the stringent measures taken to contain the COVID-19 pandemic. Deliveries to Russia collapsed as a result of EU sanctions and behavioural adjustments in response to Russia's war against Ukraine, amongst other reasons. Exports to Ukraine also declined significantly. This was partly offset by the goods delivered in connection with the war.[3] However, accounting for only 0.3%, exports to Ukraine were of minimal significance to German exporters in 2022.

Exports of consumer goods and motor vehicles up, but exports of intermediate goods and energy down

Export developments were highly heterogeneous across various product categories. In price-adjusted terms, there was significant growth in deliveries of consumer goods. Here, exports of pharmaceutical products saw especially strong expansion. Exports of motor vehicles and motor vehicle parts also rose very sharply. Motor vehicle production in Germany stalled at times in March following the outbreak of Russia's war against Ukraine, given the absence of deliveries of motor vehicle parts from Ukraine. However, as these and other preexisting global supply bottlenecks abated, domestic motor vehicle production, and subsequently exports, picked up considerable momentum. There were marked declines in exports of chemical products as well as metals and fabricated metal products. The energy-intensive production of these goods was burdened by the large rises in energy prices. In

2 Contrary to the foreign trade statistics, real goods exports rose by 1½% and goods imports by 2¾% when calculated using the national accounts approach. One reason for these divergent developments is that the foreign trade price indices weight goods according to their shares in the base year of 2015. In the national accounts, however, price changes for imported and exported goods are weighted using the goods' current shares. During periods that exhibit highly heterogeneous price increases for individual goods, such as 2022, there can be marked differences in the shares used for each of the two calculation methods.
3 These deliveries included military goods, dual-use goods, and relief aid totalling €2 billion; see Federal Government (2023).

addition, exports of energy products decreased significantly. This was attributable to declining exports of gas, which was also due to a drop in foreign demand for gas.[4] By contrast, there was growth in deliveries of refined petroleum products and electricity.[5]

Imports of wide range of products up sharply …

The revenue of foreign manufacturers from goods deliveries to Germany rose very sharply for a broad range of products. Imports of motor vehicles and motor vehicle parts increased considerably in price-adjusted terms. In this context, a role was played by the fact that purchases were brought forward seeing as government subsidies for purchases of electric vehicles were scaled back at the end of 2022. Deliveries of machinery likewise recorded strong expansion. The sharp increase in imports of intermediate goods benefited from easing supply bottlenecks. This also affected electronic and electrical equipment. Imports of chemical products, which were still stagnating in the previous year, saw massive growth. One reason for these imports was probably to substitute for domestic production, which was throttled due to energy prices. Deliveries of consumer goods were also up considerably.

… but lower energy imports in price-adjusted terms

By contrast, energy imports fell very sharply in price-adjusted terms owing to a very substantial decrease in gas imports. This was attributable to the decline in energy consumption in Germany as a result of hugely increased energy prices. The drop in consumption was connected with both energy savings as well as production cutbacks in individual sectors.[6] By contrast, coal imports were expanded, also for use in power stations. In addition, more crude oil was delivered to Germany. However, the additional imports of these energy sources only

4 See Federal Network Agency (2023). These gas exports are predominantly transit imports.
5 A role was also played by increased deliveries of electricity to France, where the nuclear power stations needed to generate electricity reduced their output due to repair work and the low water levels of inland waterways required to cool them.
6 In addition, consumption was depressed by the comparatively mild weather. See Working Group on Energy Balances e. V. (2022).

Foreign trade by region

%

Country/ group of countries	Percentage share	Annual percentage change		
	2022	2020	2021	2022
Exports				
Euro area[1]	38.1	− 10.2	18.1	15.0
Other countries	61.9	− 8.5	12.1	13.7
of which:				
United Kingdom	4.7	− 15.3	− 3.1	13.0
Central and eastern European EU countries[2]	13.2	− 6.0	19.5	13.9
Switzerland	4.5	− 0.1	7.8	16.4
Russia	0.9	− 13.0	15.3	− 45.2
United States	9.9	− 12.8	17.9	27.9
Japan	1.3	− 15.8	4.9	12.4
Newly industrialised economies in Asia[3]	3.0	− 1.5	8.4	14.1
China	6.8	− 0.1	8.1	3.1
South and east Asian emerging market economies[4]	2.2	− 17.4	15.5	14.1
OPEC	1.4	− 13.6	2.2	10.4
All countries	100.0	− 9.1	14.3	14.2
Imports				
Euro area[1]	34.0	− 9.4	18.1	16.1
Other countries	66.0	− 5.6	16.9	28.8
of which:				
United Kingdom	2.5	− 8.8	− 7.9	16.4
Central and eastern European EU countries[2]	13.1	− 4.2	13.8	15.0
Switzerland	3.7	− 0.6	8.1	12.1
Russia	2.4	− 31.3	54.2	6.5
United States	6.1	− 5.1	6.8	26.8
Japan	1.7	− 10.4	9.6	7.4
Newly industrialised economies in Asia[3]	2.6	− 7.4	11.6	25.6
China	12.8	6.7	21.8	33.6
South and east Asian emerging market economies[4]	4.1	− 2.9	15.8	31.9
OPEC	1.0	− 48.3	58.3	73.6
All countries	100.0	− 7.0	17.3	24.2

1 Excluding Croatia. 2 Bulgaria, Croatia, Czech Republic, Hungary, Poland, Romania. 3 Hong Kong, Singapore, South Korea, Taiwan. 4 India, Indonesia, Malaysia, Philippines, Thailand, Vietnam.

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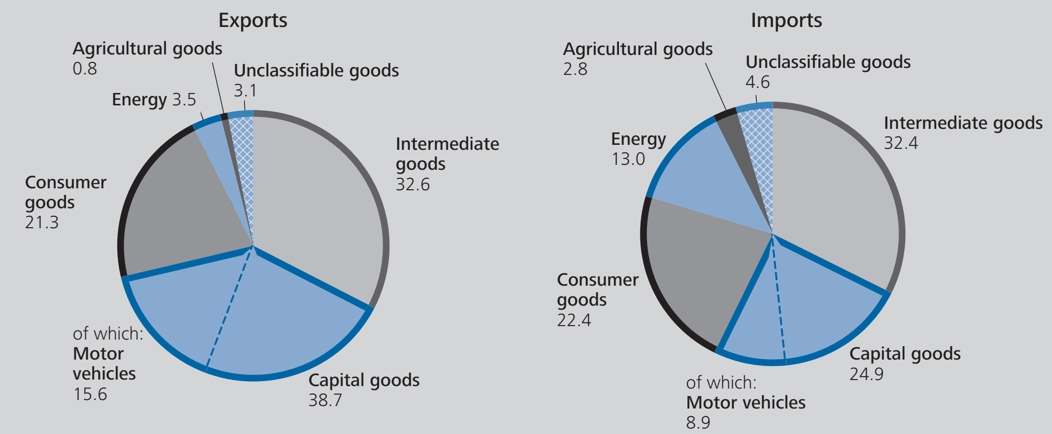
Foreign trade by selected categories of goods in 2022

Percentage share



Source of unadjusted figures: Federal Statistical Office. May not add up to 100% due to rounding.
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offset the decline in gas volumes to some extent.

Much greater nominal growth in deliveries from non-euro area countries than from euro area

Broken down by region, almost all major trading partners recorded very sharp growth in revenues from their deliveries to Germany. In this context, nominal imports from non-euro area countries increased by almost twice as much as those from euro area countries. First, non-euro area countries benefited from greater demand for their specific product mix. They offer a relatively wide selection of electronic and electrical equipment as well as clothing. Second, the prices of energy products, which make up a larger share of these countries' product ranges, went up particularly sharply. The rise in the prices of energy products was also a key factor in the growth in Russian revenue from Germany. By contrast, the volume of energy imports from Russia plummeted.

Merchanting trade and supplementary trade items bolstered goods trade on balance

The other components of trade in goods – which include the supplementary trade items, net goods exports in merchanting trade, and trade in non-monetary gold – mitigated the decline in the foreign trade balance overall.[7] As a result, the surplus on the goods account fell by €82½ billion in 2022, which was much smaller than the decline in the foreign trade surplus.

Invisible current transactions

Very large deficit in cross-border services account …

The balance of the cross-border services account was deep into negative territory in 2022. Having been positive in each of the two preceding years of the pandemic, the balance reached a deficit of €31 billion in the reporting year. On the one hand, receipts went up by 18% on the year to almost €408 billion in 2022, with revenue growth in the transportation sector playing an important role. On the other hand, however, expenditure rose significantly more strongly, climbing by just under 29%. This was due mainly to the increase in travel expenditure, which returned to pre-pandemic levels, as well as to considerably higher transport expenditure.

At €55 billion, the sub-account for cross-border travel posted the highest nominal deficit in its

7 This was primarily attributable to the sharp rise in net receipts from merchanting trade, which grew by €8 billion, as sales rose more sharply than purchases overall. A significant contribution to this was made by transactions in the automotive industry, which generally comprise a large proportion of such business. In addition, the supplementary trade items increased by €5 billion on balance. In this context, a role was also played by the strong rise in imports for contract processing in Germany. Furthermore, there was a sharp rise in the c.i.f. charges for imports, amongst others; these comprise the costs of freight and insurance from the border of the supplier's country to the German border. By contrast, net expenditure for trade in non-monetary gold remained virtually unchanged.

… due to further massive increase in travel expenditure

existence. Travel receipts – which Germany generates largely through travel for trade fairs, events and business trips – continued to fall significantly short of pre-pandemic levels. By contrast, increasing numbers of individuals resident in Germany were travelling abroad again as many pandemic-related restrictions were lifted. Travel expenditure doubled compared with the year before. The main beneficiaries were the Mediterranean and Alpine countries. However, spending on long-distance travel remained significantly below pre-pandemic levels. It was not until partway through 2022 that travel to Asia, in particular, was again possible on a larger scale.

Considerable growth in sales in transport services, deficit up only slightly

The sub-account for cross-border transport services had already expanded by around 40% back in 2021, mainly owing to the increased freight prices in international goods transport caused by higher energy prices. Starting from this elevated level, the reporting year saw further sales increases of more than one-third on both sides of the balance sheet for fees from sea, air and ground transport as well as pipeline and electricity transmission. On balance, the deficit in this sub-account rose moderately, climbing by €2 billion to €8½ billion for Germany. Other components of the services account related to the goods trade, such as manufacturing, maintenance and repair services, experienced only marginal changes in their balances compared with 2021.

Hardly any reduction in one-off effect on revenue from charges for use of intellectual property

In the reporting year, too, there was a one-off effect on the revenue side under the item "Charges for the use of intellectual property". As in the previous year, this was related to licensing following the development of vaccines. This effect was once again evident and at just a slightly reduced level, meaning that the surplus of €31½ billion in the sub-account was only marginally lower than in the previous year.

In the year under review, receipts and expenditure for other knowledge-based and business services rose fairly sharply. The resulting deficit

Major items of the balance of payments

€ billion

Item	2020r	2021r	2022r
I. Current account	+ 240.2	+ 278.7	+ 162.3
1. Goods	+ 191.0	+ 194.4	+ 111.9
Receipts	1,189.3	1,365.2	1,550.8
Expenditure	998.2	1,170.8	1,438.9
Memo item:			
Foreign trade[1]	+ 180.4	+ 175.3	+ 79.7
Exports	1,206.9	1,379.3	1,574.5
Imports	1,026.5	1,204.0	1,494.8
2. Services	+ 7.4	+ 4.8	− 30.8
of which:			
Travel	− 14.7	− 24.3	− 55.0
3. Primary income	+ 96.0	+ 138.5	+ 150.0
of which:			
Investment income	+ 94.2	+ 137.9	+ 152.9
4. Secondary income	− 54.2	− 59.0	− 68.8
II. Capital account	− 9.1	− 1.2	− 18.6
III. Financial account[2]	+ 191.5	+ 248.6	+ 219.8
1. Direct investment	− 4.9	+ 100.4	+ 125.3
2. Portfolio investment	+ 16.4	+ 203.5	+ 24.3
3. Financial derivatives[3]	+ 94.6	+ 60.2	+ 42.7
4. Other investment[4]	+ 85.4	− 147.4	+ 23.1
5. Reserve assets	− 0.1	+ 31.9	+ 4.4
IV. Errors and omissions[5]	− 39.6	− 29.0	+ 76.2

1 Special trade according to the official foreign trade statistics (source: Federal Statistical Office). **2** Increase in net external position: + / decrease in net external position: –. **3** Balance of transactions arising from options and financial futures contracts as well as employee stock options. **4** Includes, in particular, loans and trade credits as well as currency and deposits. **5** Statistical errors and omissions resulting from the difference between the balance on the financial account and the balances on the current account and the capital account.

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Other knowledge-based and business services recorded larger deficit

of €21½ billion was attributable in around equal part to cross-border telecommunications and information services as well as other business services, with the former accounting for a larger share of year-on-year deficit growth. The latter services comprise research and development, professional, technical and commercial services, and management consultancy services. The other components of the services account remained virtually unchanged in terms of both sales and balances.

Net primary income makes largest contribution to current account surplus in 2022 …

Following its massive increase in 2021, the primary income surplus also grew significantly in the reporting year. Given the sharp decline in the goods surplus, net primary income, at just under 4% of GDP in 2022 (€150 billion), unusually made up the largest share of the current account surplus. Combined, cross-border compensation of employees and other primary income recorded a small deficit.

… though increased surplus attributable to investment income

The surplus in primary income was mainly attributable to net investment income. According to the Bundesbank's preliminary calculations, income for domestic investors and capital donors from cross-border investment grew by one-sixth. This increase is heavily attributable to the upturn in receipts from direct investment, which also includes reinvested earnings. Income from non-euro area investments increased not only because of high corporate profits abroad but also because of the weaker euro exchange rate. In addition, the turnaround in interest rates had an impact on banks' revenue. Interest income doubled, albeit from a low level. Payments by domestic actors to foreign financiers rose by one-quarter in 2022 compared with the previous year. This was driven mainly by dividend payments on portfolio investments and other investment expenditure from the financial sector due to higher interest rates. Owing to the considerable net external assets of residents in Germany, it was despite the unusually sharp increase in expenditure that, for Germany, net income rose by €15 billion on the year to €153 billion in absolute terms.

Deficit in secondary income account widened significantly

The traditional deficit in the cross-border secondary income account widened significantly last year. The increase of €10 billion to €69 billion was due primarily to higher expenditure. Half of the deterioration in the account balance was attributable to unilateral non-government cross-border payments. Growing remittances from immigrants to their countries of origin played a certain role in this context. Cash and non-cash donations made by households to Ukraine were another factor, though. Government payments to non-residents rose markedly, while receipts remained broadly unchanged. On the revenue side, EU coronavirus assistance decreased considerably in 2022. This gap was partly plugged by increasing receipts from income and wealth taxes on non-residents. Meanwhile, government expenditure went up, for example as a result of Germany's contributions to the EU budget based on gross national income as well as government assistance to Ukraine.

Capital movements

Underlying trends in capital movements

Reflecting the decline in the current account surplus, the balance of the financial account, at €220 billion, was also significantly lower than in the previous year (€248½ billion).[8] In 2022, Russia's war of aggression against Ukraine, high inflation and the global tightening of monetary policy impacted the international financial markets by leading to falling prices in the equity and bond markets. At the same time, the high level of uncertainty dampened investors' risk appetite, meaning that domestic fixed income securities were more in demand than equities, despite the price losses in the bond markets.

8 The difference between the current account and financial account balances is primarily attributable to statistical errors and omissions (€86 billion).

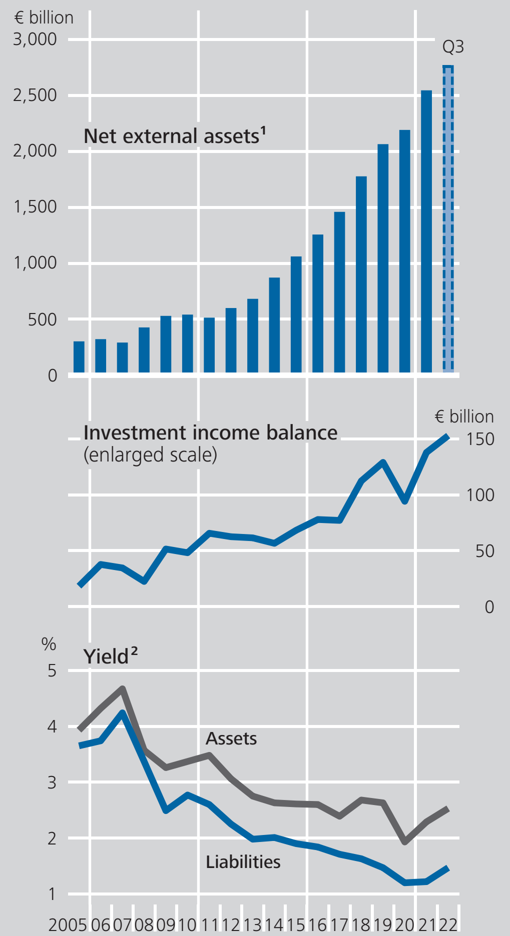
German capital flows shaped by war against Ukraine and tightening of monetary policy

As early as the beginning of the year, the international financial markets were already being affected by rising inflationary risks, which stemmed largely from the fact that global growth was increasing whilst at the same time supply-side constraints continued to exist. Russia's attack on Ukraine at the end of February then led to massive increases in commodity and food prices and sharply intensified price pressures, which also impacted inflation expectations in the medium term. As a result, major central banks moved more quickly towards monetary policy normalisation. The Eurosystem therefore decided in March 2022 to scale back net purchases under the asset purchase programme (APP) more rapidly over the course of the second quarter than it had envisaged in December 2021. In addition, the Governing Council of the ECB began raising its key interest rates in its July 2022 meeting and had increased them by a total of 250 basis points by the end of the year; at its final meeting of 2022, it made clear that it would continue to raise interest rates.

Low risk appetite leads to rebalancing

The aforementioned factors were also reflected in the behaviour of portfolio investors with an international focus. Their risk appetite, i.e. their willingness to invest in comparatively risky assets such as mutual fund shares or shares, declined markedly. Instead, domestic and US bonds were in fairly strong demand, with their risk/return profiles improving over the course of the year relative to an investment in shares. Direct investment tends to be based more on long-term considerations, which means that it takes longer for the effect of current negative factors to feed through. In this respect, the outward direct investment of German enterprises was only slightly below the previous year's level. Foreign enterprises, too, expanded their direct investment in Germany, but less so than in the year before. Other investment partly mirrored developments in portfolio investment: as, on balance, German investors sought significantly fewer foreign portfolio securities, German excess savings were increasingly reflected in net exports in other investment.

Key indicators of the cross-border investment income balance



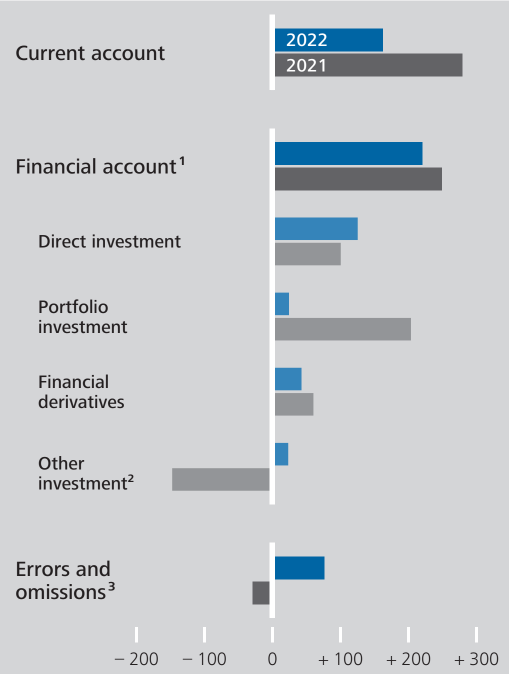
1 Direct, portfolio and other investment and reserve assets. Excluding financial derivatives. 2 Yields shown in terms of investment income/expenditure as a percentage of the annual average levels of foreign assets and liabilities. IIP as at the end of Q3 2022.
Deutsche Bundesbank

Internal study shows TARGET2 balances have little reaction to microeconomic factors

The Bundesbank's TARGET2 claims on the ECB exceeded the previous year's figure by €8½ billion, thus reaching a new peak. Transactions in the TARGET2 payment instrument are based on individual decisions made by a wide range of participants. These individual decisions, for their part, are determined by the general macroeconomic environment but potentially also by specific characteristics of individual banks participating in TARGET2. A Bundesbank study presented on pp. 35 ff. examines the extent to which the balances of the national central banks resulting from individual decisions are determined by the bank-specific characteristics. It concludes that these individual factors

Major items of the German balance of payments

Balances in € billion



1 Net capital exports: +. **2** Includes, in particular, loans and trade credits as well as currency and deposits. **3** Statistical errors and omissions.

Deutsche Bundesbank

have played only a minor role in the rise in German TARGET2 claims over the past few years.

Portfolio investment

Lower flows in portfolio investment

Portfolio investment generated relatively low net capital exports of €24½ billion in 2022 (previous year: €203½ billion) amidst a significant drop in trading volumes. One major reason for this decline is likely to have been the high level of uncertainty in the markets as a result of high inflation and Russia's war of aggression against Ukraine. This uncertainty was reflected in reduced risk appetite, meaning that investors, on the whole, were reluctant to make investment decisions regarding securities. Similarly sharp declines occurred in 2020 (coronavirus pandemic) and 2011 (European sovereign debt crisis).

Against this backdrop, portfolio investment abroad by German investors rose by only €16½ billion on balance. This is the lowest this figure has been since 2008. In 2021, German investors had added foreign securities worth €175 billion to their portfolios. Interest in foreign mutual fund shares, in particular, declined in the reporting year. Net purchases of this instrument amounted to €33½ billion in 2022, which was well below the previous year's figure (€116½ billion). In view of the significant price losses, investors appear to have been holding back on investing in this instrument.

Domestic investors purchased fewer mutual fund shares in net terms

Purchases of debt securities balanced out by sales and redemptions

Purchases of foreign debt securities were balanced out by sales and redemptions. Although German investors sold bonds worth €12½ billion on balance, they purchased money market paper worth the same amount. Over the course of 2022 as a whole, German investors added US bonds to their portfolios, amongst other things. In addition to the interest rate advantage of these debt securities, investors opting for a safe haven in connection with the war of aggression against Ukraine is likely to have played a role here. There was also high demand for interest-bearing instruments from Canada and Ireland.

Shares were sold

Decreased risk appetite and investor caution is even more evident in the equities segment. On balance, resident investors sold shares of foreign enterprises for a net amount of €16½ billion. In the previous year, they had expanded their portfolios by €47 billion. In the first quarter, German investors offloaded European shares, in particular. This behaviour is consistent with the especially sharp drop in European equity indices following Russia's attack on Ukraine.[9] However, this trend reversed as the year progressed. Over the course of 2022 as a whole, German investors sold shares from France, Switzerland and the United Kingdom in particular. By contrast, they acquired a large volume of equities from the United States, Canada and Australia.

9 See Deutsche Bundesbank (2022a).

Foreign investors sold shares and mutual fund shares …

Foreign portfolio investment in Germany generated net capital exports of €7½ billion in 2022 (previous year: €28½ billion). Over the year, foreign investors sold shares of German enterprises (€4½ billion) and mutual fund shares (€3 billion). This was in line with the price losses in the German equity market, especially in the first half of the year. Towards the middle of the year, pressure to sell eased and investors returned to the German market. Equities benefited from improving sentiment in the euro area and from reports of the first deliveries of liquefied gas being made and high gas storage levels, which pushed concerns about an energy crisis into the background. Sellers were located in the Netherlands, Luxembourg and the United States, in particular. By contrast, investors from the United Kingdom, Spain and Switzerland were some of the main buyers of German shares on balance.

… and shifted away from money market paper to bonds

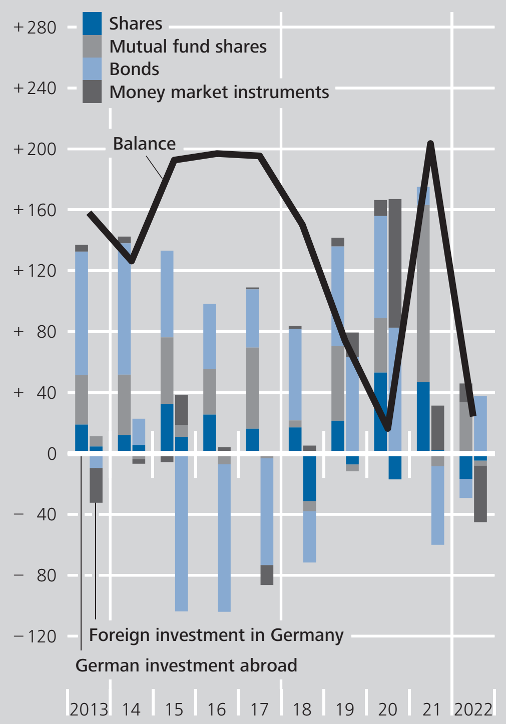
Non-resident investors acquired debt securities to the tune of €½ billion. At the same time, they offloaded money market paper (€37 billion). This is likely to have been due in part to the declining outstanding volume of German short-term debt securities. In view of rising interest rates, it became more attractive for domestic market participants to raise funding via secured loans (repo transactions). At the same time, foreign investors sought bonds issued by enterprises, the public sector and banks – worth a combined €37½ billion. Net purchases of the first two instruments were made by the Eurosystem under the pandemic emergency purchase programme (PEPP) until March 2022 and under the APP until June 2022. In the past, net asset purchases for monetary policy purposes were a major reason why, on balance, foreign investors sold domestic debt securities. With the expiry of the purchase programmes, a dominant domestic buyer has now exited the market.

Financial derivatives see outflows

Financial derivatives (which are aggregated to form a single item in the balance of payments) recorded net capital exports of €42½ billion in 2022, a clear decline from the year before (€60

Portfolio investment in the German balance of payments

€ billion



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billion). Forward and futures contracts relating to electricity and gas bucked this general trend, however. Amid the turbulence in the energy markets, net capital exports were recorded. In the previous year, trading in this segment had still yielded German net capital imports.

Direct investment

Global direct investment flows characterised by major uncertainty

The large number of events and developments that fuelled global uncertainty in 2022 also affected global direct investment. The United Nations Conference on Trade and Development (UNCTAD) observed a marked decline in new investment projects after the first quarter of 2022 and the start of the Russian war of aggression against Ukraine. This included greenfield project announcements as well as international project finance deals and cross-border mergers and acquisitions (M&As). Nevertheless, according to UNCTAD's estimate, the number of greenfield project announcements was

Financial account

€ billion

Item	2020r	2021r	2022r
Financial account balance[1]	+ 191.5	+ 248.6	+ 219.8
1. Direct investment	− 4.9	+ 100.4	+ 125.3
Domestic investment abroad[2]	+ 134.0	+ 180.9	+ 169.0
Foreign investment in the reporting country[2]	+ 138.9	+ 80.5	+ 43.7
2. Portfolio investment	+ 16.4	+ 203.5	+ 24.3
Domestic investment in foreign securities[2]	+ 166.4	+ 175.0	+ 16.7
Shares[3]	+ 53.1	+ 46.8	− 16.7
Investment fund shares[4]	+ 35.9	+ 116.4	+ 33.6
Short-term debt securities[5]	+ 10.5	− 0.1	+ 12.3
Long-term debt securities[6]	+ 66.9	+ 11.9	− 12.6
Foreign investment in domestic securities[2]	+ 150.0	− 28.6	− 7.6
Shares[3]	− 17.0	+ 2.1	− 4.7
Investment fund shares	+ 1.0	− 8.4	− 3.2
Short-term debt securities[5]	+ 84.5	+ 29.3	− 37.2
Long-term debt securities[6]	+ 81.6	− 51.6	+ 37.5
3. Financial derivatives[7]	+ 94.6	+ 60.2	+ 42.7
4. Other investment[8]	+ 85.4	− 147.4	+ 23.1
Monetary financial institutions[9]	− 112.7	− 48.4	− 93.5
Short-term	− 71.2	− 15.9	− 125.9
Long-term	− 41.6	− 32.8	+ 32.4
Enterprises and households[10]	+ 56.1	+ 7.7	+ 31.8
Short-term	+ 29.2	+ 13.4	+ 25.2
Long-term	+ 8.8	− 26.3	− 16.5
General government	+ 9.9	− 3.4	− 20.0
Short-term	+ 11.0	− 5.1	− 21.0
Long-term	− 2.2	+ 0.3	− 0.4
Bundesbank	+ 132.2	− 103.4	+ 104.9
5. Reserve assets	− 0.1	+ 31.9	+ 4.4

1 Increase in net external position: + / decrease in net external position: −. 2 Increase: +. 3 Including participation certificates. 4 Including reinvestment of earnings. 5 Short-term: original maturity of up to one year. 6 Long-term: original maturity of more than one year or unlimited. 7 Balance of transactions arising from options and financial futures contracts as well as employee stock options. 8 Includes, in particular, loans and trade credits as well as currency and deposits. 9 Excluding the Bundesbank. 10 Includes the following sectors: financial corporations (excluding monetary financial institutions) as well as non-financial corporations, households and non-profit institutions serving households.

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around 6% higher for 2022 as a whole than in the previous year. By contrast, cross-border M&A transactions were reported to be around 6% lower than the previous year's figure. When examined in detail, the figures aggregated across all countries and regions were driven by fairly different developments.[10]

Net capital exports due to German investment abroad

German enterprises operating internationally also faced particular challenges in 2022. The coronavirus pandemic and the war in Ukraine, as well as their far-reaching economic consequences, significantly hampered cross-border business for many enterprises and also influenced their investment decisions.[11] An environment with more risks and greater uncertainty – including for business conditions – makes it harder to calculate cross-border exposures. However, direct investment is generally longer-term in nature. It is affected less immediately by acute events than other forms of investment that instead pursue short-term returns.[12] German inward and outward direct investment therefore proved to be quite robust in 2022 despite the particularly difficult economic environment. It recorded net capital exports of €125½ billion – a new peak from a long-term perspective, even exceeding the particularly high figure of €100½ billion the previous year. This was partly due to the fact that German outward investment once again grew very strongly, while foreign investment in Germany was noticeably weaker than in the previous

10 See United Nations Conference on Trade and Development (2023). First estimates for the global direct investment flows of the past year are usually published by UNCTAD in January as part of the Investment Trends Monitor. The data for 2022 will be included in the World Investment Report 2023.
11 See German Chamber of Industry and Commerce (2022a, 2022b, 2022c, 2022d).
12 Direct investment is usually more long-term in nature, and adjustments are also more likely to take place over the longer term. Nevertheless, shorter-term arrangements between affiliated enterprises also affect cross-border direct investment flows. For example, this may be the case when an entity in one country provides certain cross-border financial services to entities in other countries. In recent years, this sort of cross-border relocation of business activity has been observed in the context of the United Kingdom's withdrawal from the European Union, which is also reflected time and again in direct investment flows to and from Germany.

year. It was probably to the advantage of German direct investment that Germany's direct capital links with Russia – despite its strong dependency in some sensitive areas – were already limited before the latter's invasion of Ukraine. At the end of 2021, for example, these direct investment stocks accounted for only around 1% of Germany's total direct investment stocks abroad. In addition, the large-scale withdrawal of some German enterprises from business with Russia was balanced out by the increased focus placed on future projects with other partner countries.

German enterprises again expanded both their equity investments …

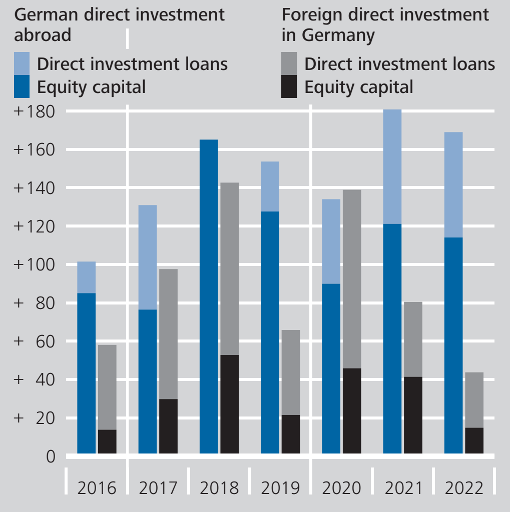
Enterprises domiciled in Germany invested €169 billion abroad in 2022, only slightly less than in the previous year (€181 billion). They once again strongly expanded their equity investments in foreign affiliates in particular (€114 billion). Reinvested profits accounted for more than half of these funds. This meant that these played a greater role last year than equity capital in the narrower sense, determined as the balance of new investment and liquidation in direct investment. Comparatively high cross-border transaction values were recorded for enterprises specialised in providing financial and insurance services.[13] In terms of volume, cross-border corporate takeovers by firms based in Germany also played a certain role last year – but to a much lesser extent than in previous years, in line with the subdued global trend.[14]

… and the volume of loans to affiliated enterprises

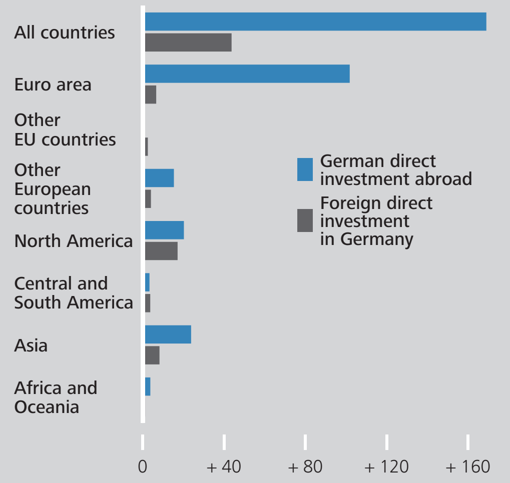
In 2022, enterprises domiciled in Germany also issued a considerable amount – €55 billion – to affiliated enterprises abroad via intra-group credit transactions, which was only slightly less than in the previous year (€59½ billion). German firms mainly granted short-term loans and trade credits to subsidiaries and affiliated enterprises abroad. Comparatively more favourable financing conditions are likely to have played a role here. By contrast, for subsidiaries domiciled in Germany, repayments of loans previously granted to their parent enterprises abroad dominated.

Direct investment

€ billion



By region (2022)



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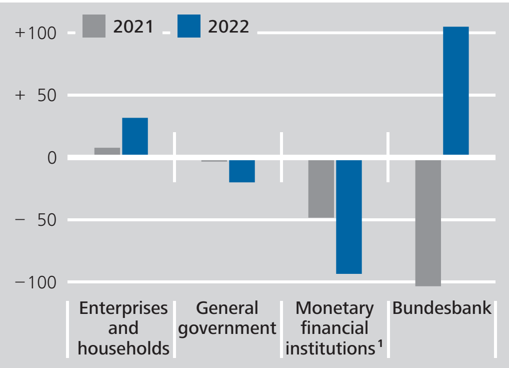
Europe and the United States key destinations for German direct investment

German enterprises engage in direct investment in many countries all over the globe. A large proportion (around 70%) of those investments in 2022 were in European countries. Around 60% of all German direct investment

13 The data refer only to decipherable net transfers used to augment equity capital.
14 Takeovers of firms domiciled abroad and previously under foreign ownership – and a German stake of at least 10% after the transaction – accounted for around €12 billion in 2022. This was noticeably less than in 2021, when the value of the takeovers was reported at around €53 billion (data based on Refinitiv Eikon). The time at which mergers and acquisitions are captured in the balance of payments can, however, differ from that recorded by Refinitiv, meaning that the reported figures are not directly comparable.

Other investment* broken down by sector

Balances in € billion



* Includes, in particular, loans and trade credits as well as currency and deposits; net capital exports: +. **1** Excluding the Bundesbank.

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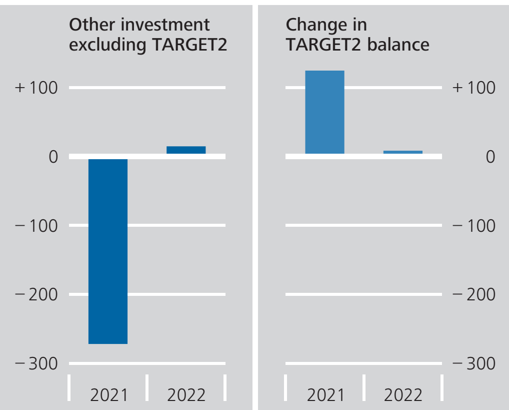
TARGET2 and other investment excluding TARGET2*

€ billion



* Net capital exports: +.

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was made in other euro area countries on balance. Particularly large amounts flowed into Luxembourg (€29½ billion) and the Netherlands (€19 billion), both of which have been significant holding company locations for years. German enterprises also made major net investments in France (€15 billion) and Spain (€13 billion). In the rest of Europe, the United Kingdom in particular attracted funds from affiliated enterprises (€10½ billion). Outside Europe, the United States (€19 billion) and China (€11½ billion) were targets of large-scale German direct investment. Sweden, by contrast, was the source of larger net return flows of funds to Germany in 2022 (€16 billion).

Inflows of funds from abroad via intra-group lending and equity investment

Foreign enterprises provided domestic enterprises with direct investment funds totalling €43½ billion in 2022. This was significantly less than in the previous year (€80½ billion). Foreign enterprises provided these funds mainly through intra-group lending (€29 billion), with loans making up more than two-thirds thereof. Loans granted by foreign subsidiaries to their German parent companies were the dominant factor here. As regards these reverse flows, last year parent enterprises in Germany redeemed long-term loans that had previously been granted to them by subsidiaries domiciled abroad. In return, they received significantly more short-term credit. On balance, foreign investors increased their equity investment in affiliated enterprises in Germany by €15 billion.

Extensive funding from the United States and Europe

Direct investment in Germany by firms from the United States (€17½ billion), Ireland (€13½ billion) and France (€11 billion) was particularly high in 2022. This was dominated by intra-group lending. By contrast, there were larger return flows of funds to Luxembourg (€25 billion).

Other investment

Net capital exports in other investment

Other investment, comprising loans and trade credits (where these do not constitute direct investment) as well as bank deposits and other assets, saw net capital exports of €23 billion in 2022. In 2021, other investment had given rise to net capital imports of €147½ billion. The balance of other investment often sees volatility – including changes in sign – but the reversal of trend in 2022 was particularly large. This was mainly due to net capital exports of €11½ billion in the banking system, which had recorded net capital imports of €152 billion in 2021. On balance, both claims and liabilities falling under “other investment” increased significantly less in 2022 than in the previous year.

Bundesbank accounts record net capital exports

Bundesbank accounts recorded net capital exports of €105 billion, following net capital imports of almost the same amount in 2021. All

Do bank-specific factors affect net cross-border transactions in TARGET2?*

At the onset of the global financial crisis, TARGET2 claims on the ECB began to accumulate on the Bundesbank's balance sheet. In the years that followed, periods characterised by growing balances alternated with phases of temporary declines. The Bundesbank regularly comments on the development of TARGET2 balances in the Eurosystem in its Monthly Reports as well as in its Annual Report.[1] These analyses are based on macroeconomic interrelationships and, as of 2015, on the evaluation of asset purchases made by the Eurosystem under the asset purchase programme (APP).

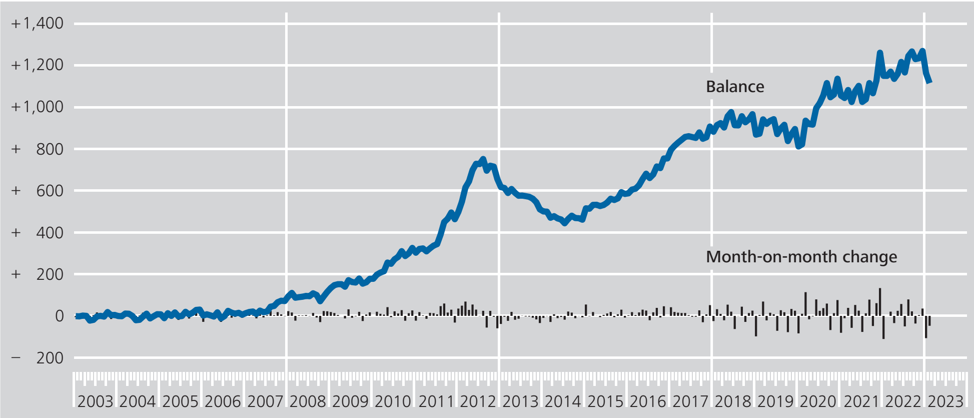
By contrast, the present analysis focuses on microeconomic factors, looking at the bilateral payments of individual banks in TARGET2. The analysis differentiates between customer payments, interbank payments, intragroup payments of banks connected to the system, transactions related to the settlement of ancillary systems, and transactions involving at least one (domestic or foreign) central bank. The study is based on transaction data from the German component of the Eurosystem's TARGET2 settlement system (TARGET2-Bundesbank) covering the period from January 2009 to December 2021. The micro data enable relationships to be identified not only at the country level but also for individual credit institutions. These micro data are linked to the yearly data on the balance sheets and profit and loss accounts of domestic and foreign banks provided by BankFocus (Bureau van Dijk). In the empirical analysis, these serve as explanatory variables for the TARGET2 transactions.

The chart below shows end-of-month values of the German TARGET2 balance from January 2003 to February 2023. TARGET2 claims increased sharply during three time periods: between the onset of the global financial market crisis in 2008 and the peak of the European sovereign debt crisis in mid-2012, upon the launch of the public sector purchase programme (PSPP) in early

* This analysis is based on Drott et al. (2022).
1 See Deutsche Bundesbank (2017, 2019, 2020).

Bundesbank's TARGET2 balance

€ billion



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2015, and upon the outbreak of the coronavirus pandemic and subsequent implementation of the pandemic emergency purchase programme (PEPP) in 2020.

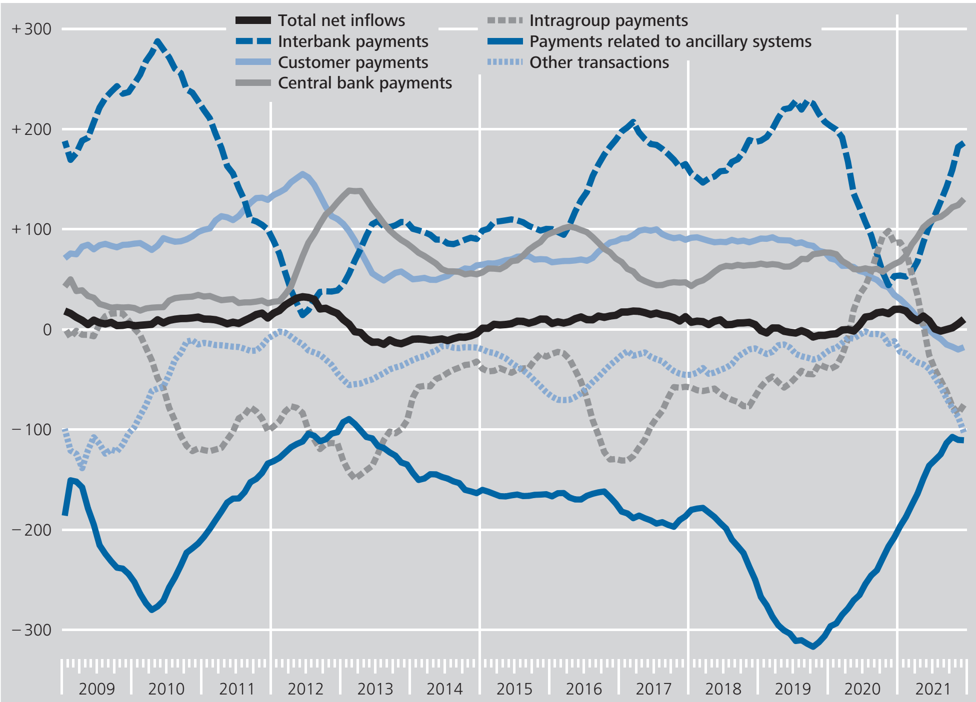
In the analysis presented here, we investigate the extent to which individual characteristics of the commercial banks participating in TARGET2 also influence the development of TARGET2 balances alongside the macroeconomic relationships that have already been examined. To study this aspect, we use transaction data from TARGET2-Bundesbank relating to individual bank accounts. The raw data comprise bilateral pairs: a sender and a recipient of euro payments. Either the sender or the recipient has to be a bank holding an account in TARGET2-Bundesbank. By contrast, the partner bank must be connected to TARGET2 abroad, as domestic transactions have no impact on Germany's TARGET2 balance. The analysis assigns a bank to a specific country according to the TARGET2 component in which the account is held.

The TARGET2 transaction data contain information about the type of payment. This is derived from the corresponding text field of the SWIFT message that is used.[2] The chart below shows the 12-month moving average of total net cross-border flows to German banks for the period from January 2009 to December 2021 and compares the overall development of net flows to German banks with the development of the following categories of transaction: customer payments, interbank payments, intragroup payments of connected banks, central bank payments, payments related to

2 SWIFT (Society for Worldwide Interbank Financial Telecommunication) is a cooperative institution established by banks that operates a network for the exchange of electronic messages, especially payment messages. A SWIFT payment message is merely a payment instruction; the payment is settled via a payment system or correspondent banking connection.

Total net cross-border inflows to German banks via TARGET2 by transaction category

€ billion, 12-month moving averages



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ancillary systems, and other transactions (rest). In general, the developments in each category vary strongly depending on the specific type of transaction. Customer payments, interbank payments and central bank payments in particular tend to increase Germany's overall TARGET2 claims.[3]

The positive balance (inflows minus outflows) of customer payments corresponds to Germany's current account surpluses during the observation period. However, individual customer payments are not necessarily linked to current account transactions, since they may also reflect transactions made on behalf of customers, such as securities purchases or other forms of investment. The positive net flows in interbank payments may reflect different financing conditions among commercial banks in the euro area. For example, German banks may generally find it relatively easy to obtain liquidity from private markets, whereas banks in other countries in some cases rely more heavily on open market operations with the central bank. This might favour payment flows towards Germany. Finally, central bank payments also continually increased Germany's TARGET2 balance.

Other types of transaction have a negative impact on German TARGET2 claims, namely intragroup payments and transactions related to the settlement of ancillary systems.[4] One possible interpretation of the negative intragroup balance is that German banks, which hold a large part of the Eurosystem's excess liquidity, provide loans to their foreign branches and subsidiaries. The negative balance of ancillary system transactions is large but difficult to interpret from an economic perspective, as information on the underlying transactions is not available.[5] This also applies to the residual "other transactions" category, as it predominantly contains transactions conducted more for technical reasons as a result of the way that TARGET2 is designed. Liquidity transfers to and from TARGET2-Securities (T2S) are one of the key factors here.[6]

The present analysis examines potential determinants among German and foreign banks that are able to explain the development of the German TARGET2 balance. The following equation is calculated using an ordinary least squares estimation and various fixed effects:

$$\begin{aligned} Net\ flows_{gft} = {} & \beta Factors_{gt-1} \\ & + \gamma Factors_{ft-1} \\ & + \pi_{gf} + \sigma_{ct} + \varepsilon_{gft}, \end{aligned}$$

where $Net\ flows_{gft}$ are the net flows, defined as inflows minus outflows, to Germany in TARGET2 to German bank g from foreign bank f in year t. These flows are normalised by dividing them by the total assets of the German bank in the previous year t–1. $Factors_{gt-1}$ and $Factors_{ft-1}$ describe the individual factors of the German bank g and foreign bank f, respectively, in the previous year t–1. They include the following variables: profits, claims on central

3 The only period in which customer payments were lower than the overall development was during the coronavirus pandemic. During this time, a negative global shock hit the world economy.
4 Payments related to ancillary systems include transactions that are initially settled via alternative private payment systems such as Euro1. The existence of independent ancillary systems leads to cross-border transactions that are based not solely on the discretion of TARGET2 participants. They arise, in part, for technical reasons given the legal and technical design of TARGET2.
5 In TARGET2, ancillary systems can use standardised access and settlement procedures and settle transactions directly in central bank money. In principle, payments can be settled on any account in a real-time gross settlement (RTGS) system. Ancillary systems include, for example, securities settlement, large-value and retail payment systems.
6 These liquidity transfers can serve a variety of purposes such as conducting transactions on the T2S securities platform.

banks,[7] customer deposits, bank deposits, equity, and liquidity, in each case for German and foreign banks, respectively. Analogously to the treatment of net flows, all German or foreign factors are normalised by dividing them by the total assets of the German or foreign bank in the previous year t–1. π_{gf} denotes German and foreign bank bilateral fixed effects, which absorb specific, time-invariant relationships between the institutions. Since German banks interact with multiple banks in a given country, the estimation also controls for any country–time-varying fixed effects σ_{ct}. These completely absorb macroeconomic country-specific effects on the German TARGET2 balance. ε_{gft} is the statistical error term.[8] The parameter vectors β and γ indicate whether and to what extent individual factors of German banks or foreign banks matter for the (relative) net flows to Germany in TARGET2. The estimates are carried out in the aggregate for all transaction categories as well as separately for the individual transaction categories.

The table on p. 39 presents the estimation results.[9] Column 1 shows the estimates for German net inflows in aggregate terms across all transaction categories. An increase in the liquidity ratio of German banks in the previous period of 1 percentage point leads to a statistically significant rise in inflows via TARGET2 of 0.14 percentage point. All other German and foreign determinants are insignificant. At first glance, this result appears to contradict the economic intuition that German banks with abundant liquidity have an incentive to invest these liquid assets abroad. However, this does not seem to be the key factor. Rather, such banks appear to be especially attractive for foreign counterparties such that the latter provide them with additional liquidity. Column 2 shows the estimates for German net inflows via customer payments. It appears that only German bank factors make a significant contribution: claims on central banks weakly reduce net flows to Germany. Customer deposits, bank deposits and the general liquidity ratio increase the central bank liquidity of German commercial banks. Customer payments on behalf of non-financial corporations mainly accrue to credit institutions that engage heavily in retail banking and the interbank market. As a result, these banks receive more liquidity in the customer payments category via TARGET2. In quantitative terms, however, the effects are rather minor. Column 3 presents the estimates for German net inflows via the interbank market. According to these results, only German banks' profits have a (weak) positive effect. All other coefficients are insignificant. Column 4 shows the estimates for German net inflows via intragroup payments. German bank factors do not play any role here. Higher equity of foreign banks increases net flows to Germany. Column 5 presents the estimates for German net inflows via central bank payments. They provide mixed results. German banks with higher claims on central banks receive lower additional net flows from abroad. These banks clearly do not need additional liquidity. Net flows from abroad are higher if both the German and the foreign bank have higher liquidity. Similar to other transaction categories, overall liquidity and claims on central banks work in the opposite direction. According to the esti-

7 The majority of each bank's claims are likely to be on the respective national central bank. However, this balance sheet item may also include claims on central banks from other countries.
8 The standard errors are clustered over two groups. The group of German banks and the group of foreign banks take into account that the data within each group are not independent. The analysis clusters all standard errors across these two groups.
9 The data set excludes all observations if one of the German or foreign factors exhibits a missing value. Some factors are not included in the estimates because the clustering across German and foreign banks does not produce standard errors in some cases.

The impact of bank factors on German TARGET2 net flows

	1 Total	2 Customers	3 Interbank	4 Intragroup	5 Central bank	6 Ancillary systems
Factors of German banks						
Profits_{gt-1}	4.046 (3.860)	− 0.045 (0.071)	0.584* (0.334)	− 1.174 (1.866)	0.081 (0.099)	237.4 (188.0)
$\text{Claims on central banks}_{gt-1}$	− 0.368 (0.236)	− 0.065* (0.034)	− 0.076 (0.119)	− 0.129 (0.226)	− 0.055** (0.022)	− 3.322 (3.171)
$\text{Customer deposits}_{gt-1}$	. .	0.054** (0.024)	0.090 (0.104)	. .	. .	− 5.807* (3.451)
$\text{Bank deposits}_{gt-1}$	0.032 (0.052)	0.048** (0.021)	0.112 (0.105)	− 0.461 (0.627)	. .	1.973 (4.115)
Equity_{gt-1}	0.422 (0.447)	0.029 (0.024)	0.274 (0.194)	− 1.537 (1.244)	0.037 (0.057)	− 18.77** (9.386)
Liquidity_{gt-1}	0.141** (0.068)	0.034** (0.015)	0.039 (0.057)	− 0.186 (0.303)	0.065** (0.033)	12.79 (10.99)
Factors of foreign banks						
Profits_{ft-1}	− 0.383 (0.286)	0.016 (0.037)	− 0.092 (0.185)	− 3.453 (2.136)	− 0.068* (0.041)	− 14.93 (24.48)
$\text{Claims on central banks}_{ft-1}$	0.063 (0.115)	− 0.001 (0.012)	0.019 (0.031)	0.692 (0.776)	− 0.017 (0.012)	− 3.156 (3.324)
$\text{Customer deposits}_{ft-1}$	. .	0.027 (0.024)	0.027 (0.045)	. .	. .	. .
$\text{Bank deposits}_{ft-1}$	0.012 (0.054)	− 0.009 (0.008)	− 0.002 (0.031)	0.287 (0.175)	. .	− 1.696 (2.518)
Equity_{ft-1}	0.001 (0.167)	− 0.086 (0.078)	0.067 (0.065)	3.573** (1.559)	0.011 (0.019)	− 14.98 (14.13)
Liquidity_{ft-1}	0.057 (0.066)	0.009 (0.006)	− 0.073 (0.055)	0.776 (0.593)	0.007*** (0.002)	− 0.533 (2.037)
Number of German banks	279	231	201	161	143	97
Number of foreign banks	740	636	605	552	397	173
Number of observations	246,411	226,732	108,986	23,705	6,694	2,851
Adjusted coefficient of determination R^2	0.585	0.442	0.421	0.020	0.239	0.594

*** Significance at the 1% level, ** significance at the 5% level, * significance at the 10% level. The dependent variable is the German TARGET2 net inflows relative to total assets. The period covers 2009 to 2021 at an annual frequency. German bank–foreign bank-specific and country–time-specific fixed effects are included but not reported. Robust standard errors (clustered by German bank and foreign bank) are shown in parentheses.

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mates, only existing central bank liquidity impedes additional financial inflows. In addition, higher profits at foreign banks are associated with lower net flows to Germany.[10] Column 6 presents the estimates for German net inflows via ancillary system transactions. Some of the coefficients are statistically significant. However, owing to the different types of ancillary systems and the lack of information on the underlying transactions, the results cannot be interpreted from an economic perspective.

The aim of this study is to examine whether individual characteristics of German and foreign banks can explain the German TARGET2 balance. Individual bank characteristics provide only limited additional explanatory power. On balance, it appears that macroeconomic effects and time-invariant relationships between German

10 It should be noted that only cross-border transactions between German and foreign institutions are examined. This excludes transactions between a central bank and a commercial bank in the same country, which means that the bulk of the Eurosystem's standard open market operations are not included in our regressions.

and foreign banks are responsible for most of the development of cross-border flows of central bank liquidity in TARGET2. At the microeconomic level, German bank characteristics play a more important role than characteristics of foreign banks. According to the estimates, a German bank with relatively large claims on central banks receives less additional central bank liquidity from abroad than a German bank with comparatively small central bank claims. However, higher overall liquidity of a German credit institution leads to stronger net inflows. Foreign bank characteristics are only relevant for central bank payments and intragroup payments.

In addition, descriptive analyses reveal differences between different transaction categories in TARGET2. While customer payments, interbank payments and central bank payments increased net capital flows to Germany overall, intragroup payments and transactions related to the settlement of ancillary systems led to net outflows.

else being equal, the Bundesbank's claims arising from currency and deposits rose by €14 billion. Of this amount, €8½ billion was attributable to the increase in the Bundesbank's TARGET2 balance compared with the previous year; in 2021, the increase was significantly higher, at €125 billion. By contrast, the Bundesbank's liabilities to non-residents arising from currency and deposits fell by €90½ billion in 2022. The bulk of the decline was driven by lower deposits from non-euro area residents compared with the end of December 2021. At that time, the Bundesbank's counterparties from non-euro area countries had temporarily increased their deposits particularly sharply at the end of the year.[15] The Bundesbank's liabilities arising from the allocation of euro banknotes within the Eurosystem went up by €9 billion last year.

Other MFIs recorded net capital imports

Transactions via the accounts of monetary financial institutions (MFIs) excluding the Bundesbank resulted in net capital imports in 2022. They amounted to €93½ billion, which meant that they were nearly twice as high as in 2021. This was primarily down to higher deposits by foreign institutions, almost half of which were group-affiliated banks. However, deposits by foreign enterprises and households also rose significantly. On the assets side, MFIs domiciled in Germany (excluding the Bundesbank) increased their deposits with foreign institutions. They also issued more loans to foreign non-banks. On balance, their claims on foreign enterprises and households increased more strongly than their claims on foreign banks.

Net capital exports via non-banks' transactions

The cross-border activities of non-banks led to net capital exports of €11½ billion in other investment, overtaking 2021 (€4½ billion). This was helped along by enterprises' and households' transactions producing net capital exports of €32 billion. They primarily issued short-

15 See Deutsche Bundesbank (2022b).

term loans to foreign counterparties and, in turn, repaid foreign loans, which were also predominantly short-term. Conversely, their cross-border claims arising from currency and deposits declined. In comparison, transactions by general government gave rise to net capital imports of €20 billion in 2022.

Reserve assets

Reserve assets increased on account of transactions

The Bundesbank's reserve assets increased by €4½ billion in 2022 on account of transactions. This was due to an increase in other reserve assets, special drawing rights and the reserve position in the International Monetary Fund.

Balance sheet value increase additionally due to market price effects

The international reserve holdings are also influenced by balance sheet adjustments which, in compliance with internationally agreed accounting standards, are not recognised in the balance of payments. The end-of-year revaluation of the reserve assets resulted in an increase of just over €10½ billion in 2022. This was due chiefly to an increase in gold prices compared to the previous year. On the reporting date of 31 December 2022, the value of Germany's reserve assets stood at €276½ billion.

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