

Geo-economic fragmentation: economic and financial stability implications

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Summary and policy implications

Since the global financial crisis in 2008, there has been a reversal of international economic integration.

With policies of strategic autonomy, countries aim to reduce risky foreign strategic and economic dependencies. This has contributed to a trend of geo-economic fragmentation. Increased fragmentation often translates into more trade restrictions between countries or world regions and into less multilateral agreements. This has consequences for economic growth, inflation and financial stability through various channels.

Increasing trade restrictions have a relatively large negative effect on the Dutch economy. The Netherlands, as a small open economy that is highly integrated in the global financial system, is particularly sensitive to geo-economic fragmentation. The Dutch economy is very open to trade, with a share of exports and imports (value of goods and services) up to 177% GDP (of which 95% GDP concerns trade with other EU countries). Consequently, the Dutch economy is relatively sensitive to disruptions in global value chains. These value chains have supported productivity and trade flows worldwide. Model simulations of a fragmentation scenario in which global value chains become disrupted, indicate that Dutch foreign trade and GDP would drop substantially. Inflation would rise, due to increasing trade and production costs related to a persistent decline of productivity in the tradeable sector. The adverse impact on the Dutch economy is more persistent than the impact on the euro area, because of the relative larger openness of the Dutch economy. Still, the European internal market mitigates these adverse effects by reducing the dependencies of the Dutch economy on other world regions.

Geo-economic fragmentation may also affect financial stability, in particular through its impact on financial institutions and by complicating decision making in multilateral fora. Via the real economic channel, geo-economic fragmentation may affect the financial sector through an increase in credit risk, a reduction of (international) diversification and a decline in capital buffers. In the fragmentation scenario that we analyse, the impact on the solvency of Dutch banks seems manageable, but a more severe or shock-wise scenario could have a significant impact. Through the financial channel, a tightening of financial conditions as a result of geo-economic fragmentation may increase vulnerabilities, as risk premia rise. Moreover, rising geopolitical tensions may lead to a more challenging cyber landscape, where state actors are playing an increasing role due to more hybrid warfare. It also can complicate decision making in multilateral fora on policy challenges that warrant a global response (e.g., climate change). Taken together, these adverse effects potentially undermine global financial stability, as they result in more frictions, while economic or financial crises usually require a swift and coordinated policy response.

Policymakers should carefully weigh the adverse economic and financial stability impact of restrictive measures against the benefits of reducing risky strategic and economic dependencies. Policies aimed at strategic autonomy will stimulate other countries to implement similar policies, causing geo-economic fragmentation to increase. At a minimum, industrial policies aimed at strategic autonomy should not undermine the internal market or the level playing field within the EU, and should ideally strengthen it. Having single EU-wide industrial policy measures, based on a clear framework to safeguard selected, vital activities, can mitigate these risks, though they can also result in a "subsidy race" with other trade blocs. Strengthening the EU internal market helps businesses to gain more opportunities to be internationally competitive, while reducing strategic dependencies of the Netherlands and other EU member states on other world regions.

1. Introduction

Since the global financial crisis in 2008, scepticism about globalisation has grown. Brexit, trade tensions between the US and China, the COVID pandemic, the Russian invasion of Ukraine and the recent tensions in the Middle East have put further pressure on globalisation. These forces oppose the long-term trend of increased cooperation and collaboration between countries, such as through multilateral trade agreements. Over time, this trend has led to a highly integrated economic and financial system worldwide in which countries have become increasingly dependent on each other.

Today, international cooperation is in retreat and countries and regions more often apply a policy of strategic autonomy. This aims at reducing risky strategic and economic dependencies on other countries in key sectors. The choice for strategic autonomy encourages other countries to do the same ("tit-for-tat"). It has led to geo-economic fragmentation, defined by the IMF as a policy-driven reversal of international integration, often influenced by strategic considerations (IMF, 2023a). Examples of these are the screening of Chinese investments in strategic relevant sectors by the US authorities and the European Chips Act that comprise measures to ensure the EU's security of supply in semiconductor technology.

The trend towards geo-economic fragmentation is evident in trade and industrial policies. For instance, the share of G20 imports affected by trade restrictions has risen rapidly over the last decade (IMF 2023b, see Figure 1). Industrial policies are also being used more widely, which often translates to direct subsidies and financial transfers to strategic sectors such as electronics, energy and aerospace (Juhász et al. 2023, see Figure 2).

Figure 1. New trade restrictions

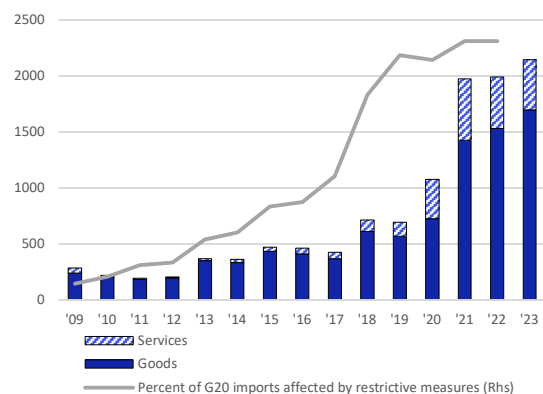


Figure 2. Industrial policy intervention

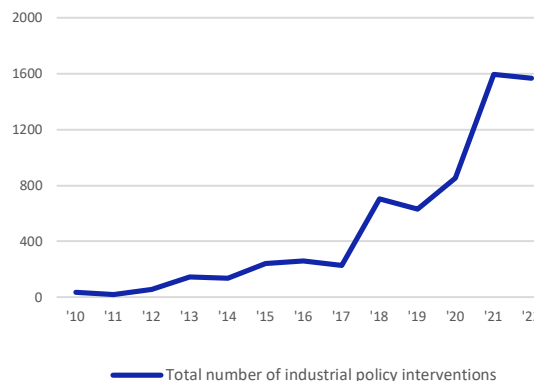


Figure 1: tariff and non-tariff measures. Source: Global Trade Alert, WTO and IMF (2023b). Figure 2: number of worldwide interventions. Source: Juhász et al. (2023). Note: these include tariff and non-tariff measures (like subsidies and export promoting measures) aimed at transforming the structure of economic activity in pursuit of some public goal.

Geo-economic fragmentation impacts the economy through trade linkages, foreign investment and access to commodities. Trade is affected since geo-economic shocks pose a risk to global value chains, which

are cross-border production and supply arrangements between manufacturers. Increasing restrictions on cross-border business incentivises companies to operate more locally (“reshoring”) to reduce their dependency on supplies in other countries. Via the investment channel, fragmentation has led to an increased concentration of investment flow in geopolitically affiliated countries (“friend-shoring”), particularly in strategic sectors. By straining the access to commodities in resource-rich countries, geo-economic fragmentation also threatens the energy transition, which depends on specific commodities and raw materials.

A small open economy like the Netherlands, which is highly integrated in the global financial system, is sensitive to fragmentation. A measure of trade openness of the Dutch economy is the sum of the value of goods and services exports and imports as a share of GDP, which is 177% (of which 95% GDP concerns trade with other EU countries). This includes re-exports that particularly depend on trade technology and global value chains (CPB, 2023).¹ The openness ratio for the euro area is 95% (ECB, 2023). Moreover, the Netherlands is a main investor and receiver of foreign investments (DNB, 2023a). Thereby, geo-economic fragmentation poses risks to the Dutch economy, inflation and financial stability and thus affects the core tasks of DNB as central bank and supervisor.

Fragmentation makes it harder to reach international compromises and agreements, including with regard to financial architecture and climate change. This could result into more frictions when future crises require a swift and concerted policy response, such as during the GFC in 2008 and the COVID-19 pandemic, thereby potentially undermining global financial stability. It can also complicate decision making on pending issues that warrant a global response, such as climate change. Moreover, a more fragmented global financial infrastructure also complicates policy making in global fora such as the IMF, the Basel Committee on Banking Supervision and the Financial Stability Board (FSB).

Fragmentation also has a potential impact on financial stability. Geopolitical tensions can be a harbinger for geo-economic fragmentation as tensions in the (bilateral) political relation between countries could form a basis for trade barriers, sanctions and protectionism. Financial stability can primarily be affected by the impact of geo-economic fragmentation on financial sector exposures, the functioning of international payment systems and on price stability, which are all indispensable for a stable financial system. Also financial market conditions can be impacted by geopolitical tensions and fragmentation. Moreover, geopolitical fragmentation leads to a more challenging cyber threat landscape, where state actors are playing an increasing role due to more hybrid (economic) warfare.

In this analysis we bring together insights from the literature and own model simulations to assess the impact of fragmentation on the Netherlands. Section 2 describes the main economic channels and provides simulation outcomes of a fragmentation scenario, based on a general equilibrium model. Section 3 analyses the financial stability channels and applies the scenario in an impact assessment for the Dutch banking sector. Section 4 reflects on industrial policy, as one of the drivers of geo-economic fragmentation, while it is also seen as a likely response to it.

¹ Source: CBS National Accounts.

2. Economic implications

2.1 How fragmentation impacts the real economy

From an economic viewpoint, the literature suggests that an increase in geo-economic fragmentation can be seen as a negative supply shock. Such a shock has a downward effect on economic growth and an upward effect on inflation through increasing trade costs. In this section, we analyse the main channels for these effects, in particular international trade and related global value chains, access to commodities and raw materials and the investment channel.

A recent IMF overview study (2023a) shows that geo-economic fragmentation in the form of increasing restrictions on goods trade affects productivity and welfare. It leads to higher import prices, market segmentation and hindered access to technology and knowledge. Cost estimates of trade restrictions vary widely and are particularly high in the case of barriers to technology exchange. The IMF estimates that trade fragmentation (resulting from geo-economic fragmentation) could reduce the global GDP volume by between 0.2% and 7% in the course of time, depending on the model and scenario used. Countries that rely more on international trade, such as the Netherlands (Box 1), are particularly susceptible to trade fragmentation. When barriers to technology exchange are additionally imposed, the costs in some emerging countries can be as high as 8-12% of GDP.

Disruptions in global value chains are an important cause of higher costs. These cross-border production and supply chain arrangements have improved the efficiency of manufacturing processes and hence lowered prices and costs in the past decades (IMF, 2023a). Disruptions in global value chains lead to a less efficient allocation of production factors and lower productivity. In a recent ECB working paper, Attinasi et al. (2023a) find that when trade in industrial components between trade blocs comes to a standstill, global trade may fall by tens of percent while the price level may rise by a few percentage points. We simulate the impact of a similar scenario on the Dutch economy in section 2.2.

A survey among multinational firms indicate that fragmenting global value chains present an upward risk to price stability (Attinasi et al., 2023b). This survey shows that changes in production location and cross-border sourcing of inputs, in response to geo-economic risks, have pushed up firms' average prices in the last five years. A large share of the firms was also expecting upward pressure on prices in the next five years for these reasons. Disruptions in commodity markets due to geo-economic fragmentation can further exert upward price pressures and make inflation more volatile (Alvarez et al., 2023).

Geo-economic fragmentation poses a risk to the energy transition as well. Access to commodities, raw materials and products for energy generation is essential for the energy transition (Aiyar et al., 2023). Figure 3 shows that there is a high concentration of suppliers of these goods to the Netherlands, with China being the main supplier, in particular of solar panels and lithium batteries.² The same holds for the supply of critical and strategic

² With an 87% global market share, China is also a dominant player in high-performance magnet production (Ma et al., 2021). Magnets might account only for a small monetary value, but are crucial in a wide range of energy transition goods such as wind turbines and electric cars.

raw materials, which mainly are obtained from non-EU countries (Figure 4).³ Many of these materials are in short supply, as demand is increasing much faster than production can cope with (Engelsman et al., 2023). Moreover, the high geographical concentration of certain raw materials needed for the energy transition can add to shifting geopolitical influence of countries.

Figure 3. Top 10 suppliers to NL of energy transition goods

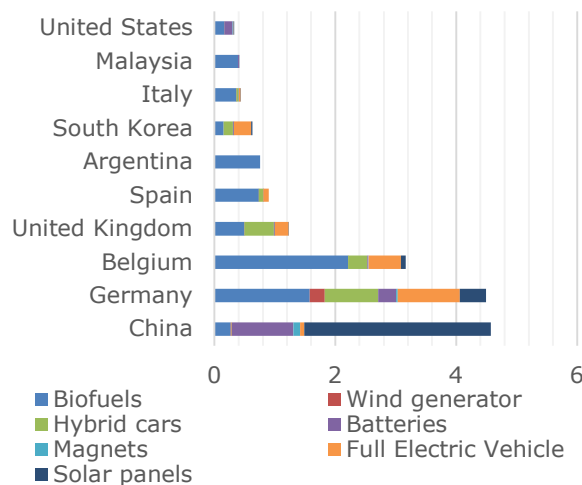


Figure 4. Main suppliers to NL of raw materials needed for the energy transition

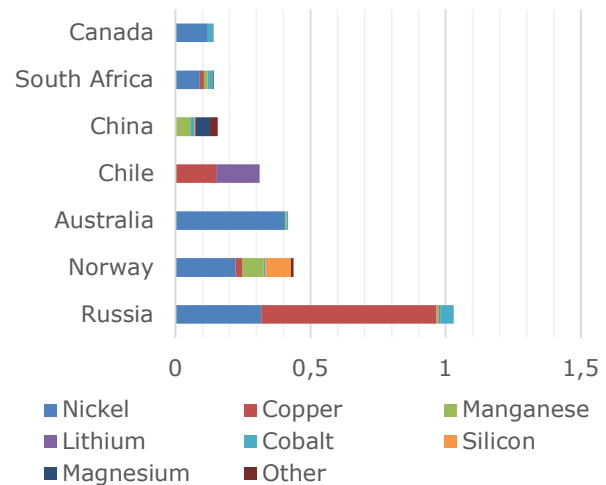


Figure 3: billion euros in 2022; excluding quasi-transit. Source: Nederland Handelsland 2023 (CBS). Figure 4: billion euros in 2022, excluding quasi-transit, Source: Nederland Handelsland 2023 (CBS). Note: imports of nickel and copper are not included in the sanction packages of the EU against Russia.

Fragmentation also affects the economy through foreign direct investment (FDI). In the April 2023 World Economic Outlook, the IMF (2023c) finds that FDI flows have recently been concentrated between geopolitically affiliated countries (“friend-shoring”), and especially in strategic sectors. Model simulations show that barriers between trade blocs to import investment goods can have a substantial impact on the global economy, with a GDP loss of around 2% in the long term. Emerging countries appear to be particularly vulnerable.

The impact of fragmentation during the pandemic diminished over time, reflecting the resilience of global value chains (IMF, 2022). Adaptation costs are particularly high in the short term, as it takes time to switch producers or adjust value chains (Boo et al., 2020). Resilience is greater when countries have diversified their imports more. However, the risks of cross-border dependencies may incentivise companies to operate more locally (“reshoring”), but it also increases the number of intermediaries in value chains, which reduces the direct dependency on specific providers (Qiu et al., 2023).

³ The relatively small share of raw materials coming from China does not show the full picture, since China owns several companies with large shares in the production of raw materials (amongst others: copper, nickel, cobalt and lithium) in Australia, Chile, the Democratic Republic of the Congo and Indonesia (IEA, 2021).

The economic impact over time depends on substitution effects. Over time, consumers and producers will react to trade barriers by switching away from more expensive foreign goods, causing a re-allocation of production across countries. This re-allocation effect depends on the flexibility of prices and on the substitutability (trade elasticity) between goods. If consumers and producers can substitute easily across products and prices are flexible, capital and labour will shift towards sectors facing higher demand, and wages will adjust accordingly. Such endogenous effects can mitigate the economic impact of trade fragmentation in the longer run. Research by DNB (Bolt et al., 2019) shows that the euro area – and the Netherlands in particular – may even benefit from trade diversion in the short run as a result of the trade war between China and the US, while overall global growth is declining. Two forces are at play here: first, the euro area benefits from cheaper imports from China as they get diverted from the US and second, it becomes more competitive in the US due higher (post tariff) prices of Chinese goods in the US and an appreciating dollar (as long as it stays outside the trade conflict itself).

Box 1. Strong integration of Dutch trade in the EU single market

A look at the data confirms that the main share of both Dutch exports and imports consists of trade with other EU member states⁴.

Goods

In 2022, total Dutch goods exports amounted to 849 billion euros (CBS Statline, 2023). Of these, more than 62.5% went to an EU member state (Figure 5). The share that went to Asia and America was approximately equal at 10.7% that year, while 2.7% went to Africa. About 13.2% of exports goes to other countries, mainly consisting of European countries that are not a member of the EU. More than half (55%) of Dutch goods exports are destined for the five largest export partners: Germany, Belgium, France, the UK and the US. The Netherlands imported around 743 billion euros worth of goods in 2022. At 45.0%, the share of these that come from an EU member state in 2022 was lower than that of exports, but is still higher than the share of imports that come from Asia (20.6%), America (15.4%), Africa (3.0%) or “other” (15.9%) countries. Just under half (49.4%) of Dutch imports come from the five largest import partners: Germany, Belgium, China, the US and the UK.

A large part of Dutch exports consists of re-exports. These are goods that the Netherlands imports and exports almost without processing, where the goods have been owned by the Netherlands. For the first time, the share of total Dutch exports in 2022 was higher than exports of Dutch production: 50.4% versus 49.6%. The vast majority of total re-exports of goods go to EU member states (80.4%).

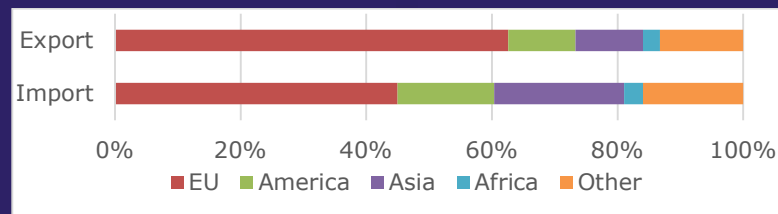
Services

The Netherlands exported nearly 282 billion euros in services in 2022 (CBS Statline, 2023). Of these, too, the largest share was destined for other EU member states (52.0%), followed by countries in the Americas and Asia (respectively 14.1% and 11.8%). Total Dutch imports of services in 2022 amounted to approximately 254 billion euros. The majority of these had a EU member state as country of origin (52.1%), but there is also a large import

⁴ These numbers differ from National Accounts data, as they are based on the “transfer of ownership” method in the Standard International Trade Classification (SITC). They also includes goods transactions that have not physically entered the Netherlands, but have been owned by a Dutch person or company.

share of American services (22.0%), to a large extent related to imports from the US of financial services and intellectual property. The share of services imported from Asia is substantially lower (8.4%).

Figure 5. Share of imported and exported goods by region



Source: CBS Statline 2023 data, based on the "transfer of ownership" method and including re-exports.

2.2 Model simulations

In this section we simulate the impact of trade fragmentation on the Dutch economy. The simulations are based on the EAGLE ("Euro Area and Global Economy") model, which is a dynamic general equilibrium model (Gomes, 2010). It distinguishes three global trade blocs, United States (US), Euro Area (EA) and Rest of the World (RoW). It also includes various sectors, like intermediate tradable and non-tradable, and final good sectors. Additionally, the model specifies a "home country" - in our case the Netherlands - distinguishing thereby between the home country and the rest of the Euro Area.

EAGLE models bilateral trade flows and their relative prices for each region, including exchange rates.

It captures the channels of the immediate impact and the dynamic effects of trade fragmentation over time, including the impact on the net foreign asset position of countries and the premium in the interest rate on foreign bond holdings. The model dynamics are driven by expectations of economic agents, though EAGLE does not include confidence effects. We simulate a benchmark scenario of trade fragmentation and a scenario variant with low price stickiness. The latter shows the influence of price flexibility on the outcomes that works via the substitution across goods and re-allocation of production across countries.

We simulate a scenario in which productivity in the intermediate tradeable sector drops strongly worldwide, reflecting a disruption in global value chains.

We assume that the intermediate tradable goods sector is hit by a very persistent negative productivity shock whose size is identical across world regions. This scenario is in line with Attinasi et al. (2023a). The size of shock is calibrated such that the decline in total factor productivity in each region leads to a drop in euro area imports of approximately 10% (in line with the fall in imports computed by Attinasi et al., 2023a). Our scenario differs from a classical trade shock that assumes an increase in trade tariffs.⁵ The shock that we assume triggers a rise in marginal costs in the intermediate tradeable sector, leading thereby to higher prices of tradable goods. It mimics a hypothetical extreme increase of trade costs due to

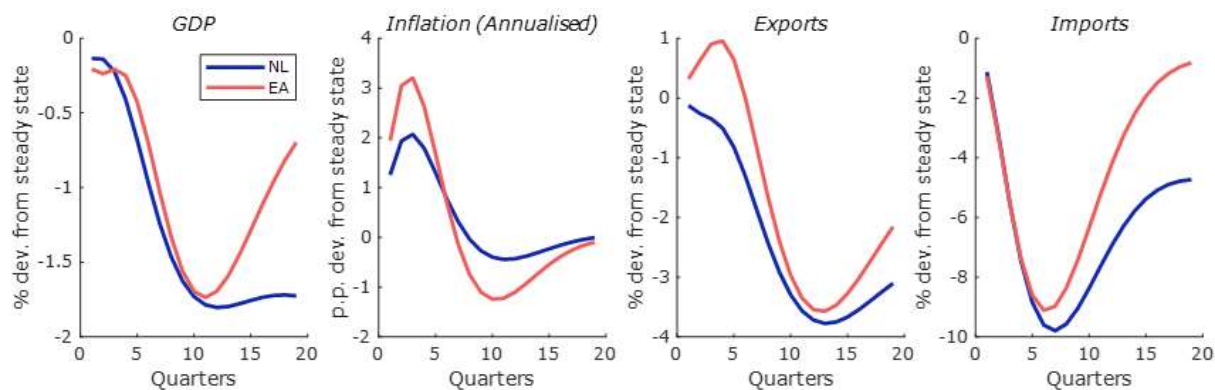
⁵ Our scenario does not assume an increase in trade tariffs because these have only been a minor fraction of the recently applied trade restrictions (see Juhász et al., 2023), while non-tariff restrictions better capture disruptions in global value chains. See Bolt et al. (2019) for an economic analysis of the effects of imposing trade tariffs between the US and China using the EAGLE model.

higher (non-tariff) trade barriers between the trade blocs. The competitiveness of intermediate tradables in particular depends on such costs and as a result the activity in this sector declines.⁶

The open Dutch economy is relatively sensitive to the scenario. The Netherlands has a relatively high overall exposure to extra EA trade (although it is a limited share of total Dutch exports, extra EA trade is high as a percentage of GDP). Through this channel, restrictions imposed by other trade blocs affect the productivity of the Dutch intermediate tradeable sector. Furthermore, we assume that Dutch trade with other EA countries is affected by the productivity shock as well. This reflects that global value chains within the EA may also be affected by higher transaction costs. Moreover, frictions in intra-EA trade may arise from country specific industrial policies in case a single EU-wide response to geo-economic fragmentation would be delayed or not be effective, allowing countries to act in their own interests, for instance by providing subsidies to domestic industries that are of strategic importance (see section 4). This would lead to allocative inefficiencies and reduced productivity. Thereby the scenario captures a downside risk.

In the benchmark scenario, Dutch foreign trade falls substantially. The peak effect on exports is almost 4 percent and the peak effect on imports almost 10 percent compared to the steady state (Figure 6). Imports fall by more because of consumption switching from imported to domestically produced goods and because the real effective exchange rate depreciation reduces the purchasing power of domestic households, whose consumption basket has a strong imported goods component (mind that re-imports and re-exports are not included in the EAGLE model, implying that only imports of goods that are consumed domestically are affected). Dutch exports are more affected than the EA average (up to 1.5 percentage point). The impact on Dutch trade with other EA countries is to some extent mitigated by the euro. The single currency implies that exchange rate fluctuations do not affect intra-EA trade. However, there are also indirect terms-of-trade effects, related to the impact of the scenario on inflation and countries' competitive positions.

Figure 6. Outcomes in benchmark scenario



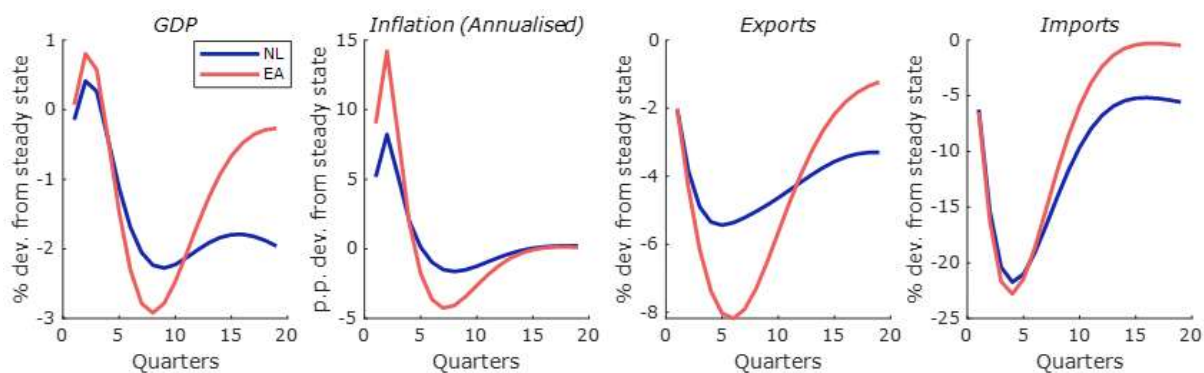
⁶ Using the EAGLE model as well, Clancy et al. (2023) analyse the macroeconomic effects of supply chain reorientation through localisation policies, such as “reshoring” and “friendshoring” production. Focusing on the euro area, they find that localisation policies are inflationary, imply transition costs and generally have a negative long-run effect on aggregate domestic output.

The scenario raises trading and production costs, causing higher inflation. The drop in productivity in the intermediate tradeable sector increases production and trading costs and thereby inflation. Initially, Dutch inflation increases less than EA inflation. This related to the relatively large impact of the shock on Dutch trade. The trade impact implies a downward demand effect on inflation, which is larger in the Netherlands than in the EA due to the openness of the Dutch economy. However, in the course of time Dutch inflation becomes higher than EA inflation, partly due to endogenous inflation persistence. It means that the real effective exchange rate depreciates to a lesser extent than the EA real effective exchange rate, by which the Netherlands become less competitive.⁷

The fall in trade causes sizeable output losses, which are persistent in the Netherlands. The model simulations show that GDP in the EA and the Netherlands drops by around 1.7 percent in the medium term. The Netherlands is particularly affected, since the real interest rate is initially higher than in the rest of the EA. This is due to the downward demand effect on inflation following the drop in trade, which is larger in the Netherlands than in the EA. The relatively high real interest rate puts additional downward pressures on Dutch output, private consumption and investment and explains why the Dutch economy does not recover in the course of time like the EA economy. The recovery of the Dutch economy is also held back by an adverse terms-of-trade effect. Since the real effective exchange rate of the Netherlands depreciates to a lesser extent than the EA exchange rate, EA consumers increasingly buy goods from elsewhere in the EA instead of Dutch goods. This hampers the recovery of Dutch exports.

With more flexible prices, the trough in trade and GDP is reached earlier and the recovery starts quicker. More flexible prices of tradable goods are associated with a larger initial impact, as shown by the steeper decline of trade and GDP in Figure 7 (compared to the benchmark scenario with less flexible prices in Figure 6). More flexible prices allow firms to pass-through their higher marginal costs to consumer prices faster. It also means that economic activity can more easily switch across goods and sectors, enhancing a re-allocation of capital and labour in line with the shift in demand. Those conditions mitigate the economic impact of the fragmentation scenario over time and make that the economy can revert to the steady state faster.

Figure 7. Outcomes in scenario with more flexible prices in global export sectors



⁷ The scenario causes a real effective depreciation of the euro in the short-run because EA prices increase less than prices of other world regions due to the stickiness of EA prices.

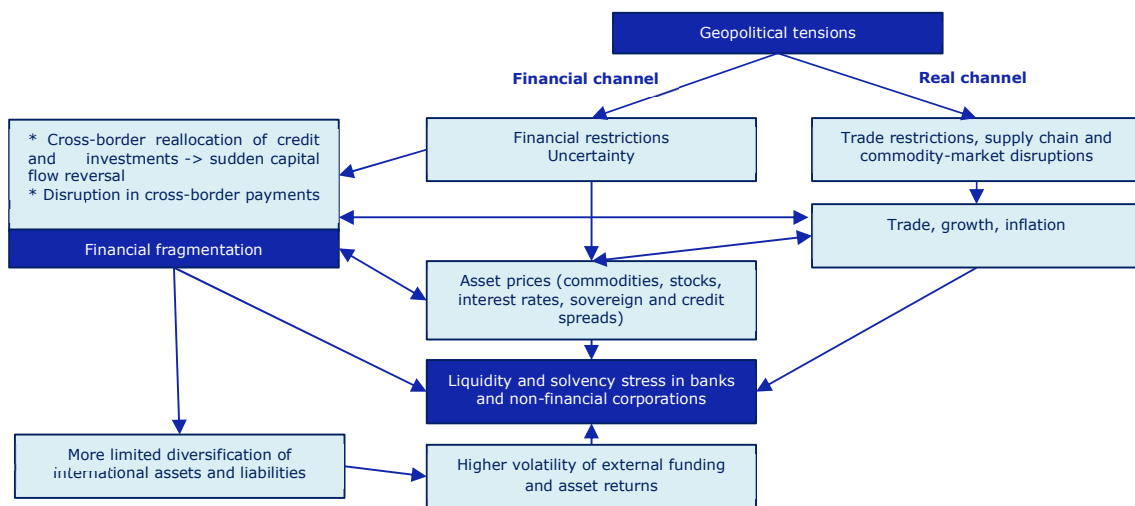
We note that the scenario outcomes are surrounded by considerable uncertainty; they are both model-dependent and scenario-dependent. The difference in the outcomes between the benchmark scenario and the variant with more flexible prices illustrates the sensitivity to the parametrization of the model. To that end, the main purpose of the scenario analysis is not a precise quantification of the economic effects of geo-economic fragmentation, but rather the illustration of a structural analysis of the channels through which fragmentation may affect the economy.

3. Financial stability

3.1 How geo-economic fragmentation impacts financial stability

Geo-economic fragmentation has the potential to affect financial stability by its impact on financial institutions, international payment systems and price stability. These elements are all indispensable for a stable financial system. The IMF (2023d) proposes a conceptual framework of how geopolitical tensions could influence financial stability. Broadly speaking, it could impact financial stability through, a real channel, a financial channel and the disruptions in payment infrastructure.

Figure 8. IMF's conceptual framework for financial stability implications of geopolitical tensions



Source: IMF (2023d), Geopolitics and Financial Fragmentation: Implications for Macro-Financial Stability, IMF Global Financial Stability Report, April 2023.

Via the real economic channel, the impact of geo-economic fragmentation is reflected in the financial sector through the increase in credit risk and the negative impact on capital buffers. For example, disruptions in value chains and their impact on economic growth and inflation can lead to an increase in banks' market and credit losses. Through the real channel, geo-economic fragmentation can also lead to less (international) diversification due to trade and capital restrictions, including diversification opportunities for financial institutions. More limited diversification can contribute to higher macroeconomic volatility by amplifying domestic and external economic shocks to the economy. Catalán et al. (2023) estimate that 20% to 50% of international diversification benefits would be lost if G7 countries stopped transacting with countries that have opposing geopolitical interests.

Through the financial channel, a tightening of financial conditions as a result of geo-economic fragmentation may increase vulnerabilities in the banking sector as risk premia rise. Catalán et al. (2023)

find a decline in bilateral investments, i.e. decline in cross-border portfolio flows, can increase banks debt rollover and funding risks. Moreover, a sudden reallocation of capital can also cause liquidity and solvency stress, especially in emerging economies (Reinhart and Rogoff, 2009; Ghosh, 2017). Phan et al. (2022) find that in times of high geopolitical risk, measures of banking sector stability – such as the return on assets and non-performing loan ratios – are deteriorating. International payment systems could also be affected by an increase in geopolitical risk. Sanctions typically have a restrictive effect on a country's ability to make international payments. Geo-economic fragmentation can also impact broader financial conditions. For example, an increase in geopolitical risk can have a negative impact on market sentiment (Phan et al., 2022), lead to an increase in uncertainty in financial markets and have a negative impact on (equity) valuations, oil prices and short-term interest rates, while risk premia increase (see Box 2).

Another channel via which financial stability may be affected is by increasing cyber threats. Geopolitical fragmentation is related to a more challenging cyber landscape. Econometric evidence shows that, rather than being random and idiosyncratic, systematic patterns in cyberattacks can be linked to both economic and political cycles and increasing geopolitical tensions are also associated with an increase in cyber risk (Fell et al., 2022). Cyberattacks can also affect financial stability through the potential impact on critical infrastructure in the financial system. Scenario analysis shows that cyber incidents can have a systemic impact in extreme scenarios through either the operational or confidence channel. As a result, payment transactions may come to a standstill, trade on financial markets may be hampered or the interbank market may be affected (DNB, 2022).

Box 2. Implications of geopolitical tensions for financial conditions

Geopolitical tensions can be a harbinger for geo-economic fragmentation as tensions in the (bilateral) political relation between countries could form a basis for trade barriers, sanctions and protectionism.

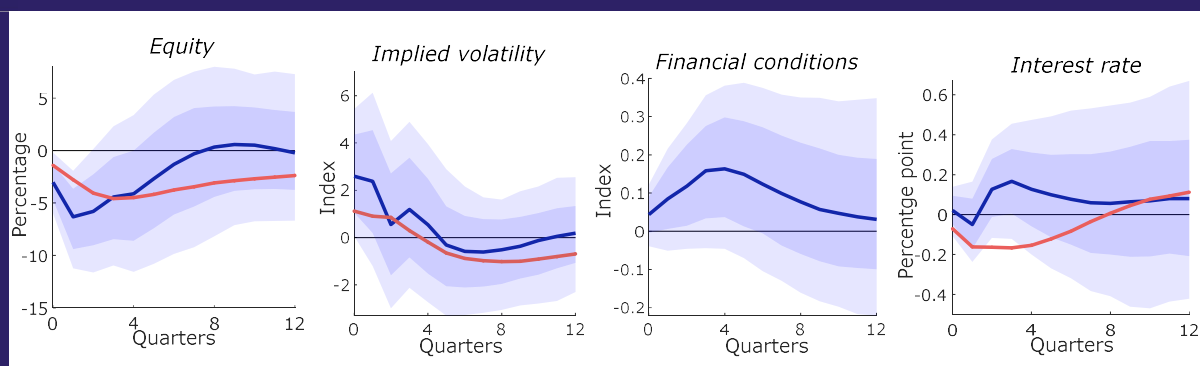
Caldara et.al. (2022) introduce a framework that allows policymakers to assess the impact of geopolitical risk shocks on financial variables.⁸ In this section we operationalise this model for the Netherlands, and assess the financial implications of an increase in geopolitical tensions. The reduced-form VAR model is a time-series model that includes financial variables such as the equity market volatility, real equity and oil prices, 2-year interest rates and a financial condition index, but also controls for the effect of real economic variables such as real GDP, real business investments, hours worked in the economy and economic policy uncertainty. We use exogenous shocks – as measured by the geopolitical risk index – to construct the impulse responses in Figure 9.

Risk premia and financial uncertainty in the Netherlands increase after a geopolitical shock. Figure 9 shows the results of the analysis when conducted for the Netherlands. Starting with the impact on the Dutch equity market (AEX-Index), a significant, but short-lived reaction is observed after a geopolitical risk shock, for both equity prices and market uncertainty. The first panel in Figure 9 shows that implied volatility – a measure of stock market uncertainty – increases significantly after a shock in global geopolitical tensions, with a peak in uncertainty between the first and second quarter after the shock. Moreover, the observed impact is larger for

⁸ The Geopolitical Risk Index is a measure of adverse geopolitical events and associated risks based on a tally of newspaper articles covering geopolitical tensions. These events are not a pure reflection of geo-economic fragmentation. The measure includes news coverage of economic restrictions such as sanctions and embargos, but also coverage on war threats and terrorist attacks.

equities in the Netherlands compared to those in the US.⁹ Given equity ownership in the Netherlands is relatively limited, a price decline of the AEX-index does not have direct financial stability implications. However, it does show that overall risk premia and financial uncertainty increase after a geopolitical shock which can imply higher financing costs for Dutch financial and non-financial corporations and households.

Figure 9. The impact of geopolitical risk shocks on financial variables for the Netherlands (blue) and the United States (red)



Source: Bloomberg, Refinitiv, Goldman Sachs Investment Research and DNB calculations. Note: The blue (red) line depicts the median impulse response for the Netherlands (United States) of the specified financial variable to a two standard deviation increase in the Geopolitical Risk Index. The dark and light shaded bands represent the 68 percent and 90 percent pointwise credible sets, respectively. Equity reflects the impact on the real AEX price index, implied volatility is the at-the-money option on the AEX index with 3-month maturity, financial conditions depicts the impulse response of the Goldman Sachs Financial Conditions index for the Netherlands, an increase in the index translates to a tightening of financial conditions. The interest rate is the yield on the sovereign bond with a 2-year maturity. Model for the Netherlands is estimated between Q1 2000 and Q2 2023, and for the US between Q1 1985 and Q4 2019. The VAR is estimated using Bayesian techniques by imposing an inverse-Wishart prior to the reduced-form VAR parameters. Financial conditions for the US are not shown in the chart due to incompatible data, i.e. differences in the construction of the GS financial conditions index and the Chicago Fed US FCI. For estimation and further details see Caldara, Dario, and Matteo Iacoviello. 2022. "Measuring Geopolitical Risk." *American Economic Review*, 112 (4): 1194-1225.

Overall financial conditions in the Netherlands tighten after a geopolitical risk shock. To assess the impact of a geopolitical risk shock on a wide set of financial condition indicators we use the Goldman Sachs Financial conditions index. The index captures interest rates, risk premia on sovereign and corporate debt and the exchange rate and is designed to measure the impact of financial conditions on future GDP growth (Hatzius and Stehn, 2018). The impulse response shows an average tightening of financial conditions peaking in the 4th quarter after a geopolitical risk shock, this would be broadly consistent with the peak impact on GDP around 8 months after the geopolitical shock hits, as changes in financial conditions take time to work their way through the economy. At the same time, the cumulative effect of a geopolitical risk shock on financial conditions is only marginal at the end of the projection horizon. Although interest rates on average increase after a geopolitical risk shock, potentially as a result of rising inflation levels, we do not find a significant impact on the two-year interest rate on Dutch government bonds.

⁹ This could reflect compositional differences between the S&P 500 index and de AEX index, amongst other factors such as a larger exposure of AEX firms to foreign sources of income.

3.2 Fragmentation and the Dutch banking sector

A possible channel via which financial stability could be affected by geo-economic fragmentation is by its consequences for the banking sector. To analyse the possible impact of geo-economic fragmentation on the Dutch banking sector, we employ our top-down stress test model to perform an impact assessment of how the macro-economic consequences of fragmentation could affect the capitalisation of banks.

Using the macro-econometric model DELFI for the Dutch economy, we develop a macro-economic scenario that is consistent with the results from EAGLE. DELFI enables us to estimate the impact of economic fragmentation on macroeconomic variables that are not included in EAGLE, such as unemployment and house prices. We use the June 2023 projections from the [Economic Developments and Outlook](#) (DNB, 2023b) as the baseline scenario, which we complement with the macro-economic shocks as estimated by EAGLE to arrive at an adverse scenario for a three-year period. In this scenario, due to the drop in productivity, inflation is substantially higher in the first two years than in the baseline scenario¹⁰, which leads to higher interest rates.¹¹ Higher interest rates suppress equity and real estate prices.¹² In line with the EAGLE results, GDP growth in the first three years is cumulatively 2.4% lower than in the baseline, whereas unemployment increases from 3.6% in the first year to 5.0% at the end of the scenario.

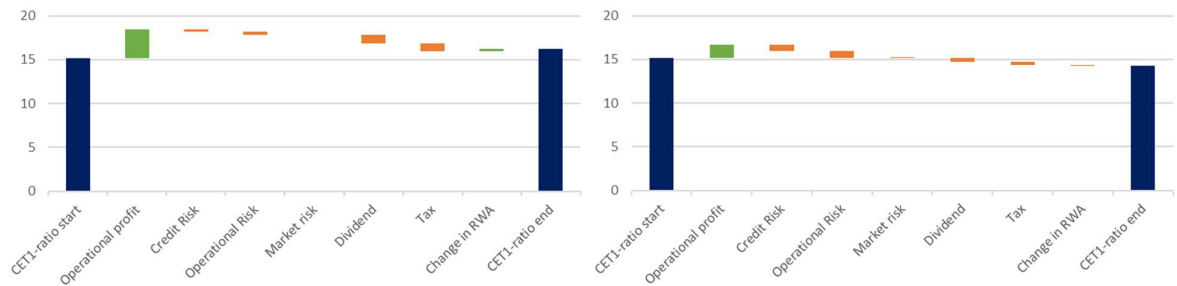
In the fragmentation scenario, the average CET1-ratio of the four major Dutch banks at end-2025 is almost 2 percentage points lower than in the baseline. Whereas the capital ratio of the banks is expected to increase by more than 1 percentage point in the baseline, it will drop by almost 1 percentage point in the fragmentation scenario (see Figure 10). Compared to the starting point, total CET1 capital falls by almost EUR 6 billion and the CET1-ratio drops from 15.2% to 14.3% at the end of the fragmentation scenario. An important driver of the results in the fragmentation scenario, is that capital ratios of banks continue to benefit from positive net profits (+1.4%), although profits are more than 50% lower than in the baseline. This is mainly driven by lower net interest income (NII). The increase in interest rates initially leads primarily to higher financing costs. Only towards the end of the scenario does profitability recover, as banks' interest income on new loans increases gradually. The overall impact on NII crucially depends on the impact of higher market interest rates on bank funding costs. We assume that funding costs follow market interest rates, except for corporate and retail deposits. For these funding sources, 75% of the increase in market rates is passed on to deposit rates. Due to lower GDP growth, higher unemployment and higher interest expenses, defaults among businesses and households increase. In combination with lower real estate prices, this leads to higher credit losses. But even though credit losses in the fragmentation scenario are almost three times higher than in the baseline, they remain relatively low and lead to a capital depletion of 0.6%. The higher credit risk leads to an increase in risk-weighted assets, which has a negative impact on the capital ratio (-0.1%). After taking into account losses due to operational risks, taxes and dividend payments, the CET1 ratio is 14.3% at the end of the scenario horizon.

¹⁰ By 1.4 and 1.7 percentage points, respectively.

¹¹ Short term rates peak at 5.9% in the second year, and 10-year interest rates rise to 4% in 2023, 125 bps higher than in the baseline scenario.

¹² Over the scenario horizon, Dutch house prices drop by almost 12%, 3% more than in the baseline.

Figure 10. Banks' CET1-ratio in the baseline (left) and the fragmentation scenario (right)



Source: own calculations DNB. Note: in percentages of risk-weighted assets (RWA).

The impact of the scenario on the capitalisation of banks seems manageable, but (a combination of) more severe and abrupt scenarios could have a greater impact. The limited impact of the fragmentation scenario suggests that the impact of such a scenario on Dutch banks is manageable. Even though the macro-economic impact of global economic fragmentation is sizeable, the fragmentation scenario is relatively mild compared to "severe but plausible" scenarios that are typically used in stress testing. However, the purpose of the current analysis is not to analyse banks' resilience to a generic "severe but plausible" economic shock, but rather the effect of a (more gradual) fragmentation scenario on banks' solvency. At the same time, it must be emphasised that a more shock-wise occurrence of geopolitical fragmentation, or sudden materialisations of geopolitical risk, could lead to a significantly greater impact via both the real and financial channels discussed in section 3.1. Moreover, the results in Section 2 show that fragmentation can have persistent effects in certain circumstances, which could make the impact on banks more severe and more protracted.

4. Industrial policy

4.1 Trade strategies

Geo-economic fragmentation poses risks to the functioning of the open market economy. It leads to increasing frictions for economic activity due to regulation and political intervention. This refers to industrial policies, defined by Juhász et al. (2023) as government policies that target the transformation of the structure of economic activity in pursuit of some public goal. These policies are implemented through (in)direct subsidies, outright financial support, or lower regulatory standards.

Today, strategically important companies, sectors and technologies are being targeted by industrial policies. Thereby, governments aim at strategic autonomy in areas that are regarded as critical, notably from a national or economic security point of view. Examples of these are semiconductors and critical raw materials which are the centerpiece of industrial policies. In such critical sectors, incoming and outgoing foreign investments are sometimes screened to protect strategic and security interests.¹³

As a small open economy the Netherlands is sensitive to industrial policies of other countries. The Dutch economy is highly dependent on international trade and foreign investments. To some extent the Netherlands is protected against frictions between global trade blocs due to its strong integration into the EU single market (see Box 1). In a previous study on changing international interdependencies, DNB (2021) pointed out that regional trade agreements can act as an “insurance” against global protectionism.

However, geo-political tensions cause countries to shy away from cooperative behavior due to a lack of trust. This creates the so-called prisoner’s dilemma, which is often used to explain strategic trade policies of countries (see e.g. Krapohl et al. 2021).¹⁴ The central assumption in this dilemma is that countries choose strategies which best serve their own interest. However, if countries apply this - for instance by trade restrictions - they can end up in an inferior equilibrium with lower benefits compared to a situation in which they are cooperative.

4.2 Importance of EU single market

The prisoner’s dilemma in foreign trade relations can be addressed by trade rules. Such rules bind countries to trade strategies that are mutually beneficial. Trade rules can be part of multilateral trade arrangements, such as the World Trade Organization (WTO) and the EU single market. The EU also demonstrates that countries can take a leadership position to maintain international cooperation, also when other world regions pursue their own interests by industrial policy.

¹³ For instance, in August 2023, the Biden Administration issued a so-called “[Executive Order](#)” that is intended to address the potential national security threats posed by outgoing investments involving national security technologies and products from the U.S. to certain countries of concern - China in particular. The EU and the UK are contemplating similar regimes.

¹⁴ Note that the simple prisoner’s dilemma approach used here to describe trade policies is fully static, while trade relations are naturally more dynamic in nature. Allowing for “repeated game” dynamics would introduce multiple Nash equilibria. Moreover, the prisoner’s dilemma applied in other studies to maximize trade benefits usually does not include strategic security interests which may impede cooperation.

A well-functioning EU market reduces the dependence of the Netherlands on other world regions. The EU internal market can support companies in being internationally competitive and innovative in critical sectors and technologies, Terzi et al. (2022) shows that a deep internal market remains the EU's best instrument to promote an innovative and resilient economic and financial system, as it fosters technological and regulatory standards to spread globally, to the benefit of European firms' competitiveness. Model simulations by Baba et al. (2023) show that deepening EU integration, by reducing remaining barriers within the internal market, would generate large welfare gains for the EU.

Completing the Capital Market Union is a key condition for a well-functioning internal market. Deep and liquid capital markets make available finance for innovative firms and reduces the dependence on finance from other world regions like the US, as well as on government support. It provides firms - start-ups in particular - more opportunities to scale up their activities and become competitive on the world market. At a minimum, industrial policy considerations should not undermine the internal market or distort the level playing field within the EU and should ideally strengthen it.

Policymakers should carefully weigh the adverse economic and financial stability impact of restrictive measures against the benefits of reducing risky strategic and economic dependencies. Policies aimed at strategic autonomy will stimulate other countries to implement similar policies. Thereby industrial policies may cause further fragmentation in trade and foreign investment, even within the EU. This can come at high cost, as the scenario analysis in section 2.2 indicates.

By "open strategic autonomy" the EU tries to balance its autonomy in strategic areas with maintaining an open, multilateral attitude (ECB, 2023). Single-wide industrial policy supports strategic areas, in particular health, defence industry, space, digital, energy and critical raw materials. A single EU-wide industrial policy has pros and cons. On the one hand, such a policy supports critical sectors without distorting the internal market. On the other hand, it bears the risk of exacerbating a subsidy race with other trade blocs, with potentially negative effects also for Europe (Rusch et al., 2023).

Single EU-wide industrial policy measures, based on a clear framework to safeguard selected, vital activities, can mitigate these risks. Such measures should aim to ensure that external shocks will not compromise the EU's economic potential and financial stability, for instance by providing energy supply security. Baba et al. (2023) associate such a strategy with "targeted de-risking". Having a clear EU framework to safeguard selected, vital activities helps to strike the balance between openness and autonomy and to avoid different interpretations and individual measures by EU members states (which could for instance lead to government interventions supporting energy intensive energy sectors to cushion the impact of high energy prices).

The first best approach from an economic perspective is to strengthen the open, multilateral rules-based system. Such a system has proven to be an engine of welfare in the last decades. The further integration of the EU and EMU, by strengthening and deepening the internal trade and capital market, will contribute to this. The ECB and national central banks support this process, by safeguarding price stability and financial stability in the EMU.

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