Study by IfW Kiel, Bruegel and DIW Berlin

Instruments of a Strategic Foreign Economic Policy

Study for the German Federal Foreign Office

Katrin Kamin, Kerstin Bernoth, Jacqueline Dombrowski, Gabriel Felbermayr, Marcel Fratzscher, Mia Hoffmann, Sebastian Horn, Karsten Neuhoff, Niclas Frederic Poitiers, Malte Rieth, Alexander Sandkamp, Pauline Weil, Guntram Wolff, Georg Zachmann

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Lead author:
Dr. Katrin Kamin (IfW Kiel)

Contributing authors:
Dr. Kerstin Bernoth (DIW)
Prof. Dr. Gabriel Felbermayr (IfW Kiel)
Prof. Dr. Marcel Fratzscher (DIW)
Mia Hoffmann (Bruegel)
Dr. Niclas Frederic Poitiers (Bruegel)
Dr. Malte Rieth (DIW)
Pauline Weil (Bruegel)
Dr. Guntram Wolff (Bruegel)
Dr. Georg Zachmann (Bruegel)

Assisting authors:
Jacqueline Dombrowski (IfW Kiel)
Dr. Sebastian Horn (IfW Kiel)
Prof. Dr. Karsten Neuhoff (DIW)
Prof. Dr. Alexander Sandkamp (IfW Kiel)

A study by

Kiel Institute for the World Economy (IfW)

German Institute for Economic Research (DIW Berlin)

Bruegel

The Kiel Institute for the World Economy, DIW Berlin and Bruegel thank the German Federal Foreign Office for funding this study. The views expressed are those of the authors.

Contact:

Dr. Katrin Kamin
Institute for the World Economy (IfW Kiel)
Tel: 0431 8814-283
E-Mail: katrin.kamin@ifw-kiel.de

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1 Introduction - Germany's Future Foreign Economic Policy

by Gabriel Felbermayr, Marcel Fratzscher, Katrin Kamin & Guntram Wolff

The rise of China as an important political and economic power challenges established foreign policy practices in Germany and Europe, while the reduced appetite of the United States (US) to underwrite the international rules-based system further complicates the situation. In the past, policy makers tended to pursue international security objectives and international economic goals separately and with distinct instruments. This orthodoxy is no longer tenable. International economic tools and arrangements – e.g. the conditions of access to domestic markets and technologies, the use of payment systems, the negotiation of debt contracts – are increasingly used to achieve various foreign policy goals. These range from the sanctioning of violations of international law or universal human rights to the protection of global commons such as the climate or biodiversity, but are simultaneously used to promote own political interests, sometimes to the detriment of partner countries. This "weaponized interdependence" makes it necessary for Germany and the European Union (EU) to assess their vulnerabilities and to design their own defensive and offensive strategies.

The difficulty, of course, lies in numerous trade-offs that arise when a single instrument – say, market access – is used to achieve several objectives, e.g., economic and non-economic ones, at the same time. The situation is made worse by the complex European governance structure, in which some policies such as single market and trade policies are centralised under EU competence while security policies remain largely national. The situation is further complicated by the fact that the various policy goals are often interdependent and even complementary to each other in the long term. For example, long-term growth, the stability of the climate and the health of the global population are inseparably intertwined. Hence, ignoring environmental concerns in trade policy can undermine the conventional goal of fostering growth and prosperity.

This study describes the objectives, instruments and trade-offs, and how to deal with them in the context of German and European policy making.

Sometimes countries have political objectives that put them in conflict with other countries, and they use economic policy tools to promote them. Such conflicts are inherently difficult to sort out. Very often, however, across and within countries, the goals are consensual at the meta-level (e.g. universal human rights). However, there is dissent on how to achieve those goals (e.g., whether a specific law on supply chain diligence achieves those goals). The interdependence between the multitude of goals makes the design of instruments and thus the achievement of the goals particularly challenging: On the one hand, a departure from silo thinking is necessary ("politicization of economics and economization of politics"). Trade policy, for example, cannot be conducted without regard to its effects on climate or human rights. On the other hand, the mixing of discussion spheres and disciplines risks creating debates that are hardly grounded in evidence and where the debate on evidence is mixed with the

debate on goals. For example it is often argued that changes in trade policy should be pursued to achieve changes in political regimes while the evidence of the effectiveness of such policy shifts is scarce.

Against the backdrop of the increasing great power rivalry between the US and China and the shift from a rules-based towards a more power-based international order, both the US and China use economic pressure to assert their geopolitical interests against other countries, including Germany and the EU. In a geopolitical environment where a multitude of power poles pursue different interests and the effectiveness of international and multinational rules decreases, the question remains how Germany and the EU position themselves to address mounting international pressure at the economic level.

One approach often suggested in the US is to reduce economic interdependence in order to become less vulnerable. We see this discussion also taking place in Europe and Germany in the context of the pandemic and the question whether supply chains should be changed and become more national or European. This strategy of "decoupling", prominent in the years of the Trump Administration and still pursued by hardliners, does not appear to be the central thrust of the current US administration. On the contrary, the approach seems to be more to define conditions and rules for peaceful coexistence (Campbell and Sullivan, 2019). This approach is similar to the approach of the EU, which in 2019 characterized its strategy toward China as one of simultaneous cooperation, competition, and systemic rivalry.[1]

This discussion is of outstanding importance for the Federal Republic of Germany due to the great openness of its economy. About 50% of German trade in goods occurs with countries outside of the EU, including 10% with China, 7% with the US and 4% with the United Kingdom (UK). The openness of the German economy is one central foundation of German prosperity. In recent years, the EU has used trade agreements to safeguard and expand the interests and opportunities of German and European companies in foreign markets. At the same time, of course, openness also means vulnerability, both regarding opportunistic behavior of outside powers and regarding the well-being of special socio-economic groups in the EU.

The central thesis of this report is that, together with partners inside and outside of the EU, Germany must take an active role in shaping international economic and political relations and that a strategy of decoupling or dismantling international linkages is not to be recommended. We argue that Germany and the EU rightly promote multilateralism as a central pillar of that strategy and should continue to do so. In the area of trade, this is most obvious: The international division of labour and the integration of value chains have the potential to generate static and dynamic welfare gains for all participating countries, albeit possibly at different rates. But such integration has to happen in a framework of rules that set standards and prevent a harmful race to the bottom. The World Trade

[1] See https://bit.ly/2UcPmvQ.

Organisation (WTO) rules are a good starting point in that regard and are usefully complemented with bilateral and plurilateral trade deals. Trade without rules or a deglobalization with significantly less trade would both undermine the success of the German and European economic models.

At the same time, within the European framework, instruments must be sharpened to defend and enforce interests in order to be less susceptible to economic policy pressure. The central problem of the current multilateral trading system is that the emergence of additional poles of power together with the partial withdrawal of the US has weakened its stability. The US pole, that traditionally underpinned the global system of rules, has become less willing to defend or even respect the rules of the system it has been instrumental to create, a process that, in our view, is going to endure into the future. It is in this context that Germany and the EU need to sharpen and strengthen defensive instruments to deploy when trade partners violate international rules. Instruments such as the investment screening mechanism or the discussed rules to block foreign investments in case of excessive subsidization serve several purposes. First, they protect the EU's single market and ensure "fair" competition and a level playing field. Second, such instruments serve the EU as a tool to retaliate and to defend the system when international rules are breached. If swiftly available and effective in case of need, their existence increases the stability of the global rules based system. Of course, such defensive instruments need to be employed with great caution as their excessive use would undermine global stability. As with all sanctions, they exert their influence "off equilibrium"; their sheer existence, not their application, incentivizes cooperation. Third, such tools have an explicit use in defending clear security interests.

A significant difficulty in the trade-offs that EU policy makers need to consider when weighing security with economic interests lies in the fact that while, in the Union, economic interests are well defined, security interests remain largely defined at the national level (Leonard et al., 2019). Trade, competition, single market policies as well as monetary policy have been centralised and are decided by majority voting in the EU, while, security and foreign policies remain subject to unanimity decisions and are largely in the realm of national decision making. This stands in contrast to the US and China, where possible trade-offs between these interests can be weighed at the same level. This leads to a significant weakness in Europe (Leonard et al., 2019). In a world in which interdependence in networks is weaponized, the issue is particularly acute (Farrell and Newman, 2019).

Overall, the challenge is to develop defensive instruments but not to fall into the traps of protectionism. In fact, as argued, protectionism would be a mistaken policy choice. Prominent thinkers now rightly warn that a protectionist trade strategy would ultimately betray the very interests of the middle class it aims to protect (Posen, 2021). Historical evidence even suggests that, precisely because of the sharp economic crisis that the world is in the process of overcoming, there could be a new golden age of globalization (James, 2021).

Europe also needs to understand that access to its market is the single most important asset in any of its international policy interactions. It is therefore of paramount importance to continue integrating

national policies into a coherent, common framework in important policy areas – such as banking and capital market union, strengthening the international role of the euro and completing the single market – in order to protect its economic interests in an increasingly polarised world.

Moreover, Europe needs to build and maintain strategic partnerships with regard to its foreign economic policy. In particular, getting China to open up its own economy more rapidly and to reduce excessive state subsidisation that harms competition requires that both the EU and the US develop leverage vis-à-vis China. Closer economic policy cooperation between the EU and the US in the years ahead will be crucial. It increases the EU's influence over global standards – from competition rules, protection of intellectual property rights, to ethical standards, data protection and state aid rules. Even if truly multilateral approaches are preferable, starting with bilateral agreements among the two largest economies in the world will be an important and effective intermediate step to not only protect German and European economic interests, but also for defining and implementing truly multilateral solutions. Some form of bilateral investment and trade agreement with the US should therefore be one of the top foreign policy priorities for the EU and for Germany in the years ahead.

Turning to specific areas of international economic cooperation and competition, we focus on monetary and macroeconomic, climate, technology and trade policies.

Monetary and macroeconomic policies

A strong and resilient macroeconomy – and especially a strong international role of the euro, with the prospect of a digital euro, deep capital markets and a stable financial system vis-à-vis other major, systemically important economies such as the US and China, and balanced current account positions – are crucial dimensions of a successful foreign economic policy. The importance of financial markets for the global economy has increased over the past few decades, not just as a threat to stability (as witnessed by the global financial crisis in 2008-09 and the subsequent European debt crisis), but also as an essential prerequisite to growth and competitiveness of the real economy.

The strength of the international role of the domestic currency is an important element for domestic companies' ability to compete globally. The ability to issue debt, receive loans and conclude different types of contracts in the domestic currency provides an important anchor of stability and ability to hedge and plan for companies. It reduces risks and helps lower financing costs to companies. Moreover, it gives the issuing economy and its policy makers leverage not only over the domestic economy, but also to some extent over the global economy as economic and financial conditions are more strongly influenced by those of the domestic economy. The US has benefited from the ability to issue the by far dominant global currency since before World War II. For Europe, the introduction of the euro has brought significant benefits as the international role of the euro is stronger than that of any of its predecessor currencies, including the Deutsche mark. Yet compared to the US dollar (USD), the international role of the euro remains modest; its importance has even declined over recent years.

Hence, a key objective of Germany's and Europe's foreign economic policy should be the strengthening of the international role of the euro. This requires a number of initiatives as the strength of the international role of a currency is determined, among others, by the depth and integration of domestic capital markets, the quality and resilience of financial institutions, the growth prospects, the stability of the political and legal system and the ability to conduct an effective joint fiscal policy. Therefore the conclusion of the banking union, capital market union and the single market for services as well as the elimination of cross-border gaps in infrastructure networks should have high priority for Europe. Also a further move towards fiscal union and the reform of Europe's banks will have substantial benefits for the international role of the euro and therefore Europe's companies in global markets.

Digital currencies have started playing a role and are likely to become a regular feature of capital markets in the next decade. Rather than leaving the issuance of cryptocurrencies and stable coins to the private sector or to the governments in central banks elsewhere, Europe should take a proactive stance in developing the digital euro, issued by the European Central Bank (ECB). This could give Europe an additional advantage, or at least protection of its interest and the ability to conduct an effective monetary policy focusing on the interest of Europe's economy.

Finally, Europe and Germany contribute to global macroeconomic imbalances with regard to trade in goods, services and capital. In particular Germany's huge current account surplus (which has been almost 9% of Gross Domestic Product (GDP) or €270 billion annually a few years ago) is creating economic and financial imbalances within Europe, but also globally. These imbalances not only pose a threat to economic and financial stability, but they are partly a reflection of inefficiencies within the economy, weakening the competitiveness of Europe's economy and its companies globally. In Germany's case, the large current surplus is, amongst other things, largely the result of low public and private investment. It is therefore in Europe's and especially in Germany's own interest to tackle barriers and market inefficiencies so that trade and investment can evolve more freely. Moreover, the European Commission's (EC's) macroeconomic imbalances procedure (MIP) could and should be strengthened in order to push member governments to remove barriers to trade in goods, services and capital.

Climate policy

In the area of climate policy, there are two key areas relevant to foreign economic policy. On the one hand, the European "green deal" has direct and indirect effects on global trading partners. Second, it must be a goal of German and European policy to accelerate decarbonization worldwide.

The European Green Deal has direct impacts on EU trading partners (Leonard et al., 2021a). The ambitious goal of full decarbonization by 2050 and significant reduction of emissions by 2030 means that the EU will import less fossil fuels. In particular, from 2030 onwards, there will be a significant reduction of gas imports from Russia according to model projections. But other energy suppliers in

the European neighborhood will also be affected. Second, the energy transition also means that the EU will need substantial imports of raw materials necessary for "green" technologies. Finally, the falling demand for fossil fuels will also have a global impact. Ceteris paribus, the prices will fall. The EU is currently one of the largest importers in the world, so the effects are quite relevant for the world price. In Leonard et al. (2021a), some of us describe in detail a work program for European foreign policy that should not ignore the Green Deal but, on the contrary, must manage its global effects.

The second major question is whether and how the EU and Germany can accelerate decarbonization globally. The first thing to note here is that global emissions continue to rise. The EU now contributes only about 8% of global emissions, far behind China (26%) and the US (13%). So the European Green Deal alone can only make a small contribution to combating climate change. As the EU accelerates its decarbonization efforts, it will be important to complement higher domestic carbon prices with an appropriately designed carbon border adjustment mechanism (CBAM). Such a mechanism, if well designed, serves two purposes: prevent carbon leakage and simultaneously provide incentives for foreign producers to decarbonize more quickly.

A crucial question is whether and how China can be brought to decarbonize more quickly. This is not only about cooperation, but perhaps more importantly about ensuring that China has an interest in accelerating its decarbonizing process. Here we recommend a transatlantic agreement with a border adjustment mechanism for emissions or even an open climate club which would provide an incentive for China to increase its climate efforts (Bierbrauer et al., 2021; Tagliapietra and Wolff, 2021; Erickson and Collins, 2021).

Technology cooperation with third countries, especially poor third countries could further contribute to the globalization of the green deal by reducing the cost of applying green technologies.

Technology policy

Technology policy has become one of the central fields of action in foreign trade policy (Poitiers and Wolff, 2021). On the one hand, this is due to the central role that digital technologies play for all sectors of the economy. On the other hand, it is due to the deliberate "weaponization" of digital interdependencies in order to achieve broader geopolitical goals. The EU has focused more on this problem area in recent years, but has limited tools to respond effectively. To be sure, the EU can enforce important standards through regulation in this area. At the same time, however, there is a lack of financial instruments for promoting new technologies, the internal market remains too fragmented, and decisions on foreign investment in European companies with key technologies also remain largely at the member state level.

In the area of data sovereignty, the EU has set international privacy standards. However, a strategy to enable digital trade with countries with lower data protection levels is still missing. A fundamental problem is the lack of investment in new technologies, networks and human capital. For example,

in the field of AI, there are far too few graduates in the EU (Anderson et al., 2020). Strengthening the Digital Single Market, increasing investment, and improving venture capital funding are essential to ensure that Europe does not fall further behind in the digital technology space and are central to better managing interdependencies and thus being less vulnerable.

The conflict between the US and China in the field of technology will shape German and European foreign economic policy in the coming years. Europe cannot be a neutral bystander in this. While there are of course differences with the US, the goal of European policy must be to reduce its vulnerability vis-a-vis to China and manage interdependence. In addition to strengthening domestic investment and consistently using the "Brussels effect" to set international standards, defensive instruments are also needed. For example, investment control to avert acquisitions of key technologies is necessary and sensible. When making decisions about the use of technologies, Europe's robustness and resilience must be taken into account. Overall, however, a defensive strategy will not be enough. Europe must invest more in digital technologies, not only to better manage geostrategic dependencies, but above all to be fit for the future in these key technologies.

Trade Policy

Trade policy instruments have long been used to promote domestic economic welfare, sometimes to the detriment of trade partners (beggar-thy-neighbour policies), and to influence the behavior of foreign governments both in the economic and non-economic spheres. The available tools range from import duties (tariffs), export subsidies or taxes, quantitative restrictions on imports and exports, so-called trade defense instruments such as anti-dumping duties, to licensing requirements or rules on minimum domestic value added content. Disciplines on such instruments have been developed multilaterally in the context of the General Agreement on Tariffs and Trade (GATT)/WTO, or with the help of bilateral and regional free trade agreements (FTA) of varying depth and breadth.

In the last few years, harmful trade policy uncertainty has increased substantially as countries have used classical trade tools more often and have experimented with less transparent, "murky" protectionism (Caldara et al., 2020; Evenett and Fritz, 2015). There is only one way to contain this phenomenon: the conclusion of binding legal agreements that effectively discipline countries. Hence, it is important for the EU to continue its agenda of negotiating and implementing ambitious trade agreements with countries around the world on all levels – multilateral, plurilateral, and bilateral. Moreover, trade agreements also widen the reach of EU rules and regulations, which is an effective means to defend against coercive measures of third parties. Big trade powers such as the EU can incentivize trade partners to align their regulations and rules with EU standards as deviations would be economically costly for exporters. This "Brussels Effect" (Bradford, 2020) is an important vehicle of informal influence that greatly depends on the size, dynamism and general attractiveness of the EU's internal market and on the quality of its own regulations. It appears clear that the level of integration must be

a function of political and economic proximity. For this reason, the EU should deepen transatlantic cooperation on climate change, the development of new technologies and trade policy among other topics.

For agreements to be effective, and in absence of any international law enforcement entity, they need to be self-enforcing, i.e., countries' incentives to deviate from the agreed rules must be minimized under all contingencies. Although sanctions are originally a foreign policy tool to achieve political goals, countries are increasingly relying on them to motivate adherence to rules in all areas of international law. In fact, the credible threat of reacting to breaches of WTO-law by imposing tit-for-tat sanctions is existential for the stability of the international trade order (Bagwell and Staiger, 2004). Hence, the EU must invest into increasing the credibility of its sanctioning mechanisms, e.g., by improving its trade policy intelligence, by speeding up decision processes, and by creating a resilience fund to deal with collateral damages. Outside the trade policy sphere, economic sanctions are increasingly used as substitutes to more conventional, i.e., military, means of intervention. Their scope has expanded, amongst other things, into travel bans, asset freezes and other financial sanctions, the black listing of firms via "entity lists", and more.

In fact, the increasing number of sanctions observed empirically (Felbermayr et al., 2020a) is troublesome as it shows that many implicit or explicit threats have not been successful and that a larger number of conflicts is escalating. Around the world, governments develop blocking legislation; the European anti-coercion instrument being an important example. Such developments have the potential to both stabilize and destabilize the global order by strengthening deterrence and by making an uncontrolled escalation into an ever more fragmented world economy more likely. To avoid such costly outcomes (Eppinger et al., 2021), it will be important to keep communication channels open to all parties and to commit to basic rules such as transparency and predictability.

The attractiveness of the single market, however, remains the most effective tool to incentivize cooperative behavior of partner countries. The simple reason is that all enforcement mechanisms rely on denying access to that internal market; the larger, deeper and dynamic that market, the better the chances that the EU and its members can continue to shape the global economic and political order in their interest.

2 Industrial Economic Perspectives

2.1 The Geopolitics of the Green Deal

by Georg Zachmann & Mia Hoffmann (Bruegel)

Summary: The decarbonization of the German economy entails fundamental structural shifts in energy and industrial systems that will have important international repercussions. With careful policy design and management, the **European Green Deal** can become a soft power instrument for the EU.

A **CBAM** is one of the most politically sensitive instruments, whose success will strongly depend on diplomatic interventions on the domestic and partner side. Gaining a clear understanding of our trade partners' red lines and economic, legal and political sensitivities to incorporate these in the design of the mechanisms will be crucial to make the tool internationally feasible and domestically effective.

The formation of a **climate club** would require massive diplomatic resources and time as, both a success and a failure could reshape global trade relations. A climate club will ultimately imply a new international climate policy architecture – and getting its governance right will be a crucial success factor.

International emissions trading could reduce global - and German - climate mitigation costs by efficiently allocating emission reductions to where marginal abatement costs are lowest. But it faces significant risk of double-counting and would discourages partner countries from ambition raising and might hence make decarbonization harder, not easier. A **Carbon Buyers' Club** led by the EU would not resolve these obstacles, but has the potential to create a predictable, liquid and efficient market through strict certification and rigorous assessment standards, raising the standard internationally.

Hydrogen (H2) is of strategic value to decarbonization and Germany is investing in its low-carbon production domestically and abroad. As part of its technological leadership role, Germany and the EU should lead in the design of H2 markets while involving foreign stakeholders, contributing to the development of a transparent and liquid market for **green H2 and green H2-based products** within and beyond the EU.

Growing reliance on imports of renewable electricity and green H2 from neighbourhood regions may become a threat to **EU security of low-carbon energy supply** in the event of geopolitical tensions. A new EU energy security framework, whereby energy supply is secured at all times by providing market-based incentives for keeping enough alternative providers available to step-in in times of shortfalls, could mitigate this risk.

International cooperation will be critical to enable a just transition for the developing world. A conditional funding mechanism, whereby credit for **climate-friendly investments** is made

available at low-cost to support transition strategies towards climate neutrality, may enable partner countries to directly adopt up-to-date sustainable technology. This creates markets for European producers and presents an opportunity to deliver on the climate finance promises made in the Paris Agreement.

Transparency along globally linked value chains will allow consumers to contribute with their choices to a transition to climate neutrality, and once carbon neutral production processes are well established, will allow governments to ban products from carbon intensive production processes. International cooperation on setting up, developing and monitoring the required systems can ensure joint ownership and support across many countries and thus avoid disputes and enhance effectiveness.

Germany's ambitious climate targets can only be meaningfully achieved when embedded in an EU wide decarbonization framework. The European Green Deal is the EC's flagship initiative aiming to reduce greenhouse gas emissions in the EU by 55 percent compared to 1990 by 2030 and achieve net-zero emissions by 2050. The European Green Deal includes a wide array of policies with the goal of decarbonizing the European economy while maintaining and creating economic opportunities in the transition. It entails a fundamental structural shift in the European energy, trade and industrial systems that will have widespread global repercussions (oil rents down, land rents up, capital & knowledge rents up). The European green deal therefore has direct foreign policy implications which must be recognised, considered and managed by policymakers (Leonard et al. (2021a), Leonard et al. (2021b)). Moreover, the European Green Deal itself might also become an important soft-power instrument of German and European foreign policy. In discussions with the different foreign partners over economic and climate relations it will be important to have many balls in the air (CBAM, climate finance, carbon trading, H2 trading, supply chain reporting and product standards) to always provide substance for constructive dialogues with all partners. But it will be equally important to not lose sight of what Germany's and the EU's purpose of the different tools and discussions is. We see three main motivations:

1. Support global decarbonization to prevent disruptive climate risk
2. Strengthen European long-term economic perspectives
3. Exercise soft influence especially in the neighbourhood

To this end, we propose six policy instruments. The following chapter will discuss the context and risks associated with each policy and develop proposals for interventions addressing carbon and H2 trade, energy security, sustainable investment and supply chain reporting and product standards.

2.1.1 Carbon Border Adjustment Mechanism

Context

In order to achieve its ambitious climate targets, the EU carbon price must provide stronger incentives and support for low-carbon technologies. Through higher carbon prices relevant for all actors along the value chain, they will internalize the negative impact of carbon dioxide (CO2) emissions and shift to climate neutral technologies, materials and practices in the EU. In our highly globalized and interconnected world, a higher carbon price can create the risk of a relocation of production and associated emission patterns. This is primarily a concern for products that are carbon intensive and tradable, such as metals, plastics and cement. To ensure the EU's climate objectives can be achieved and carbon leakage risks are avoided, the EC has announced a CBAM as part of its Green Deal policy package. A proposal by the European Conference on Information Systems (ECIS) expected by July 2021 but it is likely to require difficult discussions between the European legislators as well as between the EU and its international partners. A CBAM is unlikely to be introduced before 2023.

Multiple purposes

A CBAM should address adverse effects arising from the EU charging higher carbon prices than other countries. But this broad definition entails four very different functions, each of which could be best achieved by its own - very specific - CBAM-design. First, a CBAM can reduce (but not eliminate) the risk of so-called carbon leakage. If domestically produced carbon-intensive products become uncompetitive with corresponding imports due to high carbon prices in the EU, emitters might close their operations in the EU. This would not result in reduced EU emissions as those installations' European emission allowances could then be used by other European emitters. But it would increase foreign emissions, hence leading to an *increase in global emissions*. A CBAM could be designed to discourage such leakage. Second, a CBAM can be designed to strengthen/maintain the economic *competitiveness* of European companies. The problem addressed here is not the risk of increasing global emissions due to European climate policies. Instead, the aim is to protect jobs and value added in the EU. Third, a CBAM can be designed for specific domestic political reasons, such as generating revenues or compensating important stakeholders in the *domestic political process* to agree to higher climate targets. Fourth, a CBAM can be developed as a *sanctioning mechanism* to encourage other countries to introduce stricter climate policies by themselves. This would not only address the direct leakage concern (see first point) but also the concern of indirect leakage. Indirect leakage describes the concern that reduced consumption of globally traded polluting inputs (e.g. oil) lowers the price of those inputs and hence encourages consumers in countries without strict climate policies to use more – implying that global carbon emissions might actually increase. A threat of introducing a CBAM on imports from countries with weak climate policies, might encourage those to step-up their domestic efforts and hence reduce the risk of indirect leakage.

Multiple solutions

There are a number of valuable proposals on how individual or several of the described purposes can be best achieved. And it is likely that European lawmakers will continue negotiating the concrete instrument for many months. If the purpose is to ensure that imports of embedded carbon are not undermining domestic decarbonization efforts, a CBAM could be very nicely organised as a combination of an excise charge levied on domestic producers of basic materials and imports (e.g., steel) and a free allocation of emission allowances to producers of such components. With the revenues from the climate contribution it will in turn be possible to fund carbon contracts for difference to cover incremental costs of production and recycling processes aligned with climate neutrality objective at European scale (Neuhoff et al., 2021). This would be very efficient in incentivising decarbonization in particular in basic material production, manufacturing and construction industry - e.g. through using less and lower carbon materials and improved waste management. The design also prevents too narrow interest groups to capture the system. Moreover, it would have the strong advantage of not causing much international opposition, as such a climate contribution could be implemented as EU environmental legislation associated with the EU emissions trading directive (Ismer and Haussner, 2015). On the downside it would not address indirect leakage or provide incentives for foreign producers to use cleaner production technologies.

If the purpose of the tool is to speed up domestic decarbonization and quickly develop low-carbon technologies that can later help other countries to decarbonize, it could make sense to ignore the slow process of leakage and focus on the deployment of clean alternatives to carbon-intensive products. This would be akin to the successful – though initially expensive – renewable support schemes that allowed cost to reach competitive levels even in countries without carbon prices (McWilliams and Zachmann, 2020). Again, not much foreign opposition would need to be overcome and at best Europe could develop a competitive advantage in technologies that should become mainstream in the next decades. However, such an approach implies fiscal cost, rather than revenues, and will be challenged by incumbent interest of industry, labor unions and industrial regions, that may struggle to orderly transit carbon-intensive to climate neutral basic material production and industrial activities linked to the production process or the materials.

Finally, the EU could cooperate with other economies to commit to sufficient domestic climate policies and to leverage the size of their markets to encourage outsiders to do the same. If successful, such a "Climate Club" might encourage all economies that want to substantially participate in global trade to take meaningful decarbonization action. The upsides would be huge, as globally synchronised decarbonization would allow a much cheaper policy mix than uncooperative unilateral measures (Tagliapietra and Wolff, 2021). But the challenges are also significant, and risk extensive delays for the implementation of the policy framework and all investments in the European basic material sector dependent on this framework. A functioning multilateral institutional setup to check and enforce

compliance of sovereign countries is far from trivial and an ultimate failure of such a system might leave behind a fatally damaged United Nations Framework Convention on Climate Change (UNFCCC) process.

Many other alternatives that are being discussed, especially ones that are based on the EU trying to push through a unilateral CBAM mechanism that is potentially not WTO compatible, are high risk, low reward. For example, creating EU own resources based on a carbon border tax seems dubious. One sensible approach could be to kick-start the process with a pragmatic approach that can be implemented within Europe, like for example the climate contribution, while in parallel increasing international coordination efforts towards the more complex frameworks.

Foreign policy dimension of CBAM

The worst outcome would be a failed European attempt, like the failed extension of the Emissions Trading System (ETS) to incoming flights in 2012, that damages international trust and delays domestic decarbonization. Hence, diplomacy plays a crucial role already in the development phase.

Diplomacy has to ensure that the domestic CBAM discussion gets a realistic feeling of how far different design options of a European CBAM can affect economic, legal and political sensitivities of our partners before it risks catalysing the formation of a coalition of our trade partners. Diplomacy will be crucial to get an understanding of red lines and potentially necessary compensatory measures towards crucial partners (e.g. climate finance or carbon trading) to make the tool internationally feasible. Moreover, diplomatic channels will be key to ensure that a CBAM is communicated internationally in a way that reduces unwarranted concerns.

The most challenging diplomatic exercise would be to pursue the creation of a climate club. This will require massive diplomatic resources as both a success and a failure could reshape global trade relations. A climate club will ultimately imply a new international climate policy architecture – and getting its governance right will be a major success factor.

In all cases, a successful implementation of a CBAM will require the EU to speak with one voice. Without internal consensus trade partners might find it easy to derail the EU process. This is clearly challenging, as finding a compromise-solution domestically and finding a solution which enough of our trade partners can live with, are somewhat separate processes. Hence taking enough time and providing space to accommodate material red lines of our trade partners in the design of the instrument will be crucial to avoid a global confrontation the EU is ill-equipped to succeed in.

2.1.2 International Carbon Trading (Article 6)

Context

Mitigating carbon emissions is easier in one country than in another. In the Paris Agreement, 190 countries committed to reduce their CO2-emissions and limit global temperature rise to 2°C compared

to pre-industrial levels. Albeit a multilateral agreement, the accord sets out that climate policy is coordinated through nationally determined contributions (NDC), allowing countries to set their climate policies and targets individually. The NDCs vary widely in the way commitments are determined and how ambitious commitments are in aggregate. As a result, the cost at which the last ton of carbon is abated varies widely from country to country, from sector to sector. The NDC might imply that a sector in Germany (e.g., steel) will have to take very expensive measures to stay within the EU's NDC, while a similar sector in Ukraine would still be allowed to grow emissions under the countries' NDC. Since emission reductions anywhere contribute to the global objective of limiting global warming, it is inefficient to pursue costly measures to reduce carbon emissions while cheaper strategies remain unused somewhere else. Not only that, if policymakers believe their domestic industries' competitiveness suffer from requiring them to further reduce emissions, they could become less compliant with their climate pledges. An international market for emission reductions could in principle ensure an efficient allocation of mitigation efforts and would even out marginal abatement costs. A framework for such a market is already outlined in the Paris Agreement.

Article 6 of the Paris Agreement sets out two mechanisms that would create global markets for a) overachieved mitigation outcomes and b) carbon emissions for both private and public actors. The first would allow a country that has achieved its climate targets to sell such overachievement to another state falling short of its pledge. The second is the setup of an international carbon market for the trading of carbon credits. Credits could be earned, for example, through reforestation or a higher share of renewables in the energy mix. A third mechanism promotes non-market cooperation and assistance, such as aid to developing countries. The international community has so far been unable to agree on a rulebook determining the standards and regulations of international carbon trading. National sovereignty in designing climate policy clashes with the need for harmonisation, as tradable units need to be equivalent across countries.

Purpose

Making emission reductions tradable between countries could reduce global - and German - climate mitigation costs by efficiently allocating emission reductions to where marginal abatement costs are lowest. Such a market mechanism, if well-designed, would create incentives for additional efforts in emission reductions in return for financial income through the sale of surplus allowances. With its ETS the EU already has an example for an effective design of carbon trading in place, and can therefore play a leading role in regulating a foreign emissions trading system. Importantly, if the EU ETS carbon price, which is traded in €, serves as a reference for multilateral discussions, global carbon trading might promote the international role of the Euro.

Risks

Article 6 of the Paris Agreement is the only section of the treaty yet to be finalised. The parties' various levels of climate ambition, of development and of political will have presented major obstacles to finding an agreement on a set of rules governing the proposed carbon market. Its careful design, certification and standard setting will be critical to the market's effectiveness in mitigation. Yet, the broadest possible international consensus may only set lenient rules, which in turn leave loopholes that allow greenwashing. If the EU pushes for stricter rules, an agreement will take longer to be reached, if ever. If the EU does not take a leadership role, there is a significant risk that the market mechanism will be exploited for reduced climate ambitions. Concretely, the risk is that seller-countries have an incentive to overstate the mitigation they achieved, while buyer countries might not want to look too careful, as long as buying such allowances at low cost allows their industry and population to avoid costly domestic decarbonization.

Similarly, the politically determined initial allocation of emission allowances represents a highly sensitive issue. Without substantial pressure from the international community, a further strengthening of allocation targets for alignment with the Paris objectives would be discouraged. Likewise, the potential conflict over cheating and accounting can represent a tremendous obstacle to an efficient functioning of the market.

The market mechanism would disincentivise countries from strengthening their commitments as envisaged in the "pledge and review" process under the Paris agreement that aims to gradually align national contributions with climate objectives. This is because countries could reap financial rewards from defining looser targets in their NDCs that are easily overachieved. This could be an attractive strategy in particular for emerging economies and developing countries for whom the sale of surplus allowances could represent an important source of income.

At the country level, political acceptability for the trade may be limited if citizens come under the impression that large sums of taxpayers' money are paid to buy permission for domestic climate inaction. And indeed, the purchase of surplus allowances could be used as an excuse for less climate action at home, in particular if there is ambiguity about the climate action required domestically, this could delay necessary infrastructure development.

Proposal: Carbon Buyers' Club

The EU should form a carbon buyers' club[2] that determines its own import rules for mitigation outcomes. This would involve establishing strict certification standards and rigorous assessment methods, and could also include assessing sellers' NDCs to ensure climate targets are set sufficiently high. In principle, the buyer of foreign allowances would be responsible for their actual mitigative value, which would be assessed once every five years. At this stock-taking, allowances whose actual

[2] For a comprehensive explanation of the functioning of the Club see Zachmann (2017).

mitigative value is significantly below its market value would lose their certificate for import.
In consideration of the principle of differentiated responsibilities the EU should involve partner countries in the process to jointly determine measures that will allow developing countries to benefit from the market. This could then create the foundation of a cooperation with developing countries and emerging economies on transition strategies towards climate neutrality, with mutual commitments, technology cooperation, and provision of public financial support to contribute to incremental costs or reduce financing costs of climate neutral technologies
By regulating all incoming allowances, the Club has the chance to set an international gold standard on emission trading. It has the potential to create a predictable, liquid and efficient market. If members account for a substantial share of global emissions and GDP, non-member countries are incentivised to adhere to the standards set by the Club, which will raise the standard internationally (the Brussels effect). If the Buyers Club focuses on providing support for transition strategies of partner countries, it may in turn offer a structure to better coordinate the provision, increase predictability of the cooperation and thus allow partner countries to pursue transition strategies that do depend on a reliable international partnership.

2.1.3 Creating International Lead Markets for Green Hydrogen

Context

In its quest for climate neutrality the EU will phase out fossil fuels from its energy mix almost entirely by 2050. In order to guarantee a stable supply of energy during this process fossil fuels such as oil and gas must be replaced by carbon-free energy sources. While renewable electricity is considered a key substitute, several sectors, such as heavy-duty transport or energy-intensive industries like steel, might not be reached by electrification. Moreover, solar and wind power supply alone entails exposure to seasonal divergences in energy supply and demand. Due to its versatility green H2 is increasingly seen as a solution to both problems, serving as a low-carbon energy source in hard-to-abate sectors and as energy storage.
This raises the question to what extent H2 will be produced from renewables in the EU, and to what extent it will be imported by pipelines and ships. Due to the constrained potential for renewable energy generation in the EU, cooperation with neighbouring regions will be important for the successful transformation of the EU's energy system. The German government and the EChave recognized the strategic value of H2 for the EU's net-zero emission goal and are working to scale up its low-carbon production. The European Green Deal includes a H2 strategy with the goal of installing 40 gigawatts of renewable H2 electrolysers within its borders and the neighbourhood regions by 2030. Similarly, Germany's *Wasserstoffstrategie* describes an action plan to make Germany the global leader in green H2 technologies. As part of this strategy Germany is cooperating with Morocco[3] to develop the first

[3] See `https://bit.ly/2V12OmW`.

industrial green hydrogen plant in Africa, with a production capacity of around 100 Megawatts, to promote partnership and secure future exports to Germany.

Purpose

In addition to ensuring reliable energy supply in Europe, establishing a liquid and transparent H2 market serves a similar purpose as the global trading of mitigation outcomes explained in section 2.1.2. By concentrating green H2 production where it is more cost efficient, meaning in areas where the potential for renewable electricity generation is virtually unlimited, international trading of green H2 between the EU and its neighbours could potentially reduce climate change mitigation costs in the bloc, if green H2 can be transported via pipelines at a low cost.

Increasing the production capacity for green H2 in neighbouring regions as intended in both the EU's and Germany's H2 strategies should furthermore be used to support foreign renewable energy systems (RES) investments. This will not only ensure the low-carbon nature of the traded H2, but also help to meet growing energy demand the neighbourhood region, in particular in North Africa, in a climate-friendly way and support the energy transition abroad. The cooperation may help to strengthen partnerships by creating trade interactions, mutual dependencies and trust.

Finally, if the EU can establish the Euro as the lead currency for the global trade in green H2, this could have implications for the international role of the Euro as a global currency.

Risks

A primary risk is that of greenwashing. Assessing implicit emissions in H2 produced through electrolysis is difficult, as the plant operates on the locally available energy mix. Hence, *green* H2 may not be as low-carbon as advertised, unless the establishment of H2 plants abroad is accompanied by additional renewable energy investments. Certification and standard setting will be critical to ensure that the traded H2 is actually low-carbon, and to build trust and transparency in the market. As part of its technological leadership role, Germany and the EU should also lead in the design of regulation of H2 markets.

Secondly, the production and transport of green H2 requires significant upfront investments, while future demand is still uncertain (McWilliams and Zachmann, 2021). The production of green H2 is expensive and not competitive with alternative energy sources at this point, and future competitiveness of imported H2 will depend heavily on transport and storage costs. To prevent underinvestment in what is considered key climate infrastructure, early clarity on the policy framework for carbon cost internalization and hedging will be essential for investments.

Third, high transport costs could lead to a relocation of value chains to regions where H2 is cheaper to produce. Trade infrastructure for H2-based products, for example steel, is already in place and cheaper than the infrastructure for transporting H2. This will materialize with higher probability if

uncertainty about future H2 use dampens investments.
Finally, the prospect of importing "green" H2 could be an excuse for domestic climate inaction. Already the investments into the technology before its actual deployment might be exploited as a political victory rather than used to generate further momentum. This could lead to neglect of further important policies, in particular those for which public support is limited or measures targeting energy-efficiency. This would be particularly problematic if the finally imported H2 is not actually low-carbon, as explained in the first paragraph.

Proposal

The EU should take a leadership role in setting international standards and regulations for the green H2 trade. Such a green H2 certification initiative lead by the EU should involve foreign stakeholders and contribute to the development of a transparent and liquid market for green H2 and green H2-based products within and beyond the EU. The EU should aim to cooperate with many partner countries to boost market participation, promote competition and diversify EU H2 imports. including promoting H2 value-chains in the EU neighbourhood. Investments in H2 production in its neighbourhood should be combined with funding for renewable electricity generation. To prevent underinvestment, the EU should send clear signals to stakeholders about future climate policy and carbon pricing.

2.1.4 Political Clearance of Major Energy Import Infrastructure

Context

With the significant reduction in oil and gas consumption over the next decades the EU will solve one of its most pressing energy security problems: dependence on fossil fuel suppliers. Fossil fuels make up more than 70 percent of the EU's aggregate, and over 78 percent of Germany's energy mix[4]. Around 87 percent of oil and 74 percent of natural gas is imported (Eurostat, 2019). Historically, Europe has relied heavily on a small number of suppliers for its fossil fuel needs and the continent's dependence on Russian natural gas in particular has been a key concern for the security of energy supply and a driver of EU legislation in this area. Eventually, gas security of supply concerns amounted to the inception of the Energy Union in 2015.
Natural gas imports are hard to predict in the coming decade as domestic gas production in the EU declines and some member states replace coal-based electricity with wind and solar power but potentially also natural gas, while on the other hand gas demand for heating is also set to decline. However, between 2030 and 2050 natural gas consumption must quickly drop as decarbonization accelerates across the continent. Instead, new dependencies may develop over the course of the energy transition. The EU is likely to increasingly import renewable electricity and green H2 from its neighbourhood region – and also to rely more on interconnectors for balancing its electricity system. Given

[4] Eurostat dataset 'Complete Energy balances', online data code: nrg_bal_c.

the early stage of development of the technology for H2, and its transport infrastructure in particular (McWilliams and Zachmann, 2021), adequate diversification of suppliers might not yet be feasible in the medium-term. Long-distance transport of renewable electricity poses similar challenges, and as energy demand in the region grows negotiations about exports to the EU will become more demanding. Moreover, the geopolitical situation in producing countries in the EU neighbourhood, both, in the south (Northern Africa and the Middle East) as well as in the East (post-soviet countries), is complex and volatile. Unexpected disruptions may well become a threat to EU security of low-carbon energy supply. The EU needs to mitigate this risk early on, and in a more coordinated way than it has done in the past. We suggest establishing a framework whereby energy supply is secured at all times by providing market-based incentives for keeping enough alternative providers available to step-in in times of shortfalls. Moreover, international energy infrastructure projects that substantially impact the EU's energy demand-and-supply balance should be screened in a transparent political process.

Purpose

Article 194 of the EU treaty mandates that the EU and its member states share competence on energy supply security and explicitly asks for 'a spirit of solidarity' between member states. Although the scope and speed of the energy transition will vary from member state to member state there are benefits to coordinating a security of supply framework at EU level. It would reduce overall costs by preventing the emergence of multiple fragmented policies and subsequent redundancies. National security-of-supply mechanisms are typically created outside of European energy markets and the corresponding side-payments to encourage domestic overbuilding often undermine market-based investments in other countries. A European framework would shield the internal energy market from such undesirable effects. It would also allow the exploitation of economies of scale, especially for infrastructure networks and new technologies required for green H2 transmission and distribution across the continent. It would lead to a fairer distribution of risk among member states, a demonstration of EU energy solidarity. Finally, a coordinated approach would mitigate negative spillovers from national supply security policies, such as the geopolitical implications of the Nordstream 2 pipeline in Germany.

Risks

Political acceptability for a common framework will vary among member states, because of differences in the speed of their ecological transition, their energy mix and their vulnerability to foreign supply disruptions. Broadly speaking, EU countries will continue to compete for cheap energy imports. But a purely import-price-based approach will fail to account for insurance against supply disruptions. Member states that are less exposed to energy security risk may refuse to pay for an insurance system that doesn't benefit their citizens as much as others. This has been the case in the past concerning solidarity with Central and Eastern EU member states who were much more vulnerable to supply

disruption risk from Russia than others.

Proposal

In order to prevent overdependence on individual future exporters of renewable electricity and green H2 the EU needs to establish an insurance system that goes beyond traditional diversification. We propose a two-pronged framework: 1) A European market-based framework for maintaining sufficient alternatives to imports. And 2) the transparent European process to clear international energy infrastructure projects that substantially impact the EU's energy demand-and-supply balance (Tagliapietra and Zachmann, 2016b).

The market-based framework would require importers of energy to maintain alternative unused supply structures (e.g., storage; demand response contracts; option contracts with alternative suppliers; etc.) for a defined margin of their energy import (e.g., 20 percent). Those alternatives would serve as an insurance that would be activated only in case of well-defined energy supply crunches. The approach could also be fully integrated with a security of supply mechanism provided to account for uncertainties relating to future developments within the EU based on coordinated strategic reserve (Neuhoff et al., 2016). Crucially, essential suppliers can not be part of this security margin. The cost of maintaining these structures is significantly lower than creating supplier diversity artificially by purchasing from non-competitive sources in normal times. At the same time, it provides insurance to supply disruptions, which is not achieved by a purely market-based approach in which allocation may be efficient but does not connect normally uncompetitive sources to the market when cheaper suppliers become unavailable.

The political clearing process should only be required for critical international infrastructure that exceeds certain well-defined thresholds relating to the worst harm this project might inflict on European citizens. Accordingly, this not only relates to big pipeline infrastructures from difficult partners, but also to major electricity interconnections or network-synchronisation projects etc. The clearing process might involve enforceable remedies on projects in order to protect European citizens.

2.1.5 Enabling Green Investments in Partner Countries

Context

Almost half of the global population lives in a lower-middle or low-income country[5]. The 47 least developed countries are among the fastest-growing, with many anticipated to double in population between 2019 and 2050 (United Nations, 2019). Demand for infrastructure and energy is therefore rising rapidly in these regions and need to be met with sustainable solutions to mitigate climate change. While lack of political will is one obstacle to achieving this, many low-income countries face a more immediately binding constraint: high capital costs. Limited access to financing, especially

[5] United Nations (2019), based on World Bank income definition.

long-term funding, makes the higher upfront costs of many low-carbon technologies compared to brown infrastructure unaffordable. As a result, real climate action remains unattainable.

The scale of this problem has grown over the course of the last year, with public budgets stretched thin during the pandemic and many developing countries struggling to repay existing debts. While the EU and the US put together stimulus packages of unprecedented size, geared towards 'greening the recovery', emerging and developing countries must prioritise providing basic support over expensive, low-carbon investment programs. Moreover, most of these countries lack a stable and benign regulatory framework, leading to high capital cost for foreign investors. In the past few years, insufficient support by the EU has driven partner countries towards Chinese 'package deals' of cheap financial support for the purchase of Chinese technologies, including coal fired power plants. This puts unfair competitive pressure on European producers of climate-friendly technology. From a political perspective it stands in direct conflict with the EU's strategy on international cooperation and its foreign policy towards China. By enabling affordable financing for sustainable investment to partner countries the EU could create a political and economic win-win scenario for itself and its partners.

Purpose

International cooperation in sustainable infrastructure and green technology will be critical to enable a just transition for the developing world. Effective and targeted funding may even enable countries to leap-frog 'dirtier' infrastructure and invest directly in the adoption of up-to-date sustainable technology, which in turn would prevent the waste of money in stranded assets in the form of barely used coal-fired power plants. This presents an opportunity for industrial policy that provides an avenue for expansion to emerging markets for European producers of climate-friendly technologies, such as manufacturers of RES and energy efficiency solutions.

Delivering on the climate finance promises made in the Paris Agreement will strengthen the multilateral framework – and provide the EU with leverage in corresponding negotiations. Moreover, with the ongoing geopolitical tensions and the systemic rivalry between the EU and China it is important that the EU establishes its soft power approach to international cooperation in its partner countries.

Risks

An EU-level 'green export promotion' fund could clash with national export promotion institutions in the member states. Political support in favour of a high-level mechanism may be limited as this may create a degree of (political) competition about the prioritisation of funding allocation. An advantage would be, however, that political and economic leverage of a common fund is significantly higher.

Proposal

The EU should create a funding mechanism for climate-friendly investments in partner countries,

in cooperation with European producers of green technology. Credit would be made available at low-cost in exchange for conditionality on the borrowing country's climate policies. Such policies could include, for example, an adequate carbon price or the development of competitive and stable renewable support systems like feed-in-tariffs. In a case of breach of conditionality, financing could be suspended until compliance could be re-established. Such a fund would create a win-win situation for all involved partners. Partner countries receive support for climate-friendly investments without unfair credit conditions or prohibitively high interest rates. Moreover, the conditionality in the European mechanism would serve as a commitment device for receiving countries. This will reduce the capital cost even for projects that are not directly financed through the mechanism – but benefit from the increased regulatory certainty. European producers are able to establish new export relationships and the EU establishes its soft power in the region via the international dimension of its climate policy[6].

2.1.6 Product Labeling and Product Carbon Requirements

Context

Reporting on carbon footprints along the supply chain as basis for product labeling, corporate reporting and product standards will likely play an increasingly important role for the transition to climate neutrality. International cooperation on the development of systems, norms and standards offers the opportunity to enhance acceptance, efficiency and effectiveness of such systems while avoiding conflicts and WTO concerns. Some dedicated consumer segments may initially be prepared to pay a premium for climate neutral options, and in the longer-term, a wider group of consumers may decide to abandon carbon intensively produced products once climate neutral options are available. Hence reliable labeling systems on embodied carbon will be important to ensure consumer preferences can create an additional encouragement for the deployment of climate neutral production and in the longer-term, phase out of carbon intensive options. As the carbon intensive commodities are usually sold to final consumers only as part of manufactured products, buildings, or processed food, the emphasis that consumer will dedicate to the embodied carbon as part of the overall consumption choice may however remain limited. A similar experience has triggered the EU ban of energy inefficient appliances, e.g. light bulbs. Correspondingly it can be expected, that once sufficient clean material production is available, some territories will ban the sale of materials from carbon intensive production.

Purpose

The announcement of and preparation of labelling approaches to prepare for a ban on carbon intensively produced materials, also as part of products, can serve multiple purposes. First, it shifts the risk-reward balance. While currently firms may perceive a shift to new, climate neutral technologies, as risky with limited upside potential in a market that does not differentiate by production processes,

[6] Further reading: Tagliapietra and Zachmann (2016a), von Luepke et al. (2020) and Neuhoff et al. (2010).

the expectation of a product carbon requirement creates a tangible risk for market access in the case of failure to deployment of low-carbon technologies. Second, it may help to accelerate the ultimate phase out of carbon intensive technologies, by ensuring that carbon intensively production processes are replaced by new technologies that ensure continued access to product markets.
While product carbon requirements are primarily an instrument of domestic climate policy, their international coordination and harmonization is warranted to minimise administrative effort and avoid resource shuffling. As such, the anticipation of product carbon requirements will likely encourage manufacturers globally to shift towards producing or sourcing from climate neutral production processes if they sell into markets that may at some point implement product carbon requirements.

Risks

Product carbon requirements need to be carefully designed to avoid WTO challenges. Preceding international efforts on labelling and standardisation both strengthens the WTO case, not least by providing early signals for the announced measure.
While product carbon requirements will be primarily designed to support a domestic just transition to climate neutrality, they equally have to be applied on imported materials to avoid risks of carbon leakage. To ensure in particular developing countries can continue to sell into the European market, it will hence be important to cooperate to support the just transition towards climate neutrality also in developing countries.

Proposal

The EU should announce the implementation of product carbon requirements in future years, and start preparing for their implementation. Preparation could include the definition of appropriate thresholds for the standards and their initial application in the context of product labelling (Gerres et al. (2021) and Sartor et al. (2021)).

2.1.7 Policy Conclusion

The European Green Deal aims to reconcile decarbonization and economic growth. Both, economic growth and decarbonization, have a strong international component. Enabling the European Green Deal should not only become an important purpose of foreign policy, but the instruments of the European Green Deal will also enable new forms of international cooperation.
The transition of the German and European economy towards low-carbon sources will require extensive multilateral cooperation. Given that in the EU suitable areas for renewable power generation are limited, energy cooperation with countries in the neighbourhood would be economically efficient and politically attractive. Accordingly, Germany and the EU should collaborate with partners to create international lead markets for green H2 and green H2-based products. At the same time, steps

should be taken to address potential emerging energy security risks by creating a European market-based framework that ensures the maintenance of sufficient alternative supplies and screens major international energy infrastructure projects of member states.

International trading of emission reductions as outlined in the Paris Agreement could enable a more efficient allocation of mitigation efforts at the global level but entails the serious risk of undermining global efforts to align ambition levels with the Paris climate objectives. While this effect is inherent in any attempt of global carbon trading, further risks, like double accounting, could potentially mitigated if the EU establishes a gold-standard for valuable international emission units or a Carbon Buyers' Club with a strict regulatory and certification framework, enables members to account for greenwashing risks while exploiting benefits of a reliable and liquid market.

Introducing a CBAM could become the most challenging diplomatic exercise, if it is to be designed in a way that interferes with domestic policy choices in third countries. Hence the potential scope of policy objectives to be pursued with a CBAM must be balanced with its political feasibility and the concerns of international partners. In the longer-term, a comprehensive CBAM pursued among a set of countries part of a climate club could shape a new international climate policy architecture – and getting its governance right will be a difficult but crucial success factor. A pragmatic approach could be implemented within Europe merely to ensure an effective domestic investment framework for a transition to climate neutral production, use and recycling of materials. It would combine EU ETS with an excise charge to ensure effective carbon price incentives along the value chain while using established and uncontroversial border adjustment approaches for excise charges. By staying clear of incentivising behaviour of third countries such a pragmatic approach could mitigate international political controversies.

Finally, structuring finance for climate action in developing and emerging countries to support a transition to climate neutrality with sound energy and climate policies could help to create a more credible regulatory framework. This could unlock significant investments in green technologies and create opportunities for European producers to tap new markets, and for the EU and Germany to fulfil their climate finance pledges made in the Paris Agreement.

Consumers and investors do play a role in triggering and supporting the transition to climate neutrality – and require transparency along globally linked supply chains. In the longer-term this can then also be the basis for government regulation to support the phase-out of carbon intensive products. Cooperating internationally on the development, refinement and monitoring on associated labelling and standards can reduce transaction costs of multiple, parallel systems and ensure broad ownership to enhance the effectiveness and limit conflicts.

2.2 Global Competition and Industrial Policy in Digital Technologies

by Niclas Poitiers & Pauline Weil (Bruegel)

Summary: The rise of China and the ensuing Sino-US trade conflict around digital technologies pose significant challenges for European industrial policy. Digital technologies are seen as key for both security and economic objectives, and policies aiming to achieve control over critical value chains and data flows have disrupted global trade. China is the most important exporter of digital devices, yet it imports most of the computer chips embedded in them, including all high-tech computer chips. This dependency has made semiconductors a target for American sanctions limiting the access of Chinese companies to key inputs.

Consequentially, China is aiming to master the technology and it invest substantially into the industry. However, a shortage of know-how and limited access to key foreign technology have impeded Chinese advances. The US also seeks to increase its market share, and the new infrastructure investment plan includes $50 billions of federal investments into the sector. The ECwants to both double the EU's market share and create domestic high-tech production capabilities through an industrial alliance. However, the nature of European Industrial policy tools and a lack of a substantial European market for the chips makes this approach questionable. We advise that EU industrial policy focuses on existing strengths in the manufacturing of key equipment and on chip design instead.

The political landscape around the software side of the digital economy is also evolving rapidly. Recent cyber-attacks have exemplified the importance of the control over data flows and digital infrastructure. At the same time, regulatory divergence between the EU and the US has erected new barriers for trade in digital services. European privacy legislation has established a gold standard, but also contributed to the fragmentation of the digital sphere.

Digital services regulation is a key component in the current European policy agenda, and an area where Europe is asserting its "economic autonomy". However, the lack of competitiveness means that the economic gains from the sector are often reaped elsewhere. "Industrial policy" for digital services needs to be centred around improving the market conditions for start-ups and making it easier to trade services digitally within the EU. Given the low chances of a resolution of the challenges posed by privacy legislation to transatlantic data flows, the prospects for more ambitious international digital trade agenda seem rather poor.

Overall, European technology policy has to adapt to the current circumstances, and new tools are needed to assert Europe's "open strategic autonomy". More public investment into Research and Development (R&D) and targeted investment protection to prevent transfers of strategic technologies are needed. Furthermore, market conditions for European start-ups have to be improved, in particular with regard to access to capital and reduced market barriers.

The rise of China as economic power and the US' reaction to it has put the international rule-based economic system under strain. The US government and the EU are looking for ways to protect their economies against distortions coming from Chinese state-owned enterprises and industrial subsidies, while defending technological advantages. Additionally, the Trump presidency casted doubt over US leadership guarding the international institutions: the Trump administration not only started a trade war with China, paralysed the WTO dispute settlement mechanism, but also imposed tariffs on the EU.[7][8] While the new US administration is seeking to rebuild EU-US relations, doubts over the medium-term reliability of US international economic policy remain. Hence, the EU seeks to gain more autonomy in its international economic policy by acquiring new defensive tools, including a more interventionist industrial policy (Leonard et al., 2019). This discussion is particularly relevant in digital technologies, which are critical for economic growth and play an important strategic role. They also feature a growing antagonism between the three largest markets, posing important questions over the future governance of international flows of both trade in critical high-tech components and data. In this chapter will first be reviewed the importance of the high technology sector in the current landscape of geopolitical relations. Secondly, the positioning of the EU amid these tensions will be looked. Lastly, we will review the policy instruments the EU could leverage to safeguard its interests.

2.2.1 High Technologies, both Trigger and Victim of Geopolitical Tensions

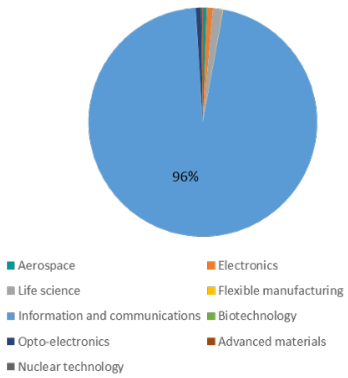
The evolving rivalry between the US and China has been called a 'technological trade war' due to the role that digital devices and services play in the conflict (Segal, 2020). The US have long been the leading economy in digital technologies. US companies are leading innovators of both the high-tech hardware and software and services running on them. This leadership is now challenged by China, which has banned US digital services from entering its market and developed into the predominant manufacturing hub for information and communication technologies (ICT) goods. However, as we will discuss in this chapter, the Chinese ICT manufacturing industry relies on foreign inputs of critical parts, making it vulnerable to American sanctions. High tech sectors, such as artificial intelligence and computer chips, are also important in security consideration. Technological leadership is seen as key for military dominance. [9] Cyber-attacks are a concern of increasing importance, posing both

[7] The US blocked new appointments to the WTO Appellate Body (AB), causing the number of judges to drop below the quorum required for decisions (Poitiers, 2019).

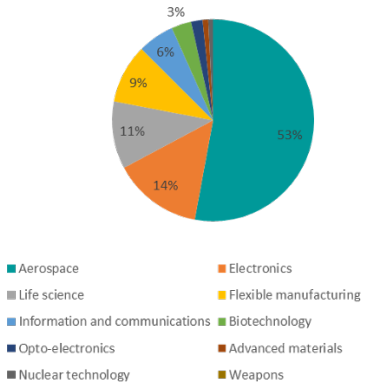
[8] The US applied tariffs on European steel and aluminium exports justified by national security concerns under section 232 of the Trade Expansion Act of 1962. See US Presidential Documents "Adjusting Imports of Steel Into the United States" 83 Fed. Reg. 11,625 (Mar. 15th, 2018) and United States Presidential Documents "Adjusting Imports of Aluminum Into the United States" 83 Fed. Reg. 11,619 (Mar. 15th, 2018).

[9] See for instance the "Bipartisan, Bicameral Letter to President Biden Supporting Funding for CHIPS for America Act" from 23 US Senators and 42 Representatives on April 12th, which states "The United States must also work with our allies and strategic partners to out-scale the CCP in manufacturing capabilities for advanced semiconductors. If we lose these highly-skilled jobs and know-how to China, the United States will never recapture them. Further, we risk dependence on a strategic competitor for the advanced semiconductors that power our economy, military, and critical infrastructure."

(a) US Imports from China



(b) US Exports to China



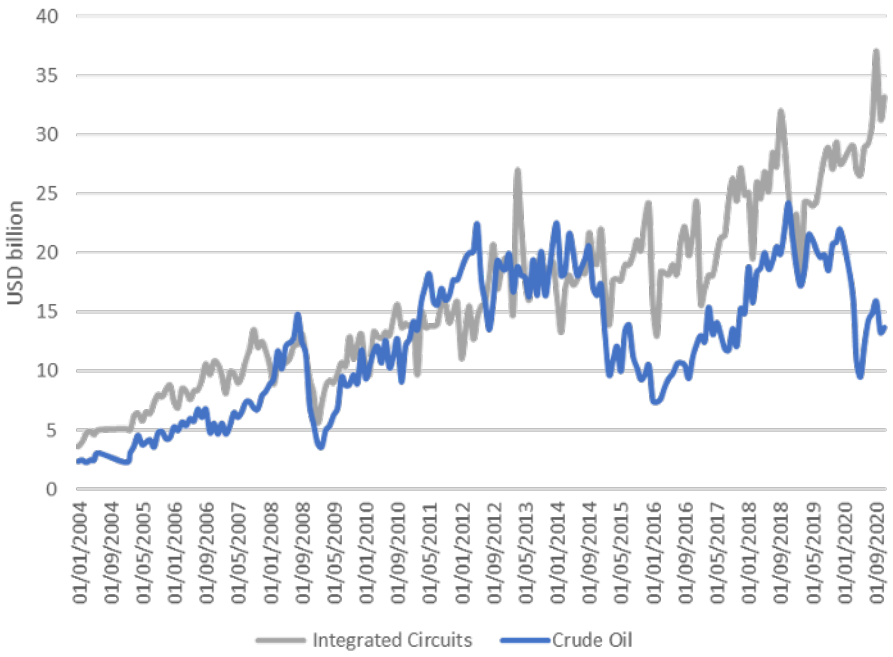
Note: Definition of high-tech goods from United States International Trade Commission (USITC) and US Census. *Source:* UN Comtrade.

Figure 1: US-China Trade in High-Tech Goods with China, 2017

political and financial risks.[10] Just in the first half of 2021, major attacks include an important US oil pipelines and the Irish Health Services.[11][12] Hence, the US wants to prevent China from catching up in the key high tech sectors for strategic reasons.[13] Both the dual-use nature of digital technologies and their centrality to the modern economy make control over data and semiconductors production an important source of geopolitical tensions between the US and China, and of concern to all countries. Control over both software and hardware has substantial economic value beyond geostrategic considerations. ICT goods account for 26% of Chinese total exports[14], and 95% of Chinese high-tech exports to the US (see Figure 1). The US controls critical parts of the semiconductor supply chain, which it has used for targeted sanctions against Chinese companies. Consequentially, China strives to shed its dependency on foreign inputs to its most important export industry. Shortages of computer chips in 2020/21 led to production delays across the globe, in particular in the automotive sector, where electronics now account for an estimated 40% of the price of car (Chen et al., 2019).[15]

In digital services, monopolistic tendencies led to a high degree of market concentration and substantial economic rents for the companies at the technology frontier, and consequentially for their home countries (Anderson, 2020b,a). Digital services have become an important part of services trade between the EU and the US, but also a source of tensions. The EU's agenda on digital regulation

[10] For instance, cyber-attacks pose a systemic risk for Financial Services, see Demertzis and Wolff (2019).
[11] As reported by Bloomberg on May 19th 2021 "Colonial Pipeline CEO Confirms Company Ransom to Hackers: WSJ", `https://bloom.bg/3y9Ua43`.
[12] As reported by Bloomberg on May 19th 2021 "Hackers Offer Decrypt Key to Irish Health Service With a Catch", `https://bloom.bg/3i8lw4Y`.
[13] As President Obamas' Council of Advisors on Science and Technology stated in its report on semiconductors: "To maintain its advantage, the US military needs access to leading-edge semiconductors that not all potential adversaries have." (Holdren et al., 2017).
[14] Source: United Nations Conference on Trade and Development's UNCTADstat database, `https://bit.ly/3y6a04u`
[15] As reported by The Guardian on March 21st 2021 "Global shortage in computer chips 'reaches crisis point'", `https://bit.ly/318ZUY2`.



Source: Bloomberg

Figure 3: Integrated Circuits have surpassed oil as largest imports by value

strongly affects the American digital companies and is perceived as European protectionism by the US (Aaronson, 2019). China, on the other hand, has banned most US digital service providers from operating in its domestic market, grooming domestic champions. However, their expansion abroad has seen backlashes due to other countries' wariness of the Chinese government's influence in them.[16] Digital services are also of increasing importance in the manufacturing sector. Services have become an important part of manufacturing value chains, with (often digital) service embedded in manufacturing exports accounting for a substantial share of value added in the EU (Görlich and Poitiers, 2020). The digitisation of the manufacturing sectors, often described under the term "Industry 4.0", is also considered key to improve competitiveness in the manufacturing sector.[17]

This international struggle over high-tech goods and services have entered in European considerations about "strategic autonomy" (Poitiers et al., 2021). In 2020-21, shortages of personal protective equipment (PPE) and the rise of export controls on many critical medical goods, and the global supply of semiconductors, have increase perceived vulnerabilities. However, Europe still lack many of the instruments needed to assert its interests, as we will discuss below.

[16] After a military confrontation in 2020, India banned 59 Chinese apps. See Ministry of Electronics & IT press release from 29 June 2020 (Release ID: 1635206); `https://bit.ly/3iaQcTm`.

[17] For instance, digitisation and industry 4.0 are key components of the German Industrial Strategy, which has the stated goal to halt the decline in manufacturing and increase its share of the economy (Federal Ministry for Economic Affairs and Energy, 2019).

2.2.2 EU Positioning in the High Tech ICT Industry

The global production of ICT goods is centred around East Asia. China is the manufacturer of 90% of smartphones, 67% of smart televisions and 65% of personal computers (Bown, 2020a). The computer chips that are the most essential part of these devices are, however, primarily not produced in China. While China has developed capabilities to produce lower-grade computer chips, the most cutting-edge semiconductors are only produced by a small number of firms in the US, Taiwan and South Korea (Baisakova and Kleinhans, 2020). Subsequently, semiconductors have surpassed oil as the largest imports to China (see Figure 3).

Semiconductors are a key part to many everyday products, including household appliances and cars, but crucially, digital hardware. Their production is a highly specialised value chain distributed across the globe. The US, Taiwan and South Korea are currently the countries with the most production capacities to fabricate semiconductors (ie foundries). The US also dominates the design of semiconductor and controls crucial software, which it has used to impose export controls against Chinese companies. By blocking Taiwanese firms from using US software to fabricate semiconductors for Chinese clients such as Huawei, the US effectively managed to cut Huawei from its supply of high-end computer chips (Bown, 2020b).

Given these developments, it is unsurprising that China aims to reach self-sufficiency for semiconductors by 2050 in its Made in China 2025 industrial strategy.[18] To reach this goal, the government had planned to spend $ 170 billion from 2014 to 2024 (Orr and Thomas, 2014). However, looking at the goals that were set for 2020, the aloofness of these targets become apparent: while China aimed at 40% market share, it is only home to around 16% of global production (Lewis, 2019). The US also seeks to defend its domestic industry and increase its share of the production process. The Biden infrastructure plan includes a $ 50 billion public investment package for the industry.[19]

The role that semiconductors play in the Sino-US geopolitical competition has led the EU to consider strengthening its position in the market (European Commission, 2021b). This was partly triggered by the chip shortage in 2020/21 that caused production difficulties to European car manufacturers. The European targets are more modest, but still the Commission aims to double its share of the production by 2030, from 10% to 20%, and become home to the production of cutting-edge chips.[20] This is supposed to be achieved through an Industrial Alliance, which the Commission hopes will unlock €20 to €30 billion in public and private investment.[21] The most important component of this strategy

[18] Xinhua (2017) "Economic Watch: 'Made in China 2025' sees China's economic upgrade", 13 June, available at http://www.xinhuanet.com/english/2017-06/13/c_136362260.htm.

[19] White House Press Briefing from March 31, 2021: „FACT SHEET: The American Jobs Plan", https://bit.ly/3l6JJKH.

[20] European Commission, "ANNEX to the 2030 Digital Compass: the European way for the Digital Decade", Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, COM(2021) 118 final, March 2021, https://bit.ly/3zLs27A.

[21] "Speech by Commissioner Thierry Breton at Hannover Messe Digital Days", July 15, 2020, https://bit.ly/3l4p3TL.

is the Important Project of Common European Interest (IPCEI) on microelectronics, which allows EU countries to provide (otherwise prohibited) state aid for research and innovation projects in the sector. However, the investments targeted by the Commission seem inadequate to reach these goals, considering that the construction of a high-tech foundry can cost $ billions. So far, public support to the sector through EU programs has amounted to only around €1.8 billion.[22]

The EU is not home to either an ICT industry or to high-tech fabrication of semiconductors. European semiconductor manufacturers have dropout out of the capital intensive "Moore's race", serving mostly the ICT sector, and focused on innovation "beyond Moore", serving mostly industrial electronics (Kleinhans, 2021). While the EU accounts for roughly 10% of global semiconductor production, these are mostly chips aimed at industrial and automotive applications where transistor density is less important than other material properties. These sectors are also where most of the European demand for computer chips lies, with the EU accounting for 14% of global demand in 2017 (Coulon et al., 2020). Apart from the fabrication of chips, the EU is home to leading producers of materials and equipment for the industry, including the leading production machinery maker ASLM and its German suppliers Trumpf and Zeiss.

Given the complexity of the industry, its capital intensity and the high degree of specialisation, it is unlikely that either China or the US will be able to achieve a decoupling of their production of the digital devices sectors. The US, in concert with its allies in Europe and East Asia, has effectively blocked the Chinese access to the most cutting-edge production technology which likely precludes it from advancing to the most high-tech fabrication. However, the US is not controlling the entire technology chain either, and it seems unlikely that it could replace the Chinese manufacturing of ICT devices in the near term.

Given the lack of both high-tech foundries and substantial domestic demand, the approach to target foundries specialised on the production of chips with the highest transistor density seems ill-suited for EU industrial policy. While there is high growth potential in the industry, and European businesses have an interest in diversification of a highly concentrated supply chain, it would be unwise to enter into a subsidy race with both established players (including the US) and China on the fabrication of such chips. A stronger focus on existing comparative advantages in the equipment manufacturing as well as on chip design seem more promising approaches (Kleinhans, 2021).

2.2.3 Digital Services and Digital Trade

Unlike the highly integrated supply chain of digital devices, the digital services running on them are fragmented between the West and China. China has isolated its digital sphere and blocked most foreign digital services from operating in its market. Information and communication in the Chinese

[22] €1.7 billion in the IPCEI on microelectronics and €80 million in an industry relevant Horizon 2020 project. See `https://bit.ly/374q6e2` and `https://bit.ly/3l381FF`.

digital sphere are censored by the government (see Stockmann, 2014, chapter 6).The government also has the right to access all data held by Chinese companies. These policies created a "parallel universe" of digital services serving the local market.

The digital services companies dominating most markets outside of China, and in particular Europe and the US, are mostly of American origin. The large domestic American market with laissez-faire regulation, strong research universities and deep venture capital markets provided the ground on which many successful start-ups developed into "digital giants". They are key providers of digital services and software, and digital services are also an important component of European manufacturing (Görlich and Poitiers, 2020).

However, the development of stringent data privacy regulation in the EU has led to a divergence of the digital spheres between the US and Europe. The declaration of privacy as a fundamental right, enforced through stringent rules for personal data in the General Data Protection Regulation (GDPR)[23] created a large regulatory divide between the two economies. In order to enforce the protection of personal data and avoid regulatory arbitrage, the GDPR is not only applied extraterritorial, but also puts conditions for the transfer of such data outside of the EU. This development has given rise to what Aaronson and Leblond (2018) call the three "data realms" of the EU, the US and China. Given the separation of the Chinese digital sphere, and the conditions put on personal data by the EU, the flow of data is facing growing non-tariff barriers. This trend has been aggravated with the Schrems II ruling by the European Court of Justice (ECJ) in 2020, striking down the EU-US Privacy Shield (the legal framework that allowed for transfers of data between the EU and the US).[24] While an alternative framework through contractual obligations between companies is currently still viable, it is challenged by the same considerations that brought down the Privacy Shield.[25] Similar considerations cast doubt about the viability of data flows with the UK (Marcus, 2018).

The GDPR has been a successful example of the "Brussels' Effect" through which its large market allows the EU to set regulation that is then adopted by other (smaller) economies (Bradford, 2020). A number of other countries have followed the EU's example on privacy regulation and enacted legislation based on the GDPR. This allowed the EU to issue adequacy decisions that declare other countries' privacy frameworks equivalent in protection to the European one. These adequacy decisions allow companies to freely exchange personal data between the respective jurisdictions and the EU. Given the status of privacy as a fundamental right, it is excluded from EU trade agreements and cross

[23] European Commission, 2016, "Regulation 2016//679 of the European Parliament and of the Council on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (GDPR)", Official Journal of the European Union 119: 1–88.

[24] For a discussion see Marcus (2020).

[25] In a precedent setting case, the Irish Data Protection Commission (DPC) is investigating against Facebook's usage of standard contractual clauses to transfer data to the US. A lawsuit brought by Facebook to halt this proceeding has been rejected by the Irish High Court. The preliminary draft decision of the DPC cited in the High Court's decision states that "Accordingly, it is my preliminary view – subject to such submissions as FBI may make – that the SCCs cannot compensate for the inadequate level of protection provided by US law" Facebook Ireland Limited v Data Protection Commission [2020] 617 (IEHC) [64] `https://bit.ly/3i9hOrH`.

border flows of personal data are only dealt with through these (unilateral) adequacy decisions. While this makes the strength of the privacy framework, it is also a major impediment to cross border data flows outside of a small network of privacy friendly jurisdictions.

The widening differences in data governance and regulation between the three largest economies will be difficult to overcome, with repercussions for global data flows. Some countries have introduced measures trying to gain stronger control over the information available to their citizens following the Chinese model.[26] Others have introduced privacy regulation based on the GDPR, or committed to data transfers under minimum standards in trade agreements with the US (Gribakov, 2019). To build mechanisms that allow the flow of data between these "data realms" will be the most important challenge in digital trade. The US and the UK are the two most important services trade partners for the EU. The uncertainty over the flow of data between them and the EU is a major impediment for trade in services, both digital and non-digital. While there is renewed engagement over the issue with the new US administration, and the Commission seeks adequacy with the UK, it is questionable whether conditions that hold up to the standards set by the ECJ in its Schrems II decision can be found.

As critical as the free flow of data is the ability to trade the underlying services. Here, there are still substantial differences between economies. China is the least open economy in the G20 with regard to services trade, while most professional services are open to foreign providers in the US. The EU, while not as open as the US, is among the more open economies and when comparing regulations across G20 countries, the EU features more similarities with other economies than the US (Görlich and Poitiers, 2020). This relative openness and the regulatory framework are comparative advantages to attract digital services companies to the EU.

However, within the EU, many services are regulated at a national level leading to a fragmentation of the single market, preventing services from being traded digitally within the single market (Marcus, 2018). The lack of a unified market and venture capital has prevented start-up in the EU to become competitive. To strengthen the European digital sector, creating the right conditions for venture capital, completing the Digital Single Market, as well as more public investment into R&D into digital technologies will be needed.

2.2.4 Policy Conclusions

The central challenge of European economic policy with respect to high-tech competition in the digital sector is to strike a trade-off between protecting its citizens and its industry from geopolitical disruptions and upholding principles of open competition in the industries. In this context, the EU should also intend to strategically support industries allowing to reap the economic potential of these

[26] Russia and Turkey are prime examples for this, see United States Trade Representative (2020, p. 428-429 & p. 488-489).

high growth sectors. The current policy paradigm revolves around the concept of "open strategic autonomy", which is intended to both recognise the necessity of increased interventionism, but intends to avoid protectionist undertones. In the following we will discuss 7 "instruments" for EU policy to reach EU ambitions.

Instrument 1: The "Brussels Effect" and Regulation The EU privacy framework GDPR has been a success story of the "Brussels Effect". Other countries have followed the EU's approach and introduced similar privacy legislations, enabling the EU to issue adequacy decisions that allow cross-border flows of personal data while maintaining the EU's high level of privacy protection. There is now an ambitious agenda on digital services and AI to develop regulation pursuing EU policy goals that could serve as global "gold standard". However, GDPR also highlights the limits of this approach: the US has a very different regulatory framework for digital services and data flows, incompatible in particular with regard to GDPR. Other important trading partners like the UK might be hesitant to sign agreements aligning with EU regulation given their concern over regulatory sovereignty. Finally, it will be important to complete the single market with respect to (digital) services, in order to harness the full potential of a large unified market (Marcus, 2018). Ultimately, the EU should aim to spread its approach further to incentivise companies and countries to adopt stricter data privacy rules.

Instrument 2: WTO, Trade Agreements and International Cooperation WTO negotiations on e-commerce are making advances, yet expectation should be kept in check. Given the fundamentally different stances of the US, EU and China with regard to the most important issues (in particular localisation requirements and privacy), they will not be resolved at the current stage. An agreement on a framework would be an important first step, but would only have limited effects for the global trade of digital services. The proposed agreement on global taxation, endorsed by the G7, might have more direct effects on the trade of digital services, where the landscape of trade flows is currently shaped by tax considerations (Setser, 2020). Bilateral agreements that seek to alleviate concerns over Chinese commercial practices are difficult to ratify, as the EU-China Comprehensive Agreement on Investment (CAI) has shown. Despite the trade policy merits of the CAI (see Dadush and Sapir, 2021), its ratification process has been frozen due to political tensions and human rights concerns.

Instrument 3: Research policy and Horizon Europe Semiconductor technology is highly R&D intensive, and many of the large multinationals dominating the digital service industry are born out of computer science research clusters in the US. Therefore, it is crucial to strengthen R&D in the EU in order to improve Europe's competitiveness in these sectors. The new Horizon Europe research program is the key EU policy tool in this regard, with a planned budget of €94 billion, of which €15 billion are devoted to projects on Digital and Industry (Veugelers, 2021). However, this tool has not gone far enough to bridge the difference in R&D investment between the EU and other developed

economies. Investment into R&D represented 2.2% of EU GDP in 2018, still well below levels of other industrialised economies (e.g. South Korea 4.5%, Japan 3.3% and US 2.8%) as well as the EU's own target of 3%.[27]

Instrument 4: Capital Markets Union The EU is lacking in venture capital, which plays a crucial role in the US dominance of digital services (Bhatia et al., 2019). Access to capital is necessary for start-ups to develop into viable businesses, and especially in markets with large returns to scale the much better availability of risk capital in the US is a significant advantage. Currently, venture capital as share of EU GDP is less than one tenth the level in the US. Deepening the Capital Markets Union will require regulatory harmonisation in particular through centralised supervisory authority, facilitating equity investment of institutional investors and harmonisation of corporate insolvency law (Demertzis et al., 2021).

Instrument 5: State Aid and IPCEI When it comes to semiconductor industrial policy, the core EU tool to support the industry is the definition of an IPCEI. This framework allows national state aid to companies investing into R&D projects that enhance strategic economic goals. However, it relies on Member States' resources and would benefit from increased cooperation. The EU does not possess mechanism with resources that could directly match US or Chinese public investments. The investments currently targeted by the EU are vastly insufficient if policy goals are to be taken seriously (Poitiers et al., 2021). The white-listing of sectors for national state aid for R&D project does not amount to a coherent European policy, and more (resourceful) common tools are needed. More importantly than subsides for industries, the right market conditions have to be created to allow businesses to thrive.

Instrument 6: Competition Policy The business environment in the EU is generally more competitive than that in the US, to the benefit of European consumers (Philippon, 2019). Yet, monopolistic tendencies are a feature of digital markets and could become even more prevalent in the future (Anderson, 2020b,a). New competition tools like the Digital Markets Act are intended to reign-in the power of large multinational digital services companies, and to create better competitive conditions for European start-ups against incumbents (Anderson and Mariniello, 2021). In other markets, as with state aid, a careful balance has to be found between proactive industrial policy and the risk of deteriorating competition protection and creating opportunities for rent seeking.

Instrument 7: Trade Defence and Investment Screening Apart from international trade agreements, the European policy response to distortionary policy includes a new emphasis on trade defence, and the development of a more coherent investment screening regime. This includes both investment

[27] Source: Eurostat, `https://bit.ly/3rCqRom`.

screening with regard to strategic sectors and to market distorting effects arising from subsidised acquisition by foreign investors (Domínguez-Jiménez and Poitiers, 2020). While the investment screening regulation with regard to strategic investments is an important first step to harmonising investment policy in the EU, so far, it only requires notification and allows the Commission to issue (non-binding) comments. Furthermore, in April 2020 only 18 EU countries had investment screening mechanisms. The non-binding nature of the Commission's notification does not provide satisfactory action to prevent investments indented to buy political influence in particular member states, or the protection of projects which's strategic interest arises from their European dimension.

3 International Macro-Economic Perspectives

3.1 The International Role of the Euro

by Kerstin Bernoth (DIW) & Pauline Weil (Bruegel)

Summary: Since its introduction 20 years ago, the euro has established itself as the second most important currency on the international capital markets. However, the USD remains by far the most important currency on international capital and foreign exchange markets.

The main reasons for strengthening the international role of the euro seem to be political. One expects less dominance of US policy and a greater ability of the EU to exert geopolitical influence.

To increase the internationalization of the euro, completing the European Capital Market Union and Banking Union to promote market integration and expand availability of euro denominated financial instruments are the main advance that policy-makers could make. The EU stimulus package and the issuance of European safe assets are encouraging steps

To promote acceptance of the euro, one should take advantage of the opportunity presented by green finance by developing the EU into a sustainable finance hub. In 2019, almost half of global green bonds issued were denominated in euro. This is expected to continue gaining momentum thanks to the European Recovery Fund. The EU could also position itself further on the trading of sustainable products (renewable energy), as such commodity trade is relatively new and less dependent on USD denomination.

As recalled by Kenen (2011), an international currency is first and foremost one that is used and held outside the issuing countries, including for transactions between non-residents. By extending the three classical functions of money (namely medium of exchange, unit of account and store of value) to official uses, Krugman (1984), finds that an international currency serves six purposes. Privately used, an international currency serves as a payment vehicle, to invoice and for banking and investment, while official use covers monetary intervention, pegs and foreign reserves.

In 2020, the ECB evaluated the degree of internationalization of the euro (European Central Bank, 2020). In terms of global holdings of foreign reserves, the USD accounts for about 60% of global holdings, while that of the euro is constant at about 20%. Next in line is the Japanese yen at below 6%. On official uses of the euro at the international level, 60 countries have chosen to use the euro as their own currency or peg their currency to it. Further, the use of the euro for transactions is mostly concentrated in the European neighborhood. According to Drabowski (2020), the USD's cash holdings outside their jurisdictions were six times larger than the euro's. In terms of the role of currencies in international banking, the dollar also ranks first, accounting for about 55 percent of all cross-border loans and deposits; the euro ranks second, but its share of global international banking

is only about half as large. In terms of the frequency of the currency used in global payments, the euro also ranks second behind the USD, but here the difference is only marginal according to data from the Society for Worldwide Interbank Financial Telecommunications (SWIFT) (in February 2021 37% euro versus 38% USD). And finally, according to a recent ECB study (European Central Bank, 2021), an overwhelming share of international trade is invoiced and settled in dollars, especially in emerging markets. Importantly, the dollar's share of invoicing is disproportionate to the role of the US economy as an exporter or importer of traded goods. The euro is also widely used, but mainly in trade involving non-European countries on one or both sides of the transaction or African countries. Efstathiou et al. (2018) put forward that the variables determining the internationalization of currencies are related to the size and stability of the issuing economy, notably of its financial markets, on the one hand, and on a policy stance favoring internationalization and global influence on the other. Because these are relatively stable variables, except for financial stability, long term trends are at play. The USD has been the dominant international currency since the end of the second world war. Segal (2019) notes that it has been so thanks to strengths of the US economy and to lack of potential alternatives. No other country has a market comparable to the scale and stability of the US economy and financial market. Further, in a study on the currency composition of foreign reserves, the IMF discovers a strong inertia bias (path dependence) which make currency composition relatively slow or non-reactive to changes in macroeconomic fundamentals (Iancu et al., 2020). Network externalities, defined as decreased transaction and operational costs of the broad use of a given currency, also favors incumbent currencies (Drabowski, 2020). In recent history, shocks and crisis on the international economic scene, have rarely or slowly initiated changes in international currency use. Although the Chinese renminbi has gained importance in recent years (from 35th most used currency in 2010 to the 5th in 2021), it still represented only 2.2% of SWIFT payments in February 2021 – much less that its role in international trade.

Thus, while there were political expectations of the euro's international role when it was introduced, monetary and fiscal policies and the state of the EU financial market did not provide the fertile ground for the European single currency to become a challenge to the dominance of the USD. In the context of increased politicization of financial activities and communications surrounding European sovereignty, the current question is to assess the will of the Eurosystem to increase the international role of the euro and its potential levers to do so.

3.1.1 Motivations for Greater Internationalization of the Euro

Macroeconomic cost-benefit analysis

There are some economic benefits to having an international currency. Global demand for a currency decreases the cost of capital and stability of access to finance (for both businesses and governments). Further it increases the currency choice of market participants and lowers costs and currency risks of

international trade. An international currency can also generate income, partly through seigniorage income from the central bank, and partly because of the spread between the returns of foreign assets and the cost of foreign liabilities.

The above privilege of holding an international currency (ie. mostly the USD's privilege), however, go along with some risks and duties. Prevalence on financial markets exposes the currency to risks of sudden loss of confidence (although such a shock could be absorbed a large domestic market) and conversely to currency appreciation risks in times of global stress which plays to reduce the competitiveness of exports. Constraints on monetary policy can materialize. Shock to global market can warrant counter-cyclical flows of liquidity, recall the Federal Reserve System's (FED) status of lender of last resort and compel it to extend swap lines to other central banks. Prevalence on financial markets conversely exposes the international to domestic shocks of the currency issuers; issuing a domestic currency should compel a country to follow sustainable fiscal policies.

Ultimately, global demand for a currency that is used domestically by a country creates incentives for a domestic policy favoring overconsumption and the running of current account deficits, like the US have, creating risks for domestic and global imbalances (Efstathiou et al., 2018; Smaghi, 2011). Tensions between domestic and global or long-term and short-term policy objectives are referred to as the Triffin dilemma, put forward by Triffin in warning of the unsustainability of the gold exchange standard in 1960.

Political motivations

The EC is committed to further internationalization of the euro, as it reiterated in the Communication "Towards a stronger international role of the euro" in December 2018. Then President of the EC Juncker has put forward that more must be done for the euro to play "its full role on the international scene". These announcements followed the US withdrawal from the Regional Comprehensive Economic Partnership (RCEP) agreement and the imposition of US sanctions that halted European companies' activities in Iran. It became clear that EU and US policy objectives will not always coincide and that overdependence on the USD constrained EU businesses engaged in international trade to abide by US sanctions on the use of the USD. Pursuing increased internationalization of the euro is part of the underlying objectives of European economic sovereignty[28] as also showed by a communication by the ECto the Parliament, Council, and ECB (European Commission, 2021c). This renewed push came in the context of increased awareness of the threat posed by the COVID-19 pandemic, but also following the threat of sanctions by the US in connection with the Nord Stream 2 project. The limitations of EU policy were also illustrated by the lack of reach of the special purpose vehicle (Instex) to secure the proceeds of the Joint Comprehensive Plan of Action (JCPOA) with Iran.

It is derived from these areas of political tension that an increased international role for the euro would

[28] For more detail see `https://bit.ly/3iUn9SV`.

ensure more autonomy for European businesses and governments. Economic sovereignty would be increased by shielding the EU from financial risks, by increasing the EU's resilience to US sanctions and improving the EU's own sanctions regime. Shifts in the global geo-economic landscape have led to the increasing use of economic instruments in pursuit of policy goals, as legislation on the use of currency allows a country to anchor effective extraterritorial reach of unilateral sanctions.
Overall, the political gain of a stronger international role for the euro would be less dominance of US policy, but also a greater ability of the EU to exert geopolitical influence.

3.1.2 Mitigating EU Ambitions

The euro will probably not dethrone the USD

The euro already has international status, but it is far from being the dominant currency. The goal of having a stronger euro will not be a sufficient incentive to drive the associated economic and political trade-offs. In its current state, the euro area is not able to bear the economic risks and international obligations that the US currently bears as a result of the internationalization of the USD.
Moreover, even a better fit of the euro area would not secure the challenge of the USD. Ultimately, international currencies are chosen by private actors in international markets; political considerations play only a marginal role (Drabowski, 2020). Changes in international currencies have historically been rare. Given the relative inertia and network externalities of international currencies, European efforts in this matter would likely have a disproportionately small impact.
The Eurozone currently enjoys some of the exorbitant privilege on macroeconomics but is relatively exempt of the magnitude of the duties faced by the Fed (European Central Bank, 2019). Main attractions to increase the international role of the euro appear to be political – as confirmed by the most advocating position of the ECand possibly, although deterministic factors are also at play, by the more neutral position of the ECB. Finally, the extraterritorial reach of US sanctions is related to the importance of the USD for international trade, but also of the US domestic market and US influence.
Increasing the role of the euro is not an objective in itself. In this view, Drabowski (2020) argues that the economic size of a country is not sufficient to assess the international role of its currency. The concept of a currency area-which groups together countries that issue a common currency and includes countries whose currencies are pegged to it and that have strong trade, investment, and financial ties-proves more appropriate for assessing the difference in the use of the USD and the euro. The euro's currency area is limited to the European periphery and some African countries, while that of the USD extends to Asia, Central Asia, the Middle East, and North and East Africa. The euro area is less open and integrated than the US.

International currency diversification: a global public good?

Ultimately, global financial stability could benefit from the increased use of an international currency

that is truly international – neutral and not used domestically by any country. Global finance's overreliance on the USD makes the world, including the Eurozone, disproportionately exposed to the US economy. As the Triffin dilemma anticipated, overreliance on some currencies creates incentives to accumulate unsustainable imbalances. Incentives for growth models are distorted as, on the one hand, issuing countries run significant external deficits and on the other "periphery" countries run surpluses and accumulate reserves (Smaghi, 2011). These stances risk creating inflationary pressures or low yield environments. Mitigating the dominance of international currencies with domestic use could curb incentives for unsustainable growth strategies.

Following the global financial crisis and out of geopolitical considerations, some emerging markets, namely China, Russia and Brazil, have proposed gradually replacing the USD with a neutral international currency, namely the International Monetary Fund's (IMF) Special Drawing Rights (SDR). If the political and economic motives of governments and Central Banks are relatively transparent, the lack of resonance of such proposals confirms that private sector preferences and inertia are the biggest forces at play in determining the internationalization of currencies.

3.1.3 Policy Conclusion

Ultimately, the use of a currency is chiefly the choice of market agents and policies can only go so far as to increase the attractiveness of a currency. For the euro to compete with the USD, it needs to provide agents with equivalent levels of value stability, last resort lending, asset safety and market liquidity (Bernanke, 2016).

The euro has the preliminary settings to be an international currency. There are no restrictions on its purchase or sale and on holdings while global exporters are able to invoice sales in euro and private and public institutions can issue in euros. The euro also provided as much value stability as the USD (in terms of inflation and exchange rate) (Drabowski, 2020). Regarding fiscal stability, the euro area is less indebted in shares of GDP than the US, but differentiation in expected solvency across member states downplays the attractiveness of the euro. The more proactive stance adopted by the ECB could play to comfort agents in its role of lender of last resort.

The size, depth and legal infrastructure of the financial market are the most relevant aspects on which the Eurozone can play to improve the euro's attractiveness. A large and liquid financial market allows economies of scale and reduces transaction costs. However, achieving these are also the biggest challenges for its internationalization. To increase the internationalization of the euro, completing the European Capital Market Union and Banking Union to promote market integration and expand availability of euro denominated financial instruments are the main advance that policy-makers could make (Sapir et al., 2018).

Other policy measures and initiatives could also help to increase the international acceptance of the euro. The euro area currently does not offer enough safe assets - on the one hand, some member

states are not rated well enough, and on the other hand, the ECB's quantitative easing programs have absorbed a significant part of the existing safe assets. The EU stimulus package and the issuance of European safe assets are encouraging steps.

To promote acceptance of the euro, economic diplomacy and the provision of technical assistance to improve foreign entities' access to the euro payment system are also considered (European Commission, 2018). Central bank cooperation to ensure financial stability (including currency swap lines) should be encouraged. Although, as Drabowski (2020) points out, central banks choose the currency of their foreign reserves according to the denomination of international trade in their jurisdiction: Ultimately, their composition reflects private sector preferences-only central banks with large reserves can have a more discretionary composition of currency reserves.

Other leads also include to take advantage of the opportunity presented by green finance by developing the EU into a sustainable finance hub. In 2019, almost half of global green bonds issued were denominated in euro. This is expected to continue gaining momentum thanks to the European Recovery Fund. The implementation of the taxonomy could also contribute to secure a leading role for the euro in sustainable finance. The EU could also position itself further on the trading of sustainable products (renewable energy), as such commodity trade is relatively new and less dependent on USD denomination (Boz et al., 2020).

3.2 Current account imbalances

by Kerstin Bernoth (DIW)

Summary: One salient feature of the global economy during the last decades has been the existence of large and persistent external imbalances. Only by understanding their drivers is it possible to judge whether observed current account surpluses or deficits are economically justified or excessive.

Policies aimed at reducing global imbalances should take into account the participation of countries in supply chains. A better identification of country characteristics in terms of the share of domestic value added in gross exports is important. Together with a better understanding of where countries are positioned along the global supply chain, this can help shape trade policy.

One argument in favor of why excessive current account imbalances need to be corrected is that they have negative spillover effects on neighboring regions. However, more research is necessary, whether this is indeed the case.

Given that bilateral current account imbalances are strong predictors for the relative costs of trade wars between two countries, it is irritating that official statistics seem to fail to provide a consistent answer on the sign and size of bilateral current account data. As long as the data quality does not improve significantly, the quality of quantitative research on the causes and

effects of current account imbalances must always be questioned, which makes effective policy advice difficult.

Focusing on the EU, a large share of intra-EU current account discrepancy may result from massive fraud in Value Added Tax (VAT) declarations. EU-US current account discrepancies seem to mainly stem from primary income and service trade balance. One potential explanations is that EU countries and the USA apply different accounting rules to the same transactions. Another is that there is considerable room for maneuver on how exactly to apply them to best serve a country's interests. Furthermore, as trade becomes more business-to-consumer instead of business-to-importer, this can increase the discrepancy in bilateral import and export figures. Particularly in the field of e-commerce and service trade data compilation needs improvement. Further, actions should be taken on tax havens to both curb tax avoidance and improve data quality with respect to primary income accounts. Moreover, transparency should be increased to get rid of meaningless confidentiality clauses that keep bilateral national current account positions undisclosed. In the EU, statistical collection is hampered by a fundamental lack of harmonization.

The four "quick fixes" adopted 1 January 2020 to improve the VAT rules for the cross-border supply of goods within the EU were necessary steps to stop unlawful practices. The introduction of the "final" VAT system expected in 2022 holds the chance to eliminate tax loopholes in a sustainable way. To combat fraudulent misreporting the implementation of an electronic clearing procedure that documents all cross-border transactions for goods and services would be helpful.

One salient feature of the global economy during the last decades has been the existence of large and persistent external imbalances. Following the global financial crisis, a general reduction in global current account surpluses and deficits has been observed. This decline is largely due to a reduction in current account imbalances in emerging economies, while imbalances in advanced economies remain at similarly high levels. The large reduction in China's surplus generally has been matched by lower deficits in some advanced and emerging economies as well as higher balances in oil exporting countries. In contrast, the current account deficit of the US stayed generally unchanged. Current account imbalances have long been a hotly debated global issue in terms of their causes and effects and the need for correction.

Analyzing the determinants of external imbalances is important for understanding the transmission of shocks in an increasingly integrated world. Only by understanding the drivers of current account imbalances is it possible to judge whether observed current account surpluses or deficits are economically justified or excessive. And even, if there are judged to be excessive, we need to know, whether they need correction, because they have negative effects on the country itself or neighboring regions. In this section, we look at role of global value chain participation (GVCP) in explaining current

account imbalances. Next, we present recent studies that examine whether the observed excessive current account imbalances are actually as damaging to regional and global growth as is often claimed, so that they need to be corrected from this perspective. Finally, since studies of the determinants of current account imbalances are only meaningful if one also has reliable statistics of the bilateral current account components, we look at the quality of bilateral trade statistics.

3.2.1 Accounting for GVCP

To derive benchmark levels that can help determine what constitutes an excessive current account for each country, the IMF has established the so call External Balance Assessment (EBA) model (see International Monetary Fund, 2012).[29] This model is a well-established empirical framework that has become the main reference for the assessment of current account imbalances in the IMF's Article IV and External Sector Reports. However, recent studies raise doubt, whether this model really captures all relevant variables and fundamentals to that explain current account imbalances. Neglecting them would automatically lead to biased estimates of excessive current account imbalances and wrong policy conclusions.

One important aspect that may not have received enough attention is the participation of countries in global value chains (GVC). Fueled by the decline in transport costs, the adoption of trade-liberalising and advances in information and communication technology, companies are increasingly shifting production steps across countries. In response, the share of intermediate goods in total trade has steadily increased relative to that of final products.

From a theoretical perspective, the impact of GVCP on current account imbalances is ambiguous. Assuming that the efficiency of imported intermediate goods in domestic production is subject to a temporary positive shock, the share of foreign value added that goes into domestic exports is expected to increase and - by improving the competitiveness of domestic exports - stimulate foreign demand for domestic goods and thus domestic income. If the shock is temporary, the domestic economy in equilibrium saves some of its income gains to smooth consumption over time, which has a positive effect on the current account. However, if the competitive gain is perceived to be of a more permanent nature, consumption, and thus imports, would rise commensurately with permanent income and this would exert downward pressure on the current account balance. Thus, one expects a positive effect of GVCP on current account imbalances only if the trade balance impact of the resulting competitive gain from domestic production is higher than the increase in imports of intermediate goods.

Empirical evidence confirms that GVCP plays an important role in explaining current account imbalances. However, there is no consistent evidence on the direction. Brumm et al. (2019) augment

[29] The typical EBA regression contains a broad set of variables that can explain the current account: fundamental non-policy-related determinants (such as productivity, expected GDP growth, demographic factors), financial determinants (countries' reserve currency status, global financial market conditions), cyclical factors (such as the output gap), and policy-related variables (like the cyclically-adjusted fiscal balance and the level of public expenditure in health).

the IMF's EBA model by measures of economies' GVCP. Their panel regression results based on a sample of 26 countries confirm that GVCP has a statistically significant positive effect on the current account that is distinct from the effects of a large number of standard fundamental determinants of external imbalances. Economies with greater GVCP exhibit larger current account surpluses (or lower current account deficits). They further document that the effect of GVCP is not driven by EU membership, country size, trade openness or a country's domestic manufacturing intensity. The part of Germany's overall current account surplus that cannot be explained by the fundamentals included in the IMFs original EBA model is reduced by around 10% when its GVCP is controlled for. For Japan and the US, the unexplained part of the current account balance is even reduced by around 50% and 75%. Their estimates thus imply that high levels of German GVCP at least partially explain large current account balances. Similarly, for Japan and the US initially low levels of participation and the subsequent increase in Japanese and further decrease in US participation seem to improve the model's ability to explain the behavior of current account imbalances.

In contrast, relying on a large panel of 57 countries, Lopez-Villavicencio and Mignon (2021) find evidence that backward GVC makes a negative contribution to current account balances: a rise in backward GVCP of a country relative to other countries—i.e., if the country imports intermediate goods for further producing its exports—deteriorates its current account position. They present evidence that whereas higher GVCP boosts exports, the rise in imports - both of intermediate and final goods - in the country involved in supply chains explains the negative effect of GVCP on current account balances.

To summarize, empirical evidence suggests that it is undisputed that countries' participation in global supply chains play an important role in the development of imbalances in individual countries' current accounts. For an assessment, whether these imbalances are indeed excessive, it is important to take these GVCs into account. However, more research is needed to determine and understand the impact of GVCP on current accounts more precisely.

3.2.2 Current Account Imbalances Good or Bad for Regional and Global Growth?

Assuming that one can correctly identify whether a country's current account position is excessive, the next question is whether it needs to be corrected. One argument in favor would be if current account imbalances have negative spillover effects on neighboring regions as it is often claimed. With regard to the Eurozone, for example, it has been argued that excessive current account surpluses, as in Germany, have hampered growth in countries in Southern Europe and that a correction of Germany's current account surpluses by a demand expansion would have positive effects on demand in other Eurozone countries.[30]

However, the empirical literature is scarce that assesses the spillover effects of large current account

[30] See e.g. Pettis (2013) and Elekdag et al. (2020).

imbalances. Using an input-output model, (Picek and Schroder, 2018) estimate the spillover effects of an expansion of Germany's final demand on GDP, employment, and the trade balance in deficit countries in Southern Europe. They find that a modest demand expansion in Germany will hardly make a significant contribution to the external adjustment process in in the neighboring region. Beirne et al. (2021) focus not on the effect of a demand expansion, but on the impact of changes to current account as such. More specifically, they assess whether current account imbalances in the three largest persistent current account surplus economies (Germany, Japan, and China) and the two largest persistent deficit countries (the US and the UK) are 'good' or 'bad' for regional and global growth. They find that current account surplus shocks (i.e. increase in the surplus) emanating from the China, Japan, and Germany have strong positive effects on regional and global growth. In contrast, for current account deficit countries, the effect of a positive shock to the current account balance (i.e., reducing the deficit) on regional and global growth is much lower.

In the case of the US, however, Beirne et al. (2021) find opposite results: a positive shock to the US current account balance impacts global growth negatively. A one percentage point shift in the US current account balance from deficit toward surplus would drag on global growth by around 0.3 percentage points. They give several explanation for this finding. First, less demand from the US for goods and services from the rest of the world induces negative growth effects abroad. Second, the decline in the US current account deficit would lower demand for USD-denominated financial assets. This leads to a depreciation in the USD and induces negative wealth effect on foreign investors that hold a substantial share of their wealth in USD denominated claims. Thus, a reduction in the US deficit may have a detrimental effect on global growth, which very likely has to do with the global reserve currency status of the USD. This should be taken into account in any political ambitions to give the euro a more prominent role in international financial and goods markets.

To summarize, whether countries with large and persistent current account surpluses hinder regional growth, cannot be said with certainty. Nor does pressure on the US to reduce its current account deficit necessarily stabilize the world and US economy. More research is needed to shed light on the channels through which different manifestations of a current account imbalance influence the growth of other countries.

3.2.3 Dominant Currency Pricing and Exchange Rates as Instrument for External Rebalancing

According the IMF, about 40 percent of global current account balances in 2019 were excessive (Iancu et al., 2020). Because these excessive imbalances increase the likelihood of external crises and protectionist measures that impede global growth, affected countries are urged to take corrective action. Next to structural and fiscal policies, exchange rates are traditionally assigned an important role in external adjustment. However, in recent years, the economics literature has increasingly drawn

attention to the fact that the response of trade flows, and hence the current account, to changes in exchange rates depends on the currency in which internationally traded goods and services are priced:

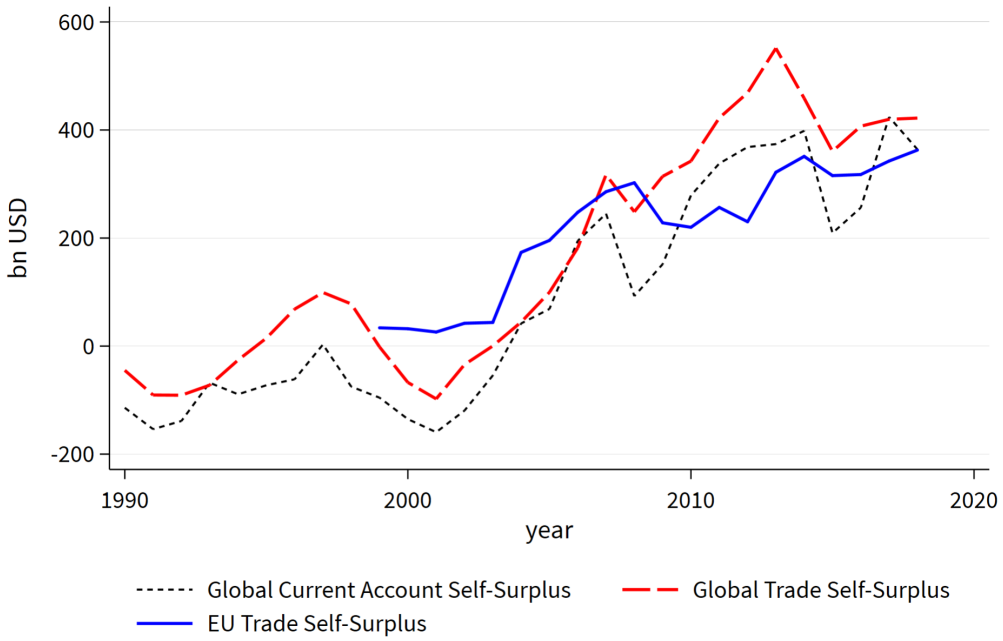
- When goods and services are priced in the producer's currency (producer currency pricing, PCP), a depreciation of a country's currency (against all other currencies) increases the price of imports in the home currency and lowers the price of exports in the target currency. As a result, demand for foreign goods and services (imports) decreases, while foreign demand for domestic goods and services (exports) increases. Thus, exchange rate depreciations induce external rebalancing through expenditure switching.

- When prices are set in the currency of a third country, regardless of where trade flows from or to (dominant currency pricing, DCP), a depreciation of a country's currency also leads to an increase in import prices in the short run. However, the prices faced by trading partners do not move because their exchange rates have not changed against the dominant currency. Thus, the currency devaluation of one country leads to a decrease in imports from all countries, while the reaction of export volumes is not affected. Thus, the exchange rate mechanism of external rebalancing is weaker.

Recent empirical literature studying the response of bilateral trade flows confirms this theory (Adler et al., 2020; Gopinath et al., 2020). At both, short and medium horizons, the terms-of-trade is largely insensitive to exchange rate fluctuations, when a large share of goods and services of a country is priced in a third currency, i.e. the USD. The stability of the terms-of-trade under DCP follows from the pricing of imports and exports in a common currency and the low sensitivity of these prices to exchange rate fluctuations. Thus, where DCP are widespread, the short-term response of trade volumes to exchange rates is likely to be more muted and to be manifested mostly through imports. Gopinath et al. (2020) conclude that this observation indicates that rebalancing external positions will generally require larger exchange rate movements and may justify supportive macroeconomic policies when large exchange rate fluctuations carry adverse side effects. Adler et al. (2020) suggest supporting exchange rate flexibility through macro-structural measures that improve export capacity, such as improving infrastructure (i.e., roads, ports, logistical support), easier access to credit, and lower regulatory barriers for firms.

3.2.4 Reliability of Bilateral Current Account Imbalances

Studies of the determinants of current account imbalances only make sense if one also has reliable statistics of bilateral current account components. This, however, does not seem to be the case. It has long been known that the world's current account is notoriously unbalanced with itself (see e.g. Frankel, 1975). In 2018, this discrepancy amounts to 422 billion USD, which is around 0.5 percent of global output. Focusing on bilateral current account data, Braml and Felbermayr (2019b)



Source: Braml and Felbermayr (2019a)

Figure 4: The EU Self-Surplus in the global context, bn USD

show that from 2009 to 2017, EU-US current account discrepancies sum up to more than 1 trillion USD. And also current account data within the EU and the Euro Area suffer from very substantial inconsistencies. In 2018, the EU has been running massive trade surpluses with itself over years, amounting to 307 billion Euro or 86 percent of the entire global self-surplus. The EU's self-surplus is bigger than the frequently criticized current account surplus of Germany, and larger than the GDP of the eight smallest EU Member States combined. Given that bilateral current account imbalances are strong predictors for the relative costs of trade wars between two countries, it is irritating that official statistics seem to fail to provide a consistent answer on the sign and size of bilateral current account data.

Braml and Felbermayr (2019a) show that these global and European current account surpluses are mainly driven by the trade balance. Figure 4 tracks the evolution of the global trade self-surplus, the EU's trade self-surplus as well as the global current account discrepancy, which consists by and large of global trade surpluses. The figure shows that the global trade self-surplus was negative before 2004 and has increased since then. The pattern of the EU's own self surplus looks very similar.

Where do these current account discrepancies come from? Focusing on the EU, Braml and Felbermayr (2019a) argue that the discrepancy may result from massive fraud in VAT declarations. Strikingly, the global trade deficit started growing in 1993 and turned into a surplus in the late 90s. The year 1993 is also the starting date of the EU single market, which has facilitated intra-European trade substantially (Felbermayr et al., 2018). Between 1999 and 2003, the EU self-surplus has remained very stable.

From 2004 onwards, coinciding with the EU Eastern enlargement, it has quadrupled, which suggests that this development is related to the creation of the single market. Braml and Felbermayr (2019a) claim that since participants of the single market exempt exports from VAT, the European VAT system in its original form has been apparently prone to fraud: if firms can legally declare products as exports which are in fact not exported (or re-imported), they can sell them domestically without remitting VAT to the respective government.[31] Experts have named this fraud system "carousel". To end this tax fraud opportunity, the EC introduced 'Quick Fixes' on 01 January 2020, replacing the old VAT system based on the origin principle with a system based on the destination principle. VAT is now invoiced by the supplier to the customer in the country to which the goods are shipped. With these changes in tax law, it can be assumed that the discrepancies in cross-border goods traffic within the EU will decrease.

But what explains the large transatlantic bilateral discrepancies? Cezar and Le Gallo (2019) outline that EU-US bilateral mismatches with respect to primary income can be traced to differences in accounting methods. Braml and Felbermayr (2019b) contradict this interpretation and see no reason to believe that methodological differences between EU and US authorities with respect to data compilation have played an important role. They show that the EU-US current account discrepancies are, by and large, driven by two countries: the UK and the Netherlands. Further, these mismatches mainly stem from the primary income and service trade balance. In their view, there are two potential explanations, why they exist. First, EU countries and the US apply different accounting rules to the same transactions. Second, even if they apply the same formal rules, there is considerable room for maneuver on how exactly to apply them to best serve a country's interests. For instance, there are international conventions regulating the accounting practices (the Balance of Payments and International Investment Positions Manual 6 (BPM6) standard), but the rules leave scope for interpretation, and there is little supervision or enforcement of rules.

Furthermore, the growing importance of e-commerce and the process of dis-intermediation in consumer behavior may also explain a rapidly growing discrepancy especially in service trade, as Braml and Felbermayr (2019a) explain. As trade becomes more business-to-consumer instead of business-importer, this can increase the discrepancy in bilateral import and export figures, as the exporting company records the cross-border transaction but the importing consumer does not have to, if the value is below a certain threshold. In a case where transactions of low value are carried out with high frequency, the statistics systematically under-report the true import figures.

3.2.5 Policy Conclusions

A thorough analysis of external positions is essential in order to promote growth-friendly policies by both countries with excessive current account surpluses and deficits. Whether countries with

[31] Fedeli and Forte (2009) and Braml and Felbermayr (2019a) describe technical details of VAT fraud systems.

large and persistent current account surpluses hinder regional growth, as is often claimed, cannot be answered with certainty. Further research is necessary to shed light on the channels through which different manifestations of a current account imbalance affect growth outside countries at the regional and global level. There is evidence that GVCs are important factors influencing regional and global growth and amplifying the magnitude of shocks affecting current account balances. It is important to understand more precisely the way countries trade with each other, particularly in relation to trade in intermediate goods at the regional level. Policies aimed at reducing global imbalances should take into account the participation of countries in supply chains. A better identification of country characteristics in terms of the share of domestic value added in gross exports is important. Together with a better understanding of where countries are positioned along the global supply chain, this can help shape trade policy.

When a need for external rebalancing is identified, the prevalence of dominant currencies in the pricing of internationally traded goods and services must be taken into account when designing optimal policies. With a weaker short-run trade response to exchange rates, rebalancing the external balance generally requires larger exchange rate movements. If these involve adverse spillovers-for example, through balance sheets or inflation-more supportive policies may be needed.

To this end, it is important that the analysis of external imbalances and their drivers, as well as the quality of data used, be improved and further developed by incorporating recent advances in the literature and lessons learned from implementation processes. As long as the data quality of balance of payments statistics does not improve significantly, the quality of quantitative research on the causes and effects of global and country-specific current account imbalances must always be questioned, which makes effective policy advice difficult. Particularly in the field of e-commerce and service trade data compilation needs improvement. Further, actions should be taken on tax havens to both curb tax avoidance and improve data quality with respect to primary income accounts. Moreover, transparency should be increased to get rid of meaningless confidentiality clauses that keep bilateral national current account positions undisclosed (Braml and Felbermayr, 2019b).

In the EU, statistical collection is hampered by a fundamental lack of harmonization. This is particularly true for the collection of data on cross-border trade in services. Not only does the existence of 28 different tax systems in the EU lead to statistical discrepancies, but also the poor data situation makes it easier for fraudulent parties to hide illegal activities. The four "quick fixes" adopted 1 January 2020 in a package of measures to improve the VAT rules for the cross-border supply of goods within the EU were necessary steps to stop unlawful practices with respect to cross-border services and goods trade. The introduction of the "final" VAT system is not expected before 2022 and holds the chance to eliminate tax loopholes in a sustainable way.

To combat fraudulent misreporting, Braml and Felbermayr (2019) propose the implementation of an electronic clearing procedure that documents all cross-border transactions for goods and services. In

doing so, each transaction should require two-step authentication: The exporter records the export value, quantity and counterparty in the system, the importer records the transaction details. The collected data is automatically forwarded to statistical offices and tax authorities. Reverse VAT accounting, which normally applies to intra-Community supplies, should also apply here. As long as the importer does not confirm the transaction, the VAT liability lies with the exporter. The moment the transaction is confirmed, the tax liability is transferred to the importer. In this system, the exporter would pressure the importer to complete the transaction in order not to have to pay VAT. In any case, at least one party would pay the VAT.

3.3 Cross-Border Payments with Digital Currencies

by Kerstin Bernoth (DIW)

Summary: Despite the fact that cross-border payments are the backbone of a globalised economy, they are slow, costly and opaque. In response, stablecoin providers have entered the market in recent years, the most likely to combat or even surpass the two most common forms of money today, cash and bank deposits. The emergence of new payment systems provided by private providers brings with it new risks and challenges to which policymakers must find appropriate responses.

It is important that commercial banks adapt to a digital life by offering attractive services or products similar to those offered by private payment service providers (PSP). In addition, central banks around the world are considering the introduction of central bank digital currencies (CBDCs) that would either compete with private and/or foreign-issued alternative digital payment instruments or can be used to regulate digital payment platforms.

However, the introduction of a full-fledged retail CBDC would be associated with some risks. A more feasible solution could be the introduction of a so-called "synthetic CBDC (sCBDC)." Private PSPs would be required to hold deposits with the central bank, and each stablecoin would be backed by one unit of local currency.

However, if one wants to extend the sCBDC model to the international level in order to develop a serious response to the dynamic activities of global private PSPs such as PayPal, one would have to find a way to exchange central bank reserves between providers of different countries. These considerations, as well as implementation, will require a high degree of international coordination and cooperation.

Until such deeper solutions are implemented, it is essential that regulators develop a legal framework that underpins their proper oversight and regulation of privately issued payment instruments. International coordination is almost impossible when many countries lack even a clear legal basis for stablecoins at the national level.

Despite the fact that cross-border payments are the backbone of a globalised economy, they are slow, costly and opaque. The most important back-end arrangement for cross-border payments are correspondent banks. According to Rice and Boar (2020), the recent global decline in correspondent banking has further exacerbated these impairments in international payments. In view of these deficiencies, the G20 finance ministers and central bank governors mandated the Financial Stability Board in April 2020 (Financial Stability Board, 2020) to develop a roadmap to improve cross-border payments. This is no easy task. For one thing, there is a very high degree of non-transparency regarding the costs and actual benefits of different various types of back-end arrangements. Secondly, coordinating efforts to solve the problems in cross-border payments is more challenging as it involves many players in the private as well public sectors.

In the past decade, alternative models to the traditional correspondent banking model for cross-border payments have entered the scene.[32] The most prominent model during the past decade are peer-to-peer arrangements that simply cut out the financial intermediary PSPs between the payer and the payee. Adrian and Mancini Griffoli (2019) argue that in this segment stablecoin providers have the greatest likelihood of combating or even surpassing the two most common forms of money today, namely cash and bank deposits. Unlike other crypto-assets, such as Bitcoin, that are characterized by high price volatility, stablecoins are crypto-assets that have a stable value because they are fully backed by a basket of secure assets.[33] The stablecoin Libra launched in June 2019 by Facebook is here a prominent example. Libra's initial proposal involved creating its own unit of account, avoiding the need to deal with different currencies when settling cross-border payments. Facebook announced that in future cross-border payments will be as simple as sending an email. Transfers in digital money are nearly costless and immediate, and thus are often more attractive than card payments or bank-to-bank transfers especially across borders.

3.3.1 Risks Associated with the Rise in Privately Issued Digital Money

The emergence of new payment systems provided by private providers brings with it new risks and challenges to which policymakers must find appropriate responses. i) Digital payment instruments offered by private agencies could lead to currency substitution in the domestic economy, which would reduce the effectiveness of domestic monetary policy. ii) They may also pose risks to the stability of the international payments system by encouraging "dollarisation", i.e. the use of foreign digital currencies in parallel with or instead of the domestic currency. This is likely to be particularly relevant for countries with weak institutions and political frameworks. iii) Depending on which assets and currencies are included in the reserves to back the value of a global provider of a stablecoin, this could increase

[32] See Bech and Hancock (2020) for a more detailed overview.
[33] Adrian and Mancini Griffoli (2019) provide an excellent overview of the different models of digital money currently in circulation.

monetary policy spillover effects and further hinder the transmission of domestic monetary policy.[34] iv) Private providers operate outside the supervision of the financial authorities and could displace banks as financial intermediaries, putting pressure on the entire banking system. v) digital money providers could quickly become large monopolies due to the strong network effects that drive their adoption, the high fixed costs required to establish operations on a large scale, and the exponential benefits of access to data, hindering new entry and absorbing rents. Thus, these developments could pose a threat to financial, economic and ultimately political sovereignty.

Given that one of the responsibilities of central banks is the smooth settlement of payment flows, the question arises as to how far they should react to recent developments. Two models are currently discussed, which are explained in more detail below: i) fully-fledged CBDC, ii) granting fintech companies access to central bank reserves/"synthetic" CBDC. We will argue below that the latter solution is the preferred one.

3.3.2 Is a Digital Central Bank Currency the Optimal Policy Response?

In response, central banks around the world are considering the introduction of CBDCs that would either compete with private and/or foreign-issued alternative digital payment instruments or can be used to regulate digital payment platforms.[35] A CBDC is electronic central bank money that – just like cash – is directly available to consumers and non-financial corporations.

It is often argued that the introduction of a CBDC would reduce the demand for digital money from private providers and thus curb their growing market position in digital money.[36] Moreover, the introduction of CBDCs could be an instrument for making the stablecoin sector safer. Private peer-to-peer PSPs could integrate CBDCs directly into their reserve portfolio, eliminating the need to manage associated reserves. This approach could avoid 'stablecoin runs' in times of crises by increasing confidence.[37]

But, the introduction of fully-fledged retail CBDC would also entails several risks. One is that it could further exacerbate disintermediation pressures and lead to further displacement of the commercial banking sector (e.g. Brunnermeier and Niepelt, 2019). CBDC as a substitute for bank deposits would reduce the availability of a cheap and relatively stable source of refinancing for banks. Consequently, banks' funding costs would rise, potentially leading to an increase in interest rates on bank loans and a decrease in the supply of credit with negative effects on aggregate investment and consumption.

[34] See Kriwoluzky and Kim (2019) and Adrian and Mancini Griffoli (2019) for a more comprehensive overview.

[35] Surveys indicate that 80 percent of central banks are engaging in work on the topic (Barontini and Holden, 2019) and over 30 central banks have already launched research or design reports (Kiff et al., 2020).

[36] Another argument often made in favor of a retail CBDC is that current retail electronic money is a claim on an intermediary that could become insolvent, act fraudulently or suffer technical failures. Having a direct account with the central bank could be attractive because of its absolute security. Here, however, one could counter that bank deposits up to a certain amount – in Germany up to 100 thousand euros - are protected by the deposit insurance schemes. Hence, in this respect, a CBDC would not be necessary. Allowing all households access to a bank account, prudent financial supervision and banking regulation are the right responses to possible bank failures, money laundering or fraud.

[37] Depending on the size of the stablecoin issuer, a 'run' could have severe consequences for global financial markets.

Another risk is that banks would become increasingly dependent on central bank credit. Greater reliance on central bank credit would require monetary authorities to permanently increase their liquidity supply, which would exacerbate the problem of collateral shortages and could ultimately affect market rates for safe assets. Moreover, the introduction of CBDC increases the likelihood and severity of bank runs in crisis situations. Liquid assets might be shifted rapidly from commercial bank deposits to the digital currency. Another concern relates to negative interest rate policy (NIRP) as a monetary policy tool. If the least risky and most liquid assets like CBDC are offered at a zero interest rate, which they would have to be in order to be used as a substitute for cash, no other financial instrument can yield a negative interest rate. Its holders would then always substitute it for CBDC.
As Panetta (2018) and Bindseil (2020) point out, these risks could be minimised, for example, through smart remuneration policies. Remuneration of the digital currency could be tiered, with different interest rates applied in different cases. For instance, central banks could pay less attractive interest rates on large holdings of CBDC in order to discourage excessive use of the digital currency as an investment.
However, a very serious problem with the issuance of a CBDC directly by the central bank, which cannot be easily pushed aside, is that it involves additional operational tasks that have nothing to do with the main mandate of central banks, such as maintaining customer relationships or monitoring transactions. Involvement in such tasks may raise public concerns that central banks are neglecting their main mission, which might lead to a lower reputation. Moreover, such customer management is very complex and involves high operational risks.

3.3.3 Policy Conclusion

A solution that counteracts most of the above risks is to require private PSPs to hold deposits with the central bank. This is already the case in China, where the large payment providers Alipay and WeChat Pay hold client funds at the central bank in the form of reserves. Such central bank intervention improves financial stability as it would de facto place PSPs under the umbrella of the central bank's reserve requirements. It would also help them to reduce market and liquidity risks in their reserve portfolio and the likelihood of 'stablecoin runs' and destabilizing devaluations.
Adrian and Mancini Griffoli (2019) add that in case of a full coverage of stablecoins with central bank reserves payment interoperability between different providers will be created, which makes the monopoly formation less likely. A payment between two different digital PSPs would simply work by moving deposits between their deposit accounts at the central bank. Central banks may further foster healthy competition in the digital payment sector by controlling the supply of reserves to a broad range of stablecoin issuers.
Moreover, the effectiveness of domestic monetary policy transmission would be strengthened. First, since central banks could pay interest on the deposits held by suppliers of private digital money, mon-

etary policy interest rates would be passed on to consumers. Interest rates on deposits of stablecoin providers at the central bank could even be brought into the negative range, which would eliminate the constraint imposed by the effective lower bound (Agarwal and Kimball, 2015). Second, if central banks only provide access to their safe and liquid central bank reserves to domestic providers operating under their direct supervision, the risk of dollarisation by foreign stablecoin providers could be reduced.

Adrian and Mancini Griffoli (2019) point out that as long as a stablecoin is backed by a unit of domestic currency at the central bank, the model of private payment providers holding deposits at the central bank is as if customers hold domestic currency at the central bank, which is precisely the essence of a CBDC. The main difference with a full-fledged CBDC model is that it is not the central bank that maintains the end relationship with the customer, but the stablecoin provider. The tech companies hold accounts with the central bank and the customers in turn hold accounts with these private payment providers. Adrian and Mancini Griffoli (2019) therefore define this model as a 'sCBDC'.

Such a public-private cooperation between central banks and private digital money providers has the big advantage compared to a fully-fledged CBDC system that monetary authorities can profit from the technological advantages and innovation in digital currency issuance of fintech companies (Kriwoluzky and Kim, 2019). This lowers initial and maintenance costs, while at the same time allows the central bank to regulate private issuance companies and to maintain their reputation.

However, Bofinger and Haas (2021) point out, this more nationally oriented approach of introducing an sCBDC needs to be thought through further if central banks are to develop a serious response to the dynamic activities of global PSPs such as PayPal. In the event that a cross-border payment is made between two different providers and currencies, exchange rate risk and repayment risk re-occur. The payer's provider could sell domestic currency in exchange for foreign currency and send it to the payee provider, which would be cumbersome, expensive and potentially slow. The very costs these companies are trying to avoid. One solution would be for payment providers to focus only on transactions in major currency pairs for which there are large and relatively balanced capital flows, in order to maximise the matching of digital money with local currency reserves. However, this could lead to a damaging fragmentation of the international payments system.

Instead of national systems that operate only with the national currency and can only carry out transactions with system-specific accounts, the solution would have to be supranational, with multi-currency capability and openness to payment objects that are not system-specific. However, this will increase the risk of distorted competition that arises due to the tendency of private payment providers to form a natural monopoly. Since cross-border transfers are cheaper if they stay within the same company, the response will be cross-border mergers and a more concentrated market structure. Thus, if one wants to extend the system in which private payment suppliers cover their reserves with central

bank reserves, one would have to find a way how to exchange central bank reserves among providers of different countries. These considerations and also the implementation will require a high degree of international coordination and cooperation.

In addition to all these considerations on how to reduce risks by increasing the market power of private digital payment providers, efforts should also be made in parallel to improve the competitiveness of commercial banks in order to avoid further dis-intermediation of the banking sector. To increase their competitiveness, banks should also respond and further adapt to a digital life by offering attractive services or products similar to those offered by private PSPs, e.g. contactless cards, phone-based apps that facilitate debit card payments, or 'fast-payment' systems introduced by the central bank that allow commercial banks to process retail transactions in near real-time and at negligible cost. In the euro area, this is already happening with TIPS-TARGET instant payment settlement.

Until such deeper solutions are implemented, it is essential that regulators develop a legal framework that underpins their proper oversight and regulation of privately issued payment instruments (Kriwoluzky and Kim, 2019). However, the development of such a legal framework is extremely complex due to the global nature of digital payment providers: authorities need to take into account the heterogeneous laws in different jurisdictions as well as different cultural views on certain legal aspects. Extensive research is already underway around the world on how to overcome these difficulties (see G7 Working group on Stablecoins (2019)). But international coordination is almost impossible when many countries lack even a clear legal basis for stablecoins at the national level.[38]

3.4 China's Role in International Credit Markets

by Malte Rieth (DIW)

Summary: China is an active international and strategic lender. However, its capital exports are opaque. In addition, China's loan agreements contain extensive confidentiality clauses. Most of China's external loans are official and go to developing countries. The Belt and Road Initiative (BRI) plays an important part. The regions most indebted to China are the Far East and Central Asia. Hidden debt is a major problem. There is no official information on the BRI nor on the size and terms of debt. More transparency is needed. One way would be to create international lending standards and urge China to follow these. Another route would be to ask China to join the transparency initiative of the Institute of International Finance or to commit it to the G20 Guiding Principles on Sustainable Finance. Alternatively, China could adopt formal lending rules similar to those of international institutions. Developing countries could also improve their statistical capacities with European development assistance. Finally, European lenders could increase their engagement in these countries.

[38] For example, many countries do not recognise various types of crypto-assets as fiat money or as property due to their unstable value, as the law does not recognise ownership of such intangible items (Omlor, 2019).

Over the past two decades, China has become the world's largest official lender because of its significant GDP growth and a strategy launched in 1999 to promote Chinese investment abroad. This development is the continuation of China being an active international and strategic lender for a long time already. After World War Two it provided substantial loans to other communist countries. Despite their importance, China's capital exports are opaque Horn et al. (2019). The government does not report public lending, and there is no standardised data on China's external debt. In addition, the People's Bank of China does not publish data on its purchases of sovereign debt or the composition of its asset portfolio. Neither does China disclose official data on flows of funds in the Organisation for Economic Co-operation and Development's (OECD) creditor reporting system, nor does it participate in the OECD Export Credit Group. The latter provides data on trade credit flows. Regarding cross-border banking, China has started reporting data to the Bank for International Settlements but it has not authorized to publish data at a bilateral level.

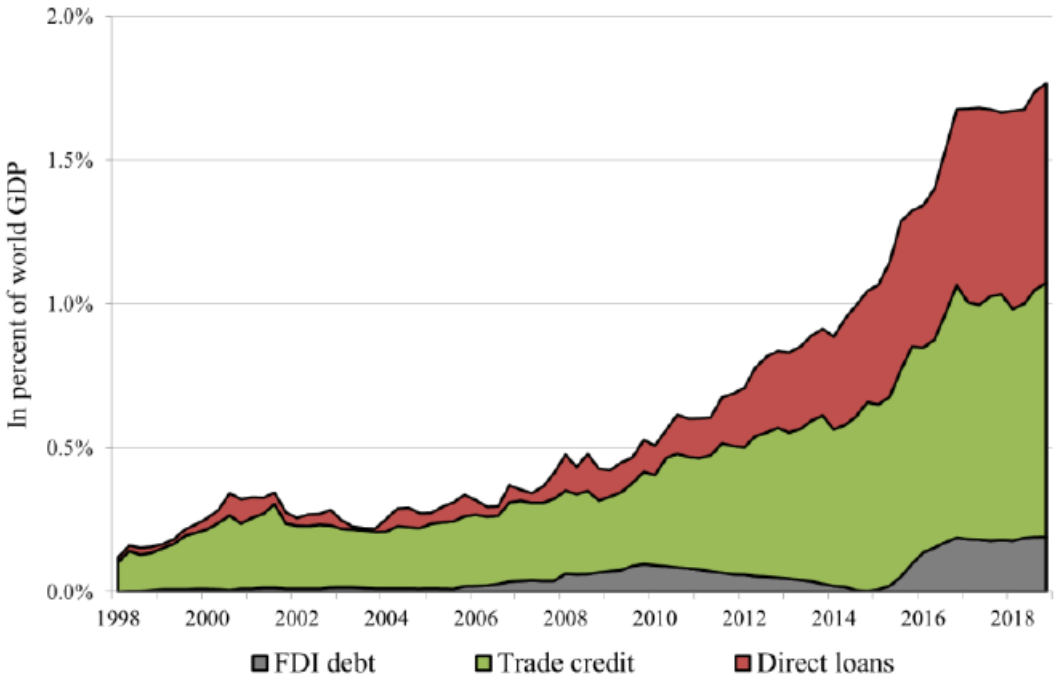
In addition, China is not a member of the Paris Club, which monitors sovereign borrowing from bilateral official creditors. Hence, it is not subject to standard disclosure requirements. Commercial firms such as Bloomberg neither monitor China's official borrowing abroad, while rating agencies (such as Moody's and Standard & Poor's) track sovereign borrowing only from private public lenders. Finally, and as discussed in greater detail below, China's loan agreements for developing countries contain extensive confidentiality clauses that prohibit the debtor from disclosing the terms and conditions of the loan agreement with others.

3.4.1 China's Overseas Lending Boom

The economic literature on China's lending practices is scarce because most of the research on international lending has focused on the role of the US or the UK. A notable exception is Horn et al. (2019). The authors construct a comprehensive dataset on external credit extended by China to 150 countries around the world since 1950. They use the credit data to estimate the outstanding debt of developing countries to China. The authors document that most of China's external loans and investments are official and made by the Chinese government, state-owned enterprises, or state-controlled banks.

Figure 5 uses aggregate data from China's balance of payments statistics. China's direct trade loans and credits have grown from almost zero in 1998 to over USD 1.6 trillion (2% of global GDP) in 2018. The loans mainly finance infrastructure projects in low- and middle-income countries.

Furthermore Horn et al. (2019) document that China adapts its external lending to the receiving country. Instead of direct loans, developed and upper-middle income countries obtain portfolio investments from the central bank. Figure 6 also includes these debt securities (in blue). It shows that in 2018, the world owed China over USD 5 trillion (6% of global GDP); since 2000, this amount has increased by a factor of ten. The dramatic increase is almost unprecedented in peacetime history and is only comparable to the loans made by the US after the two world wars. It has made China the



Source: Horn et al. (2019)

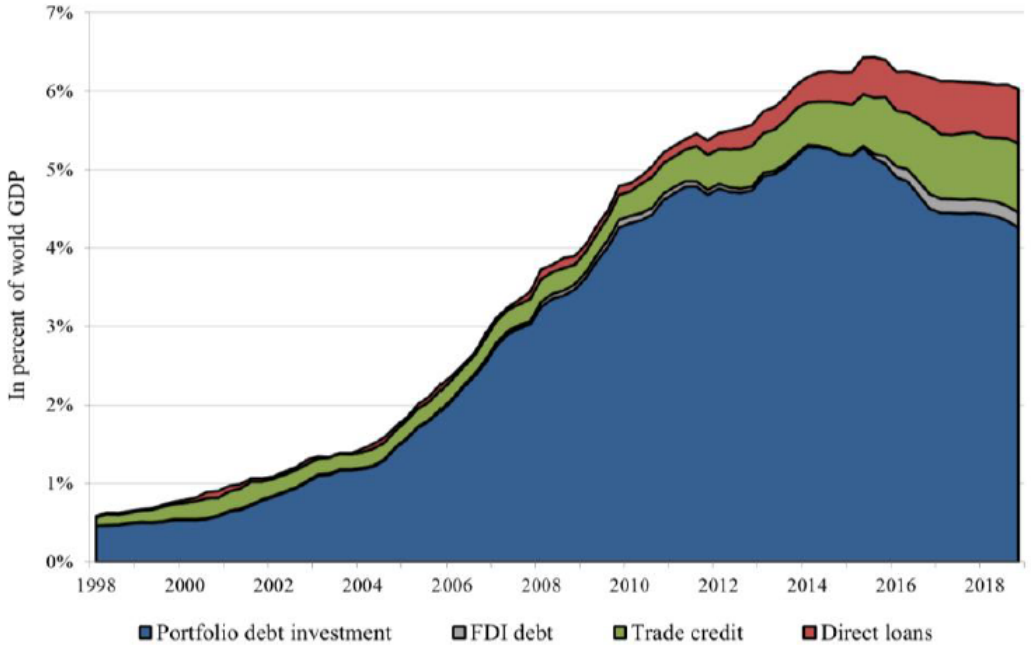
Figure 5: Oversea lending of China

world's largest official creditor.

China's role as an international creditor has been particularly dominant in low-income countries. Horn et al. (2019) document that its credit flows to these countries exceed total capital flows from the IMF, the World Bank, and private creditors (Figure 7). As a result, these countries owe China USD 380 billion, which is far more than to the governments of other major creditors combined. Figure 8 provides a global overview of the different levels of indebtedness to China.

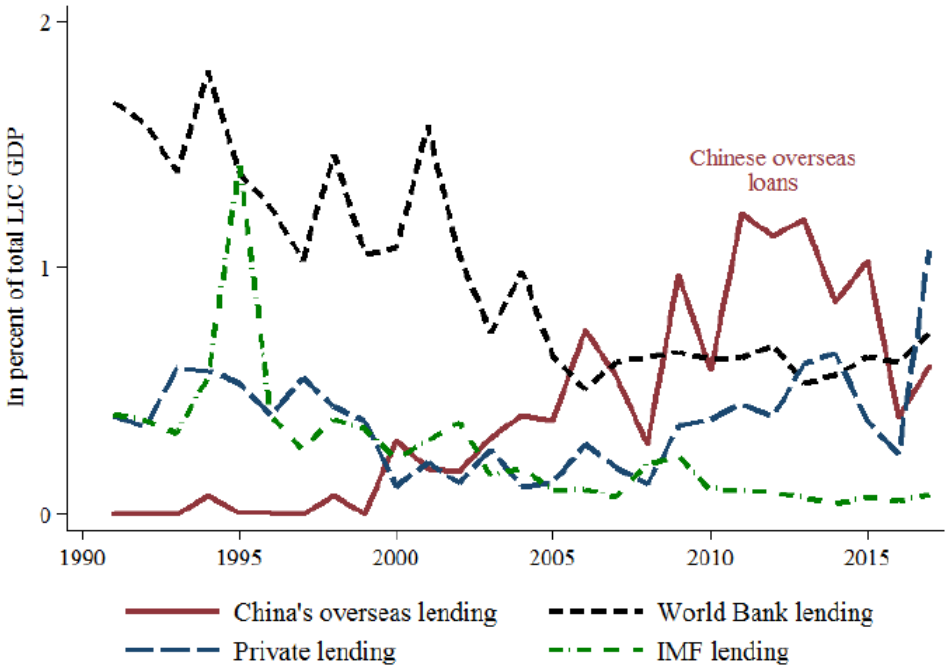
The BRI plays an important part in China's international lending. It was announced in 2013. The initiative aims at improving intercontinental connectivity and regional cooperation through large-scale investments (Bandiera and Tsiropoulos, 2019). China plans to invest over USD one trillion in infrastructure, the bulk of it in the Asia-Pacific region, but also in Africa and Europe. Figure 9 shows the planned infrastructure for the Silk Road Economic Belt, the New Maritime Silk Road, and joint transport infrastructure projects in Central Asia (De Soyres et al., 2019).

China's' motivation for the initiative remain debatable; according to Zhai (2018), it reflects that Chinese companies seek secure resources, expand market access, and manage domestic economic transformation, which would indicate that China's diplomacy has changed from reactive to proactive. Generally, the construction of railways and roads is of direct value to the host country. Nevertheless, common transport infrastructure can also have an asymmetric impact on trade and GDP (De Soyres et al., 2019). The countries that finance the projects are not necessarily those that benefit the most.



Source: Horn et al. (2019)

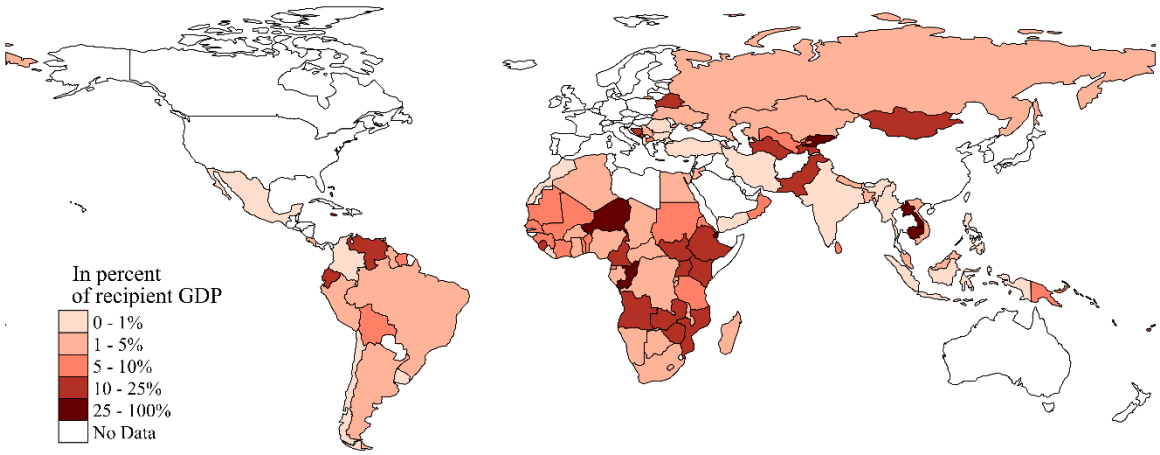
Figure 6: Total debt owed by the rest of the world to China



Source: Horn et al. (2019)

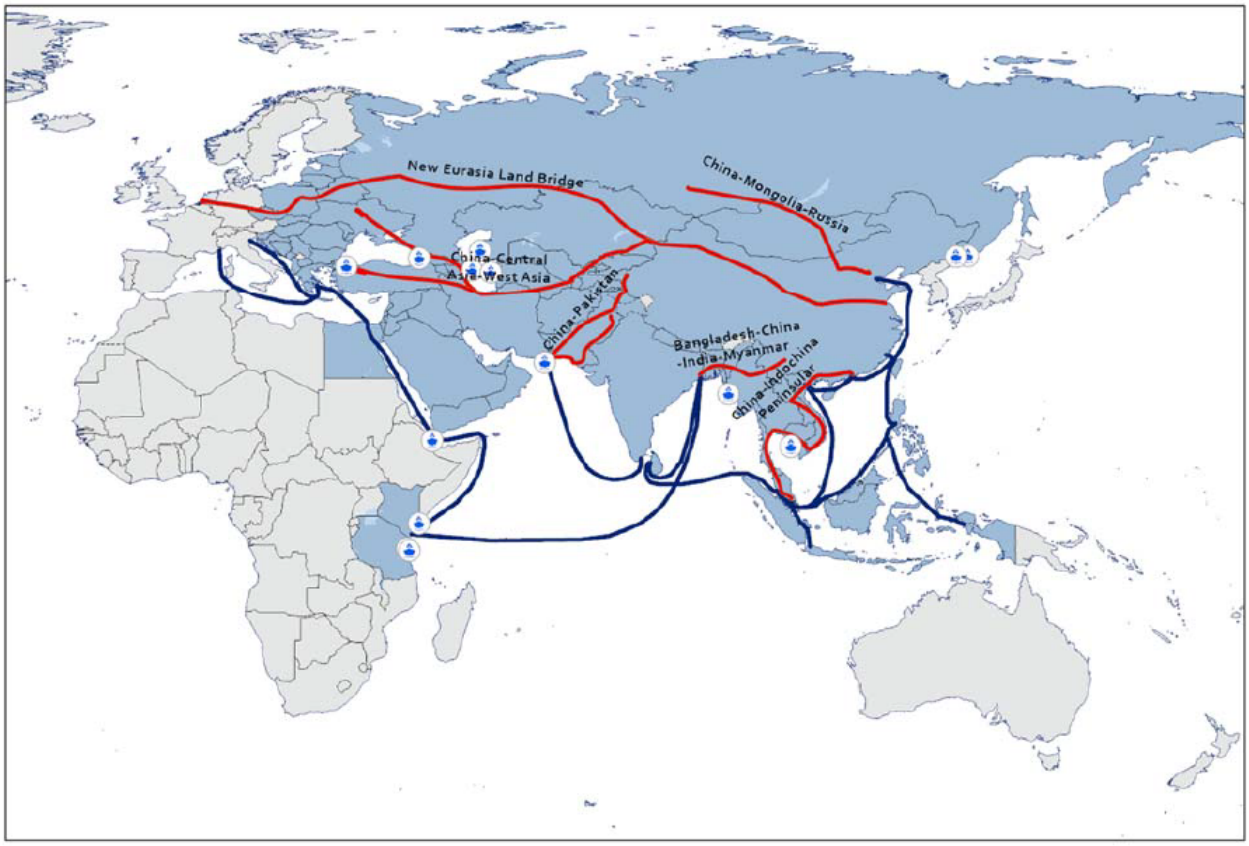
Figure 7: Capital flows to low-income countries

Moreover, a better transport network can also benefit neighbouring countries, which might not be taken into account when countries decide on their own about infrastructure investment. The costs



Source: Horn et al. (2019)

Figure 8: External debt of the world owed to China in 2017



Source: De Soyres et al. (2019)

Figure 9: Routes of the Belt an Road Initiative of China

and benefits of infrastructure also depend on the standards and procedures for building it and for clearing goods at borders.

De Soyres et al. (2019) present a framework for analysing the impact of the BRI on trade and GDP. They find that the common transport infrastructure increases GDP of the economies directly involved

by 3%, which is equivalent to a reduction of tariffs by one third in these countries. However, the authors also show that the gains from trade are not proportional to investment in each country. Three countries - Azerbaijan, Mongolia and Tajikistan - actually suffer welfare losses. Furthermore, their model implies that investment increases production of countries not involved in the initiative by more than 2%. These gains are larger than typical findings for regional trade agreements (RTAs) such as NAFTA because the initiative not only reduces trade costs in the participating countries but also in others which benefit as well from lower transportation costs.

Similarly, Lall and Lebrand (2020) argue that transportation infrastructure investments can improve welfare by facilitating trade, particularly among countries that are densely populated and physically and economically distant from global markets. Especially those regions that can offer better services and higher wages seem to profit as they can attract skilled labor. To quantify these impacts, Lall and Lebrand (2020) developed a quantitative model of economic geography. According to the model, regions with good access to external markets, that is, with border and port areas, would benefit most from trade liberalisation. However, they show that not all regions and workers benefit equally from greater integration into global markets because there might be re-allocation frictions. In some areas, products may simply pass through such that they will not profit by the same amount although these areas have to maintain the infrastructure investment. The main conclusion from this model is that urban centres located near border crossings benefit greatly, while remote areas can lose.

Zhai (2018) quantitatively explores the global impact of the BRI. He uses a computational general equilibrium model with multiple sectors that allows him to explore the interdependence between economic activity and its distribution. Assuming USD 1.4 trillion in infrastructure investment between 2015 and 2030, the model implies that by 2030 the Initiative countries benefit from a 2.9% increase in GDP. It also predicts that global trade will grow by 5.6% in 2030 compared to the baseline model.

The secrecy surrounding Chinese overseas lending has given rise to controversial debates on China's lending practices. Some observers have suggested that China is intentionally pursuing a strategy of "debt trap diplomacy," in which it imposes harsh loan terms on developing country governments in order to seize strategic assets, such as ports or infrastructure, when debtor countries run into financial problems (Chellaney, 2017; Parker and Chefitz, 2018). Similarly, senior US government officials have argued that Beijing "encourages dependency using opaque contracts [...] that mire nations in debt and undercut their sovereignty" Tillerson (2018). At the opposite end of the spectrum, researchers have emphasized that concerns about a loss of sovereignty are greatly exaggerated and that there is no evidence of China seizing assets from insolvent debtors (Brautigam, 2020).

In a recent paper, Gelpern et al. (2021) provide the first systematic analysis of 100 loan contracts between Chinese state-owned banks and developing and emerging market countries. Three main findings emerge from their analysis. First, Chinese loan contracts contain unusually broad confidentiality clauses that bar the borrowers from revealing the terms, or even the existence of the loans. Second,

Chinese contracts contain provisions to obtain seniority, often by requiring debtors to route revenue streams from commodity exports or project income to offshore bank accounts. These informal collateral arrangements put Chinese lenders at the front of the repayment line, since banks can simply dip into their debtors' accounts to collect unpaid debts. Also, since these accounts are confidential, any revenues that borrowers deposit into the accounts are hidden from public view. The contracts also include provisions that prevent the borrowers from restructuring their debts to China in coordination with Paris Club creditors and/or on comparable terms with those of other official or commercial creditors.

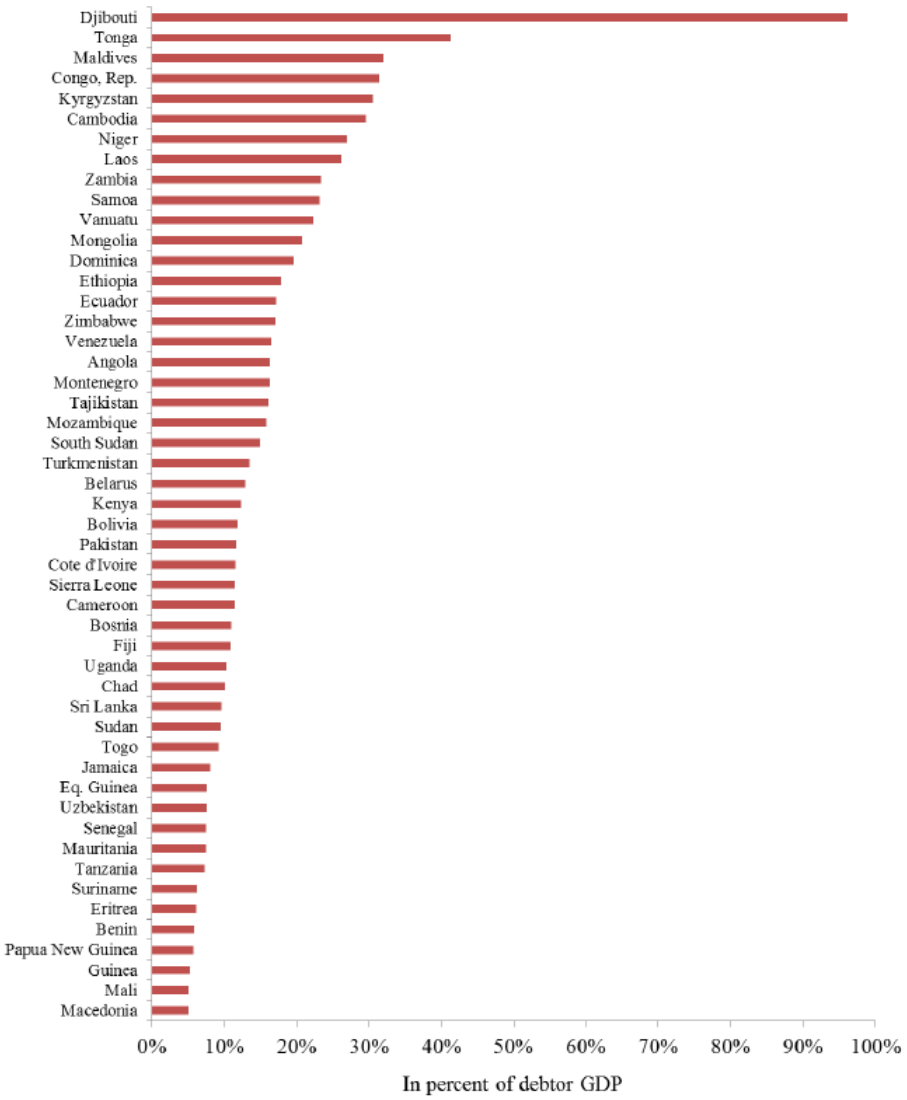
Chinese loan contracts also contain a variety of novel clauses that adapt standard commercial terms in ways that go beyond the maximization of commercial leverage. These terms can enhance Chinese influence over the borrowers' domestic and foreign policies. Chinese lending contracts, for example, often include broadly defined cancellation rights and repayment acceleration rights in the event the lender disagrees with the borrower's policies. China Development Bank, for example, can cancel loan agreements and demand immediate repayment, if a borrowing country terminates diplomatic relations with the People's Republic of China. And in some cases, Chinese lenders can walk away if the sovereign borrower acts against ostensibly unrelated Chinese interests in its country.

Overall, Gelpern et al. (2021) conclude from their analysis that China is a muscular and commercially-savvy lender to the developing world that shows considerable ingenuity in adapting and expanding standard contract tools to maximize repayment prospects and leverage over borrowers.

3.4.2 Debt Sustainability, "Hidden" Debt and Debt Restructurings

An important question is how China's lending and in particular the BRI affect the debt sustainability of the recipient countries. Horn et al. (2019) document that the borrowing led to high debt service burdens. For the 50 main recipients of direct loans, the debt owed to China has increased from less than 1 percent of GDP in 2005 to more than 15 percent in 2017, and nearly half of their total external debt is owed to China. Figure 10 shows these 50 countries, ordered by the debt to China divided by GDP. More than 20 countries now owe more than 10% of GDP to the Chinese government. These estimates include both loans to public and to private debtors. However, 90% of China's lending is to public institutions.

The countries most affected by China are developing countries. Many are primary commodity exporters, including former highly indebted countries that have already received debt relief in the 1990s and 2000s. The regions most indebted to China are economies close to China, such as Laos, Cambodia and the Kyrgyz Republic. Hereafter follow sub-Saharan Africa, Latin America, the Middle East, and North Africa. Capital flows to Eastern Europe are small but they have increased significantly during the last ten years. This adds to a general trend whereby debt risk in developing countries has risen significantly recently. The share of countries with debt distress doubled to around 40% since 2013



Source: Horn et al. (2019)

Figure 10: External debt owed to China by country in percent of GDP

Bandiera and Tsiropoulos (2019). High debt financing in foreign currency and on unconventional terms could lead to debt problems. In 2018, the IMF identified eight low-income countries in Africa that have such difficulties. In these countries, external debt-to-GDP has increased by more than 20 percentage points. More than half of the additional debt are bilateral loans from China. Some countries have already asked China for debt relief. For example, Malaysia has renegotiated USD 20 billion and Pakistan has reduced investments into a major railway project financed by China.

Hurley et al. (2019) provide a formal assessment of current debt vulnerabilities of the countries included in the BRI. The authors focus on 23 countries that are most likely to face debt distress. They integrate China's financing into other country debt and examine changes in the overall public debt-to-GDP ratio and in debt owed to China. From these two perspectives, they identify 8 countries for which the infrastructure investment may create a debt sustainability problem and where China

is the main creditor. These countries are Maldives, Mongolia, Djibouti, Montenegro, Lao, Pakistan, Kyrgyz Republic, and Tajikistan.

In the only European country in this set, Montenegro, the source of the problem is one very large infrastructure project. A motorway aims at integrating the country into the transport network of the other Balkan countries. Here, China Exim Bank finances 85 percent of the estimated USD 1 billion for the first phase of the project, or about 25 percent of GDP. The road is planned to be built in three phases. The IMF argues that the remaining parts need concessional funds because otherwise the country would likely have to default on its debt.

Looking ahead, Bandiera and Tsiropoulos (2019) develop a framework to assess debt sustainability and fiscal risks under the BRI in the medium and longer term. The framework deals with the opaqueness of China's credit behaviour. Their analysis focuses on investment financed by Chinese public debt, which is the largest part of China's external lending (see above). Their database contains investment projects worth USD 575 billion. This includes completed, ongoing and planned projects, but most of the projects are still in early phases. The analysis focuses on 50 developing countries along the Belt and Road routes and for which data are available. Unfortunately, these data limitations largely exclude sub-Saharan Africa.

The authors estimate that debt will increases substantially in the medium-term in 12 out of 43 developing countries due to the BRI. 10 of the 12 countries have had debt problems already beforehand. The authors furthermore stress that their estimates are rather optimistic: they assume that the investments have a positive impact on growth and that no additional fiscal risks materialise. For the long run, they project sharply increasing debt for 11 countries due to the infrastructure investments. Again, these estimates are rather optimistic as they are based on favorable interest rate assumptions.

The analysis of public solvency of the receiving countries is severely hampered by the opacity of Chinese loans Horn et al. (2019). The authors investigate which parts of China's external lending are reported in recipient country debt statistics and which parts are hidden. They find that since 2000, more than half of China's loans to developing countries have not been included in traditional public debt databases (for example, the World Bank's International Debt Statistics). These data gaps also reflect a serious lack of statistical capacity and weak governance structures in recipient countries.

Hidden debt is a major problem. It makes it difficult to analyse the sustainability of the debt and properly price the risks. A particular concern in the current context is that the increase in lending in the wake of the COVID-19 pandemic could lead to over-indebtedness in developing countries. A related problem is that Chinese loans are often secured by the income from the projects they finance or from the export of primary commodities. Chinese creditor banks often require their debtor to hold funds in special bank accounts in China, so that they can be collected by Chinese creditors if the borrower defaults (Gelpern et al., 2021). Coupled with confidentiality obligations, this makes macroeconomic analysis and dealing with debt problems difficult. Moreover, the Paris Club faces

significant challenges because it does not know how many assets function as collateral and how much the country can afford to repay. On top comes often poor governance in the recipient countries, which contributes to the hidden debt problem. Political leaders decide to carry out projects in their birth regions and give construction contracts to Chinese companies directly instead of tendering them in transparent processes.

The COVID-19 pandemic has aggravated these debt problems. The IMF estimates that more than half of the poorest developing countries are already in debt distress. In many of these countries, China's state-owned banks are now the most important bilateral lenders; Horn et al. (2019) note that other official lenders often provide concessional terms with longer maturities and lower than market interest rates, whereas China lends with shorter terms and at market rates. This makes China's loans today rather similar to the foreign loans by France, Germany and Britain in the 19th century.

These practices and China's absence from the Paris Club complicate coordinated debt resolution. Instead, China has restructured claims bilaterally and did not disclose the details of the negotiations. This creates mistrust among other donor countries and private investors who might fear that debt concessions are used to finance payments to China instead of increasing social spending or combating the epidemic. To address these problems, the G20 has developed a "Common Framework for Debt Treatments" in developing countries. This framework requires transparency from all G20 members and that borrowers should treat their creditors comparably. This makes the framework similar to the Paris Club. In principle, the framework could make substantial progress towards a coordinated debt restructuring approach, but it is unclear how much China will commitment itself to it in the future.

3.4.3 Policy Conclusions

There are significant challenges in assessing the impact of Chinese international lending on recipient countries' debt sustainability. The main problem is the lack of comprehensive and consistent information on investment and financing conditions Bandiera and Tsiropoulos (2019). Accurate and complete debt data are important for policymakers and private creditors to make informed decisions and to prevent instability. However, there is no official information on the size and terms of the investments within the BRI.

How can more transparency be created? One way would be to create international lending standards and then urge China to follow these. So far, there are very few binding standards for international credit financing. OECD Development Assistance Committee agreements bind only member countries and China is not a member. Hence, one possibility to increase transparency would be to offer China OECD membership.

Another route would be to increase political pressure on China to join the transparency initiative of the Institute of International Finance, which so far is entirely voluntary. Similarly, the G-7 and G-20 could emphasize the importance of debt transparency. For example, China has committed to the G20

Guiding Principles on Sustainable Finance. But these are so far only declarations of intent.

Regarding debt sustainability and the role of other international institutions, China has supported an IMF training centre to help improve the debt management capacity of the BRI countries (Rajah et al., 2019). Moreover, China's Ministry of Finance has published a debt sustainability framework for its lending based on those of the IMF and World Bank. While this suggests that China's officials are aware of the problems of debt sustainability, these guidelines are not binding either. Rajah et al. (2019) therefore conclude that China should adopt formal lending rules as those of multilateral development banks.

Morris et al. (2020) examine the policy implications of the BRI for China, the World Bank, the Asian Infrastructure Investment Bank (AIIB), and the Asian Development Bank (ADB). The initiative coincides with the establishment of the AIIB. But China's financing is mostly provided through the China Development Bank, the Export-Import Bank of China and the Agricultural Development Bank of China. These banks are supposed to follow the transparency, contractual, and concessionality standards of the multilateral institutions. However, whether this actually happens is highly uncertain. Moreover, Morris et al. (2020) document that with an annual investment of USD 2 billion, the AIIB's total lending volume is small compared to China's USD 30-40 billion in international bilateral lending. De Gregorio et al. (2018) point out the tension between China's role as a provider of development assistance and the fact that it continues to receive funds from the World Bank and the ADB. They document that in 2018 China obtained lending worth USD 60.5 Billion for 416 projects from the World Bank. The US is critical about these loans. Moreover, while the authors admit that China's efforts to improve transport infrastructure can be beneficial for the participating countries, they have the concern that the initiatives largely reflect China's geopolitical and strategic objectives. To address these concerns, the World Bank, the AIIB and the ADB could find common lending criteria, and try to make these applicable also to bilateral aid. De Gregorio et al. (2018) suggest one way to do this: China could join the OECD and its Development Assistance Committee which sets standards for development assistance.

There are also options for the direct relation between the receiving countries of Chinese capital and Europe. Europe could give technical assistance to these developing countries to improve their statistical capacities. Furthermore, European lenders could increase their engagement in these countries, for example, through new instruments of the European Bank for Reconstruction and Development or Kreditanstalt für Wiederaufbau. This would address the strong demand for Chinese loans for financing large infrastructure projects, which reflects a lack of alternatives from traditional creditor countries. Many high-risk countries have no access to international capital markets and China is the only lender that is willing to bear the risks. European lenders might also want to fill this gap so that Chinese lending practices are not adopted by other creditors. The EU should therefore also try committing itself and other official creditors to high transparency standards.

4 International Trade Policy

by Katrin Kamin & Gabriel Felbermayr (IfW)

Summary: The EU has exclusive competence in trade policy. This is why the limited number of trade policy instruments is increasingly used to pursue an increasing number of objectives that go far beyond the regulation and creation of trade flows. This practice creates **difficult trade-offs** that can be solved only if additional policy instruments are created so that the number of independent objectives and the number of independent instruments are equalized (Tinbergen rule).

The EU, as other powers, makes increasing use of **economic sanctions** that typically include trade policy measures or affect the conduct of trade. For sanctions to work they have to be credible ex ante. In this case, they can be effective without actually being imposed. Because sanctions often hurt own economic interests, to foster credibility, the EU has to develop instruments that compensate domestic losers in case of escalation.

The EU still is an influential player in the area of trade in goods and services. Its big interior market and its export prowess gives it indirect influence over regulations in foreign countries through the so-called '**Brussels Effect**'. The reach of EU regulation is further enhanced through trade agreements, in particular through association agreements. However, the EU has encountered difficulties in finding appropriate institutional frameworks for countries in its immediate neighborhood such as the UK, Switzerland, or Turkey. One way out would be the upgrade and extension of the European Economic Area into a Customs Union where all members have a say proportional to their relative importance.

The WTO continues to be in a deep crisis because its building principles assume convergence of members' economic models. One way to deal with increasing heterogeneity is to pursue more and deeper plurilateral agreements that require reciprocity but that are open to all WTO members. The EU should be an intellectual front-runner in this regard. In particular, the climate club could be construed as a plurilateral agreement with the objective of 'greening' the WTO. For this agenda to be successful, **exclusive but open plurilaterals** should no longer require the consent of all WTO members.

The EU has a large number of fairly successful trade agreements. It should continue this agenda, but limit the scope of the agreements to EU-only competences. Making market access concessions conditional on partner countries' abiding by international commitments on environmental policies, social or labor conditions, would avoid that trade policy counteracts the pursuit of other EU objectives. Amongst future trade agreements, a **transatlantic cooperation** treaty and a deal with India should be high on the list of priorities.

The EU with its large interior market is much less vulnerable to **supply chain disruptions**,

caused both by political or natural hazards, than its individual member states. However, for about 100 products that are not easily substituted by other items, the EU has not more than three supplying countries. Heavy-handed interventions to incentivize reshoring, e.g., through subsidies or local value added requirements, should, however, be minimized. Other instruments are more promising. In the heavily regulated markets for medicinal products, procurement contracts should put more emphasis on supply guarantees by producers. Protection against political risks can be obtained only by a diversified portfolio of well-designed trade agreements. Moreover, the EU, together with partner countries, should pursue a more activist anti-trust policy to tackle the monopolization of markets.

The EU should minimize the cost burden created by **mandatory due diligence legislation** for EU importers and foreign exporters. Direct costs of supervision and the risk of fines could lead to a recalibration of European value chains. Reshoring production will, however, not be compatible with the objectives of better human rights and social and environmental outcomes. A negative list approach, which centrally lists foreign suppliers that violate standards would be the better alternative. It would be much more targeted while achieving the same objectives.

4.1 Objectives and Instruments

4.1.1 Objectives of Trade Policy

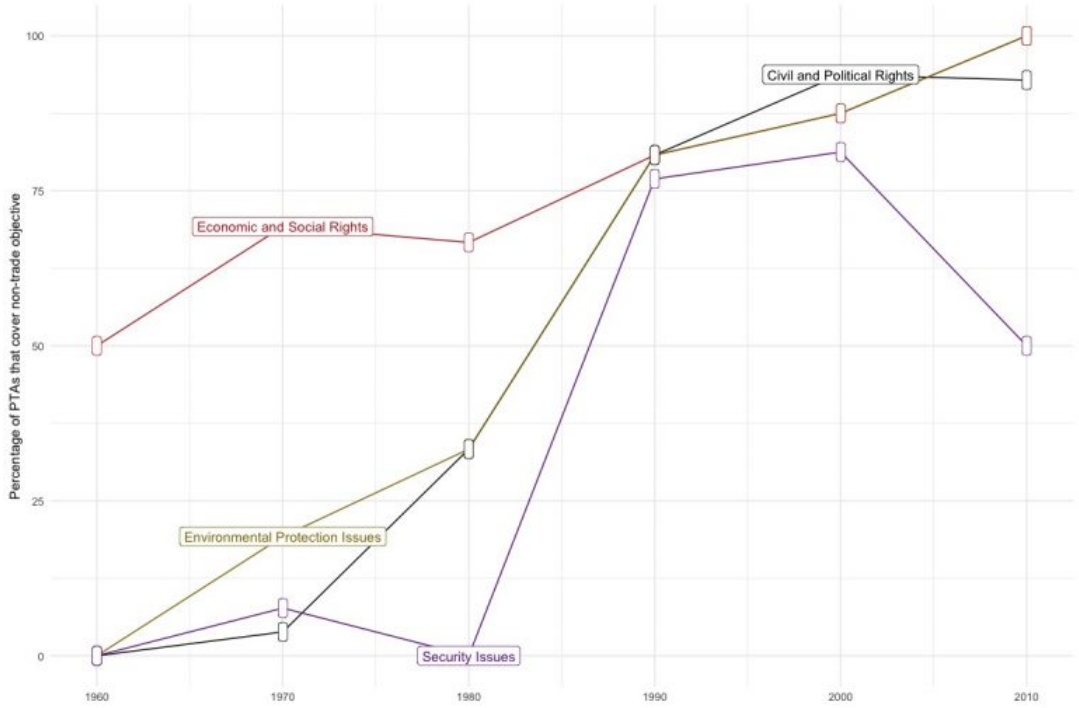
The objectives of today's trade policy are multifaceted, but this has not always been the case. In the beginnings of EU trade policy making, goals were narrowly defined and comprised mainly economic objectives. More specifically, it focused on the intensification of trade flows to promote export interests and to secure crucial imports. This narrow focus on trade matters widened with the more broadly defined objective of maximizing economic welfare. The focus thus shifted from a purely import/export oriented policy towards a trade policy that stressed objectives such as real per capita income growth and employment; the 2006 "*Global Europe Strategy*" summarized this policy stance.[39] The inherent philosophy was that trade policy should limit itself to enabling aggregate gains from trade; social policies would redistribute those gains such that they reach the largest possible number of people.

After the Great Recession, the debate changed and concerns about inequality became more important. This tendency was accelerated by wide-spread opposition against deep and comprehensive trade agreements such as the planned one with the US. Thus, in 2015, the EC issued a new "*Trade for All Strategy*" which gave more weight to the distribution of gains from trade and to social as well as environmental concerns.[40] In recent years, trade policy has increasingly mirrored the widened definition of the EU's interest, and there has been a shift from purely economic objectives towards

[39] See `https://bit.ly/3xcNXmB`.
[40] See European Commission (2015).

a maximization of societal objectives, that encompasses environmental, human rights and labor and social concerns. The EC completed a review of its trade policy in February 2021, highlighting "*Open Strategic Autonomy*".[41] Now, trade policy is seen as an instrument of foreign policy making and the difficult trade-offs between the objectives openness, sustainability and strategic autonomy are laid open. The EU has committed itself to look after its own strategic interests and to be more assertive in its approach.

Within the realms of trade agreements and the regulations of the Generalized System of Preferences (GSP), the EU is putting more and more emphasis on so-called non-trade objectives (NTO). Since the 1990s, the EU increasingly implements provisions on environmental and labour standards as well as human rights in their agreements and is leading when it comes to regulating these NTOs via trade agreements (Lechner, 2019). Currently, about one third of the EU trade agreements encompass provisions on labour standards and two thirds on human rights and the environment (Fiorini, 2019). One example is Vietnam. In August 2020, the trade agreement between the EU and Vietnam came into force. While it comprised an ad-hoc elimination of up to 70% of tariffs, Vietnam as well committed to ratify and implement the ILO conventions, for example against child labor and for collective bargaining. However, critics say that these commitments are not sufficient, as Vietnam continues to arrest political activists and to restrict fundamental rights.[42]



Source: Lechner (2020)

Figure 11: Non-trade objectives in EU trade agreements over time

[41] See `https://bit.ly/3yaIcXU`.
[42] See `https://bit.ly/2VJk14w`.

One of the major problems for the EU with NTOs is the poor enforceability of the latter. Suspension or termination of trade agreements as a tool to get trading partners to fulfill previously made NTO commitments excludes provisions on labour and environmental standards. Moreover, it is not in the EU's own interest to suspend recently concluded trade agreements, so that threatening suspension or termination is not always credible. However, positive conditionality is limited as well: the regulations of the WTO demand *erga omnes* elimination of tariffs, such that the EU cannot make use of a carrot-and-stick-mechanism in bilateral relationships outside of formal FTAs (Borchert et al., 2020). In the past years, the EU has pushed towards tougher human rights, labor and sustainability standards in trade agreements - e.g. in the cases of the EU-Canada FTA or the European Green Deal (Meissner and McKenzie, 2019; Brundes and Mallet, 2020). While the EU often uses ex-ante conditionality, i.e. making the signing of the agreement conditional on changes in the partner country, ex-post conditionality, where legal consequences for violations are implemented in trade agreements, is gaining momentum (Lechner, 2020). This is especially important when the EU fears that trade partners might not live up to the committments they have made ex-ante. A big question is whether trade policy is actually an effective tool for the EU to achieve compliance with NTOs with trading partners. Understanding the effectiveness of trade policy as a means to achieve NTOs is also not straightforward as the causal effects of NTOs are very difficult to identify (Borchert et al., 2020; Fiorini, 2019).

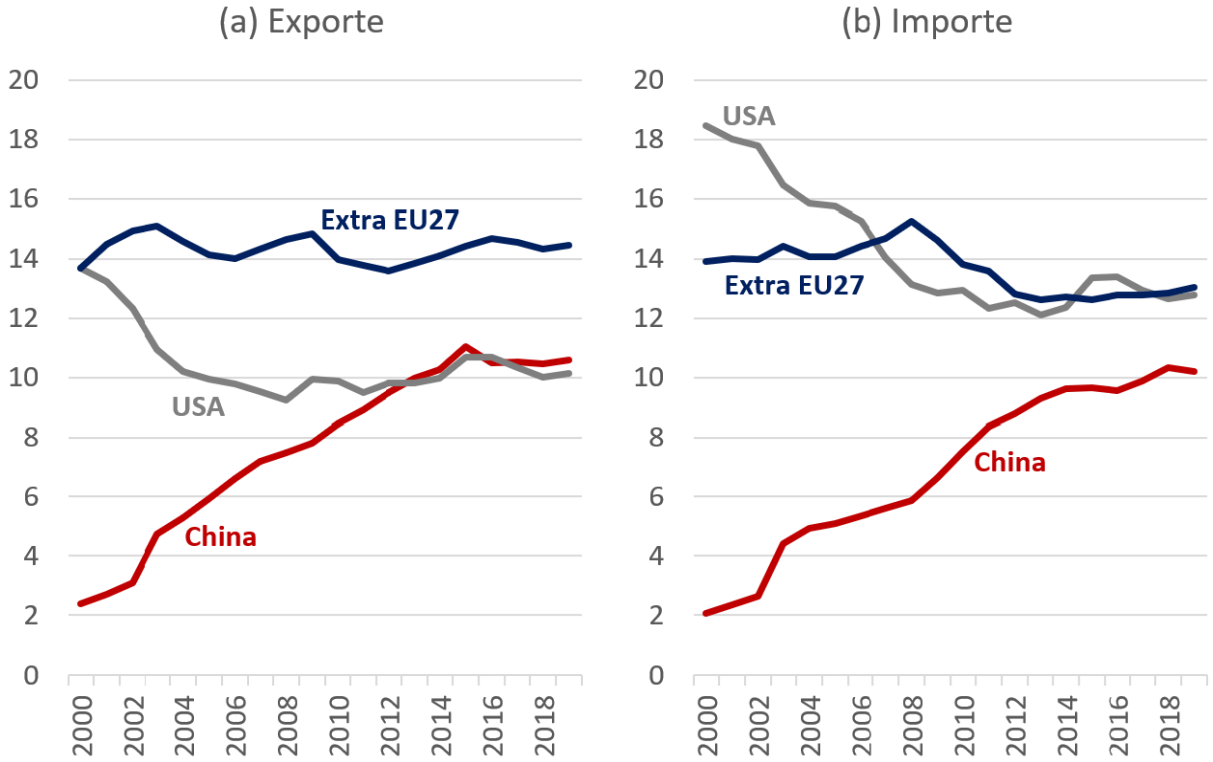
4.1.2 The Brussels Effect

Apart from tackling a variety of objectives by the means of explicit legal text in trade agreements, the size of the EU's market also gives it indirect means of extending the reach of its regulation to ease trade of goods and services and to promote EU interest. This mechanism has been called the **'Brussels Effect'** (Bradford, 2012, 2020). It allows the EU to extra-territorialize its own regulations and standards, and can be observed in many major EU projects, such as the GDPR, the regulation of chemicals REACH (Registration, Evaluation, Authorization and Restriction of Chemicals), in product regulation, and in many other areas (see Gehrke (2020) for a detailed analysis).

When exporting to the EU foreign companies must comply with the rules in force. Thus, it is often more advantageous for them to apply these rules to their whole production, and also to sales in markets where the EU standards are not prescribed or lower. If they want to export to the European single market, which most large corporations have to do, they adopt the EU rules. Within their home markets, companies then have an incentive to promote and lobby for stricter standards so that they do not face 'unfair' competition there from firms applying lower standards.

The strength of the Brussels effect thus depends on the size of the market and its net value for foreign exporters. In turn, the European single market is of utmost importance for the assertion of Germany's and the EU's geoeconomic interests. The size and, equally important, the quality of the internal market are crucial when it comes to competing with China or the US. In 2019, the EU27 accounted

for about 14.5 % of global exports (China, for example, followed with 10.6 % and the US with 10.1 %). This export share of the EU has remained relatively stable around 14 % for the past 20 years. This is depicted in Figure 12, which shows the shares of the EU27, China and the US in international trade in goods and services in % of total global trade.[43] Chart (a) in Figure 12 looks at the time series of the share of exports of goods and services; chart (b) looks at import shares. The EU27 also leads the way in imports with a world market share of around 13.1 % (USA: 12.8 %, China: 10.2 %). Even after Brexit, the EU remains by some distance the largest exporter of goods and services.



Source: World Bank, Eurostat, own calculations and presentation. Basis: balance of payments.

Figure 12: Shares in global trade in goods and services (in %)

Considering for how many countries the EU is the most important export market in goods trade, the importance of the EU becomes even more evident. According to the Comtrade database, the EU is the most important export market for 57 % of the countries (compared to China for just under 24 % and the US for just under 20 %). Considering its importance as a source of imports the EU is ahead with 44 %. And although the EU's global import and export shares are declining, its role as the most important trading partner for many countries and the large internal market give the EU considerable power and influence in setting international standards in goods and services, because the EU can demand cooperative behavior from trading partners in exchange for access.

As shown before, while the EU27 market is only the third largest in the world in terms of size, it

[43] Based on extra-EU27 trade; intra-EU trade is treated as that between US states or Chinese provinces. This is a simplification that ignores the still-high intra-EU trade barriers; see Santamaría et al. (2020) for a recent study.

still has the greatest relative importance for world trade. This has to do with the Union's geographic location, but also with a long-held policy of economic openness, particularly through a large number of FTAs.

However, the Brussels effect also has limits: where other major economic powers, such as the US, make compliance with even stricter rules a precondition for market access, EU companies must submit to foreign regulation in order not to lose market access. The US sanctions regime against Iran or Russia is one prominent example. Another major disadvantage of the single market is the fact that due to linguistic, cultural and regulatory differences between the individual EU countries goods and services cannot be traded without barriers. Thus, foreign suppliers usually needs more than one importer or European branch to serve several countries in the EU, which means that the costs of market development are higher than in other markets.

While linguistic and cultural differences can hardly be eliminated by regulations or decrees, regulatory differences result from the political fragmentation of the EU. Despite decades of efforts, barriers are still strong (Mika, 2017; Santamaría et al., 2020).

Additionally, EU trade policy contains security and/or geostrategic objectives. However, these objectives have not been very prominent in EU's trade policy doctrine until recently. At the latest with the proclamation of a "geopolitical" commission by EC President Ursula von der Leyen (Von der Leyen, 2019), the EU has has acknowledged the fact that the international order has evolved from a rules-based order to a more transactional and power-based one, and that the EU has to adapt to it. Because the EU's common security and foreign policy is still subject to unanimity, it is considered "toothless". However, this does not apply to trade policy and parts of investment policy, which provides leverage for the EU to use these policies for power politics. An outline of a conceptual framework for stronger EU trade policy action in power politics was created by the new EU foreign trade strategy (European Commission, 2021d) presented by EU Trade Commissioner Vladis Dombrovskis on February 18, 2021. The strategy is currently being discussed by the European Council and emphasizes that the EU, like its partner countries and political competitors, should stand up for its own interests with greater assertiveness. The new foreign trade doctrine, focused on "Open Strategic Autonomy", sets the agenda for European foreign trade policy in the coming years. The shift toward a more geoeconomically oriented EU is evident: the new strategy is more defensively oriented and emphasizes EU resilience in the face of strategic vulnerabilities. As shown in chapters 2 and 3, the geostrategic behaviour of partners and competitors is ubiquitous. Geostrategy expands increasingly into economic areas and has already led to a "politicization of economics and economization of politics" (as e.g. described in Farrell and Newman (2019); Blackwill and Harris (2016)). Thus, moving towards more assertiveness is overdue and necessary.

4.1.3 Dealing with Conflicting Objectives

Trade policy objectives of different countries may be in mutual conflict. If the objective is to attract foreign direct investment, and if governments unilaterally impose or threaten tariff increases to reach this goal, a "zero-sum game" may result, which merely redistributes existing levels of economic activity, without creating additional value added. One country's success is then necessarily another country's loss. Similarly, if the aim is to monopolize some technology or resource, the successful use of such strategy generates a clear winner-loser structure. Or, if the objective is to use trade policy to gain a GDP advantage over a rival country, only one single country can prevail. When objectives are in conflict, i.e., if they are mutually inconsistent, escalation into other areas of international policy making become likely.

If, however, objectives stress outcomes which allow for "positive-sum" outcomes, trade policy can have a pacifying role. For example, if countries strive to maximize real per capita income, they can be collectively successful. However, such outcomes regularly require some degree of cooperation, so that beggar-thy-neighbor policies do not prevail. The temptation for such non-cooperative policies is high and prisoners' dilemma outcomes can durably lock countries into "bad" non-cooperative equilibria. So, countries must find ways to credibly ban policies such as the strategic use of import duties or subsidies, which may be unilaterally rational (under the assumption that the trade partner behaves either passively or pursues opportunistic policy himself), but turn out to be collectively harmful (i.e., they reduce per capita income everywhere). Cooperation cannot be enforced, so cooperation must emerge as a decentralized equilibrium, i.e., countries must have strong interests in choosing cooperation. Under certain conditions, tit-for-tat threats can achieve such outcomes, but game theory teaches that many equilibria, including bad ones, are possible, and institutional frameworks (such as the one offered by the WTO) are therefore needed.

Objectives can clash between countries, but different objectives may also be mutually incompatible within countries. For example, in certain environments trade-led specialization leads to higher economic inequality so that there is an efficiency-equity trade-off for governments who care about both, economic growth and a just distribution of real incomes. Or, if a country wishes to expand trade, there needs to be additional transportation, and such activities may lead to higher CO_2-emissions. However, the dichotomy does not necessarily exist: trade liberalization typically leads countries and firms to specialize on those activities they are most efficient in, and this can lead to emission savings in production. Hence, trade liberalization need not be leading to higher emissions.[44]

Economists have long argued that, if policy-makers pursue N independent objectives, they also need N independent instruments. Named after Nobel prize winner Jan Tinbergen who has first shown the logic of this insight, this principle is called "*Tinbergen Principle*" .[45] If the number of objectives

[44] See Copeland et al. (2021) for a survey of recent literature.
[45] See Tinbergen (1952).

(e.g., efficiency and equity goals) exceeds the number of instruments (trade policy), it is impossible to achieve both policy targets and a difficult trade-off is needed. In practice, this means that some efficiency gains need to be foregone to avoid too much of an increase in inequality. In theory, if policy-makers have effective tools to redistribute income, they can do better and achieve both, a higher level of efficiency and a more even distribution of income. This insight has been important to defend trade policy as a stand-alone policy that should not be used to achieve NTOs, but policy-makers should target additional objectives with additional policy instruments. In the case of the EU, the Tinbergen Principle warns that if trade policy is used to achieve international security objectives or environmental goals along with classical economic targets, it will lead to underwhelming results. It is important to develop additional instruments, such as a common foreign and security policy.

4.1.4 Legitimacy Issues

What are legitimate objectives relating to the behavior of foreign governments that the EU can safely pursue and apply trade policy (or other) instruments to achieve them? This is a very fundamental question without a clear answer.

A trade policy that is derived from national interest must make clear how national interest is to be defined. Classical trade theory assumes that policy-makers strive to maximize their citizens' absolute level of welfare, the natural unit of analysis is the nation, and policy-makers are assumed to freely chose whether they wish to set cooperative or non-cooperative policies. Indeed, constitutions around the world, weather democratic or not, require leaders to act on behalf of their constituencies. The art of policy-making is to work out the ultimate consequences of policy choices, i.e., after foreign countries have reacted and all relevant economic forces have played out in general equilibrium. Failure to take these aspects into account leads to short-sided protectionism themed "my country first". To insulate themselves against short-run populist pressure, policy-makers may rationally decide to bind themselves, e.g., by signing international treaties. This way they rule out to exert negative external effects on other countries and can expect their trade partners to behave reciprocally.

In the political science literature, security concerns lead researchers to put a country's relative level of GDP into the objective function; see Powell (1991) for a discussion and a simple model. A focus on relative gains, however, means that the foreign GDP enters the national objective function directly. This opens the door to destructive policies, as higher relative GDP can be achieved either by policies that increase own GDP or by policies that reduce the other country's GDP or both. Such a configuration involves a negative externality: if foreign GDP goes up, the value of the domestic objective function goes down. If one country fears to be dominated by foreign power, it is natural that it focuses on relative GDP, as the latter determines military power. However, "positive-sum" outcomes become difficult to obtain when such motives matter.

Direct externalities appear to matter in other contexts as well. For example, domestic policy-makers or

voters may worry about outcomes such as pollution or inequality in foreign countries and adjust trade policies accordingly. For example, if free trade with the EU could lead to more inequality within the society of a trade partner, the EU could argue for higher tariffs. Or, if foreign producers sell products at low costs because they are allowed to dump waste freely, the EU may want to impose barriers if local pollution in a foreign country lowers utility of domestic constituencies. However, applying insights from welfare economics on individual choice to the choices of countries, one needs to caution against an excessive broadening of the objective function to include all sorts of externalities.

Sen (1970) has developed a famous impossibility theorem that shows that in the presence of externalities there may not exist a Pareto efficient outcome (whereby no opportunity is wasted) and all units decide freely (liberalism). Sen argues that, to escape such a situation, it is not sufficient to create a suitable governance system (in our context: to create a body of international rules and make them prevail), but the objective functions of governments need to be pruned. In Sen's words, "*The ultimate guarantee for individual liberty may rest not on rules for social choice but on developing individual values that respect each other's personal choices.*" The translation to the relations between countries is straight-forward. Essentially, it means that sovereign countries which strive at interacting with each other in a non-wasteful manner must tolerate certain choices of their peers, in order not to risk endangering the relationship or exerting some sort of colonialism. It is not possible to theoretically determine which preferences (objectives) are permissible, but one pragmatic approach would be to require physical or pecuniary externalities affecting the EU and resulting from foreign countries' actions as a justification for EU policy action, or the violation of norms that all societies accept (such as the universal human rights).

Summarizing, if EU policies (trade policies or other) are to reflect European objectives, and respect other countries' rights while striving for overall efficiency, the EU must think very carefully about the legitimacy of its actions regarding policies or outcomes in foreign countries.

4.1.5 Trade Policy Instruments

Traditionally, trade policy is mostly concerned with the setting of import tariffs. In contrast to other indirect taxes such as the VAT, tariffs are discriminatory since they affect imported goods only. Tariffs very rarely apply directly to services, but to the extent that final goods comprise an increasing share of services content (such as software), services are indirectly affected (Cernat and Sousa, 2015). The European customs system contains about 12,000 products, which can be affected by tariffs of widely different height. For most products, countries use ad valorem tariffs (i.e., specified as percentages of product value), but there are also specific tariffs (a tax per quantity unit), and combinations of both. For sensitive products (e.g., in the agri-food sectors), there are tariff-rate quota which prescribe low tariffs within the quota and higher tariffs outside.

Tariffs exist for various reasons. Historically, they played important roles for governments' tax revenues;

this is no longer so. Today, tariffs mostly exist to protect firms in import-competing sectors. There is substantial empirical evidence that shows that more concentrated sectors are more successful in lobbying for protectionism (Goldberg and Maggi, 1999). Tariffs are also used to manipulate the terms-of-trade (by lowering demand, import tariffs depress prices for import goods) or to attract foreign producers to manufacture their products locally rather than to export them. Tariffs typically increase the prices for consumers, but, as with all taxes, depending on elasticities of demand and supply, a share of the burden is borne by producers, which happen to be foreign firms. This is why the literature characterizes tariffs as "beggar-thy-neighbour" policies: they generate revenue for domestic governments but are partly borne by foreign producers (their owners and their workers).

Export taxes can also be "beggar-thy-neighbour": they restrict the supply of domestic goods, thereby rising their world market prices. This hurts foreign consumers while the domestic government gains tax revenue. However, export taxes lead to firm relocation. This is why they are rarely observed. Quantitative export restrictions are more frequently encountered. They do not raise any government revenue but they affect prices to the benefit of consumers and to the detriment of producers. Quantitative import restrictions have the opposite price effects.

Often, trade policies as described above give rise to prisoners' dilemma situations. E.g., governments find it unilaterally optimal to impose tariffs, because tariffs improve welfare regardless of whether the trade partner imposes tariffs or not. Since all trade partners come to this conclusion, in the absence of cooperation, they will find themselves in a situation where they are worse off than without tariffs. The reason is that the mutual imposition of tariffs undoes any terms-of-trade gains, just leaving the damage from less efficient patterns of production (i.e., smaller gains from trade). The key question therefore is: how to escape that dilemma? The literature has shown (e.g., Bagwell and Staiger (2004)) that repeated interactions can lead to cooperation with the help of appropriately structured trade agreements. Such agreements must specify the conditions under which governments are allowed to punish non-cooperative behavior by themselves reverting to non-cooperative behavior. In other words, it is the threat of sanctions which stabilizes cooperation.

Before turning to sanctions in more detail, it is necessary to acknowledge the importance of non-tariff measures (NTMs). These can be either product-related, e.g., if they prescribe certain quality standards that must be met to gain market access, or process-related, e.g., if they allow only goods on the market that are produced with certain technologies, or certain inputs, or under certain conditions. Traditionally, WTO law allows trade restrictions that are related to product characteristics. Goods that do not meet technical standards or that can be dangerous to human, animal, or plant life or health are refused entry at the borders of countries. Very often such practice is disputed, and numerous disputes over Technical Barriers to Trade (TBTs) and sanitary and phytosanitary (SPS) measures exist. TBTs and SPS measures are often not intended discriminatory as, in principle, they apply to domestic and foreign producers alike. However, practice frequently is different and member states have lodged

increasing numbers of concerns with the WTO about discrimination or non-proportionality, and these have been shown to distort trade (Crivelli and Gröschl, 2020).

Recently, attention has moved to process-related trade regulation. Traditionally, international trade law views such regulation with much more skepticism than product-related measures, since the dangers of protectionism and illegitimate breaches of sovereignty are greater. Examples for such measures are supply chain laws (due diligence laws) or the much discussed carbon adjustment mechanism (CBAM). There are, of course, justifications for such measures in international law (such as Art. XX GATT, which allows for exemptions from WTO rules when the life and health of humans, animals or plants is put in danger). However, *in extremis*, adjusting for all differences in production costs at the border would mute international competition and unable the classical motives for trade as based on comparative advantage. This is why caution is required.

Non-tariff barriers can be viewed as comprising all trade restrictions, induced by trade policy or not, that are distinct from tariffs. Indeed, there is a substantial body of empirical literature that shows how NTMs can substitute for more overt trade policy.[46] E.g., exchange rate manipulation, the granting or refusal of trade finance, or a wide array of tax measures can have direct and indirect effects on the profitability of cross-border goods or services transactions. Also, policies regulating the mobility of individuals who are essential for creating, maintaining and enhancing trade relations, affect trade flows. Similarly, investment regulation can be complementary to trade flows: investment is often necessary for GVCs and for the intra-firm trade flows that are often crucial for their functioning.

4.1.6 Sanctions

For agreements to be effective, and in absence of any international law enforcement entity, they need to be self-enforcing, i.e., countries' incentives to deviate from the agreed rules must be minimized under all contingencies. This is where **sanctions** enter. Originally a trade policy instrument used to achieve foreign policy goals, states are increasingly using sanctions to motivate adherence to standards in all areas of international law. As recently seen in the stalled ratification process of the investment agreement with China, sanctions overall play an increasingly important role in international trade policy. Their number has increased from approximately 20 in 1950 to approximately 250 in 2019 (Felbermayr et al., 2020a).

In the past, sanctions often were designed to exert "maximum pressure". However, in the 1990s, this changed when Western sanctions against Iraq revealed their grave civilian impact (Drezner, 2011). Since then, policymakers have developed more nuanced and targeted "smart" sanctions. These aim at hitting the political elite and specific decision-makers and industries rather than the economy at large. Thus, sanctions have been diversified to target cross-border flows of goods, services, finance or people, arms trade or military assistance. They may impose direct penalties on countries (negative

[46] This literature mostly uses the so-called gravity model; examples are contained in Head and Mayer (2014).

sanctions) and involve the withdrawal of existing or future concessions (positive sanctions).
While sanctions' effectiveness in achieving political goals is contested (Pape, 1997, 1998; Hufbauer et al., 2007), sanctions typically have negative consequences not only for targets, but also for senders, with costs distributed unequally across countries within sanctioning coalitions (Chowdhry et al., 2020). This is particularly well documented for trade sanctions. Moreover, authoritarian regimes often re-distribute the burden of sanctions within their countries while bolstering regime support via the "rally-around-the-flag"-effect (Grauvogel and Von Soest, 2014).
The sanctions paradox by Drezner (1999) describes the puzzle that sanctions are popular although they are often not effective in achieving their goals. Game theory suggests that the threat of sanctions should already achieve the objective of the sender, so that the applications of sanctions should never be empirically observed. Sanctions that are not bound to be successful should not be threatened. This biases the set of observed sanction episodes towards cases of failure. In fact, credible sanction threats of reacting to violations of WTO-law are considered to be existential for the stability of the international trade order (Bagwell and Staiger, 2004).

4.1.7 Trade Defense Measures

International trade law provides three different types of instruments with which countries can defend their interests against anti-competitive behavior of others or against disruptive surges in imports. While WTO law specifies the conditions under which those measures are allowed, they give rise to a great number of disputes that can take substantial time before being resolved.
Anti-dumping duties can be used if a trade partner exports goods at prices below the fair value of a good, i.e., if a good is 'dumped' on the foreign market. The 'fair' value is, however, not easily defined. Dumping is assumed when a good is sold abroad below the price that it is sold in the domestic market. For such behavior to justify the imposition of a duty, injury must shown. Economists ted to have difficulties with this instrument, because alleged dumping may be injurious to a particular producer in the EU, but it may actually be beneficial from a macroeconomic point of view. Also, if demand conditions differ from country to country, it might be natural for firms to charge different prices in different markets, and such differentiation may well be necessary for economic efficiency. A particular difficulty with anti-dumping duties arises if domestic prices cannot be used to establish what a 'fair' price would be, because these prices are distorted, for instance, by the subsidization of credit. This problem has received a lot of attention with regard to China and to other so-called non-market economies.[47]
Countervailing duties should be the tool of choice to deal with illegal subsidization of production, but they are rarely used because of high formal demands. Much discussion on the modernization of WTO law revolves around this instrument and how to give it more bite. Finally, countries can use

[47] See Sandkamp and Yalcin (2016) for a discussion of this particular aspect.

so-called **safeguard tariffs** to protect their firms against sudden and unforeseen surges in imports that threaten the existence of an entire industry. As with all trade defense measures, such protection can only be granted temporarily.

4.1.8 Vehicles of Trade Policy

Next to defensive ad-hoc measures or sanctions discussed above, trade policy is undertaken to solve the prisoners' dilemma situations characterized above in which countries unilaterally adopt policies that are collectively damaging. Trade agreements provide platforms for repeated interactions, protocols for the handling and resolution of conflicts, and they act as credible commitment devices which remove international trade and or investment policy from daily domestic policy making into the sphere of international law. Trade agreements bind tariffs and market access conditions, they contribute towards the setting of standards, they create various fora for discussion and cooperation. In that sense, they are vehicles of trade policy.

In the EU, trade agreements – since the treaty of Lisbon also investment treaties – fall into exclusive competence of the Union. This means that the member states mandate the Commission to negotiate agreements. If they do not cover areas of mixed competence, the texts can be adopted by qualified majority in the Council and by majority in the EU Parliament. If they cover areas of mixed competence, e.g., portfolio investment, certain aspects of regulation, taxes, responsibilities of courts, then national parliaments have to agree, too. In the past this has led to difficult situations. For example, the EU-Canada Comprehensive Economic and Trade Agreement (CETA) is seen as an FTA with mixed competence. Therefore, all member states need to ratify. The components of CETA which fall into exclusive competence of the EU have been provisionally applied since September 2017, but various member states, including Germany, have not ratified the agreement yet. This creates substantial legal uncertainty, because the consequences of a failed ratification process in some national parliament are not entirely clear. This leads to substantial legal uncertainty and weakens the EU's international bargaining position. For this reason, newer agreements are handled as EU-only FTAs. But this means that areas of mixed competence are excluded. In the future, to allow the EU to effectively negotiate with big and difficult trade partners, it seems necessary that competences are further clarified and expanded, for example, in the area of investment liberalization and protection.

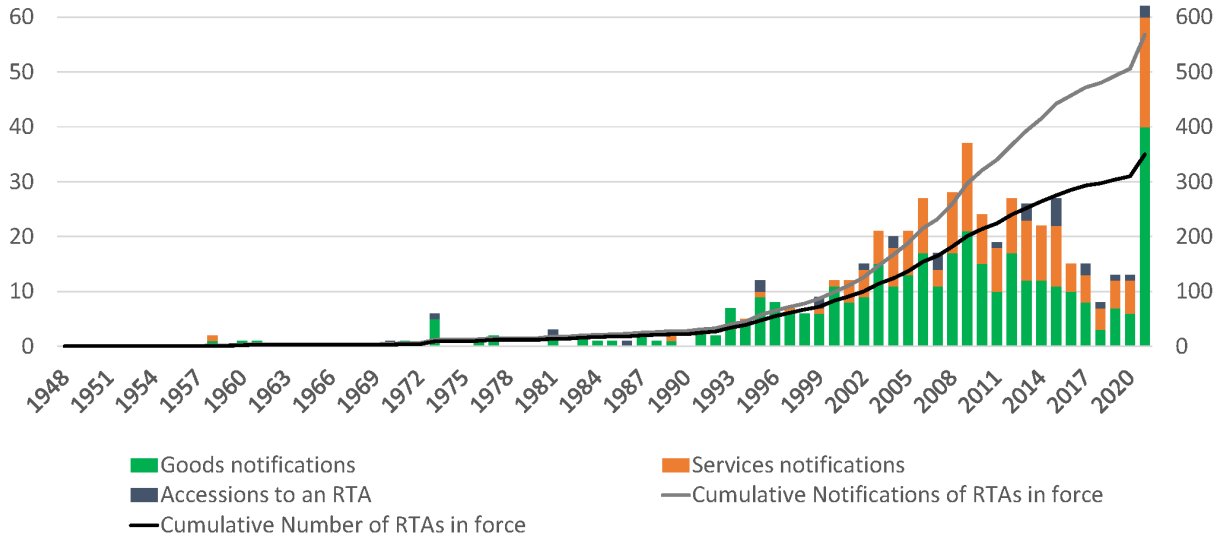
Worldwide, most trade agreements are bilateral in nature. This means that two partners negotiate an FTA; since the EU is a customs union, it counts as a single party. However, an increasing number of agreements cover more than two entities. The EU itself is a good example. Agreements that cover only a limited number of countries and that are negotiated outside of the WTO are referred to as **RTAs**, despite the fact that they can encompass many countries and cover very wide regions such as the whole of South-East Asia or the Pacific Rim countries; also bilateral RTAs can connect very

distant countries.[48] RTAs need to be notified to the WTO because they violate the most favored nations (MFN) principle enshrined in Art. I GATT and Art. II General Agreement on Trade in Services (GATS). The reason, of course, is that RTAs grant different rights to different trade partners so that they are in fact discriminatory. Nonetheless, WTO law permits RTAs if they satisfy the conditions put down in Art. XXIV GATT, which mandate that external trade barriers of the RTA partners are not increased and that 'essentially all' trade is covered. This is why RTAs must be notified to the WTO examines them. However, not all RTAs are notified.

Figure 13 shows that currently there are 350 RTAs in force.[49] The diagram also shows that the number of new agreements notified to the WTO has been falling for the last ten years. The year of 2021 is an outlier as it captures the fact that the UK as successfully transformed over 40 agreements concluded in the past by the EU into own FTAs. Many economists are critical towards RTAs, because they discriminate between trade partners. They create trade between the signatories but the divert trade from partners outside the agreement to the partners inside the agreement. For these reasons, the welfare effect of RTAs is ex ante ambiguous, even for the signatories. The point is that the continuation of tariffs with third parties can lead buyers to purchase from the RTA partner country even if that country produces at higher costs. At the same time, tariff revenue is lost. Hence, regional agreements can distort trade patterns away from the structure of comparative advantage. Hence, to ascertain the economic desirability of RTAs, the simulation of a quantitative trade model is needed.[50] Typically, RTAs create losers amongst third countries. While this feature is criticized by economists, it means that RTAs can be used as geostrategic tools. Moreover, when non-economic objectives matter, trade diversion can have positive welfare implications, for example if trade is diverted away from CO_2-intensive production.

Next to RTAs, there are so-called **plurilateral agreements** which are negotiated in the framework of the WTO but do not cover all WTO members. Since the membership of the WTO has become extremely heterogeneous over time, plurilaterals are increasingly discussed and negotiated. There are two types: exclusive and non-exclusive ones. The former extend to all WTO members under the conditions that a sufficiently large number of members ratify the agreement (and, therefore, commit to adopting the negotiated measures, e.g., a reduction of tariffs). Such a plurilateral is non-discriminatory, but it allows free-riding behavior as countries could benefit from better market access without reciprocating themselves. Non-exclusive plurilaterals do discriminate; but, unlike RTAs, they are open for accessions by all WTO members. The problem, however, is that all WTO members must agree to the creation of a non-exclusive plurilateral. In the future, it is important to break the numerous dead-locks that hinder the WTO from modernizing and upgrading its rule book. Plurilaterals are important here, but they can only work if single members lose their veto rights. Germany and the

[48] According to the WTO jargon, the EU, for example, has RTAs with countries such as Chile or Japan.
[49] The WTO counts notifications of goods and services agreements separately.
[50] This point was first demonstrated by Viner (1950).



Source: World Trade Organization. Own illustration. Cumulative numbers on the right-hand-side. RTAs comprise free trade agreements and customs unions.

Figure 13: Number of RTAs currently in force, by year of entry into force

EU should push for such an amendment. It is better for the global trade community if plurilaterals are negotiated within the WTO than outside, which would be the logical consequence of a continuous threat of vetoes. For instance, a climate club (which, amongst other things, sets a minimum price for CO_2 emissions amongst its members but rules out carbon border adjustments between them) could be construed as a non-exclusive, but open, plurilateral.

Finally, there are **multilateral agreements** negotiated within the WTO and applied to all WTO members.[51] Multilateral agreements satisfy the WTO's most-favored nations and the national treatment principles which require that all trade partners are treated alike and that foreign sellers or buyers are treated as domestic ones. Bilateral agreements can have multilateral aspects, e.g., when they contain provisions that cannot technically discriminate between markets (such as technical standards).

As is the case with essentially all international agreements, trade agreements cannot be fully enforced externally. In fact, they need to be self-enforcing. As discussed above, the threat of sanction plays an important role in deterring opportunistic behavior. Because trade agreement grant advantages to countries, the treat of withdrawing such advantages can create leverage in other policy fields. For this reason, trade agreements can be used to bind trade partners to commitments made in other treaties. For example, the EU can conclude RTAs that require the partner countries to fulfill their pledges under the Paris Agreement and that withdraw concessions if the partner fails to do so.

Since RTAs offer access to the EU's single market against the exchange of concessions by the partner countries, the EU's bargaining power rests squarely on the size, depth, seamlessness, and dynamism

[51] In fact the term 'multilateral' is misleading because it does not sufficiently distinguish from 'plurilateral' agreements and does not convey the fact that multilateral agreements apply to all WTO members; hence, the term 'omnilateral' would be more fitting.

of its single market. Therefore, the EU's capacity to negotiate trade agreements is strongly linked to the quality of its own interior market. To strengthen its bargaining power, the EU should invest into the single market. This is also the best measure to protect the integrity of the interior market itself, because the threat of sanctions against opportunistic foreign behavior depends strictly on the attractivity of the single market.

4.2 Trade Agreements

The EU currently has 36 trade agreements with 77 trade partners in place; about 25 trade agreements are being negotiated at the moment.[52] Against the backdrop of the shift in the global economic and political order over the past decade, the extension of the EU's bilateral trade partnerships is of strategic importance. However, not only do EU trade agreements that are in place or being negotiated matter, but also trade agreements that are being negotiated and installed amongst third parties. Thus, the following section as well discusses developments in trade agreements outside of the EU that are strategically important and/or impact on the EU.

In its history, the EU has negotiated different types of trade agreements. In the early days, it focused very much on multilateral negotiations and on treaties with immediate neighbors. With increasing WTO membership and decreasing success of multilateral negotiations, the EU has used RTAs in a more strategic fashion. It is important to distinguish between two broad types of RTAs. First, the EU negotiates association agreements which aim at bringing partner countries very closely into its regulatory and institutional orbit, often granting the ECJ judiciary oversight over the agreement, and preparing formal EU membership in the future. While the latter is not always intended, one may further distinguish between neighborhood agreements and pre-accession agreements, but the border between these categories is blurry. Second, the EU also negotiates more classical FTAs, in which there is no role for the ECJ and in which the extension of the regulatory reach operates, in the best of cases, through the so-called Brussels Effect (see chapter 4.1.2).[53]

4.2.1 Important Prototypical Existing EU Trade Agreements

4.2.1.1 EU-Ukraine Association Agreement The EU and the Ukraine negotiated an Association Agreement between 2007 and 2011. The agreement was signed in spring 2014 and was provisionally applied from 1 January 2016 onwards. Full entry into force started on 1 September 2017 following ratification by all EU Member States. As a fully integrative part, the Association Agreement contains a Deep and Comprehensive Free Trade Area (DCFTA) which eliminates tariffs and other trade barriers and which aims at aligning Ukrainian regulations with the EU's in areas such as competition, TBT, SPS, customs and trade facilitation, or the protection of intellectual property rights. According to

[52] See `https://bit.ly/376A12Q` for details.

[53] For the sake of completeness, it is worthy to notice that the EU maintains a large non-reciprocal preferential trade program with developing countries under the so-called Enabling Clause in Art I(2) in GATT.

the EU's website, "*The Association Agreement is the main tool for bringing Ukraine and the EU closer together: it promotes deeper political ties, stronger economic links and the respect for common values.*"[54]. Indeed, the preamble of the agreement states objective of 'progressively closer links', of 'participation of Ukraine in European policies', or of 'gradually approximating Ukraine's legislation with that of the Union' which are typical for association agreements. The text requires that 'relevant jurisprudence of the Court of Justice of the European Union' is taken into account. In certain areas, the Ukraine has accepted language such as 'The ruling of the Court of Justice of the European Union shall be binding on the arbitration panel'. Formulations like these are prototypical for an association agreement. They directly extend the reach of EU regulations, not relying on the indirect working of the Brussels Effect. While full membership of the Ukraine in the EU is currently a remote possibility only, the FTA can be seen as a preparatory step towards that goal. This ambition, however, has met opposition in Moscow, with consequences that cannot be discussed here at the required length. However, it is clear that the agreement shows in a very drastic way how strongly interrelated trade policy and more classical foreign policy are.

4.2.1.2 EU-Japan

In contrast to the EU-Ukraine agreement, the EU-Japan agreement is an excellent example for a modern and far-reaching, yet in many ways conventional trade agreement. Officially, it is called an "Economic Partnership Agreement", as it does go beyond trade policy. It has been designed as an EU-only agreement and entered into force on 1 February 2019. The agreement removes tariffs and non-tariff barriers, it creates various fora for cooperation and it has a strong political component. When entering into force during the presidency of Donald Trump, it sent a strong signal against protectionism. It also stresses the EU's willingness to engage in the Asian-Pacific region and to counter advances by China, for example with the help of its Regional and Comprehensive Economic Partnership (RCEP, see chapter 4.2.3.1) agreement. Besides this, the EU-Japan agreement is also very promising in its expected economic consequences; see Felbermayr et al. (2019b) for a careful analysis. However, because of its size, the agreement has important effects on third countries, which exemplifies the geostrategic nature of the undertaking.

4.2.1.3 EU-UK

The agreement between the EU and the UK is the first that follows a period of full membership in the EU. From a conceptual point of view, it is interesting because it reflects a difficult compromise between two positions and is thus a hybrid between association agreement and FTA: the EU's, who, during the negotiations, was pushing for an association agreement, and the UK's, who wanted a very standard FTA with a very limited role for the ECJ. Following the **Brexit** vote on June 23, 2016, the UK finally left the EU single market and a relatively narrow trade agreement has been in force since January 2021. The size of the EU's single market has thus shrunk by a seventh with the UK's exit. Studies focusing on the impact of Brexit on GDP/welfare predicted a decline in average

[54] See `https://bit.ly/3j015X2`.

GDP per capita in the UK of up to 1.3% in the case of a soft Brexit, and of up to 2.7% (Dhingra et al., 2017; Vandenbussche, 2019) in the case of a hard Brexit. This decline increases to between 6.3% and 9.4%, if dynamic effects on output are taken into account (Dhingra et al., 2017). For Germany, GDP losses of up to 0.3% were forecast in the event of a hard Brexit (Felbermayr et al., 2017; Brautzsch et al., 2019). Because anticipation effects led to decreases in trade even before the end of 2020, there was hope that the economic tension might ease in the first half of 2021. However, tariff barriers and skilled labour shortage appear to be lasting problems that continuously impact negatively on the EU's as well as the UK's economy.[55]

The EU-UK agreement is still in its very early stages. Whether the various provisions, e.g., those relating to the island of Ireland, will effectively and efficiently work, is still doubtful. Also, the geostrategic consequences of the Brexit appear not yet to be fully digested in EU capitals and in Brussels. Hence, it is likely that further amendments to the bilateral EU-UK relationship will be necessary in the future. The objective for the EU must be to keep the UK as closely aligned to the single market as possible without intruding on the country's objective to keep control over its policy choices. Similar challenges exist in the EU's relations with Switzerland or Turkey; see below. One way forward could be a relatively narrow customs union between the EU and its neighbours, where all members have rights to contribute towards the setting of policies.

4.2.2 Existing EU Trade Agreements in Renegotiation

4.2.2.1 EU-Switzerland Approximately 41 percent of Switzerland's goods exports went to the EU27 in 2019; around 53 percent of imports came from EU27 countries. However, due to Brexit, the importance of the EU for Switzerland has fallen. Conversely, Switzerland is the fourth most important trading partner for the EU (after the US, China and the UK).

Economic relations between Switzerland and the EU are currently governed by a number of complex contractual agreements. The basis is a classic FTA, which has been in force since 1973 and primarily limits or bans customs duties and quantitative restrictions on trade in goods. The Swiss population narrowly rejected joining the European Economic Area in a referendum. Instead, there are a number of bilateral agreements with the EU that regulate Switzerland's integration into the European single market and cover aspects of cooperation beyond that. The Bilateral Agreements I, which have been in force since 2002, comprise seven sectoral agreements on the free movement of persons, mutual recognition of conformity assessments, public procurement, trade in agricultural products, land transport, air transport and scientific and technical cooperation. Although the treaties are legally independent of each other, they are linked by guillotine clauses. Since 2006, another set of bilateral agreements (the Bilaterals II) has also been in force, governing Switzerland's accession to the Dublin and Schengen agreements, cooperation to investigate fraud, and aspects of cooperation

[55] See `https://bit.ly/3yUelCY`.

on agricultural products, the environment, media, education, pensions, statistics, and services.
The complexity resulting from the interaction of various bilateral treaties led the EU to negotiate the above-mentioned framework agreement. The core of the European demand was been dynamic legal harmonization, which was intended to prevent renegotiation of the treaties when European legal norms are certain to change. In addition, the ECJ was to play a central role in monitoring the framework agreement. The objective of the EU was to directly expand the reach and the seamlessness of the single market, which would bring economic advantages and also a better geostrategic position for the EU.
The Swiss Confederation and the EU conducted negotiations on a framework agreement between 2014 and 2018. Since November 2018, a draft treaty had been available, which the Swiss Federal Council described as basically positive but not worth signing. Since then, "clarifications" and "side-letters" were discussed, threats and warnings were issued, but with no avail. In May 2021, the head of Swiss government declared the end of the negotiations. This means, that the EU has failed in its objective to to ensure that anyone operating in the EU single market, to which Switzerland has significant access, faces the same conditions. In her press statement, the EC argues that "privileged access to the Single Market must mean abiding by the same rules and obligations".[56] In the future, as EU regulations develop, bilateral trade is likely to be subject to greater frictions as rules gradually diverge. Already, as a consequence of the Swiss decision, standards for Swiss medical devices will no longer automatically be recognised in the EU and vice versa. Switzerland continues to push for the negotiation of negotiate individual sector-specific agreements with the EU. The EU, however, refuses to continue along this tradition.
This failure to find a new bilateral arrangement means that the EU single market may gradually lose a very attractive associated member. The EU must ask itself whether it has the right package on offer to induce rich outsiders to engage in deep cooperation. As in other bilateral relationships, EU trade partners appear less willing go subject themselves unilaterally to EU rules making. One way out would be to find a political superstructure that allows countries such as Switzerland a say in political processes that directly concern them without forcing them into full EU membership. The EU-Turkey relationship, considered next, poses a very similar challenge.

4.2.2.2 EU-Turkey Customs Union

The economic aspects of the EU-Turkey relationship bear testimony to the difficult geostrategic trade-offs faced by the Union, in this case between an enlargement of the single market and its deepening.[57] Since 1996, there is a customs union which ensures that almost all industrial and processed agricultural products (except coal, steel and agricultural products)

[56] See `https://bit.ly/3BSJokP`.
[57] This section draws on a recent report that some of us have drafted for the EU-Parliament; see Yalcin and Felbermayr (2021).

can be traded duty-free into the EU or Turkey.[58] A customs union is a deeper type of integration, because it foresees a common trade policy vis-à-vis to third countries (FTAs, in contrast, allow members to set their own trade policies autonomously). Therefore, customs unions require some sort of common institutional framework through which common trade policy is decided. In the EU-Turkey case, such a framework does not exist: Turkey is suppose to mimic EU trade policy – in particular, its tariffs – without having a say in the process and without third party concessions, for example in the context of EU FTAs with other countries, being automatically granted to Turkish exporters. Such an asymmetric arrangement was acceptable to Turkey in 1996 only because full membership to the EU was expected in a near future so that the asymmetric construction of the customs union would only be temporary.

In the meantime, however, full membership of Turkey to the EU has become unlikely while the active EU trade policy schedule has increasingly exposed Turkey to risks. For example, the EU-Japan trade agreement, in force since 2019, requires Turkey to lower tariffs on Japanese imports while Japan does not (yet) reciprocate. The customs union allows Turkey to adjust tariffs in such cases, but goods entering the customs union through an EU country an easily reach Turkey duty-free, as goods circulate freely (without customs checks) within the customs union.[59] A key problem related to the asymmetry of the customs union is that it undermines Turkey's incentives to abide by the rules. As shown by Yalcin and Felbermayr (2021), Turkey levies additional tariffs on a substantial portion of its imports from third countries; this lowers the geostrategic value of the arrangement for the EU, because it cannot use access to the Turkish market as a bargaining chip in negotiations with third parties. On top of these problems, the lack of a modern and effective dispute settlement mechanism is creating additional tensions. Since its introduction, the EU-Turkey customs union has led to a tight integration of Turkish manufacturing into EU value chains. Compared to other trade partners of the EU, simplified rules of origin have played an important role in this process. But the arrangement has become increasingly dysfunctional. In 2015, the EU and Turkey agreed to modernize and upgrade the customs union. However, after the failed coup of 2016, political tensions in various areas, e.g., over gas drilling off the coast of EU member Cyprus, a severe economic crisis in Turkey, and the had rhetoric of the Turkish president Erdogan, have troubled relations.

Essentially, there are four options on the table. First, the parties could agree to continue the current customs union framework as it stands, despite its shortcomings, until relations improve. Second, they could go forward with the modernization and upgrading of the Customs Union despite political tensions, with the objective to stabilized the Turkish economy. Third, the bilateral trade relations

[58] A separate FTA on coal, iron and steel products was concluded in 1996 between the European Coal and Steel Community (ECSC) and Turkey. In addition to the Customs Union, in 1998 the Association Council agreed on a FTA for agricultural goods. At the 1999 Council meeting in Helsinki, Turkey received the status of a candidate for the EU. Six years later, in 2005, official accession negotiations between the EU and Turkey began.

[59] In a standard FTA, rules of origin would be required which determine the "nationality" of a good and hence the applicable customs regime. Such rules, as discussed by Felbermayr et al. (2019d), are burdensome and hamper the functioning of value chains. Their absence makes customs unions more effective than FTAs.

could be transformed into a FTA similar to the ones the EU has negotiated with Canada, Korea or the UK. And fourth, the EU could suspend the Customs Union and revert to WTO rules in its trade with Turkey. The fourth option, reverting to WTO rules, would be economically damaging for both sides, but the damages would be substantially bigger for the smaller and more dependent Turkish economy. It can act as a threat point for the EU should political relations deteriorate further, but it cannot be an objective per se.

An update of the customs union could certainly spur economic development in Turkey and act as a powerful incentive for further political alignment. It would keep Turkey very tightly integrated into the EU single market, which would have important geostrategic benefits for the EU since the customs union directly extends the reach of European policy making. However, it is hard to see how the asymmetric nature of the arrangement could be resolved, as full membership of Turkey into the EU is not in sight. Even an upgraded customs union would, therefore, come with incentive problems as Turkey, soon the most populous European nation, would have to submit to EU trade policies without any say and without reciprocity from third parties. Continuation of the status quo has similar implications. In both scenarios, the geostrategic advantages for the EU may well turn out to be smaller than hoped because third parties understand the inherent fragility of the construction. What is more, keeping the current arrangement with free circulation of goods within the customs union, the EU remains vulnerable to opportunistic behavior by Ankara which can threaten the integrity of the EU single market.

Given these considerations, it appears sensible to investigate another option, namely the transformation of the EU-Turkey trade relations from a Customs Union into a DCFTA. Such a scenario would require the introduction of rules of origin which would hurt value chains. At the same time, the FTA would cover areas that are not regulated under the current regime, such as services. Moving to a DCFTA would require a transition phase. It would also require a liberal approach to rules of origin to avoid inflicting damage to value chains. The lessons learnt from the UK's exit from the EU (which is of course, amongst other things, a customs union) would apply. The advantage, besides increased scope, would be that Turkey regains autonomy over its own trade policy which should improve the incentive structure. Ultimately, in order to bring countries such as Turkey, but possibly also Switzerland or the UK into a customs union with the EU, one would need to create a new political superstructure that allows those countries to participate in certain aspects of trade policy decision making without being full members of the EU; see Felbermayr et al. (2019a).

4.2.3 Important Existing or Planned Trade Agreements with Geostrategic Importance

4.2.3.1 Trade Agreements of Third Parties

Although China has enshrined a "peaceful rise" in its strategy (Scobell et al., 2020) and has committed to the multilateral order, the geoeconomic nature of its aspirations is clear. Besides other geoeconomic mega-projects such as the BRI and China's

engagement in Africa, the newly concluded **RCEP** highlights the expansion of China's reach and its search for allies inside and outside Asia (Felbermayr et al., 2019c). The agreement is set to become the largest free trade area in the world, encompassing 15 countries that together account for 30 % of the world's population and 30 % of global GDP. A quantitative assessment of the economic impact of the agreement by (Felbermayr et al., 2021) suggests modest trade, income, and welfare gains from RCEP for its members. Due to increased competition from other RCEP members (e.g., South Korea's loss of market share in China), some countries even experience welfare losses. Similarly, the impact of the agreement on total EU exports and income is limited. What is more, EU production costs are affected due to lower trade costs within the region. Imported inputs become cheaper, resulting in a price reduction of 0.05 % for the EU and an overall increase in welfare of 0.01 %. The important role of complex GVCs in determining the impact of RCEP are highlighted by this fact. Overall, while the agreement represents an important milestone, it is not as ambitious in terms of the scope and depth of its commitments as other mega-agreements such as the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) or the EU-Japan Economic Partnership Agreement (EPA). However, RCEP could trigger dynamic processes and it can be assumed that the deepening of regional value creation and production networks will lead to regional technology development. This could produce a gradual change in the structure of comparative advantages to the disadvantage of the EU, but depends on central technology leaders such as Japan and Korea, who are members of RCEP but also have FTAs with the EU.

In the wake of the US-China trade conflict, US tariffs on Chinese products as well as Chinese tariffs on US goods were raised to 21 % in 2019 from both sides. In 2020, the US and China signed the **Economic and Trade Agreement** (ETA), which was intended to deescalate the trade dispute. The agreement commits China to import an additional $200 billion worth of US products and services in 2020 and 2021. In return, the US is to waive further tariffs. Following the conclusion of the Phase I deal, tariffs were reduced to around 20 % from both sides (Bown, 2020d). However, since then, tariffs have remained unchanged, and the agreement does not provide for any tariff adjustments for the time being. Partly due to the COVID-19 pandemic, China has so far fallen short of its offtake promises. As of November 2020, actual US offtake was only $82 billion. This represents only 58 % of the agreed upon 2020 offtake ($141.7 billion) (Bown, 2020c).

The ETA could lead to significant trade diversion effects and market share shifts for China's major trading partners. However, it could also benefit third countries via prevention of forced technology transfers and efforts to increase intellectual property protection. Furthermore, it could halt targeted currency devaluations (Chowdhry and Felbermayr, 2020a). Given the EU's close trade ties with both China and the US, the trade dispute continues to impact on the two rivals as well as on the European economy. As model simulations of the current status of the trade dispute by Felbermayr et al. (2021)

show, while production in the US and China is impacted negatively (0.23 % and 0.45 % respectively[60]), the EU benefits from slightly increased production (0.01 %) due to trade diversion effects. However, a potential restrictive trade policy response in form of increases EU's bilateral tariffs against China would impact negatively on all actors: European real output would fall by 0.08 %. This highlights the relevance of international production linkages. China is a key player in the production and processing of intermediate goods and thus an important trading partner for the EU. Even partial isolation from China would entail economic losses. Moreover, the ETA poses a threat to the WTO, as its targets for bilateral trade flows are at odds with Article 1 of the GATT, in which WTO members commit to nondiscriminatory trade policies (Chowdhry and Felbermayr, 2020b; Felbermayr et al., 2021).
Other agreements that strongly affect the EU through trade diversion affects are the CPTPP and the US-Mexico-Canada-Agreement (USMCA). The **CPTPP** which includes countries around the Pacific Ocean (but without China, and, against initial planning, without the US), has been construed as a vehicle to contain China's economic influence in the region. It is in force since July 2018, but the US' withdrawal from negotiations after the election of President Trump limits the role of the agreement. The USMCA is in force since 1 July 2020. It overwrites the earlier North American Free Trade Agreement (NAFTA). Because of much strengthened rules of origin and value added requirements within the region, the EU and other trade partners of the USMCA countries are hurt.

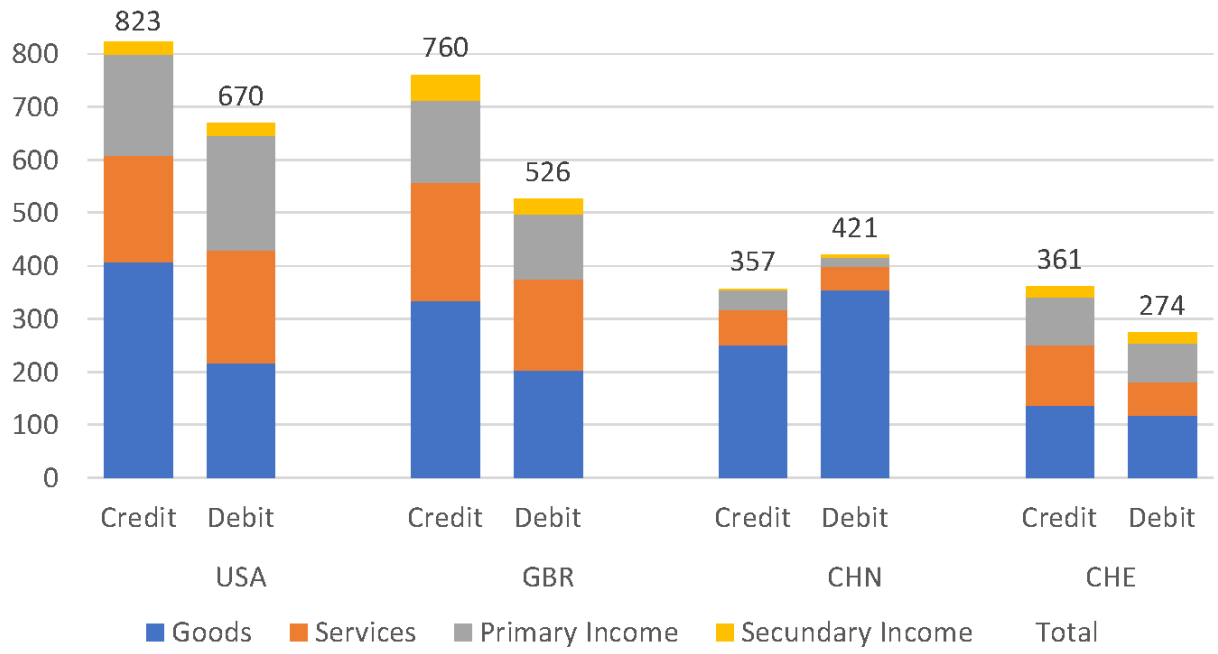
4.2.3.2 EU Trade Agreements

Trade relations with the US have not only deteriorated within the framework of the WTO. The past years have been marked by strong tensions in the transatlantic relationship. The US imposed additional tariffs on steel and aluminum products, and the dispute over aircraft subsidies led to the mutual imposition of high countervailing duties following corresponding WTO rulings. The new Biden administration has signalled willingness to cooperate with the EU on important trade matters such as the above mentioned tariffs: the EU suspended punitive tariffs over aircraft subsidies against the US for 4 months in March 2021 and agreed to extend the tariff truce to 5 years in June 2021 (European Commission, 2021a). Additionally, in May 2021, the EU suspended tariffs on steel and aluminium in order to keep up the positively developing dialogue. Both parties agreed to avoid changes on these tariffs that negatively affect bilateral trade. However, this discussion is mainly driven by the question on how to deal with China and its excess capacity in steel and aluminium, which drives down prices and production of other exporters. Accordingly, a common China policy would help to tackle these issues. But Biden's China policy remains unclear. Biden wants to renegotiate the ETA, but here, too, details are completely missing so far. During his vice presidency from 2009 to 2016, the US relied on a "pivot to Asia" rather than closer cooperation with Europe. Whether Biden will take EU interests into account in the process is doubtful. Moreover, the Buy-American principle does not give reason to hope for a President Biden as a boundless supporter

[60] China loses more because a higher share of production is affected by additional burdens in the form of US tariffs.

of free trade (Bardt and Kolev, 2020).

However, the logic for transatlantic cooperation is very strong. Despite differences in geostrategic objectives in in the deep structure of their economies, there are important similarities that result in a broad compatibility of the economic and societal systems. Moreover, economic ties are very strong. In fact, as Figure 14 shows that the current account – goods trade, services trade, revenues from investment (primary income), and transfers of income (secondary income) – amounted to 823 billion Euro on the credit side (inflows) and 670 billion Euro on the debit side (outflows). While China has caught up on goods trade and, according to Eurostat, in 2019 was almost at par with the US if one adds up imports and exports, services trade with China is still very underdeveloped. Moreover, despite the presence of European firms in China and must discussed corporate investment of China in the EU, the financial links between China and the EU are still very weak. In fact, in 2019, China was not much more important than Switzerland, if one views the entire current account, and of substantially smaller relevance than the UK for the EU27 economy.

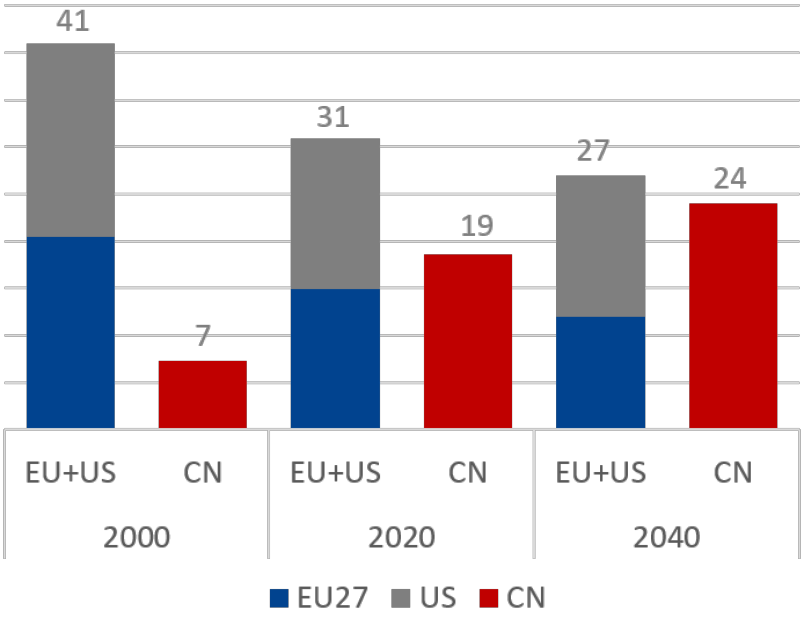


Source: Eurostat, own calculations and illustration.

Figure 14: The EU27's top 4 international partners in 2019

These figures illustrate the case for a transatlantic trade agreement. The level of bilateral exchange, on which trade cost reductions would apply, is so substantial that the welfare gains on both sides would be significant. The many economic analyses that were undertaken when the Transatlantic Trade and Investment Partnership (TTIP) between the EU and the US was actively negotiated (from 2013 to 2016) are still meaningful. Even if a cooperation agreement between the transatlantic partners were stripped from some of the more controversial issues such as investment protection (in particular investor-state dispute settlement), the analyses suggest that a transatlantic FTA would unlock higher

welfare gains for the EU and the US than any other conceivable trade agreement of either partner.[61] It is of course true that China has become much more important over time, not only in European trade statistics, but regarding a large host of measures. One important statistic is GDP; it correlates with a countries' global influence in both economic, social, environmental, and military terms. Figure 15 shows that, in the year of 2000, measured by power purchasing parities, China's share in global GDP was about 7 percent while the EU27 and the US each made up about thrice as much, accounting for about 41 percent of world GDP. Twenty years later, in 2020, China has overtaken both the EU27 and the US by substantial margins.[62] According to estimates, the share of China in global GDP will reach about 24 percent by the year 2040 and be about twice as big as the EU27's. But the EU and the US together will still command a somewhat higher share of 27 percent. Clearly, such forecasts can fail to materialize. However, counting other members of the transatlantic community in (such as the UK, the European Free Trade Association (EFTA) countries, Canada and Mexico), the distance to China grows. The lesson from the figure is that, if the EU and the US want to deal with China on a level playing field, they have to team up. On their own, they will be junior partners.



Source: World Bank, Kiel Institute forecast, own illustration.

Figure 15: Share of world GDP captured by China, the EU and the US: 2000, 2020, and 2040.

The **CAI** reached late last year between the EC and China yields improvements for European companies in terms of fair competition and better market access. It provides a basis for the EU to demand

[61] For examples of the numerous studies see Egger et al. (2015) or Felbermayr et al. (2015).
[62] Counting in current USDs instead of in purchasing power lowers China's share so that it has not yet overtaken the US (but the EU27).

compliance with its commitments and to expand and improve previously weak points. This enhances the EU's bargaining power vis-à-vis China and is thus very important for the EU in terms of power politics. However, there has been criticism that Chinese concessions to the EU do not go far enough: lack of investment protection standards and investor-state dispute settlement procedures, weak rules on compliance with environmental and labor standards, and selective market access and subsidy obligations (Bickenbach and Liu, 2021).

But also China has made decisive concessions to make the conclusion of an agreement possible. In the future, for example, China is to refrain from locking out and discriminating against European investors, especially in important service industries. It accepts new rules for state-owned enterprises and subsidies as well as effort clauses on labor standards and sustainability, as the EU has agreed with other contracting parties. Once expanded to include investment protection, the agreement will replace the 25 existing bilateral agreements. That alone is an important gain for the EU in the current geostrategic situation. However the entire negotiation process has been highly opaque and the text of the agreement is not yet published, which makes it difficult to make a final assessment.

In few years, **India** will overtake China as the most populous country in the world. Moreover, India is a fast growing country (averaging GDP growth of about 6 percent over the last years) and a democracy. It is an important regional counter-power of China. At the same time, its economy still is relatively closed. While India is the EU's third largest trade partner, bilateral trade and investment between the EU and India are below their potentials; see Felbermayr et al. (2016). For these reasons, it is natural that the EU is seeking to conclude a FTA with India. However, progress has been slow. Offical negotiations had started in 2007 but broke down in 2013. They are now in the process of being revived.

On June 28, 2019, the EU and the Mercado Común del Sur (Mercosur) countries Argentina, Brazil, Paraguay, and Uruguay agreed on the outlines of the **EU-Mercosur Trade Agreement**, which is part of a broader association agreement that is still being negotiated. The agreement is ambitious: it covers countries with a population of 770 million people and would thus create the world's largest free trade area.[63] Despite the immense combined trade volume of EUR 122 billion, trade barriers between the two regions are high: market entry into the Mercosur remains difficult with high bureaucratic barriers, non-transparent procedures and a high degree of uncertainty in implementation and law. The agreement aims to reduce these barriers to facilitate trade in goods and services. As a result of the current drafting of the potential Mercosur-EU trade agreement, the EU has reduced its tariff barriers by at least 50 percent in 84-95 percent of all sectors (depending on the Mercosur partner). The Mercosur alliance has significantly reduced a much higher number of tariff barriers, over 95 percent.[64]

[63] See `https://bit.ly/3rFSi0D`.

[64] It should be noted that the change in tariff rates does not reflect potential future structural changes as a consequence of the tariff changes. This is particularly true for the agricultural sector.

At present, however, there are still numerous political and economic obstacles that create risks with regard to ratification. Even without Brazil's withdrawal from the Paris Climate Agreement, Brazil's President Jair Bolsonaro is facing criticism, especially regarding his environmental policies. In summer 2019, French President Emmanuel Macron announced that France could not support the Mercosur Agreement under these circumstances. Since 2015, Mercosur countries are experiencing a massive slowdown in economic growth (until 2014, Mercosur members were still growing at an average annual rate of 4 percent). Trade openness of Mercosur members is low (The World Bank, 2019).[65] The Corona crisis and social conflicts are currently causing additional political and economic uncertainties, such that neither a strengthening of domestic demand nor increasing foreign demand for Latin American products is in sight. The latter is largely due to stagnant trade intensity worldwide and trade barriers currently in place.

Very recently (July 2021), in the process of finalizing the legal text, the EU and Mercosur countries have agreed to an innovative conditionality in the highly sensitive area of agricultural trade. The text of the agreement states that tariffs on imports of most kinds of eggs will eliminated over five equal annual stages. But it also makes clear that goods benefiting from this concession "shall be accompanied by a certificate of compliance with Council Directive No. 1999/74/EC or any equivalent animal welfare official standards."[66] This means that only eggs produced according to European standards of animal welfare will be exempted from tariffs. This conditionality could provide a new model for other trade agreements as well and a way out for the difficult European discussion on the general desirability of an FTA with Mercosur countries.

The **EU-Mexico Trade Agreement** concluded in April 2020 updates the EU-Mexico Global Agreement from 2000. Compared to the former agreement, it contains several enhancements regarding trade barriers and NTOs, such as sustainability, human rights and labour aspects. Furthermore, it will cover market access regulations as well as regulatory and anti-corruption cooperation. Publicly legitimized investment courts will settle investor-state disputes.

With a population of 128 million people, Mexico is the EU's second biggest trading partner in Latin America after Brazil. In 2020, the EU-Mexico trade amounted to €66 billion in goods and €19 billion in services.[67] The new agreement provides for tariff reductions of almost all goods traded between Mexico and the EU, with transitional periods/quotas for certain agricultural products. The protection by geographical indications of 340 EU-food products is especially important for the EU.

While the agreement still needs to be translated and ratified by all European countries, it faces similar critique as the EU-Mercosur agreement: for many, the provisions regarding environmental and human rights are not sufficient. As in the Mercosur case, especially farmers fear that the new agreement will

[65] Trade openness is equal to the ratio of foreign trade volume and the value of domestic production, [(export + import)/GDP] Thus, compared to international trade, domestic trade is relatively more important for Mercosur countries.
[66] As reported by `https://bit.ly/3f1x6wM`.
[67] See `https://bit.ly/3ya0hoR`.

harm the EU agri-food sector, permitting the import of Mexican beef meat, which has formerly been banned for health reasons.

Similar, but even more sweeping problems loom regarding negotiations on the **EU-Indonesia Comprehensive Economic Partnership Agreement (CEPA)**. Environmental and human rights concerns are the focal points of dispute. Biofuel production in Indonesia is linked to deforestation, labor rights abuses and conflict. After the EU implemented a policy to phase out palm oil as a biofuel in 2019, the WTO's dispute settlement body agreed to Indonesia's request to examine Europe's Renewable Energy Directive II. Indonesia claims that the directive unfairly discriminates against palm oil producers and is not in line with WTO provisions. As the second biggest palm oil producer, Malaysia similarly filed a complaint at the WTO.[68] Meanwhile, the EU itself requested an examination at the WTO of Indonesia's export restrictions on raw materials for stainless steel.[69]

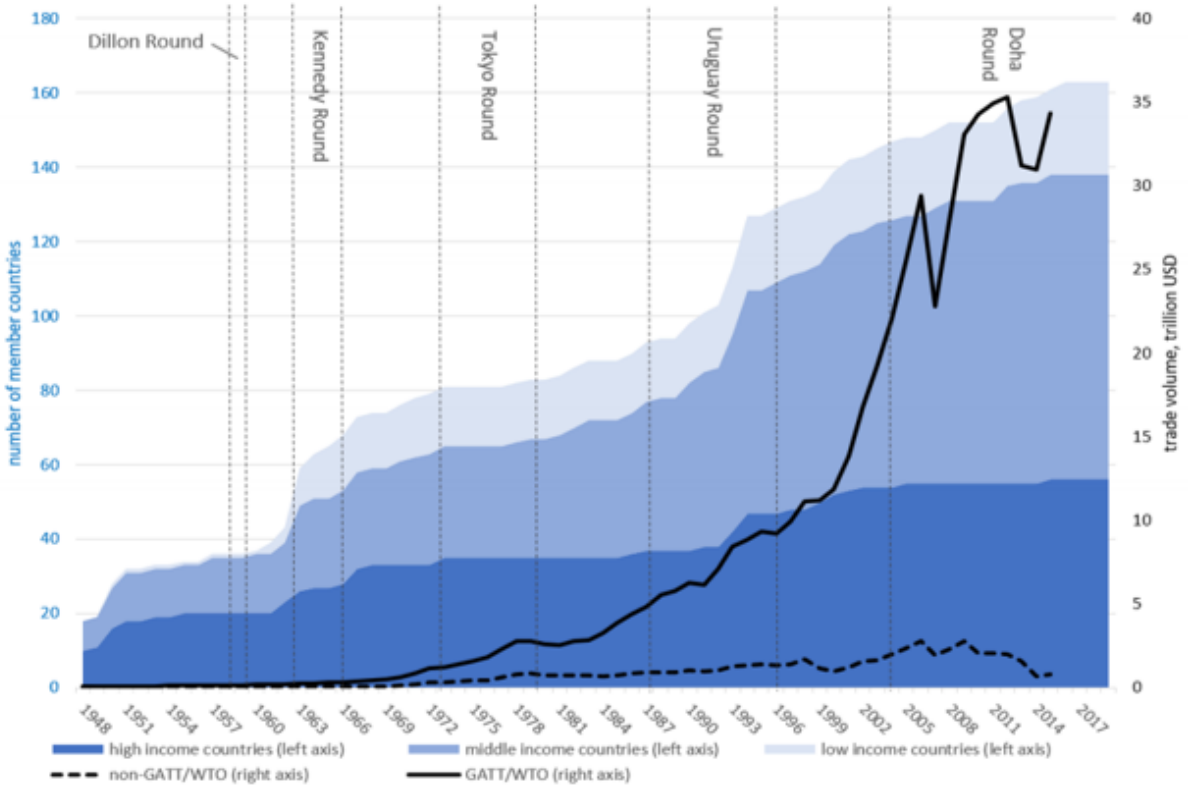
4.2.4 The World Trade Organization

The WTO is a late-comer amongst the global economic institutions. It was formally created in January 1995 after negotiations that took place in the Uruguay Round from 1986 to 1994. The mandate under which the EU negotiated dates from 1985, i.e., from a time where the end of communism and the emergence of China as an economic and political super power seemed very remote possibilities. After the US and the EU agreed on a critical aspects of agricultural subsidies (Blair-House-Compromise of 1992), the negotiations quickly came to a successful end. It continued to expand its membership, as evidenced by Figure 16, bringing increasing shares of world trade under its umbrella. Today, there are 165 member countries, 25 observatory countries, and the organization covers about 98 percent of world trade.

The WTO was created as an institution, with a secretariat and structures to adjudicate trade disputes. It brought the modernized GATT, which from 1947 to 2004 had governed goods trade, together with the GATS, the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), and a large additional number of agreements on aspects, covering, amongst other things, dispute settlement. The WTO is usually seen has having three related roles: (i) the negotiation of new rules for international trade, (ii) the settlement of disputes, and (iii) the development of trade capacity in developing countries.

When the negotiations over the WTO entered their final and decisive stages, the general mood was that the Western model of democracy and market economy had completely prevailed over alternative societal designs. This is best summarized by Francis Fukuyama's book "The end of history" (1992). Under this working hypothesis, a one-size-fits-all approach was imaginable, at least in the long-run. The basic design of the world trade order bears the traces of this thinking. The first years of the

[68] See `https://bit.ly/2UOXvHv`.
[69] See `https://bit.ly/3f4twC9`.



Source: World Trade Organization. Own illustration.

Figure 16: GATT/WTO Membership over Time and Trade Covered

WTO where years of phenomenal success. From the early 1990s to 2008, when the global financial crisis broke out, world trade, both of goods and services, grew very quickly at about twice the rate of global output.

In 1997, agreements on telecommunications services, on duty-free trade in IT-products, and a financial services deal were concluded. These agreements were designed as non-exclusive plurilaterals. In November 2001, at the fourth WTO Ministerial Conference in Doha, Qatar, the so-called Doha Development Agenda was launched – without a formal conclusion until this day. However, some progress was made, e.g., by expanding the Government Procurement Agreement in 2011, by negotiating a new Agreement on Trade Facilitation (Bali, 2013) and by widening the scope of the Information Technology Agreement (Nairobi, 2015). However, it is probably fair to say that the pace of technological, social, environmental and political change at the global scale was much larger than the small and piece-meal progress in updating the rule-book.

In particular, the WTO has not been able to update disciplines on subsidies and state-owned enterprises. These are regularly seen as highly distortive and are mostly associated to the economic development model of China. Also, the WTO has not developed rules that would help tackle global warming. As a consequence, these areas are left to unilateral action by national governments. More generally, the WTO has not been able to escape from its flawed design which assumes a world where

the institutional setups of economies are converging rather than diverging. Not surprisingly, in a fast-changing world but with an unchanged rule-book, the WTO's judicial function came into pressure as well. The growing gap between the legal texts and reality gave increasing power to panels and to the AB which, in turn, resulted in criticism, in particular by the US. Under the Obama Administration the US stopped to confirm the nomination of members to the AB; under the Trump Administration the AB stopped to be functional. The Biden Administration does not seem to be in a hurry to change tracks. This is understandable, since the refusal to confirm members is deeply rooted in the institution's inability to reform its rules. But the consequence is that WTO members have the right to appeal against panel rulings without there being a body or arbitrators to deal with these appeals. This is progressively corroding the global trade order.

In the meantime, the WTO's Appelative Body remains in deadlock after the US blocked the appointment of new members under the Trump administration. Thus member states cannot respond to potential violations within the usual framework (Garcia-Herrero et al., 2020). The EU and China are hence striving to create alternative mechanisms to counter these US policies (Chowdhry and Felbermayr, 2020a), e.g. by creating an ad hoc AB (Garcia-Herrero et al., 2020; Lester, 2020). Since March 2021, the 'Multi-party interim appeal arbitration arrangement' (MPIA) comprises 50 countries and serves as an interims tool to supply these countries with a two-step dispute settlement system within the WTO.[70] The new WTO Director General Ngozi Okonjo-Iweala aims at reforming the WTO dispute settlement procedure, but as well wants to implement reforms beyond the AB (Okonjo-Iweala, 2021).

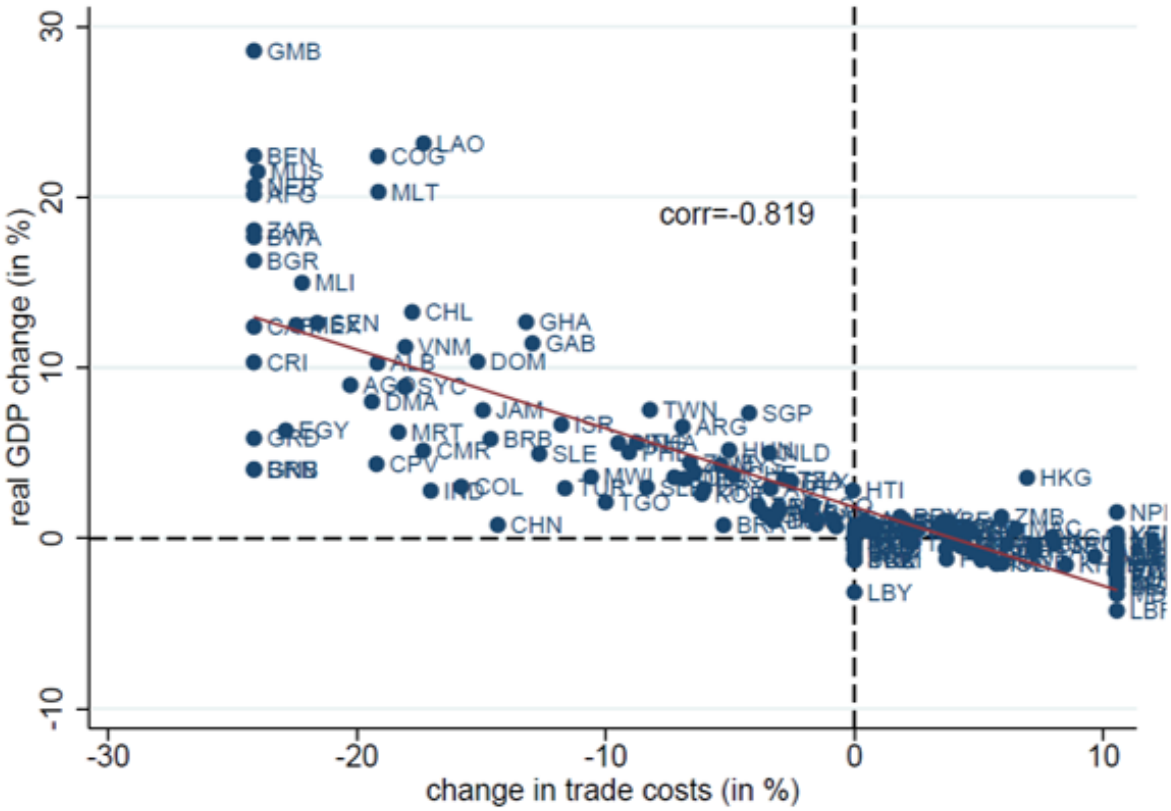
Notwithstanding these issues, the GATT/WTO system has increased trade between member states quite successfully, and this trade creation has been a steady source of per capita income growth, as shown by Figure 17.[71] To make progress at the WTO, one has to deal with undebatable fact that the world has become more heterogeneous and that the differences in economic models are here to stay. The EU and Germany should push for an open but reciprocal system of plurilateral agreements. This would allow subsets of countries to go ahead, e.g., with the creation of a Climate Club, but encourage entry of additional members when they are ready. The condition for this is that countries forego their veto powers – but in the face of continuous decline of the WTO these powers are of decreasing relevance anyway.

4.3 Supply Chain Resilience

In the supply chain debate, two related but differentiated sets of issues emerge: First, there is the question of how Germany and the EU can secure the supply of essential (critical) intermediate and final products in times of geopolitical tensions and increased risk of exogenous shocks from natural

[70] See `https://bit.ly/2Wwn1BF`.

[71] Not all countries have benefited, though. According to the empirical analysis, there are several small developing countries who face higher trade costs due to the WTO and its standards.



Source: Felbermayr et al. (2020b), own illustration.

Figure 17: The Effects of GATT/WTO on Effective Trade Costs and Real Per Capita Income

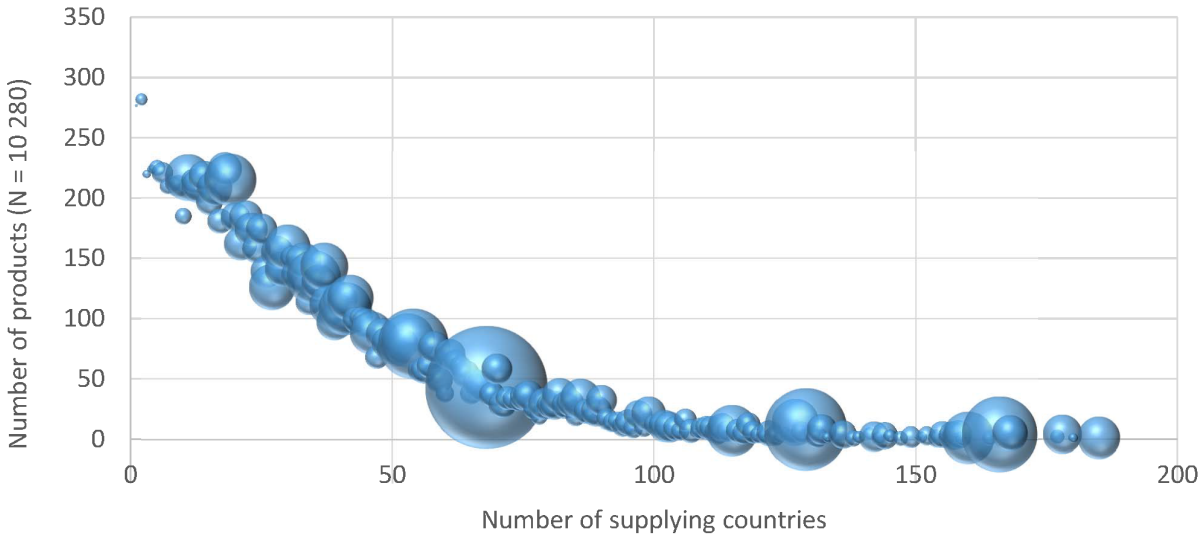
disasters or pandemics. This discussion addresses Europe's defensive interests; it is a matter of importing goods that cannot be produced domestically or only at very high cost, and strategies are required to reduce dependence on imports and political blackmail. In this context, proposals are discussed that aim at preventing the outflow of critical goods abroad by means of export controls, at making it more difficult for foreign companies or governments to gain access to domestic know-how by means of investment audits, and at reducing the risk of foreign direct investment by means of the strategic use of development aid, trade agreements or access to foreign markets.

Second, there is the question of the circumstances under which foreign producers should have access to the production networks (value chains) of German/European companies and/or to the European domestic market. As discussed above, in contrast to the usual practice in WTO law, the focus here is not on product *characteristics* but on the production *process*. It is required that foreign producers comply with certain sustainability or social standards, or respect human rights. In contrast to the question of dependency, an offensive European interest can be discerned here; it is not a matter of containing supply risks or warding off opportunistic behavior on the part of foreign governments, but of exerting influence to shape production processes abroad according to one's own values. In this context, legislative projects such as the introduction of a CO_2 border adjustment or a German or

European due diligence law (supply chain law) should be mentioned.
Clearly, these two debates have strong linkages: they both relate to the use of economic power to enforce certain domestic strategic interests. In both areas, there are valid economic and political in favor of such instruments; in both cases, difficult trade-offs are required: In the first case, between narrowly defined economic interests and security objectives, and in the second case, relating to the definition of externalities that are permitted to shape domestic adjustment policies.

4.3.1 Raw Materials and Critical Inputs

The COVID-19 crisis has raised important questions about the security and reliability of GVCs. When the pandemic forced Chinese authorities to close factories in Hubei province and to shut down port facilities, shortages of critical inputs in Europe led to a drastic reduction in manufacturing output, in particular in sectors such as automotive or machinery. When the pandemic hit Europe in early spring 2020, the continent did not have sufficient PPE and many countries reacted with export restrictions. Quickly, many other world regions saw a massive increase in the use of such restrictions (Evenett and Fritz, 2020). Later, in the course of the pandemic, demand for raw materials for the production of vaccines as well as vaccines skyrocketed, leading to higher prices, severe competition, and acrid debates for the jabs amongst governments around the world. Driven by a strong economic recovery in many world regions, in particular in China and the US, growth of demand for microchips has outpaced growth in supply, leading to shortages and production stops in, amongst other places, Europe.
Before the current crisis, fears of shortages of raw earths or other important industrial supplies, in particular those needed for battery cells or wind turbines, a strong geographical concentration of production of certain inputs for medicines, or key inputs for cell phones (micro chips) have motivated policy discussions about the need for defensive policy instruments. The key driver behind these developments, without doubt, is an erosion of trust between major trading powers that countries would not use possible monopoly situations resulting from specialization to extract economic or political concessions from their trade partners. This erosion has started around the great recession of 2008/09. Since then, protectionism has increased around the world (Evenett and Fritz, 2020), leading to much slower expansion of goods trade than before. In 2020, the number of export restrictions exploded. Besides the increase in perceived political risks, GVCs have been criticized as being vulnerable to exogenous shocks such as earthquakes, tsunamis, or storms which interrupt either supply from places where the production of critical products in key products is concentrated or the supply routes, whether maritime or land-borne. The 2011 Tohoku earthquake and tsunami is an example.
Using data for the year of 2019 (i.e., pre crisis), 18 shows the number of products (on the y-axis) out of 10280 products in the product-level EU trade statistics supplied by 1 to 185 partner countries of the EU27 (on the x-axis). A barely visible dot in the North-Western corner of the blot shows that there are 277 products for which the EU has only one single import source. The much larger dot right



Source: Own calculation and illustration based on COMEXT 8-digit product data. Bubble size is proportional to import values (in Euro). Data for 2019.

Figure 18: How many products do the EU27 countries source from how many countries?

next to it shows that for 282 products the EU has exactly two supplying countries. The size of the bubbles depicts the total import value aggregated over those products; this value is 121 million Euro for the products with a single supplier and 2.3 billion Euro for the products with exactly two suppliers. Another 220 products, with total import value of 1.1 billion Euro, come from exactly three sources. So, 779 products accounting for 3.5 billion Euro stem from not more than three countries. Inversely, for 92% of all products, the EU has more than three sources of imports. 80% of all products are sourced from at least 10 different countries; these make up 98.7% of the total EU import value of 2019.

Quite clearly, for a very large number of products and for almost the entirety of the EU27 import value, the EU has a very diversified portfolio of import sources. However, there is a number of products, in which this is not the case and where a closer inspection is necessary. The key criterion to assess vulnerability is the degree of criticality of an input for production or consumption processes in the EU. In economic terms, the question is, whether there are ready substitutes available or not. In this study, is not possible to undertake a detailed analysis of this question. However, the inspection reveals that 537 out of these 779 products are highly specialized agri-food products such as palm oil (import value of 430 million Euro) or food products with protected origin, which, by definition can be sourced only from one single country, such as cheeses (e.g. Gruyère from Switzerland, 83 million Euro), wines, liquors (e.g., Tequila from Mexico, 32 million Euro), or very special types of fish and other animals (e.g., the EU has only one supplier for living goats). For these goods, substitutes are easily available, not only in the EU but from other countries as well.

Out of the remaining 242 non-agri-food products, about 200 relate to very specialized manufacturing goods whose production, by their very nature, is concentrated in very few countries. For example, the

EU has single suppliers for goods such as telecommunication satellites, refrigerator ships or bucket dredges. These products could be produced in the EU as well, albeit at substantially higher costs, as the scale economies of concentrating productions would be lost.

Things are more critical for about 50 items which cannot easily be substituted. Raw lead (3 suppliers) or uranium ore (2 suppliers) stick out in terms of their import values (266 million Euro and 74 million Euro, respectively). The list comprises certain raw metals such as Thallium, Barium, or Beryllium, and some highly specialized chemical substances such as chlorethylen, anthraquinon, fenproporex (the latter two being important medical inputs).

Interestingly, if one were to compare the results of 18 with a similarly constructed diagram for a single EU member state, the result would look more troublesome. For example, Austria sources 66% of all imported products from at most ten supplying countries, most of them being other EU members. This shows that, for EU members, access to the large and secure European single market is an important protection against disruption. Of course, if, as in the early weeks of the Corona-Pandemic in spring 2020, EU members introduce export restrictions within the EU single market, that advantage disappears. Hence, a large and crisis-proof single market is a key factor in improving supply security of member states.

One may ask whether the EU has become more dependent on few suppliers over time. Figure 19 plots so-called Herfindahl-Hirschmann (HH) concentration indices. These reach the value of 100 if trade is concentrated on a single country. If trade very perfectly diversified (each country supplying or demanding goods in strict proportion to its GD), the HH index would be equal to 14. Panel (a) in Figure 19 shows that, for EU imports as well as for EU exports, the HH index is below that mark, meaning that the EU is very diversified with small countries receiving a higher weight than their GDP shares.[72] The concentration of imports and exports is roughly similar and does not reveal any upward trend, despite China's entry into the WTO in late 2001.

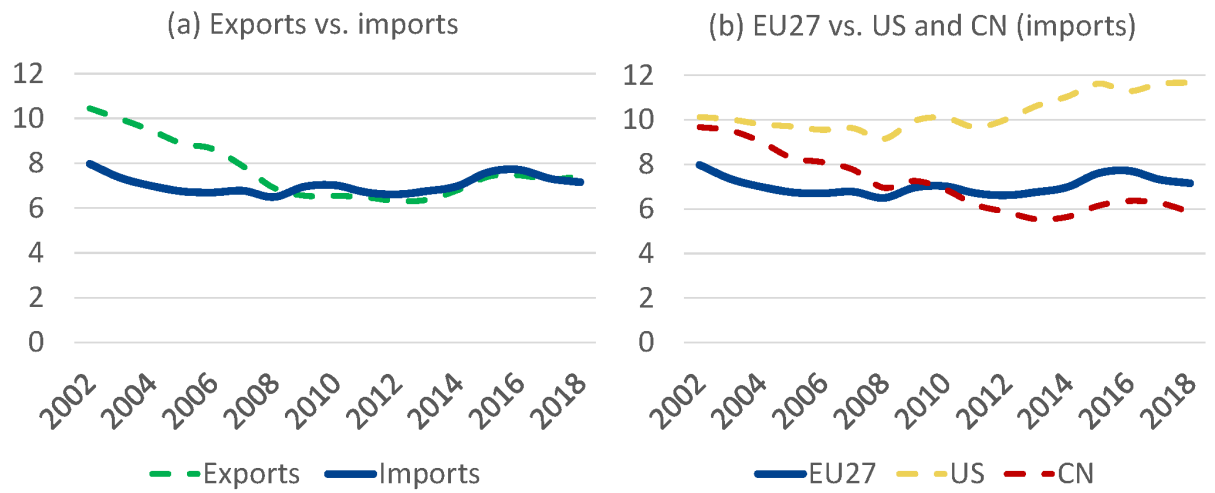
Compared to other big trading blocs, the EU's imports are rather well diversified (Panel (b) of Figure 19). While US imports have become more concentrated since about 2008, China has successfully diversified its import sources.

4.3.2 Managing the Risks of Disruptions

Overall, the data do not show wide-spread dependence of the EU on very few supplying countries for large number of products. There are, however, certain products where concentration on very few supplier country is an issue. Here, the risk of disruption through political or natural events is high, and governments should ask the question, how these risks can be reduced.

To start with, it is important to note that generalized policy action is required only if individual firms in the EU do not have the incentives of the capabilities to deal with supply chain risks themselves.

[72] This is natural as small countries are much more open than larger ones.



Source: Own calculation and illustration based on BACI-Comtrade 6-digit global trade data.

Figure 19: Herfindahl-Hirschmann concentration index

This would be the case in the presence of externalities that cannot be dealt with by writing appropriate contracts between buyers and suppliers along the whole value chain. In fact, any disruption of supplies has immediate consequences for firms' profitability, so that they should have strong incentives to act on their own behalf. For example, firms can work with several suppliers to insure against disruption by diversifying their portfolio across geographies and partners. If contracts within production networks distribute incentives across firms in an inadequate way, e.g., because they do not specify penalties for late delivery, buyers have incentives to amend such contracts. When supply chains become more risky, firms will increase efforts to reduce these risks. This, of course, comes with additional costs. For example, if health insurance companies increase penalties for late delivery of drugs, prices for medication would probably rise. The same is true when manufacturers expand their set of suppliers. If imports of raw materials become very volatile, recycling or urban mining may become competitive alternatives. Only if these solutions fail, is there a clear justification for government intervention.

While firms can deal with supply chain risks by writing contracts and by diversifying, governments can negotiate trade agreements to increase legal security (so that suppliers cannot easily walk away from contractual commitments) and to render opportunistic behavior by foreign governments (such as the imposition of export restrictions) illegal.

However, certain contingencies cannot be dealt with contractually. For example, contingencies and their probabilities need to be known. In the face of radical uncertainty (where probability distributions are unknown), or in the presence of highly unlikely but hugely disastrous shocks ('black swan' events), firms with short planning horizons may not be willing or able to internalize externalities associated to supply chain risks. In these cases, public action may be required.

Governments could stock pile essential products and finance the warehousing cost with general taxes. Examples for such policies may be found in the establishment of strategic oil or gas reserves. Also,

when raw material prices and deliveries become more volatile, there may be additional needs for government support in trade finance.

Besides these measures, the EU and its member states should evaluate whether their competition policy instruments are well suited to deal with foreign monopolies. Indeed, foreign monopolies may restrict supply to the EU while maintaining high prices, even more so when they are state-owned. The problem with national competition authorities is that they may be unwilling to tackle national firms when they enjoy monopoly positions abroad. The EU's competition authorities should continue to build partnerships with foreign anti-trust institutions. Again, this is done best in the context of trade agreements, which have chapters on competition policy.

The measures discussed above are micro-economic and case-dependent. Cutting back on trade in inputs in a generalized way, in contrast, would be costly with very little effects of supply security. Eppinger et al. (2021) have shown that reducing trade in intermediate goods would be much more costly than living with adverse effects of foreign supply-side shocks. Also, as argued by D'Aguanno et al. (2021), the integration into GVC does not lead to more macroeconomic volatility. Quite the contrary is true, unless shocks are perfectly correlated across trade partners.

4.3.3 Supply Chain Acts

Since this year, Germany has a mandatory due diligence law (a 'supply chain act'), which requires firms to supervise their direct foreign trade partners and take responsibility for violations of human rights, environmental or social standards as enshrined in international treaties. The EU is planning to enact an even more far-reaching legislation on its own. The objective is to fight abuse such as child labor, any sorts of forced labor, exploitation of workers, the degradation of the environment and so forth. There cannot be any doubt that the EU is firmly set in pursuing this objective. The discussion, then, is not so much about the objective, but about the instruments how to achieve it.

It is clear that mandatory due diligence puts additional burdens on European importing firms. The direct costs of these burdens may be small. However, firms risk substantial monetary fines and reputation damage if they are sued; this drives up the expected costs of maintaining a large portfolio of suppliers in countries with weak law institutions. The modern microeconomic literature shows that the fixed costs of maintaining a presence in foreign markets are important to explain firm behavior. If a due diligence law raises the expected costs of maintaining a supplier relationship, importers will react by shrinking the portfolio of suppliers and concentrate on fewer markets and companies. With a less diversified supplier base, supply chain risks increase. Also, in the poor countries, smaller suppliers may be pushed out of EU value chains and retreat into the informal sector, in which labor, social, and environmental conditions are typically much worse than in the formal export sector. So, the partial withdrawal of EU importers from poor countries may achieve the opposite of what due diligence legislation intends to do. On top of this, there may be geostrategic implications, because

the withdrawal of EU importers leaves space for competitors from countries such as China or Russia. To avoid these problems, supply chain acts must make sure that the effective costs of interacting with exporters from poor countries do not go up; otherwise, firms will react by thinning their supplier base. Fortunately, there are instruments that keep costs low. For example, the EU could opt for a centrally maintained negative list, where foreign suppliers with dismal human rights, social, or environmental performance are listed. Such firms could be banned from supply chains of EU companies. The same institutions that have legal standing in due diligence laws could be allowed to bring cases to the authority that maintains such a list. That authority hears appeals and can delist foreign suppliers if they change their practices.

Such a negative list approach would result in a much lower cost burden for EU importers. Rather than requiring every single EU importer to screen foreign suppliers, and thereby multiplying costs, a central authority would examine every supplier only once. In other words, there would be strong economies of scale. Moreover, a central negative list would establish legal certainty and free individual firms who abide by the list from the risk of law suits. This means that supply chains would be adjusted only if suppliers are indeed black-listed. As a consequence, a negative list would leave non-offending foreign suppliers unscathed. The drawback of a negative list approach, probably, would be that it could more easily be politicized, provoking retaliatory action by the host governments of black-listed companies. Due diligence legislation carries the same risk, though, e.g., when a spectacular law suit forces an EU buyer out from a certain foreign market. Moreover, politicization need not be harmful in a time when geostrategic considerations become more important. For example, the authority running a central black-list can take such concerns into account while a court deciding in context of an alleged breach of due diligence could not.

4.3.4 Strategic Autonomy

The EU's new trade policy strategy revolves around defending European sovereignty. This is enshrined in the new trade policy strategy and described by the goal to achieve 'open strategic autonomy' (see chapter 4.1.1). In this review, at several places, we have touched on this objective and on instruments that contribute towards achieving it. In this section, we only highlight areas where trade policy is particularly relevant.

First, trade agreements, whether bilateral, plurilateral or multilateral, have the implicit goal to ensure EU against opportunistic behavior by foreign governments. However, it is important to make sure that the legal texts are actually enforced. Therefore, the establishment of an enforcement unit in the Commission's Directorate General for Trade is to be welcome.

Second, when an infringement of rules is observed, the EU has to impose sanctions. However, as discussed above, it is important that sanctions are credible and predictable. Only then will they deter opportunistic behavior in the first place. It is possible that countries try to test the resolve of

EU decision-making. In such cases, sanctions must follow, otherwise the entire enforcement regime risks to collapse. Everything that makes the threat of sanctions more credible protects the EU against infringement of its rights without necessarily requiring the imposition of sanctions. The EU, therefore, has to speed up decision processes, go for majority voting in as many constellations as possible, provide compensation for countries and firms that suffer from the imposition of sanctions, and maintain lists of possible actions up to date. Also, as stressed above, the EU must continue to develop its single market and to improve its dynamism. Sanctions almost always involve the refusal of market access; they are, therefore, more successful, the more painful access restrictions are, which, in turn, is proportional to the attractiveness of the EU's interior market.

Third, as new technologies, new institutional setups, and new geostrategic interests emerge, foreign powers may apply new instruments that limit the degrees of freedom of the EU, its firms and citizens. The EU has develop its strategic foresight capacities such that possible threats to its autonomy are detected and instruments to defend against them are developed early on. The development of an anti-coercion instrument is an example of such policy work. Another instrument is the further development of the EU's trade agreements so that they offer protection against contingencies.

4.4 Policy Conclusions

The EU is especially strong when it comes to its role in international goods and services trade. To make full use of the potential of its trade policy, the EU needs to remove inter-institutional barriers and to expand the number of independent instruments to pursue a growing number of objectives.

Concerning NTOs, the EU can make tariff-cuts or other market access concessions in trade agreements conditional on compliance to commitments related to NTOs. As causality between implementing NTOs in trade agreements and their effectiveness is difficult to establish, the EU has to invest in a robust understanding of the outcomes of different non-trade provisions and the conditions under which implementing NTOs is most successful.

In order to remain an important global trade force and to continue to successfully harnessing the so-called Brussels Effect by which the EU influences other countries' regulatory regimes, the EU has to foster its single market. This is important internally, as the well-functioning of the single market has direct economic benefits for the EU itself and keeps centrifugal forces at bay. A strong single market is also crucial externally since granting or withdrawing access to is the most effective sanction that the EU has to project its economic power to third parties and/or the rest of the world. Thus, the EU needs to continue reducing internal trade barriers, both regulatory and related to infrastructure; it needs to solve the inconsistencies that burden the currency union. The more dynamic the internal market, the more valuable access to it is for partners and the stronger the EU's hand in a geostrategic sense. Furthermore, upgrading and extending its economic outreach in form of association agreements and, even more effectively, customs unions, would help the EU extend its regulatory reach.

The removal of inter-institutional barriers is also important for efficient decision processes in the EU regarding sanctions. This is especially crucial as the EU has to build up its image as a credible sanction sender - otherwise the threat of sanctions will be a rather toothless tool for deterrence and to incentivize third party compliance. As the number of sanctions as well as blocking legislations worldwide increase, the risk of escalation increases as well. Thus, the EU also has to invest in instruments to compensate domestic losers from both sanctions and blocking legislations.

The high number of trade agreements that the EU has already successfully concluded and the wide range of ongoing negotiations about new agreements is an important signal in times of increasing trade tensions. It is important for the EU to intensify its trade relations with strategically important partners such as Mercosur, as it otherwise gives away crucial leverage to other countries such as China.

Likewise, the EU should be aware that trade agreements between third parties could yield an increase in negotiating power for these while weakening the EU's bargaining position. Much heralded trade agreements such as RCEP have in fact little static effect on the EU and its members (Felbermayr et al., 2021), but they could foster dynamic adjustments which could render access to entire regions more difficult for EU firms and which could bias the evolution in the pattern of comparative advantage to the EU's disadvantage. The EU should thus work towards trade agreements with these countries to secure access to trade and production networks. Amongst future trade agreements, a transatlantic cooperation treaty and a trade agreement with India should be prioritized.

The US will again emphasize multilateral cooperation and the importance of the WTO, such that the EU should invite the US to participate and engage itself in the reform process of the AB initiated by Dr. Okonjo-Iweala. The reform process is necessary and important to deal with the deep crisis of the WTO. Plurinationals that require reciprocity but that are open to all WTO members should be advocated for by the EU; such agreements should go ahead even if not all WTO members consent.

Although in general the EU has a very well diversified supplier base and is, thus, not excessively vulnerable to supply chain disruptions, dependencies exist for a few but important products. The EU should use trade agreements to diversify its supply chains rather than to directly or indirectly subsidize re- or nearshoring. Concerning its due diligence legislation, the EU should opt for regulation that does not increase the expected costs of running international production networks as this risks counteracting the goals of diversifying the portfolio of suppliers and of connecting foreign firms to European ones with the purpose of promoting economic development abroad.

5 Conclusion

by Katrin Kamin & Gabriel Felbermayr (IfW)

In the past, European policy makers tended to pursue international security policy objectives and international economic goals separately and with distinct instruments. In this study, we argue that this orthodoxy is no longer tenable. All great powers make increasing use of international economic - 'geoeconomic' - instruments to achieve various foreign policy goals, and vice versa. For the EU, this development is particularly relevant, as the common foreign and security policy is still very much underdeveloped and remains on the national level while the field of trade, monetary, competition and single market policy almost completely fall under the exclusive competence of the union. Thus, the two areas that are interacted in the realms of geoeconomics remain mostly separated from each other in the EU. Additionally, neither the US nor China face these obstacles. The EU thus has to overcome this separation in order to enable effective implementation of its targeted assertiveness.

The major difficulty lies in the fact that the number of policy instruments available to the EU is smaller than the growing number of foreign policy objectives which reach from regulating trade and investment to foster domestic growth and employment, to preserving global commons such as the climate, biodiversity or oceans, to defending the European 'way of live', and to ensuring member states' security, broadly defined. Since Tinbergen (1952) it is known that hard trade-offs arise if too few independent instruments are brought to pursue too many independent objectives. Additional complexity arises since the policy goals are often interdependent and even complementary to each other in the long term. A basic recommendation of this study, hence, is to develop additional independent instruments that target the underlying problems as a closely as possible (Cordon, 1974) and thus can support the EU in circumventing painful trade-offs.

Foreign policy actions can reduce the attainable value of the EU's objective function directly, e.g., by the setting of import tariffs, or indirectly, by limiting the policy space of EU institutions or firms. To maintain its strategic autonomy, the EU has to defend this policy space and to keep a check on opportunistic behavior of foreign countries. The EU needs instruments to incentivize foreign powers to cooperate, i.e., to adopt policies that enable the EU to attain its objectives and to renounce policies that would harm it. International agreements, joint institutions, and the credible threat of effective sanctions play important roles in achieving this. The incentives generated by both agreements and sanctions directly rely on the attractiveness of the EU's common market. Defending the EU's interests therefore must start with fortifying its interior market, e.g., by completing the capital union, building cross-border infrastructure, and a more strategic research and technology policy. The Euro is not just a common currency, it is also a geostrategic tool that can play its role effectively only if basic institutional inconsistencies – in particular the lack of a common fiscal policy – are repaired. The more attractive the EU's internal market, the stronger the 'Brussels Effect' (Bradford, 2020).

In this study we recommend that the EU and Germany continue to pursue an agenda of concluding strategic economic partnership agreements and promoting as well as supporting multilateralism. First, the EU needs to develop a model that allows neighboring country to participate as closely as possible in the single market without being full members. In contrast to existing or failed models (with the UK, Switzerland, or Turkey) this will require some sort of political participation in the setting of a selected array of external policies (e.g., external tariffs). Second, the EU should seek to conclude a formal transatlantic partnership agreement. The US is the EU's most important economic partner and shares fundamental convictions; close trade partners such as Canada, Mexico, the UK, the EFTA countries could be included into a comprehensive framework, which should also include provisions to coordinate the fight against climate change. Third, the EU should continue to push for a reform of the WTO. Exclusive plurilateral agreements that remain open to all WTO members could break the deadlock the organization is currently trapped in. Transatlantic leadership will be crucial for progress.

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List of abbreviations

ADC Asian Development Bank

AIIB Asian Infrastructure Investment Bank

AP Appellate Body

BRI Belt and Road Initiative

CAI Comprehensive Agreement on Investment

CBAM carbon border adjustment mechanism

CBDC central bank digital currencies

CEPA EU-Indonesia Comprehensive Economic Partnership Agreement

CETA EU-Canada Comprehensive Economic and Trade Agreement

CO2 carbon dioxide

CPTPP Comprehensive and Progressive Agreement for Trans-Pacific Partnership

DCFTA Deep and Comprehensive Free Trade Area

DCP dominant currency pricing

DPC Data Protection Commission

EBA External Balance Assessment

EC European Commission

ECB European Central Bank

ECIS European Conference on Information Systems

ECJ European Court of Justice

EFTA European Free Trade Association

EPA EU-Japan Economic Partnership Agreement

ETA Economic and Trade Agreement

ETS Emissions Trading System

EU European Union

FED Federal Reserve System

FTA Free Trade Agreement

GATS General Agreement on Trade in Services

GATT General Agreement on Tariffs and Trade

GDP Gross domestic product

GDPR General Data Protection Regulation

GSP Generalized System of Preferences

GVC global value chain

GVCP global value chain participation

H2 hydrogen

HH Herfindahl-Hirschmann

ICT information and communication technologies

IMF International Monetary Fund

IPCEI Important Project of Common European Interest

JCPOA Joint Comprehensive Plan of Action

MFN most favored nations

MIP macroeconomic imbalances procedure

NAFTA North American Free Trade Agreement

NDC nationally determined contributions

NIRP negative interest rate policy

NTM non-tariff measures

NTO non-trade objectives

OECD Organisation for Economic Co-operation and Development

PCP producer currency pricing

PPE personal protective equipment

PSP payment service provider

R&D Research and Development

RCEP Regional Comprehensive Economic Partnership

REACH Registration, Evaluation, Authorization and Restriction of Chemicals

RES renewable energy systems

RTA regional trade agreement

sCBDC synthetic central bank digital currencies

SDR special drawing rights

SPS sanitary and phytosanitary

SWIFT Society for Worldwide Interbank Financial Telecommunications

TBT Technical Barriers to Trade

TRIPS Trade-Related Aspects of Intellectual Property Rights

TTIP Transatlantic Trade and Investment Partnership

UK United Kingdom

UNFCCC United Nations Framework Convention on Climate Change

US United States of America

USD US Dollar

USITC United States International Trade Commission

USMCA US-Mexico-Canada-Agreement

VAT Value Added Tax

WTO World Trade Organization