
FIW-Research Reports

October 2022, N° 07

Report

The Brussels Effect 2.0 **How the EU Sets Global Standards with its Trade Policy**

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Commissioned by:

 Federal Ministry
Republic of Austria
Labour and Economy

Austrian Institute of Economic Research
Kiel Institute for the World Economy

Internal Review: Franz Sinabell (WIFO)
Research assistants: Irene Langer (WIFO), Jacqueline Dombrowski (IfW)



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August 2022
Austrian Institute of Economic Research

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Executive Summary (English)

The EU Single Market is key for securing EU's geoeconomic interests. The large internal market, sophisticated regulatory capability, and a stringent regulatory framework give the EU considerable power in setting international standards: because foreign companies must comply with the rules when exporting to the EU, it is often advantageous for them to apply these rules to their entire production, and thus also to exports in markets where the EU standards are not relevant at all. Ideally, globally active companies produce according to a single standard and thus opt and lobby for the most stringent regulations also at their domestic market to compensate for competitive disadvantages. This power surplus by the EU constitutes the Brussels Effect and allows the EU to export its own regulation in certain policy areas, like the General Data Protection Regulation, the regulation of chemicals REACH (Registration, Evaluation, Authorization and Restriction of Chemicals), product regulation as well as environmental protection.

The spreading of EU norms and standards outside the boundaries of the internal market ensures competitiveness for EU export-oriented companies and also allows the EU to protect and even export political and humanitarian values to third countries. However, the benefits of the Single Market cannot be easily transferred abroad. While EU's external regulatory reach is mainly triggered by market access and a proactive global trade strategy, enactment of extraterritorial EU legislation is rare and the Brussels Effect is seen as passive dynamic, that is independent of external policies by the EU. Thus, regulatory globalization is not evident in all policy dimensions and aspects of international trade, as various external and internal factors may place limits on the regulatory globalization, such as the principles of the World Trade Organization (WTO) or geoeconomics and geopolitical aspects. At the same time, regulatory cooperation constitutes a key component of EU association agreements with close neighbours and the EU actively fosters trade facilitation through a vast number of free trade agreements with non-EU member countries, resulting in trade enhancing effects for participating economies and potentially detrimental impacts for non-participating countries.

While the EU exports its norms and standards via unilateral, bilateral and multilateral channels, the scope and depth of the Brussels Effect are not unambiguous and unquestioned in the economic literature. In particular, voluntary alignment with EU regulations in specific areas is often only partial, hence, reducing the trade enhancing and cost reduction effects. While positive trade and welfare effects of free trade agreements are well documented in the economic literature, there is little empirical evidence on the impact of regulatory cooperation on trade and investment flows. Contributing to this gap is the subject of the present study. Based on a comprehensive literature review and a quantitative analysis, this study provides an overview of the EU's sphere of influence in terms of the Brussels Effect. The analysed EU's sphere of influence includes impact via policy regulations, technical convergence and the transmission of values. Moreover, the study aims to highlight qualitatively further policy areas in the broader context of EU trade policy with an untapped potential of a "Brussels Effect 2.0".

The findings of the comprehensive literature review based on the broad fields of application of unilateral regulation of the EU internal market and specific EU regulations, reveal positive indications of a Brussels Effect in individual areas. In particular, in areas like the General Data Protection Regulation and the regulatory globalization of competition law EU's influence in shaping the global regulatory landscape proved successful. Adequacy decisions between the EU

and third countries reveal substantial trade enhancing effects for digital services and approve the Brussels Effect as important driver for policy diffusion. Similarly, accession to the EU improves not only the required de jure legislation but also the de facto quality of competition policies via the implementation of pro-competitive and market-oriented policies.

For the quantitative assessment of a potential Brussels Effect in international trade relationships, we test the following hypotheses: (i) country pairs in which both partners have a trade agreement with the EU trade more with each other, (ii) countries that have a trade agreement with the EU face lower trade costs with all other countries, too, and (iii) countries that have a trade agreement with the EU put in place a lower number of non-tariff measures and are therefore generally more open to international trade. The study applies a two-step approach. In the first step, we estimate structural gravity models for trade data provided by WTO's structural gravity database covering the years from 1980 (1995) to 2016 and 132 countries. The empirical specifications of the gravity model control for (direct) trade policy measures including EU membership, the formation of free trade agreements and WTO formation and accession. On top of these, we separately assess the potential direct trade effects of three candidate variables for a potential Brussels Effect:

- an indicator which takes on a value of one if two trading partners have a free trade agreement with the EU in force but do not share a common free trade agreement;
- a unilateral indicator which is one for all bilateral international trade relationships not directly covered by a trade agreement whenever the trading country has a free trade agreement with the EU in force;
- the overall number of non-tariff trade policy measures issued by the importing country.

The empirical findings for the three alternative measures suggest that only the number of non-tariff trade policy measures exhibits an economically and statistically significant effect on cross-border trade flows, ten additional non-tariff measures imposed by the importing economy decrease exports to this destination by approximately 0.5%. Furthermore, reduced-form regression analysis suggests that countries forming a free trade agreement with the EU engage less in issuing non-tariff barriers to trade. Having a free trade agreement with the EU in force, decreases the number of unilateral non-tariff barriers signed by the EU's trading partner between 24% and 29%.

In the second step, we use the latter findings as input for counterfactual policy analysis in the KITE model, a standard new quantitative trade model with many sectors and many industries. The general equilibrium results from KITE deliver the following main findings: the reduction of non-tariff measures induced by EU trade agreements has had very moderate welfare effects. This holds even for the most strongly benefiting countries and in particular for EU member countries, with Austria e.g., losing only 0.004% in the absence of the non-tariff measure reduction. The sectoral production effects in the EU are heterogenous, i.e., there are some changes in the sectoral composition. In line with the small European welfare gains, however, these compositional shifts are very mild. The effects of expanding the non-tariff measure reducing effect of EU trade agreements to all countries that have not yet signed an agreement with the EU are found to be slightly larger than the existing agreement's non-tariff measure effect. The magnitude of both European welfare gains and sectoral composition shifts would, however, still be of a very minor magnitude, with Austria e.g., gaining 0.007% in welfare.

Though the observed quantitative effects are relatively small, potentials for the Brussels Effect can be found in several areas. Among those sectors with potential increases in real production in case of expanding unilateral NTM changes is the services sector, including financial services, business services, and ICT related aspects (like digital services and communication). The unified EU regulatory framework for financial services restricts the market access of banks and financial market providers to the EU Single Market. While the implementation of international standards partly ensures regulatory convergence, fostering agreements with key financial centres like United Kingdom, Switzerland, Singapore, and the USA is essential. Further, the EU aims to shape the digital future. To do so, it sets a priority in technical standards allowing for innovations aligned with EU values. Moreover, one of the biggest problems of our time, affecting not only most countries in the world, but also many policy areas is global warming. In the framework of the Green Deal, the EU should seize the opportunity to take a leading role in climate protection by setting various standards and promoting renewable energies, especially in the context of carbon trading, new green technologies such as hydrogen, carbon product labelling and supporting the development of renewable energies together with the promotion of energy efficiency.

To promote its standards globally, the EU puts special emphasis on building partnerships particularly with African countries and the Gulf region. However, the EU cannot take its spheres of influence for granted. Importantly, the expansion of the spheres of influence of the USA and China must be considered. The USA, if rather reluctant in trade matters under Biden's presidency, recognize in their national security strategy the geopolitical rivalry with China and other autocracies while underlining the importance of transatlantic relations. China, on the other hand, has as its primary foreign policy goal the containment of US hegemony, which China seeks to achieve not only by expanding its influence in Southeast Asia, but also by expanding development aid as a strategic tool to counterbalance the West.

Therefore, the future and the potential impact of the Brussels Effect depends on the solidity of the regulatory framework, the EU's openness for a trade-regulation nexus with third countries, and its cooperation and use of synergies in terms of trade, regulatory and development policies.

Executive Summary (German)

Der EU-Binnenmarkt ist für die Sicherung der geoökonomischen Interessen der EU von zentraler Bedeutung. Der große Binnenmarkt, die ausgefeilte Regulierungsfähigkeit und ein strenger Rechtsrahmen verleihen der EU eine erhebliche Macht bei der Festlegung internationaler Standards. Da ausländische Unternehmen die Regeln bei Exporten in die EU einhalten müssen, ist es für sie oft von Vorteil, diese Regeln auf ihre gesamte Produktion und damit auch auf Exporte in Märkte anzuwenden, in denen die EU-Standards überhaupt nicht relevant sind. Im Idealfall produzieren global tätige Unternehmen nach einem einheitlichen Standard und setzen sich auch auf ihrem Heimatmarkt für die strengsten Vorschriften ein, um Wettbewerbsnachteile auszugleichen. Diese Marktmacht der EU stellt den "Brussels Effect" dar und ermöglicht es der EU, ihre eigene Regulierung in bestimmte Politikbereiche zu exportieren, wie z. B. die allgemeine Datenschutzverordnung, die Chemikalienverordnung REACH (Registration, Evaluation, Authorization and Restriction of Chemicals), spezifische Produktstandards sowie der Umweltschutz.

Die Verbreitung von EU-Normen und EU-Standards über die Grenzen des Binnenmarktes hinaus, sichert die Wettbewerbsfähigkeit exportorientierter EU-Unternehmen und ermöglicht es der EU, politische und humanitäre Werte zu schützen und sogar in Drittländer zu exportieren. Die Vorteile des Binnenmarktes können jedoch nicht so einfach ins Ausland übertragen werden. Während die externe regulatorische Reichweite der EU hauptsächlich durch den Marktzugang und eine proaktive globale Handelsstrategie ausgelöst wird, ist die Implementierung extraterritorialer EU-Rechtsvorschriften selten. Der "Brussels Effect" wird daher als passiver Nebeneffekt betrachtet, der nicht unmittelbar durch politische und wirtschaftliche Verträge mit Drittländern ausgelöst wird, sondern sich auch durch Marktmechanismen auf den außereuropäischen Raum entfalten kann. So ist die regulatorische Globalisierung nicht in allen politischen Dimensionen und Aspekten des internationalen Handels offensichtlich, da verschiedene externe und interne Faktoren der regulatorischen Globalisierung Grenzen setzen können, wie z. B. die Prinzipien der Welthandelsorganisation (WTO) oder geoökonomische und geopolitische Aspekte. Gleichzeitig ist die Zusammenarbeit in Regulierungsfragen ein Schlüsselement der EU-Assoziierungsabkommen mit engen Nachbarn und die EU fördert aktiv Handelserleichterungen durch eine Vielzahl von Freihandelsabkommen mit Nicht-EU-Ländern, was zu handelsfördernden Effekten für teilnehmende Volkswirtschaften und potenziell nachteiligen Auswirkungen für nicht teilnehmende Länder führt.

Während die EU ihre Normen und Standards über unilaterale, bilaterale und multilaterale Kanäle auf Drittländer überträgt, sind der Umfang und die Tiefe des "Brussels Effects" in der ökonomischen Literatur nicht eindeutig und unbestritten. Insbesondere ist die freiwillige Angleichung an die EU-Vorschriften in bestimmten Bereichen oft nur partiell, sodass die handelsfördernden und kostensenkenden Effekte geringer ausfallen. Während die positiven Handels- und Wohlfahrtseffekte von Freihandelsabkommen in der ökonomischen Literatur gut dokumentiert sind, gibt es nur wenige empirische Belege für die Auswirkungen der Zusammenarbeit in Regulierungsfragen auf Handels- und Investitionsströme. Diese Lücke zu schließen, ist Gegenstand der vorliegenden Studie. Auf der Grundlage einer umfassenden Literaturrecherche und einer quantitativen Analyse gibt diese Studie einen Überblick über den Einflussbereich der EU im Hinblick auf den "Brussels Effect". Darüber hinaus zielt die Studie darauf ab, qualitativ weitere Politikbereiche im breiteren Kontext der EU-Handelspolitik aufzuzeigen, die ein ungenutztes Potenzial eines "Brussels Effect 2.0" aufweisen.

Die Ergebnisse der umfassenden Literaturrecherche, die sich auf die breiten Anwendungsgebiete der unilateralen Regulierung des EU-Binnenmarktes und der spezifischen EU-Verordnungen stützt, lassen in einzelnen Bereichen positive Anzeichen für einen "Brussels Effect" erkennen. Insbesondere in Bereichen wie der Datenschutz-Grundverordnung und der regulatorischen Globalisierung des Wettbewerbsrechts hat sich der Einfluss der EU auf die Gestaltung der globalen Regulierungslandschaft bewährt. Äquivalenzentscheidungen zwischen der EU und Drittländern zeigen erhebliche handelsfördernde Effekte für digitale Dienstleistungen und bestätigen den "Brussels Effect" als wichtige Triebkraft für die Politikverbreitung. In ähnlicher Weise verbessert der EU-Beitritt nicht nur die erforderliche De-jure-Gesetzgebung, sondern auch die De-facto-Qualität der Wettbewerbspolitik durch die Umsetzung wettbewerbsfördernder und marktorientierter Maßnahmen.

Zur quantitativen Bewertung eines möglichen "Brussels Effect" in den internationalen Handelsbeziehungen testen wir folgende Hypothesen: (i) Länderpaare, in denen beide Partner ein Handelsabkommen mit der EU haben, treiben mehr Handel miteinander, (ii) Länder, die ein Handelsabkommen mit der EU haben, haben auch mit allen anderen Ländern geringere Handelskosten, und (iii) Länder, die ein Handelsabkommen mit der EU haben, führen weniger nichttarifäre Maßnahmen ein und sind daher generell offener für den internationalen Handel. Die Studie wendet einen zweistufigen Ansatz an. Im ersten Schritt werden strukturelle Gravitationsmodelle für Handelsdaten aus der strukturellen Gravitationsdatenbank der WTO geschätzt, die die Jahre von 1980 (1995) bis 2016 und 132 Länder abdeckt. Die empirischen Spezifikationen des Gravitationsmodells kontrollieren (direkte) handelspolitische Maßnahmen wie die EU-Mitgliedschaft, den Abschluss von Freihandelsabkommen sowie die Gründung und den Beitritt zur WTO. Darüber hinaus werden die potenziellen direkten Handelseffekte von drei alternativen Variablen für einen potenziellen "Brussels Effect" getrennt untersucht:

- ein Indikator, der den Wert 1 annimmt, wenn zwei Handelspartner ein Freihandelsabkommen mit der EU in Kraft, aber kein gemeinsames Freihandelsabkommen haben;
- ein unilateraler Indikator, der den Wert 1 für alle bilateralen internationalen Handelsbeziehungen annimmt, die nicht direkt durch ein Handelsabkommen abgedeckt sind, wenn das Land ein Freihandelsabkommen mit der EU in Kraft hat;
- die Gesamtzahl der nichttarifären handelspolitischen Maßnahmen, die vom einführenden Land erlassen wurden.

Die empirischen Ergebnisse für die drei alternativen Messgrößen deuten darauf hin, dass nur die Anzahl der nichttarifären handelspolitischen Maßnahmen eine ökonomisch und statistisch signifikante Auswirkung auf die grenzüberschreitenden Handelsströme hat; zehn zusätzliche nichttarifäre Maßnahmen, die vom importierenden Land eingeführt werden, verringern die Ausfuhren in dieses Zielland um etwa 0,5 %. Darüber hinaus deutet die Regressionsanalyse in reduzierter Form darauf hin, dass Länder, die ein Freihandelsabkommen mit der EU geschlossen haben, weniger nichttarifäre Handelshemmnisse errichten. Wenn ein Freihandelsabkommen mit der EU in Kraft ist, sinkt die Zahl der einseitigen nichttarifären Handelshemmnisse, die von den Handelspartnern der EU unterzeichnet werden, zwischen 24% und 29%.

In einem zweiten Schritt werden die letztgenannten Ergebnisse als Input für eine kontrafaktische Analyse mit dem KITE-Modell, einem quantitativen Handelsmodell mit zahlreichen Sektoren und vielen Branchen, verwendet. Die allgemeinen Gleichgewichtsergebnisse von KITE liefern die

folgenden Hauptergebnisse: Der durch die EU-Handelsabkommen bewirkte Abbau nichttarifärer Maßnahmen bewirkt sehr moderate Wohlfahrtseffekte. Dies gilt selbst für die am stärksten begünstigten Länder und insbesondere für die EU-Mitgliedsländer, wobei z. B. Österreich ohne den Abbau nichttarifärer Maßnahmen nur 0,004% verloren hätte. Die sektoralen Produktionseffekte in der EU sind allerdings heterogen, d. h. es gibt einige Veränderungen in der sektoralen Zusammensetzung. Im Einklang mit den geringen europäischen Wohlfahrtsgewinnen sind diese Verschiebungen in der Zusammensetzung jedoch sehr gering. Die Effekte einer Ausweitung der nichttarifären Maßnahmen, die durch EU-Handelsabkommen reduziert werden, auf alle Länder, die noch kein Abkommen mit der EU unterzeichnet haben, sind etwas größer als die Effekte der nichttarifären Maßnahmen von bestehenden Abkommen. Das Ausmaß der europäischen Wohlfahrtsgewinne und der Verschiebungen in der sektoralen Zusammensetzung wäre jedoch immer noch sehr gering, wobei Österreich z. B. 0,007% an Wohlfahrt gewinnen würde. Auch wenn die beobachteten quantitativen Auswirkungen relativ gering sind, lassen sich in mehreren Bereichen Potenziale für den "Brussels Effect" finden. Zu den Sektoren mit einem potenziellen Anstieg der realen Produktion im Falle einer Ausweitung unilateraler NTM-Änderungen gehört der Dienstleistungssektor, einschließlich Finanzdienstleistungen, Unternehmensdienstleistungen und IKT-bezogene Sektoren (wie digitale Dienstleistungen und Kommunikation). Der einheitliche EU-Rechtsrahmen für Finanzdienstleistungen schränkt den Marktzugang von Banken und Finanzmarktanbietern zum EU-Binnenmarkt ein. Während durch die Umsetzung internationaler Standards die regulatorische Konvergenz teilweise gewährleistet ist, ist die Förderung von Äquivalenzvereinbarungen mit wichtigen Finanzzentren wie dem Vereinigten Königreich, der Schweiz, Singapur und den USA von entscheidender Bedeutung. Außerdem will die EU die digitale Zukunft gestalten. Zu diesem Zweck setzt sie einen Schwerpunkt auf technische Standards, die Innovationen im Einklang mit den EU-Werten ermöglichen. Darüber hinaus ist die globale Erwärmung eines der größten Probleme unserer Zeit, welches nicht nur die meisten Länder der Welt, sondern auch viele Politikbereiche betrifft. Im Rahmen des Green Deals sollte die EU die Gelegenheit ergreifen, eine führende Rolle beim Klimaschutz zu übernehmen, indem sie verschiedene Standards setzt und erneuerbare Energien fördert, insbesondere im Zusammenhang mit dem CO₂-Handel, neuen grünen Technologien wie Wasserstoff, der Kennzeichnung von CO₂-Produkten und der Unterstützung der Entwicklung erneuerbarer Energien zusammen mit der Förderung der Energieeffizienz.

Um ihre Standards weltweit zu fördern, legt die EU besonderen Wert auf den Aufbau von Partnerschaften, insbesondere mit afrikanischen Ländern und der Golfregion. Allerdings kann die EU ihre Einflussbereiche nicht als selbstverständlich betrachten. Vor allem die Ausweitung der Einflüsse der USA und Chinas muss berücksichtigt werden. Die USA, wenn auch in Handelsfragen unter Bidens Präsidentschaft eher zurückhaltend, erkennen in ihrer nationalen Sicherheitsstrategie die geopolitische Rivalität mit China und anderen Autokratien an und betonen die Bedeutung der transatlantischen Beziehungen. China hingegen verfolgt als primäres außenpolitisches Ziel die Eindämmung der US-Hegemonie, was es nicht nur durch die Ausweitung seines Einflusses in Südostasien, sondern auch durch die Ausweitung der Entwicklungshilfe als strategisches Gegengewicht zum Westen zu erreichen sucht.

Die Zukunft und die potenziellen Auswirkungen des "Brussels Effects" hängen daher von der Solidität der regulatorischen Rahmenbedingungen, der Offenheit der EU für eine Verknüpfung von Handel- und Regulierungsfragen mit Drittländern sowie von der Zusammenarbeit und der Nutzung von Synergien in den Bereichen Handel, Regulierung und Entwicklung ab.

1. Introduction

The creation of uniform, legally binding norms and standards is an essential basis for the functioning of the EU Single Market, which at the same time is increasingly spread beyond the EU's borders through international trade relations. The shaping of global standards and regulatory environment according to EU directives also beyond the EU borders is an important competitive advantage of the EU. The harmonization of standards and regulations makes it easier for European companies to participate in the global market and reduces trade barriers. This externalization of EU's regulatory power has already contributed to the "Europeanization" of many important aspects of global trade. However, several dimensions of regulatory convergence and harmonization act in parallel. First, in line with the new trade policy strategy (European Commission, 2021a) the EU remains committed to multilateralism. At the same time the EU recognizes that the strengthening of regulatory cooperation is a central argument for EU trade policy and pursues political globalization of regulatory standards through international treaties or agreements. Second, different from other forms of global influence, the EU also succeeded in enforcing rules, regulations and standards in third countries – developed and developing countries alike – only through market mechanisms which relates to the process of unilateral regulatory globalization. Third, international institutions, and standard-setting organizations as well as multinational companies are further drivers and sources of promulgating global norms and regulations.

Critical commentators on globalization often argue that trade liberalization undermines domestic regulation and boosts a relaxation of regulatory standards or a "race to the bottom". Existing literature, however, mainly supports counter arguments and finds that international trade leads to an overall ratcheting up of domestic and international standards in the sense of a "race to the top" (Vogel, 1995; Vogel and Kagan, 2004). Given the large consumer market and the preference for stringent consumer and environmental regulations that disseminated to other regions this process was primarily termed "California Effect" (Vogel, 1995). In a similar vein, a vast body of literature analysed the external impact of EU regulatory policies under the broad definition of EU policy diffusion, policy externality or functional extension (see e.g., Börzel and Risse, 2012, 2020; Nicolaidis and Egan, 2001; Lavenex, 2014) A recent strand of literature on this phenomenon in the context of the EU coined the unprecedented regulatory influence of the EU as "Brussels Effect" (Bradford, 2012, 2020). The Brussels Effect mainly addresses the EU's unilateral power to regulate global markets through market forces given the EU's attractiveness in terms of size and regulatory stringency¹⁾. Hence, the Brussels Effect emerges from an interplay between EU regulations and market forces' ability to externalize the EU's regulatory power. However, this process is seen as passive dynamic, that is independent of external policies by the EU. In general, transmission channels shaping the regulatory environment are interconnected and unfold multilateral and bidirectional network effects across the EU's trading partners. In particular, the emergence of the European market provided the EU with a regulatory framework or template for regulatory cooperation that consolidated different legal systems. Unpacking these key conditions and mechanisms for regulatory globalization reveals why the regulatory regime of the EU – in contrast to other major powers such as the USA or

¹⁾ See, for example, Cremona and Scott (2019) or Hadjiyianni (2021) for a contextualization of the Brussels Effect from a legal perspective.

China – seems to be attractive for third countries in certain areas, and why the EU can successfully export certain regulations but not others.

While the scientific literature (see Gehrke, 2020 for a detailed analysis) has mainly focused on the broad fields of application of unilateral regulation of the EU internal market and in particular concentrated on specific regulations, e.g. the REACH regulation for chemicals or the General Data Protection Regulation (GDPR), this study aims to identify and embed the Brussels Effect in terms of EU trade policy, which has so far remained largely unnoticed in the literature. Specifically, this study will examine the extent to which the Brussels Effect can be observed in the network of EU trade agreements and major trading partners. The increasing number of EU trade agreements as well as the large consumer market of the EU incentivize many trading partners to unilaterally introduce EU rules to cushion the effects of trade diversion and to standardize different regulatory requirements in important host markets. Specifically, the study aims to address the following research questions:

- How can the Brussels Effect be defined in terms of EU trade policy?
- What is the latest research on the Brussels Effect and how does it relate to EU trade policy?
- What is the role of multilateral compared to bilateral trade policy?
- Which trade effects for the EU and Austria can be attributed to the Brussels Effect?
- How large are the corresponding network effects?
- In which areas are the conditions for unilateral regulatory globalization through trade agreements still in place but not yet exhausted?
- Through which forums or instruments of EU trade policy can the EU best enforce its regulatory norms and values?

A central cornerstone of this study is the broad identification of the Brussels Effect based on a comprehensive overview of existing literature and consistent definition of the regulatory influence of the EU illustrated in different policy areas and case studies. As far as possible, the identification of the effect should capture different forms as well as potential differences in the influence and scope of regulatory interaction or cooperation (see Lavenex and Schimmelfennig, 2009 for a theoretical review). The identification of the Brussels Effect also highlights the relevance of exporting European values, in the sense of e.g. human rights and environmental standards and the related pursuit of non-trade policy objectives in EU trade policy.

In addition to identifying the Brussels Effect, this study aims to quantify the trade effects in terms of the EU's leading role in shaping global standards and regulations for the EU and Austria in particular. In terms of quantifying these network effects of existing EU regulations on third countries the quantitative model mainly investigates the role of EU trade policies for third countries and the implementation of non-tariff trade policy measures by partner economies. Using a static general equilibrium model this study applies several counterfactual scenarios to analyse the extent of the economic impact of the Brussels Effect in the network of EU trade policy. Moreover, this study tries to qualitatively identify further policy areas in the broader context of EU trade policy with an untapped potential of a "Brussels Effect 2.0", in the sense of EU's openness for a trade-regulation nexus with third countries, and use of synergies in terms of trade, regulatory and development policies. While the EU has already shaped global guidelines, especially in relation to the consumer market, there is still potential in other areas. Certainly, the Brussels Effect faces challenges from external developments (such as the rise of China, the

decline of international cooperation and the slowdown of globalization) as well EU disintegration, such as the Brexit. As countries like the USA and China are economically and geopolitically powerful, the EU cannot take its position and market power as a global standard setter for granted. In particular, the Brussels Effect needs to be seen as a dynamic process that can be strengthened but also mitigated through specific policy interventions, a fact that may be considered in the future design of trade policy.

The remainder of the study is structured as follows. Chapter 2 determines the Brussels Effect in terms of policy diffusion, essential preconditions for regulatory globalization as well as convergence of standards and also highlights the relevance of exporting European values. Chapter 3 offers a comprehensive overview of the literature regarding policy dimensions, technical convergence and the transmission of values. Specific case studies show the extent of the global reach of EU legislation in terms of the Brussels Effect. Chapter 4 provides a quantitative assessment of the Brussels Effect using a structural gravity and a counterfactual policy analysis. Chapter 5 discusses further potentials and limits of the Brussels Effect, highlighting geoeconomic aspects and repercussions. The last chapter concludes.

2. Understanding the Brussels Effect

2.1 Diffusing regulatory standards

Differences in regulatory requirements across countries, such as divergent product regulations, licensing requirements, certification and conformity assessment procedures are of increasing importance in terms of discriminatory non-tariff barriers (NTBs) that raise the cost of international trade relations. The multiplicity of regulatory policies limits the ability of companies to participate in global value chains (GVCs) as companies need to comply with different regulations that segments markets and results in less efficient global value chains (Hoekman, 2015). At the same time governments are concerned with regulatory cooperation to ensure that all inputs along the value chain fulfil environmental, health and safety standards. Incentives to foster regulatory cooperation or convergence and to reduce trade barriers are primarily linked to international trade agreements that often evolve (i) harmonization – the adoption of same standards across countries; (ii) mutual recognition – the certification of counterpart regulatory practices; or (iii) regulatory equivalence – the equivalence of regulatory requirements across parties (Correia de Brito et al., 2016).

In the European context fostering European integration and implementing the EU Single Market²⁾ have been the driving forces for harmonizing the EU's regulatory environment and thereby ensuring frictionless trade across Member States. While the EU internal market has harmonized few central policy areas like chemicals, vehicles or medical devices, it builds the origin of the mutual recognition principle. Regulatory cooperation also constitutes a key component of EU association agreements with close neighbours, such as the Western Balkans and Turkey as well as the "new generation" of EU free trade agreements with Korea, Canada and Japan for example. This integration motivation regarding accession to the EU and access to the EU Single Market builds a key driver for regulatory cooperation and alignment to EU standards and regulatory practices. By 2020, the EU's network of 46 trade agreements with 76 partner countries covers 34% of EU external goods trade³⁾ (see Figure 2.1). Thus, the EU exports its norms and standards via unilateral, bilateral and multilateral channels, including neighbourhood policy and partnerships, free trade agreements, international treaties and an active participation in standard setting bodies. These approaches mainly focus on EU's active efforts to shape the national (Single Market) and international regulatory environment for EU companies abroad, while EU's global influence – in the sense of Bradford's Brussels Effect – is supported by market dynamics and international economic actors. However, this process is rather seen as passive dynamic, as the unilateral strategy by third countries to apply certain regulations is independent from EU's external policy (Bercero and Nicolaidis, 2021). Despite various examples of EU's regulatory impact, the scope and depth of the Brussels Effects are not unambiguous and unquestioned in the economic literature (Young, 2015). In general, as Scott (2013) concludes, the enactment of extraterritorial EU legislation is rare, and the application of EU regulations is mainly triggered by market access and a proactive global trade strategy. Given the multidimensional driving forces and instruments for regulatory cooperation the context of EU's external regulatory

²⁾ Especially the harmonizing legislation under Article 114 of the Treaty on the Functioning of the European Union (TFEU) as well as the Treaty of Maastricht (Treaty on European Union, TEU) expanded the regulatory agenda and form the legal basis of the EU.

³⁾ https://trade.ec.europa.eu/doclib/docs/2021/february/tradoc_159431.pdf (accessed December 15, 2021).

influence varies significantly across different forms of regulatory cooperation, which is summarized in Table 2.1.

Table 2.1: Forms of external regulatory cooperation

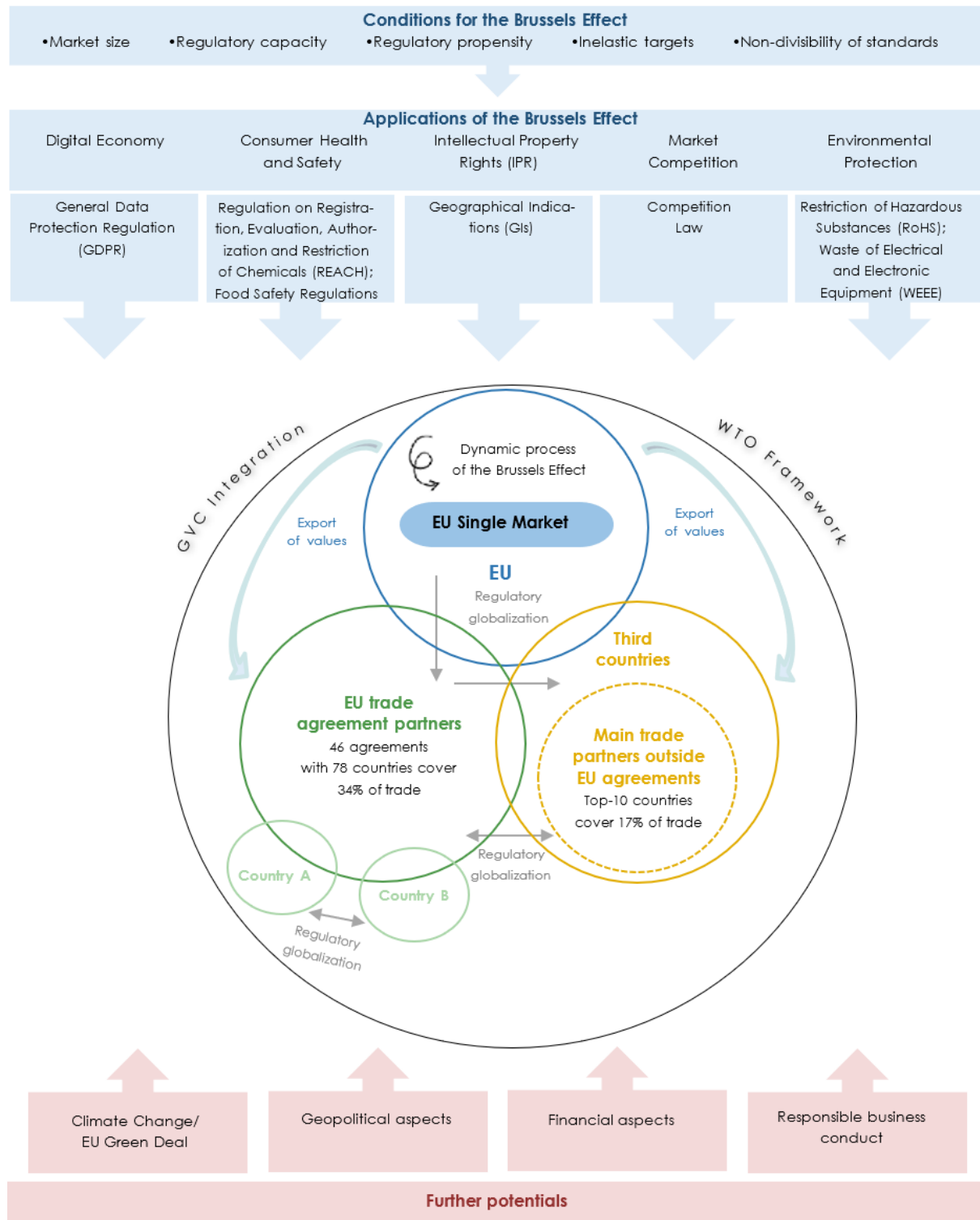
Forms of regulatory cooperation	Aim and driving force	Instruments
Formal Agreements with Deep Integration Orientation based on a process of "political" negotiations	Market access, trade facilitation, EU integration	Multilateral agreements (EEA), bilateral agreements (Association Agreements, Deep and Comprehensive Free Trade Agreements, Customs Union), active participation in international standard setting bodies: application of EU laws and close alignment with EU regulations to foster convergence with EU regulatory framework
Formal Agreements with Trade Orientation based on power-based bargaining	Trade facilitation and regulatory efficiency through division of labour	Free trade agreements, regulatory cooperation fora, equivalency/adequacy decisions/agreements, mutual recognition agreements
Informal Regulatory Convergence (Brussels Effect)	Market access and economies of scale; reduction of costs	Market mechanisms, regulatory template for third countries, active participation and decision-shaping in multilateral organizations

Source: WIFO presentation, Golberg (2019), Bercero and Nicolaidis (2021).

Overall, the literature on international regulatory cooperation and policy diffusion concludes that the far-reaching regulatory framework of the EU builds a central cornerstone for the Single Market, which demands a robust system of enforcement and regulatory convergence. In terms of the external reach of EU legislation, integration motives, especially EU accession and access to the Single Market, have driven the closest alignment with EU regulations, while regulatory cooperation within the new generation of free trade agreements focuses on mutual recognition, conformity assessment and a regulatory cooperation dialogue rather than alignment. Besides trade facilitation regulatory efficiency and reductions of compliance and regulatory costs seem to be the main driving forces for equivalency and adequacy agreements. Beyond formal agreement the regulatory reach of the EU builds on voluntary alignment with EU regulations in specific areas. However, alignment in these instances is difficult to capture and is often only partial, hence, reducing the trade enhancing and cost reduction effects (Golberg, 2019).

Through multilateral network effects the EU may also succeeded in exporting its regulations to third countries (or companies) outside the framework of international agreements. These transmission paths potentially reinforce the Brussels Effect as other countries find it beneficial to adopt the same standards or put in place less trade-hindering non-tariff measures. This increases the global influence and competitiveness of the EU by providing a regulatory framework for these countries in specific areas. Overall, the ten most important trading partners of the EU outside the framework of international agreements are responsible for roughly 17% of EU external goods trade, lifting an enormous potential for the Brussels Effect to spread across third countries. Figure 2.1 portrays these interlinkages of the EU's influence towards regulatory globalization by providing a comprehensive overview in terms of essential conditions, network effects and policy domains that help understanding the Brussels Effect.

Figure 2.1: Brussels Effect in the context of EU trade policy



Source: WIFO illustration.

Hence, the multidimensional facets of EU's regulatory reach can be summarized along different spheres of regulatory impact, as Table 2.2 shows. While technical regulation focuses on the convergence of regulatory standards usually resulting from unilateral legislation or negotiated international standards, the policy impact is attracted by economic integration and market access motives. In contrast to technical regulation, the later type of externalization is mainly driven by cultural, legal and political ties, as well as trade agreements. The third pillar of EU's sphere of regulatory impact is defined by the EU's capacitive power to export norms of good governance to third countries. As the applications in Chapter 3 show, the different spheres of influence are also motivated by different motives. While the primary goal of EU's regulatory activity focuses solely on establishing and strengthening its Single Market, the external dimension in terms of technical convergence and the shaping the global regulatory environment happened rather unintended as "incidental externality", as the Single market imposes costs on third countries. In recent years the EU also applies trade agreements as tool to promote its regulatory preferences together with the EU's principles and values.

In terms of the Brussels Effect 2.0, Table 2.1 and Table 2.2 highlight that the EU's global regulatory influence wields over different channels, implying different levels of regulatory harmonization or cooperation depending on different forms of regulatory cooperation, different dimensions of EU's regulatory reach depending on the geographic scope (bilateral, multilateral), different spheres of regulatory impact and different modes of implementation (treaty-driven, market-drive, persuasive, coercive).

Table 2.2: Scope of EU's regulatory impact

Type of regulatory reach	Sphere of (regulatory) impact	Examples	Further Potentials
Policy regulation	Internal motives: protecting consumer welfare, fostering economic integration; External motives: shaping of global marketplace, extraterritorial power through regulation	Bilateral Agreements, legislative borrowing, extraterritorial influence (see Chapter 2.2. and 3.1)	Enforcement of bilateral agreements through sanctions, financial regulations, climate regulations (see Chapter 5.1)
Technical convergence	Internal motives: achieving technical harmonization; External motives: removal of technical barriers, setting international standards	Participation in international institutions and transnational networks (see Chapter 2.3. and 3.2)	Take a leading role in the digital sphere through close cooperation (see Chapter 5.2)
Transmission of values	Internal motives: promote sustainable development; External motives: export of European values	Pursuing non-trade objectives in EU trade agreements (see Chapter 2.4. and 3.3)	Foster sustainable and responsible behaviour in global value chains (see Chapter 5.3)

Source: WIFO presentation.

This study aims to identify and embed the Brussels Effect in terms of EU trade policy. Thus, the study examines the extent of regulatory globalization in the network of EU trade agreements and major trading partners (see Figure 2.1). The transmission paths may occur across countries that individually have in force a trade agreement with the EU, but not among themselves. This transmission paths may also encourage third countries or major trading partners of the EU outside the framework of international agreements to comply with these standards to reduce compliance and administrative costs and facilitate economics of scale (see also Chapter 2.2).

EU trade agreements may also lead agreement partner countries to put in place generally more liberal trade policies, from which third countries might also gain. Hence, the study tries to account for various spheres of EU's regulatory impact, however, treaty-driven alignment can be assessed easier in quantitative terms than market-driven harmonization (see also Chapter 4). Besides the multilateral network impacts of trade agreements or efforts to pursue regulatory convergence bilaterally, the regulatory environment of the EU also diffuses through participation in multilateral institutions, as requirements defined globally are incorporated into EU law. Given this network effects the EU regulatory environment has emerged as the global standard, de facto and in certain cases also de jure. While the "de facto Brussels Effect" refers to the (voluntary) take-up of EU norms by multinationals or countries, this process may be subsequently followed by the "de jure Brussels Effect" whenever foreign governments adopt to these same standards through legislation (Bygrave, 2021; Bradford, 2015).

2.2 Policy impact of regulatory globalization

In general, the EU's ability to externalize its regulations across a range of areas, such as consumer health and safety, market competition, environmental protection, and the digital economy depends on a set of conditions, as depicted in Figure 2.1. While initial contributions to the literature mainly favour market size and the attractiveness of the market as key determinants (see e.g. Drezner, 2005) later works stress regulatory capacity as another decisive factor (Bach and Newman, 2007). The work by Bradford (2015, 2020) builds on these findings and elaborates on the theory how and why this "Europeanization" of standards plays out.

In relation to the previous literature, Bradford identifies five essential preconditions for regulatory globalization that also define the boundaries of the EU's global regulatory reach. **First**, a large market size secures market power and a high value of market access in terms globalizing internal regulations and standards and third countries gravitating towards adopting the standards prevailing in this market or industry. Given its large importing market, access to the EU market is highly attractive and justifies why trading partners bear significant adjustment costs in certain policy dimensions. As the EU's market power and value vary across industries and countries the regulatory influence defines the boundaries of the global regulatory clout. **Second**, the ability to externalize the regulatory environment to third countries also depends on the regulatory capacity regarding capable regulatory institutions to enforce the standards and norms and to activate the global regulatory authority. Guarding the functioning and fostering the further integration of the common market enabled the EU to strengthen its global regulatory power. Additionally, the large consumer market and the strong institutional and bureaucratic foundation allow the EU to enforce stringent regulations and to challenge non-compliant Member States to comply with internal market rules. **Third**, regulatory capacity needs to be supported by regulatory propensity defined as the preference for high standards and a supportive political pro-regulation climate or willingness to enforce them. The EU's effort towards uniform regulations in terms of harmonizing up standards across Member States and EU's preference for stringent regulations according to the precautionary principle unfold the potential to become a predominant regulatory regime, since complying with the most stringent standards assures access to all markets. However, the EU's regulatory impact is also limited in some areas, reflecting either heterogenous preferences across member states, for example regarding corporate tax levels, or less stringent regulations, as compared to the USA for example in terms of corporate governance and responsibility (Bradford, 2015). **Fourth**, stringent domestic regulations can

operate as global standards only if they aim at inelastic targets by primarily regulating consumer markets, such as consumer or product safety, which tend to be immobile and thus, are likely to stay within the EU. In contrast, regulatory endeavours on mobile targets, such as capital or strategic decisions of corporations, are undermined by market forces and the elasticity of the targets (Bradford, 2015). Hence, regulations on mobile and elastic objectives, such as financial consideration to harmonize corporate tax levels, will relocate financial transactions and thus erode the effectiveness of stringent regulations. Under these circumstances the spreading of the Brussels Effect is less likely. **Fifth**, the global regulatory power is also determined by the importance of economies of scale or the non-divisibility of standards in the sense that the regulatory requirements encourage the practice of standardization and application of a uniform standard across different regulatory regimes. Besides economic reasons the non-divisibility can also stem from technological aspects reflecting the technical impossibility to limit compliance to the EU market only or legal aspects relating to global mergers. For instance, the EU chemical regulation REACH unfolds a strong global incentive to align chemical production to the strict EU standard, which is a prerequisite to enter the EU market, as for many multinationals it is too costly to comply with varying requirements and production processes in different markets.

In general, the EU possesses – with limitations regarding the scope of certain policy domains and heterogeneous preferences across Member States – the aforementioned qualities and makes use of its internal market regulations to incentivize multinational operating organizations and corporations to adopt EU regulations, as for several trading partners the market is too attractive to forego. Besides market power the EU also possesses ideational power in the sense of referring to a highly accessible legal model, that also draws on innovations and ideas of institutions outside the EU (Schwartz, 2019). Thus, many countries also adopt or replicate EU legislation (see for example Chapter 3 regarding the case of EU competition law or EU data protection legislation) as the EU law offers an attractive legal and regulatory framework and is seen as "normative power" or regional regulatory hegemony. However, regulatory globalization is not evident in all policy dimensions and aspects of international trade, as various external and internal factors may place limits on the regulatory globalization, such as the laws of the World Trade Organization (WTO) (see Chapter 2.3), geoeconomic aspects (see Chapter 5 for different issues)⁴). Additionally, also external factors place limits to the chances of the EU to export its regulatory framework to other countries (see Chapter 5.4. and 5.5 for more details).

Hence, the regulatory power to externalize standards globally depends on the interplay of several forces that allows jurisdictions, like the EU, to set global standards and thereby to level the playing field for transnational trade. At the same time the Brussels Effect is not per se specific to the EU and could apply to any other jurisdiction, like the USA in the sense of the California Effect, in the presence of specific market and regulatory features. The spreading of EU norms and standards outside the boundaries of the internal market ensures competitiveness for EU export-orientated companies and also allows the EU to protect and even export essential values to third countries (see Chapter 2.4).

⁴) A detailed analysis is also provided by Sinopoli and Purnhagen (2016).

2.3 Regulatory globalization by convergence of standards

A convergence of regulatory standards usually results from negotiated standards. This includes international treaties and agreements among countries, states, or regulatory authorities. The harmonization of regulations and standards, particularly for agri-food and industrial norms and regulations, is a complex task involving the removal of non-tariff barriers to trade. Non-tariff barriers to trade can be comprised in two basic categories: first, non-tariff barriers related to industrial products, i. e. technical barriers to trade (TBT) and, second, non-tariff barriers related to food and agricultural products, i. e. sanitary and phyto-sanitary regulations (SPS). Difference in norms, standards and testing procedures can lead to large inefficiencies along global value chains. Trade along global value chains often incorporates a large number of countries, i.e. involves a large number of different regulatory jurisdictions, where different standards and procedures apply. These differences in regulations can result in components and final products and services that are not interchangeable. Thus, TBT and SPS can lead to high trade costs that cannot be resolved in reciprocity in negotiations. Usually, regulatory cooperation includes some form of harmonization or mutual recognition of standards or procedures. While mutual recognition is an agreement that products and services legally introduced in another country can be sold and consumed without any further controls, harmonization requires a close regulatory cooperation. The EU has with the USA, Canada, and other OECD members a Mutual Recognition Agreement (MRA), a well-established mechanism to reduce costs of non-tariff barriers. Though product standards may differ substantially across trading partners, the MRA allows trade of products with certified standard conformity. However, Vogel (2012) shows limited impact on trade for cases of mutual recognition. Hoekman (2015) notes that a successful regulatory cooperation needs to encourage learning processes and building a trustful environment through regular communication and repeated interaction across agencies within countries.

The EU standards and regulations are based on unilateral legislation as well as international standards and regulations and are constantly adapted to new technologies. The need to reach internal compromises between different legal systems, including the common and civil law, and different legal traditions, like the German, French and Scandinavian legal tradition, supported the development of an EU law with a high degree of completeness and reproducibility that cannot be found in other legal systems (Bercero and Nicolaïdis, 2021). This legal template, driven by empathy as stressed by Nicolaïdis (2016), provides the EU with experience in regulatory politics. This constitutes an advantage in inter-state cooperation and in the negotiation process (Bercero and Nicolaïdis, 2021).

Most of the EU regulations have a primary domestic focus aiming at facilitating the access to (internal) markets, promoting trade, and providing a regulatory efficiency through division of labour. Such regulations deal primarily with consumption externalities like health, safety, environment protection and are the base of the EU Single Market regulations. As export economy, the EU is also interested in promoting corresponding matching regulations in partner countries. Through active participation in international standard setting bodies, the EU exerts a certain power to promote the emergence of compatible regulations at international level. Such standards from international bodies like the International Standard Organization (ISO) or the International Electrotechnical Commission (IEC) often provide the basis for EU standards and regulations. According to the June 2021 Global Outreach Report of the European Committee for Standardization (CEN) and the European Committee for Electrotechnical Standardization

(CENELEC)⁵⁾, more than 34% of CEN standards are identical to ISO standards and more than 78% are based on or identical to IEC standards. The EU standards in the transport and vehicles industry are mainly building on the United Nations Economic Commission for Europe (UNECE) regulations. The Codex Alimentarius is the base of many standards in the food and agriculture sector. Despite these alignments to international standards, in many areas the EU applies and supports stricter standards. Bercero and Nicolaïdis (2021) note that this application of stricter standards within the EU and the support of stricter international standards contribute to a convergence of global regulation which in turn serves as vehicle to further strengthen the EU's regulatory power.

Though standards per se are voluntary, market-driven, and business-led, the EU outlined specific "essential" health and safety requirements that need to be fulfilled before products can be circulated in the EU market. Therefore, CEN, CENELEC and ETSI develop harmonized standards that provide the compliance of products with the essential requirements as stated in the EU directives and, thus, connecting the binding law to respective standards for manufacturers. Around 30% of the European Standards published by CEN and CENELEC are developed on request by the European Commission, enabling businesses to ensure that their products and services comply with essential requirements set out in the European legislation. CEN and CENELEC (2021) report that they observed in 2020 113,556 instances of the adoption of CEN and CENELEC standards outside Europe. Many of these standard adoptions in the past decade can be observed in Eurasian countries. The Eurasian Economic Union and its member states adopted more than around 30 sector-specific framework regulations based on EU directives and accompanied by adopting 5,830 product-specific standards identical to those of the EU (that are to a large extent identical to the standards by the International Standards Organization, ISO; Emerson and Kofner, 2018). This adoption of EU and international standards by the Eurasian Economic Union and its member states is building a legal and technical infrastructure that allows for closer cooperation between the EU and the Eurasian Economic Union members.

In general, as Chen and Mattoo (2008) show, the harmonization of standards and mutual recognition (with or without rules of origin) significantly increase the likelihood of trade and the intra-regional trade between developed countries. Schmidt and Steingress (2019) quantify this effect at the product level. They estimate an increase in product level trade flows by 0.67% on average, which corresponds to a reduction of an ad-valorem equivalent tariff by 2.1 percentage points. This effect is dominated by firms extending their sales of already existing product varieties. However, Disdier et al (2015) show that the harmonization of standards in Economic Integration Agreements (EIA) between developing and developed countries hurts trade between developing countries. If the harmonization is based on strict regional standards, it might even impact the exports of the developing country to the developed country. While the harmonization of standards assures a high level of synergies for producers in countries that adopted the same standards, they seem to constitute a trade obstacle for countries that do not adopt the same standards. Further, this negative effect, particularly due to stringent TBT or

⁵⁾ CEN and CENELEC are non-profit organizations that are officially recognized by the EU and EFTA as responsible agencies for developing and defining voluntary standards at European level (34 European member states). CEN and CENELEC develop standards providing conformity with EU regulations in response to requests by the European Commission who translates the requested standards into EU directives (<https://www.cencenelec.eu/>, accessed December 15, 2021).

SPS can be multiplied by multi-destination exports. Fontagné and Orefice (2018) show that multi-destination exporters divert their exports towards TBT-free destinations away from the destination that introduced stricter technical regulations.

International cooperation to harmonize standards internationally and reduce trade barriers is in practice extremely difficult due to the concerns that this will impede the realization of domestic regulatory objectives and hinder the execution of legal mandates and obligations. The de facto and de jure transmission of EU standards and the transnational harmonization might be facilitated or restricted by the WTO. The WTO aspires to remove barriers to trade between its member countries by instituting an equal treatment of all trade partners as important principle. Thus, the WTO provides a state-based, rule-based framework for international cooperation. Multilateral regulatory cooperation such as negotiations at the WTO is particularly important for smaller countries that have less market power to influence substantial product and process regulations. Sinopoli and Purnhagen (2016) state that dominant regulators like the EU and the USA might push for their own standards and regulations in international agreements. This dominant power, however, is restricted in cases where large alternative markets exist, leading to a trade diverting effect. Hoekman and Mavroidis (2015) stress that plurilateral forms of cooperation like within the WTO can facilitate regulatory cooperation and attenuate the potentially trade-diverting effects of a multitude of overlapping preferential trade agreements dealing with bilateral compliance of regulations in inconsistent and inefficient ways.

2.4 Beyond standards: export of values

With its regulatory superpower as defined by Bradford (2015, 2020), the EU also exerts a capacitive power to export norms of good governance. Within the realms of trade agreements and the regulations of the Generalized System of Preferences (GSP), the EU increasingly implements non-trade objectives (NTOs) in its trade agreements with third parties. NTOs encompass provisions on environmental and labour standards as well as human rights in agreements (Lechner, 2019). The design of NTOs in trade agreements also reflects policymakers' preferences, but also the institutions through which they compete for decision-making influence and countries' relative market power (Hafner-Burton, 2009). Currently, approximately one third of EU trade agreements contains provisions on labour standards and two thirds on human rights and the environment (Fiorini, 2019). All recent trade agreements contain sustainable development clauses between the parties involved as well as labour standards based on Conventions and Recommendations of the International Labour Organization (ILO) (Bronckers and Gruni, 2019). Lechner (2016) stresses that a high import demand from partner countries with high income disparities result in stricter social and environmental provisions in trade agreements.

Non-trade objectives in EU trade agreements⁶⁾

The promotion of sustainable development is required by EU law in all relevant EU policies. Thus, EU trade policies also aim for ensuring a respect of human rights, social justice, high labour standards and environmental standards among EU trading partners. Therefore, all modern EU trade agreements include clauses on sustainable development according to which the EU and its trade partners must

- adhere to international labour and environmental standards and agreements,
- respect human rights,
- enforce environmental and labour laws,
- apply environmental and labour laws in trade and investment activities,
- trade natural resources like timber and fish in a sustainable manner,
- combat illegal trade, particular in threatened and endangered species of fauna and flora,
- promote trade in goods and services tackling climate change and
- encourage responsible business practices such as corporate social responsibility or the sustainable development goals.

Thus, trade agreements shall facilitate trade, but conditional on sustainable development efforts. Such sustainability clauses are included in EU trade agreements with Canada, Central America, Colombia, Peru and Ecuador, Georgia, Japan, Moldova, Singapore, South Korea, the United Kingdom, Ukraine, and Vietnam.

However, it is questionable whether trade policy is the right tool to achieve compliance with NTOs by trading partners. Though, the view of EU institutions on the importance of NTOs is aligned with objectives stressed in many activities by civil society organizations and has become more prominent among firms engaging more dominantly in responsible business conduct activities, the perceived effectiveness of NTOs in stakeholder groups is ambiguous. According to a survey by Yildirim et al. (2020), targeted assistance to non-government organizations, technical assistance and bilateral expert dialogues are regarded as important instruments to pursue NTOs and their implementation in partner countries among businesses and civil society.

As the causal effects of NTOs are difficult to identify, it is not straightforward to examine the effectiveness of trade policy regarding the achievement of NTOs (Borchert et al., 2020). Another problem lies within the poor enforceability of NTOs: Primarily, it does not lie in the EU's own interest to suspend recently concluded trade agreements, and the option of suspension or termination of trade agreements as a tool to get trading partners to fulfil previously made commitments also excludes the provisions of interest. Thus, negative conditionality is limited. However, the EU can neither make use of a carrot-and-stick-mechanism in bilateral relationships outside of formal FTAs, as the WTO regulations demand a mutual elimination of tariffs (Borchert et al., 2020).

⁶⁾ https://ec.europa.eu/trade/policy/policy-making/sustainable-development/#_trade-agreements (accessed December 15, 2021).

3. Applications of the Brussels Effect

The following review of the literature provides an overview of studies that examine the extent of the Brussels Effect in different policy areas. The different policy areas are grouped according to their predominant impact mechanism on regulatory globalization, i. e. policy regulation, technical convergence and the transmission of values. However, the boundaries of the spheres of influence are often blurred. For example, the General Data Protection Regulation promotes the extraterritorial application of EU regulations and EU values while providing technical standards.

3.1 Policy regulation

3.1.1 General Data Protection Regulation (GDPR)

With the GDPR⁷⁾, the EU implemented a comprehensive legal framework aimed at harmonizing the internal European market with regard to data protection and privacy and facilitating international data transfers, while respecting the rights of EU data subjects. At the same time the GDPR also depicts a precedent of extraterritorial application of EU legislation as all corporations need to comply with EU law whenever EU data subjects are involved – within EU borders as well as data transfers abroad (Bendiek and Römer, 2019). Hence, the field of data protection represents one legal policy dimension that may exert the global reach of EU legislation in terms of the Brussels Effect, as the GDPR strengthened the enforcement capabilities. Besides the EU's effort to spread data privacy regulations through bilateral negotiations and recent trade agreements that incorporate the GDPR principles, like the EU-Japan Treaty, the EU is also negotiating adequacy agreements to define rules on personal data transfers between EU members and third countries. Moreover, the GDPR also formulates the conditions under which international data transfers are possible to countries without any adequacy status (Hoekman et al., 2021). While the EU and the USA signed a new agreement for cross-border data exchange, the EU-US Privacy Shield, which was repealed in 2020, the EU as of today adopted adequacy decisions for 13 countries, while Switzerland is also linked to the adequacy agreements with the USA, as Table 3.1 shows.

Using this measure on adequacy decisions in a gravity model shows that the trade effects following an adequacy decision are positive for digital services trade with an impact of around 4% to 6% (Hoekman et al., 2021). Using the introduction of the GDPR in the EU and the simultaneous non-intervention in Canada as a natural experiment Mahieu et al. (2021) analyse the compliance with data protection obligation using access requests. Their results highlight that the right of access to personal data and thus, compliance with data protection requirements improved with the introduction of the GDPR, supporting that the Brussels Effect may act as important driver for policy diffusion once enforcement goes up.

⁷⁾ The EU General Data Protection Regulation is in force since May 2018, replacing the initial Data Protection Directive 95/46/EC (<https://eur-lex.europa.eu/eli/reg/2016/679/oj>, accessed December 15, 2021).

Table 3.1: Adequacy decisions over time by the EU and other countries

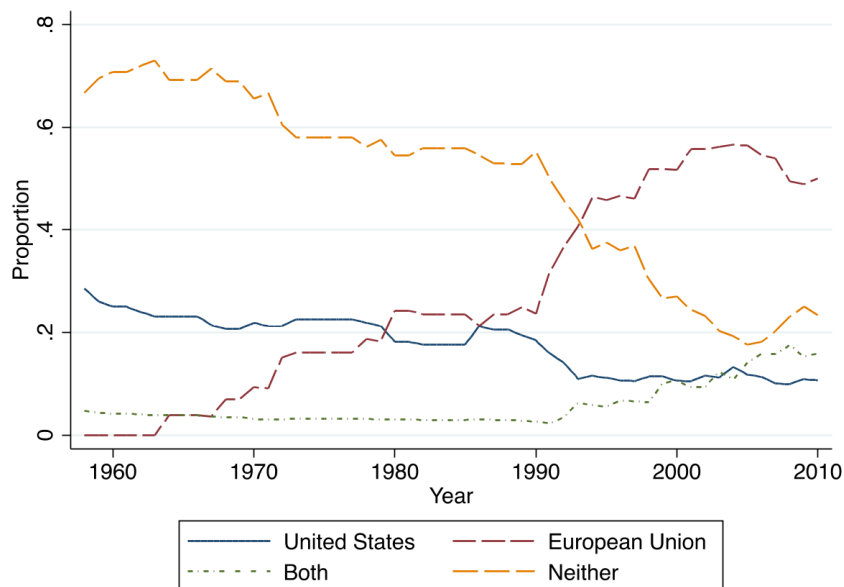
Adequacy agreement	Year	Note
EU - Switzerland	2000	
EU - USA (SH)	2000	Till 2014 (repealed in 2015)
EU - Canada	2002	December 20, 2001
EU - Argentina	2003	
EU - Guernsey	2003	
EU - Isle of Man	2004	
EU - Jersey	2008	
Switzerland - USA (SH)	2009	Till 2014 (repealed in 2015)
EU - Andorra	2010	
EU - Faroe Islands	2010	
EU - Israel	2011	
EU - Uruguay	2012	
EU - New Zealand	2013	December 19, 2012
EU - USA (PS)	2016	Till 2019 (repealed in 2020)
Switzerland - USA (PS)	2017	
EU - Japan	2019	

Note: PS - Privacy Shield, SH - Safe Harbour.
Source: Hoekman et al. (2021).

3.1.2 Competition law

EU competition law represents a cornerstone of EU's founding treaties but is more recent than its US counterpart. Both jurisdictions prohibit anticompetitive agreements between firms and the abuse of a dominant position and control mergers. While the primary objective of competition law of both countries is understood as maximising and protecting consumer welfare, the EU also employs competition policy for a variety of goals, including economic integration of its Member States and evolving the common market to foster the free movement of goods and services across the EU. Hence, EU competition law is increasingly supported by high values of fairness (the right to be free of coercion), the protection of small- and medium-sized firms and the protection of the market structure (Bradford, 2020; Fox, 1997). These principles of EU competition policy often raise concerns that certain political instruments deploy protectionist competition policy. Since EU's regulatory capacity in competition law is very broad it also unfolds extraterritorial effects whenever it influences EU market or EU consumers. Hence, besides many similarities between the US and EU competition laws, EU regulations are seen as very sophisticated in terms of enforcement, offering benefits from emulating EU's competition and enforcement practices to foreign governments, especially regarding evidence and lower enforcement costs. To establish a level playing field for European firms abroad, the EU managed to transfer competition policies to other countries, especially EU candidate and association countries (Hölscher and Stephan, 2009). In particular, the EU conditions preferential access to its consumer market via its preferential trade agreements and association agreements on the adoption of EU competition law, while the USA primarily concentrate on their persuasive power (Kovacic, 2014). This leverage of EU's bargaining power is also supported by the study of Böheim and Friesenbichler (2016). Their findings confirm that accession to the EU improves not only the required de jure legislation but also the de facto quality of competition policies via the implementation of pro-competitive and market-oriented policies.

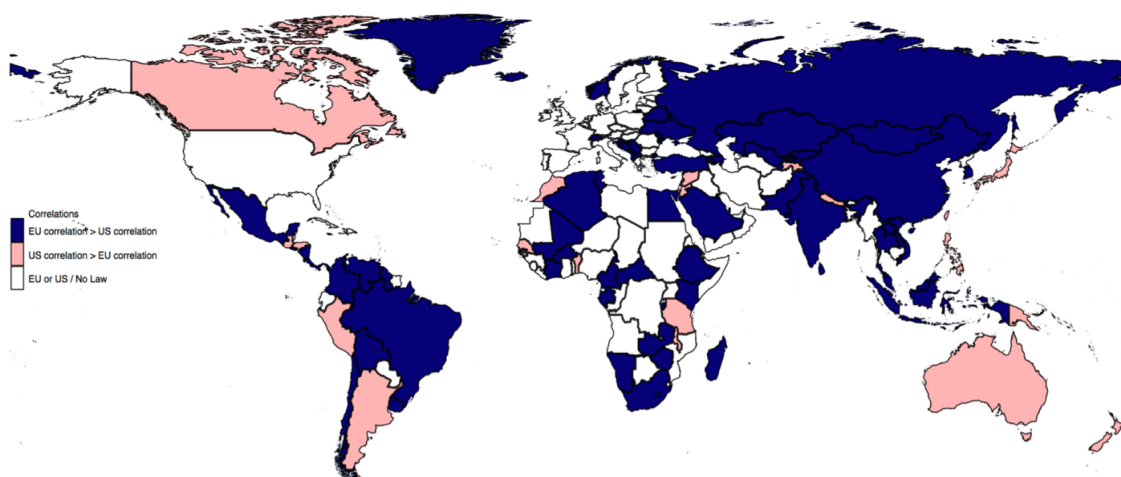
Figure 3.1: Proportion of laws that resemble the EU and US competition law



Source: Bradford et al. (2019).

A recent study by Bradford et al. (2019) using a novel dataset of competition statuses examines the relative influence of EU and US competition regimes in shaping the global regulatory landscape. Their results show that most jurisdictions with domestic competition laws emulate the EU model rather than US law, especially since the 1990s, as Figure 3.1 depicts. The externalization of competition law regimes is, however, mainly driven by cultural, legal and political ties, as well as trade agreements. While countries like Australia, Canada, New Zealand and Japan resemble US law, emerging economies, such as the BRICS countries have emulated the EU model (see Figure 3.2).

Figure 3.2: World map of countries with higher correlation to the US or the EU competition law in 2010



Source: Bradford et al. (2019).

Additionally, the EU has developed a comprehensive legal framework to manage and regulate state aid. The instrument can promote growth and competition among firms. However, incorrectly used state aid is also likely to distort competition and to harm consumers. Currently, EU state aid law is limited to the internal dimension, thus aid granted by Member States, while subsidies granted by third countries are not covered. This imposes a competitive disadvantage for domestic companies both at the global market and at the Single Market itself. Hence, competition-distorting subsidies from third countries represent an external challenge for global and EU competition and need to be addressed in EU state aid law (see Böheim et al., 2022 for a comprehensive evaluation and discussion of modernizing EU state aid law).

3.1.3 Geographical indications

Following on from the previous chapter, the selected applications of the Brussels Effect now turn to the case of geographical indications (GIs). These were defined by the WTO (1994) as follows: "Geographical indications are, for the purposes of this agreement, indications which identify a good as originating in the territory of a member, or a region or locality in that territory, where a given quality, reputation or other characteristic of the good is essentially attributable to its geographical origin." On the question of the influence of GIs on the Brussels Effect, Huysmans (2020) examined the extent to which GIs influence trade agreements between EU and non-EU countries. The study found that trade agreements with the USA and Canada, among others, were influenced by discussions about GIs, as Greece and Italy vetoed CETA because they did not see their GIs as sufficiently protected. As with other Southern European countries, this is not only due to monetary reasons, but is also an expression of national identity due to the high value of gastronomy in these countries, which makes the external GI protection both a trade and non-trade issue.

Preusse et al. (2020) examined the extent to which the European standards of GIs affect developing countries: the EU offers developing countries a lucrative export market due to its high standards of protection. A comparative study of Germany and Thailand was conducted to find out to what extent Thailand is aligning with European standards (de facto Brussels Effect) and to what extent regulation is similar to that of Europe (de jure Brussels Effect). The study found that GI-labelled products from Thailand meet the high European standards, but that regulation and control are less stringent than in the EU.

3.2 Technical convergence

3.2.1 Pan-European cooperation in standard setting

To achieve technical harmonization, and to contribute to the removal of technical barriers to trade between Europe and trading partners, the EU standard setting bodies cooperate with national standard setting bodies outside Europe. The harmonization of regulations and standards for industrial products, services and agri-food products for the EU common market also affects trade partners and neighbouring countries. The European standards organizations (CEN, CENELEC, ETSI) work closely together with the international standards organizations (ISO, IEC, ITU).

Partnerships of EU standard setting bodies

The European standards organization CEN and CENELEC have established many partnerships with standard setting bodies outside the EU-27⁸⁾:

- **Full member:** Full members must implement European standards as national standards. The national standardization bodies distribute and sell the implemented European standard and must withdraw conflicting national standards.
Iceland (IST), Norway (SN), Republic of North Macedonia (ISRSM), Serbia (ISS), Switzerland (SNV), Turkey (TSE), United Kingdom (BSI)
- **Affiliates:** Affiliate members are countries that are formally recognized as potential candidates for EU membership and want to integrate the European standardization system to achieve technical harmonization with the EU Single Market.
Albania (DPS), Bosnia and Herzegovina (ISBIH), Montenegro (ISME)
- **Companion standardization body:** Members of ISO that aim at an alignment of technical standards and a removal of technical barriers to trade.
CEN and CENELEC: Belarus (BELST), Côte d'Ivoire (CODINORM), Egypt (EOS), Georgia (GEOSTM), Israel (SII), Jordan (JSMO), Kazakhstan (KAZMEMST), Republic of Moldova (ISM), Mongolia (MASM), Morocco (IMANOR), Tunisia (INNORPI), Ukraine (DSTU)
only CEN: Armenia (SARM), Australia (SA), Cameroon (ANOR), Lebanon (LIBNORM), New Zealand (SNZ)
- **Cooperation agreement:** With partners who signed cooperation agreements the EU standardization bodies exchange close information, cooperate on selected topics and assist in regulatory dialogues and trade negotiations.
Japan (JISC), South Korea (KATS), Russia (ROSSTANDART), China (SAC), Canada (SCC)
- **Priority partners:** To strengthen partnerships with key regions, CEN and CENELEC work closely with selected regional and national standard setting bodies on specific, sectoral topics.
Africa (ARSO, AFSEC), Gulf region (GSO), China (SAC), India (BIS), Japan (JISC)
- **ISO und IEC:** The Vienna Agreement between ISO and CEN signed in 1991 and the Lugano Agreement between IEC and CENELEC signed in 1991 (third version: Frankfurt Agreement signed in 2016) stipulated a close cooperation between the standardization bodies to use resources, expertise and time more efficiently, and prevent duplications in standards and efforts. Given conformity with EU legislation and no other non-European competitor has implemented a respective standard, CEN and CENELEC shall cooperate in the development of an international standard.

Note: Countries are listed in alphabetical order. Abbreviation of the national standard setting organization of the respective partner in brackets.

Source: CEN and CENELEC (2021).

Adoption of CEN and CENELEC deliverables takes often place by countries with an affiliate status or work closely together with CEN and CENELEC, i.e., countries with a companion standardization body.

Table 3.2 shows the distribution of EU standards adopted by third countries based on their equivalence to ISO and IEC standards. Particularly Eastern European countries and Eurasian countries show a high degree of adoption of EU standards in general, not only of standards driven by the EU market or EU legislation, i.e., homegrown standards, but also of applied international standards used in the EU i.e., standards identical to ISO or IEC standards or standards developed by ISO or IEC and modified by CEN and CENELEC for their application in the EU. If

⁸⁾ <https://standards.cencenelec.eu/dyn/www/?p=CEN:5> (accessed May 20, 2022).

other countries adapt standards of the EU, these are in the case of 70% standards that are not only homegrown but also driven by EU legislation.

Table 3.2: Adoption of CEN and CENELEC standards by third countries

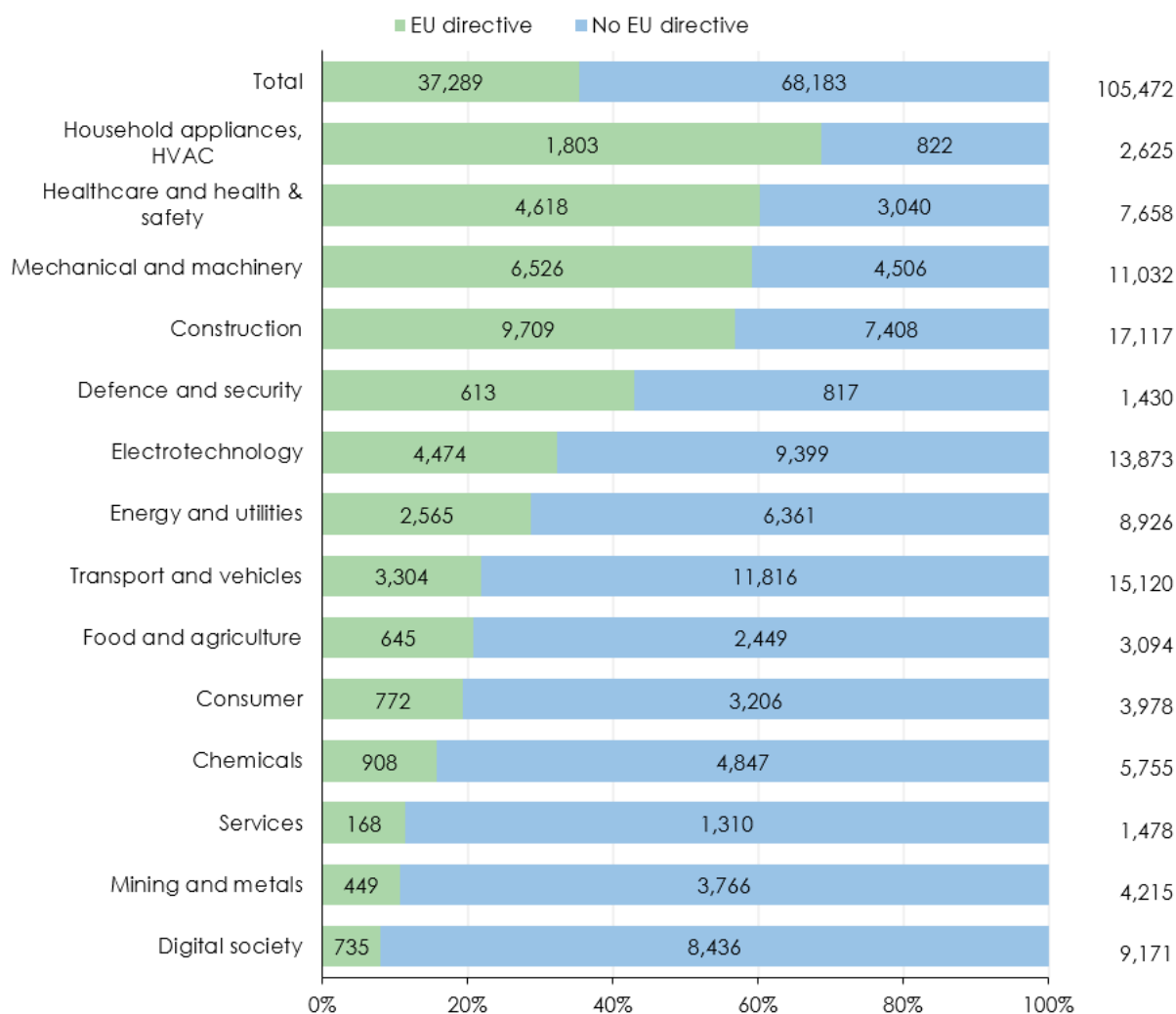
	Home-grown	International relation						Total	Partnership
		Identical Number	Modified	Total	Percentage shares				
					Home-grown	Identical	Modified		
Moldova	12,219	10,251	327	22,797	53.6	45.0	1.4	100.0	CSB
Bosnia and Herzegovina	10,563	9,604	320	20,487	51.6	46.9	1.6	100.0	AFF
Montenegro	10,099	8,946	302	19,347	52.2	46.2	1.6	100.0	AFF
Albania	9,911	8,290	294	18,495	53.6	44.8	1.6	100.0	AFF
Georgia	4,110	4,630	225	8,965	45.8	51.6	2.5	100.0	CSB
Ukraine	2,742	1,499	199	4,440	61.8	33.8	4.5	100.0	CSB
Morocco	2,798	467	104	3,369	83.1	13.9	3.1	100.0	CSB
Tunisia	2,481	658	135	3,274	75.8	20.1	4.1	100.0	CSB
Kosovo	531	2	5	538	98.7	0.4	0.9	100.0	
Belarus	455	20	5	480	94.8	4.2	1.0	100.0	CSB
Uzbekistan	318	0	0	318	100.0	0.0	0.0	100.0	
Jordan	155	116	45	316	49.1	36.7	14.2	100.0	CSB
Saudi Arabia	307	0	0	307	100.0	0.0	0.0	100.0	
Egypt	232	9	0	241	96.3	3.7	0.0	100.0	CSB
South Africa	226	0	2	228	99.1	0.0	0.9	100.0	
Kazakhstan	223	0	1	224	99.6	0.0	0.4	100.0	CSB
Lebanon	177	12	0	189	93.7	6.3	0.0	100.0	CSB
Armenia	175	3	0	178	98.3	1.7	0.0	100.0	CSB
Malaysia	140	0	0	140	100.0	0.0	0.0	100.0	
Botswana	123	0	0	123	100.0	0.0	0.0	100.0	
Sri Lanka	123	0	0	123	100.0	0.0	0.0	100.0	
Israel	115	2	1	118	97.5	1.7	0.8	100.0	CSB
Angola	101	0	0	101	100.0	0.0	0.0	100.0	
Ethiopia	98	0	0	98	100.0	0.0	0.0	100.0	
Mongolia	79	1	0	80	98.8	1.3	0.0	100.0	CSB
China	74	0	0	74	100.0	0.0	0.0	100.0	CA
Ghana	60	2	3	65	92.3	3.1	4.6	100.0	
Singapore	60	0	0	60	100.0	0.0	0.0	100.0	
Kenya	55	0	0	55	100.0	0.0	0.0	100.0	
Mauritius	44	0	1	45	97.8	0.0	2.2	100.0	
Indonesia	37	0	0	37	100.0	0.0	0.0	100.0	
Cameroon	30	0	0	30	100.0	0.0	0.0	100.0	CSB
United Arab Emirates	27	0	0	27	100.0	0.0	0.0	100.0	
Australia	23	0	0	23	100.0	0.0	0.0	100.0	CSB
Zambia	23	0	0	23	100.0	0.0	0.0	100.0	
Philippines	21	0	0	21	100.0	0.0	0.0	100.0	
New Zealand	12	0	0	12	100.0	0.0	0.0	100.0	CSB
Qatar	10	0	0	10	100.0	0.0	0.0	100.0	
Zimbabwe	6	0	0	6	100.0	0.0	0.0	100.0	
Saint Lucia	1	3	1	5	20.0	60.0	20.0	100.0	
Jamaica	3	0	0	3	100.0	0.0	0.0	100.0	
Uganda	2	0	0	2	100.0	0.0	0.0	100.0	
Canada	1	0	0	1	100.0	0.0	0.0	100.0	CA
Namibia	1	0	0	1	100.0	0.0	0.0	100.0	
Eswatini	1	0	0	1	100.0	0.0	0.0	100.0	
Tanzania	1	0	0	1	100.0	0.0	0.0	100.0	
Total	58,993	44,515	1,970	105,478	55.9	42.2	1.9	100.0	

Note: AFF – Affiliates; CSB – Companion standardization body; CA – Cooperation agreement.
Source: CEN and CENELEC (2021).

Most adopted standards by third countries are standards related to construction activities (16% of all active standards adopted by third countries), transport and vehicle standards (14%), and electrotechnology standards (13%). In these sectors many standards are equivalent to ISO or IEC standards. The highest share of adoption of EU standards following an EU directive are

household appliances and HVAC standards. In 2021, on average 69% of active standards that were adapted by third countries in the household appliances and HVAC sector were driven by an EU directive, in the healthcare and health & safety standards sector 60%, and in the mechanical and machinery sector 59% of all standards.

Figure 3.3: Sectoral distribution of standards adopted by third countries in 2021



Source: CEN and CENELEC (2021).

Note that many of these common standards driven by EU directives are adapted to facilitate trade agreement negotiations or were adopted after trade agreements were signed. The convergence in regulatory standards originating in the EU seems thus, like Hoekman (2015) stresses, often driven by trade and investment agreements. In the quantitative part of this study, we aim to empirically investigate whether harmonization of standards also positively affects free trade agreement partner economies of the EU that do not share a trade agreement with each other (see Chapter 4). This should shed some light on potential spillover effects in standard harmonization.

3.2.2 Regulation on Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)

The EU Regulation on Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) was waived in 2007 and regulates both new chemicals being traded as well as a great amount of chemicals that are already on the EU market. Manufacturers and importers bear the burden of proof and need to supply information on the health and environmental effects of their substances to EU authorities.

Although there has been a lot of critique towards REACH, mainly because of its impact on production, supply chains, and costs associated with abiding by the regulation, many multinational firms have submitted to REACH (Bradford, 2012). CEN developed several standards for the European Commission that meet the essential requirements of the REACH directive. When placing a chemical product on the EU market covered by REACH or any other harmonization legislation, manufactures must declare and ensure that their products are satisfying EU legislation.

Figure 3.4: Number of adopted standards driven by the EU REACH directive over time



Note: Green – Affiliate countries; turquoise – Countries with companion standardization body; red – Countries with cooperation agreement; dark green – Third countries. The total number of different reach standards adopted by third countries is ten.
Source: CEN and CENELEC (2021).

Figure 3.4 shows the number of REACH standards adopted by other countries. Standard setting bodies of countries like Albania, Bosnia and Herzegovina and Morocco have adapted the essential REACH standards of the EU voluntarily as national standards. Particularly EU membership

candidates apply standards driven by EU directives like REACH to a large extent. The most common adopted standard is a standard related to the coloration of textiles. Even the Chinese standard setting organization (SAC) adapted a standard related to allergens of nickel covered in REACH. By example of REACH, Scott (2009) describes how this regulation impacted on the US chemicals regime and how actors within the USA use the foreign regulation to shape US law and policy. The author highlights the simultaneity in the regulatory influence and the fact that the EU regulation leaves room for reciprocal learning.

3.2.3 Food regulation

The EU has particularly high standards in the area of food, which are often discussed by WTO member states as being too strict. Curzi et al. (2018) examine to what extent the EU standards influence both the importing and exporting country. It becomes clear that the EU has on average higher restrictive standards than other countries, which has a positive effect on EU exports to both developed and developing countries. It has also a negative effect on the exports of developing countries – but if they comply with the high restrictive standards, they are favoured as exporters of food to the EU. The adoption of EU food and agricultural standards in third countries was 2021 still comparably low.

Though most of the food and agricultural standards are homegrown EU standards, only 20% of standards driven by EU directives are adopted by other countries. In recent years, with a growing importance of the EU market and the stronger convergence of Eastern European countries to the EU, the adoption of EU food and agricultural standards in third countries increased (Figure 3.5). Particularly, Eastern European countries align their food standards with EU standards to further integrate their markets to the EU market. Particularly Moldova and Bosnia and Herzegovina show a strong alignment in recent years with EU standards. They adopted more than 95% of EU food standards adopted by third countries. In total, 146 different standards driven by an EU directive are adapted by third countries. Of particular importance for third countries are standards related to animal feeding stuffs and methods of analysing and sampling animal feeding, and utensils in contact with food. Kareem and Martínez-Zarzoso (2020) looked at the effect of the adoption of standards in more detail and examined in a case study how the regulatory margin in food standards affects African fish exports to the EU. The comparison of EU standards with international benchmarks showed that they are not inhibiting. The many fish exports from Africa that were rejected by the EU because they did not meet the standards can therefore be attributed to the poor quality of African fish exports and not to excessively high standards.

In a case study of New Zealand, Klüche (2017), like the previous study, does not provide evidence for an effect of the high EU standards in relation to the wine trade. In this case, with the exception of additives and processing aids, standards were not stricter in the EU than in New Zealand. In addition, the extraterritorial scope of the Brussels Effect was limited by regulations of other states (China, Japan) and international organizations. A possible negative impact, especially on developing countries, is addressed by Bureau and Swinnen (2018) in their review on the impact of EU policies on global food security. While in the past EU trade and food aid policies have severely restricted imports from developing countries and subsidised EU exports, developing countries' food security has long been affected directly or indirectly through world market prices. This has changed dramatically over the last 20 years, with export subsidies being

removed and developing countries being given better access to EU markets. These exports receive preferential treatment from the EU as well as help to find outlets for their markets. This resulted in positive effects on food security through the associated job and income creation. In addition, Bureau and Swinnen (2018) stress that the aggregate net effect of higher agricultural prices affects food security positively, but the impact varies at country and regional levels. The impact of EU policies on food security is thus positive in principle but differs depending on whether countries are exporters or importers, producers or consumers.

Figure 3.5: Number of adapted food and agricultural standards driven by EU directives



Note: Green – Affiliate countries; turquoise – Countries with companion standardization body; red – Countries with cooperation agreement; dark green – Third countries. In total 146 different standards driven by an EU directive are adapted by third countries. Source: CEN and CENELEC (2021).

3.3 Transmission of values

3.3.1 Non-trade objectives in EU trade agreements

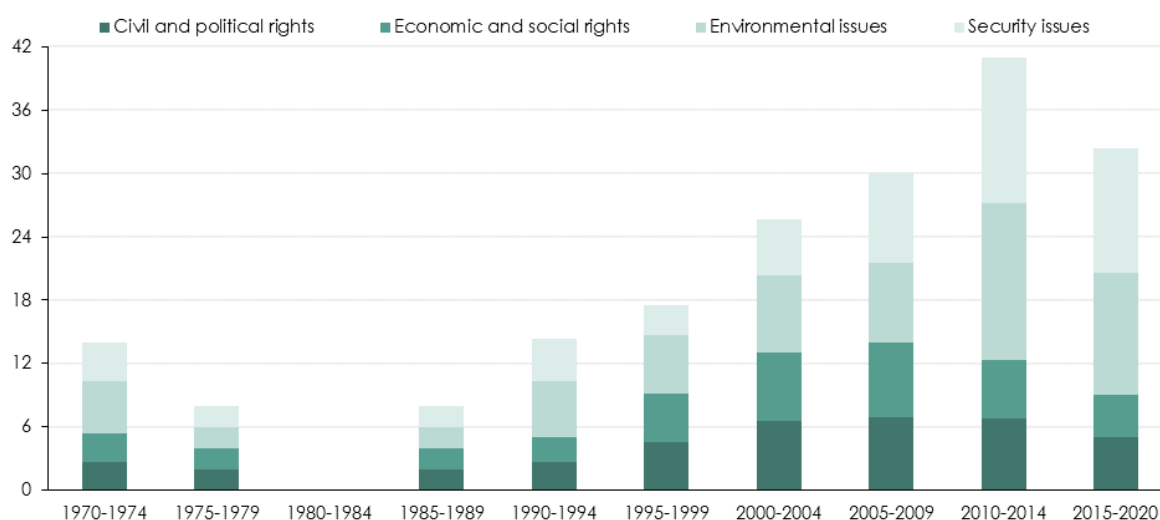
Cooperation and promotion of the EU's social, civil, and juridical values constitute one of the pillars of the Treaty of the EU (TEU, Article 21). This includes that trade shall be used to protect and project EU values and ensures that EU partner countries adapt social and environmental norms. Provisions in the protection and promotion of civil rights, labour rights and environmental protection are included in more than half of EU trade agreements (Lechner, 2020).

Figure 3.6 shows that in recent years there has been a huge increase in the number of NTOs in EU trade agreements that include some commitment, precision, and delegation of NTOs. In the 1970s, only 4% of EU trade agreements included civil and political rights, with the majority of clauses focusing on human dignity, the right to political participation, minority protection, and women's and children's rights. Since the 2000s, there has been a strong increase toward more NTOs in EU trade agreements. Since 2010, 93% of EU trade agreements negotiated have included at least one of these measures.

The increasing awareness for environmental protection, social and human rights and security in EU single markets regulations is reflected in the increase in NTOs in EU trade agreements. The EU, for example, set a precedent by including animal welfare conditions in a trade agreement. Since 2003, the EU increasingly includes animal welfare in bilateral relations. To establish a mechanism of transparency and recognition of equivalence with protection of public, animal and plant health agreements on SPS measures are applied. For example, the Mercosur agreement implies that EU-related standards must be applied to preferential imports of shelled eggs. To obtain preferential market access, Mercosur egg producers must certify that they apply EU-equivalent animal welfare for laying hens.

Figure 3.6: Development of the legalization of NTOs in EU trade agreements

Index of the legalization of NTOs



Q: Borchert et al. (2020), Lechner (2019). The index of legalization compiles measures for the degree of obligation (i.e. the degree of legally binding NTOs), delegation (i.e. the ability to implement, interpret and apply the NTOs by different granted authorities) and precision (i.e. how unambiguously rules are defined) of NTOs in EU trade agreements.

Not only the number of EU trade agreements with NTOs increased, but also the degree of legalization of non-trade issues in trade agreements. Figure 3.6 shows the increase of the level of legalization of NTO in EU trade agreements, i.e. the increase of legal obligation, increase in binding delegation and a higher precision of NTOs in EU trade agreements. Particularly since 2010, the legalization of environmental obligation drastically increased.

Though NTOs are hard to enforce (see Chapter 2.4), the EU sets an exemplary case in 2018. For the first time, the EU stepped forward and initiated a consultation regarding a breach over NTOs clauses in its trade agreements. Specifically, in December 2018, the EU initiated a consultation with the government of the Republic of Korea over its breach of commitment for sustainable development and labour standards. In January 2021, a panel of experts of both countries confirmed that the commitment in the Free Trade Agreement (FTA) is legally binding and must be implemented. However, this enforcement is difficult and, therefore, the EU established a concrete action plan together with South Korea to ensure the adjustment and implementations of labour laws and Conventions of the ILO⁹⁾. Particularly with the Aid for Trade initiative, the EU uses its development policy more and more as tool for a comprehensive engagement with third countries to support sustainable and responsible business conduct along global value chains.

Further, the EU set up multiple regulatory approaches to eliminate or restrict certain foreign goods violating EU values from entering the EU market. Import and marketing bans are used EU instruments to prevent a circulation of goods violating the values of the EU. For example, the EU has been at the forefront of the Kimberley process, a multilateral trade regime that entered into force in 2003¹⁰⁾. The Kimberley Process regulates international trade in rough diamonds. The import and export of rough diamonds is only allowed between countries participating in the Kimberley process Certification Scheme to prevent conflict-diamonds from entering (and leaving) the EU. The Kimberley process was motivated by preserving international peace and ending conflicts by stopping diamond purchases fuelling violent rebel movements. Moreover, with the timber regulation (EU No 995/2010)¹¹⁾ the EU took measures to stop the trade in illegally harvested timber and products thereof. To protect the environment, the EU also bans the import of illegal, unreported and unregulated fishing. Further, besides the inclusion of animal protection and animal welfare in bilateral trade agreements, the EU implemented in 2007 a marketing prohibition to regulate products whose production process is seen as unethical. For example, the EU has a ban on dog and cat fur and products thereof, and on seals products. Both import and marketing bans are effective in reducing consumption and thus have a repercussion on global value chains.(Hoffmeister, 2022)

⁹⁾ <https://trade.ec.europa.eu/doclib/press/index.cfm?id=2238> (accessed December 15, 2021).

¹⁰⁾ The EC regulation 2368/2002 implements the Kimberley process certification scheme for the international trade in rough diamonds. In 2021, the EU amended the regulation by implementing EU 2020/130.

¹¹⁾ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32010R0995> (accessed July 25, 2022).

4. Quantitative assessment of the Brussels Effect

In this chapter we aim to quantify the Brussels Effect in international trade relationships relying on structural gravity modelling combined with a multi-country, multi-sector new quantitative trade model. The structural gravity model allows us to identify the direct effects of different empirical dimensions of the Brussels Effect. In a second stage, the estimated effects from the gravity model serve as an input for counterfactual policy analysis in the new quantitative trade model. This model is based on the influential contribution of Caliendo and Parro (2015) and its specific implementation in the Kiel Institute Trade Policy Evaluation (KITE) model. Caliendo and Parro (2015) provide a multi-sector version of the Eaton and Kortum (2002) gravity model that explicitly accounts for input-output linkages when studying general equilibrium trade policy effects. The KITE model thus allows to estimate a heterogeneous Brussels Effect across industries even if the trade policy change from the gravity model is estimated to be homogenous or if it is identified based on aggregate trade data and it takes into account all direct and indirect effects, where the latter stem from domestic and global value chain linkages.

As discussed in detail in previous chapters, it is almost impossible to come up with one specific and narrowly defined empirical measure to capture the various potential dimensions of a Brussels Effect as suggested in the literature. The EU's geographical enlargement episode as well as its formation of free trade agreements with third countries clearly decreased trade costs and induced an increase in bilateral trade flows among participating economies. The international economics literature documents very well that EU membership together with the development of its Single Market and the introduction of the Euro as the common currency has had the largest cross-border trade enhancing effects of any trade policy measures since the Second World War. Furthermore, the EU is among the most active economic areas in terms of negotiating and signing free trade agreements with non-EU member states. In fact, with the exception of the USA and China, the EU has successfully concluded free trade agreements with virtually all of its main trading partners. The empirical findings in the economic literature on the trade effects of free trade agreements are also rather robust and document trade enhancing effects for participating economies typically associated with trade diversion from non-participating countries.

This chapter offers a first empirical attempt to model and identify a Brussels Effect that goes beyond the ones from the two trade policy tools the EU is frequently using for fostering bilateral trade. The potential channels that could affect trade in addition to EU membership and free trade agreements are only vaguely defined and, as a result, the empirical application offered in this study needs to rely on relatively broadly defined empirical measures.

In the next subchapter, we introduce the applied structural gravity model incorporating three variables that might pick-up the Brussels Effect conditional on other narrowly defined trade policy tools. This is followed by a discussion on suitable underlying data sources motivating our choice for the used data. Afterwards, we present the empirical findings from the structural gravity model and discuss how we translate the empirical parameter estimates into a change in trade costs for the counterfactual policy analysis carried out with the KITE model. We also provide a brief overview of the main features of this model before turning to the discussion of the model's general equilibrium results.

4.1 The structural gravity model

The structural gravity model constitutes the workhorse toolkit for estimating direct bilateral trade effects from trade policy measures. As the various Brussels Effect measures also intend to reduce trade costs and foster bilateral trade flows, the choice for this model framework in the empirical analysis follows naturally. Over the last two decades, the international economics literature made vast progress in directly relating empirical gravity model specification to standard theoretical trade models (see, e.g., Anderson and van Wincoop, 2003; Allen et al. 2020) and in terms of the econometric procedures applied in order to consistently estimate the parameters of interest and its trade effects in counterfactual policy scenarios (see, e.g., Yotov et al., 2016). The latter strand of the literature particularly highlights the need to include information on domestic trade flows from country i to itself in order to cleanly identify the trade effects from trade policy measures (see e.g., Bergstrand et al., 2015). Intuitively, domestic trade flows constitute the empirical observations for most frictionless trade regimes, and we aim to measure the impact of changes in trade costs for cross-border trade flows relative to this frictionless alternative. Whenever cross-border trade becomes less expensive relative to domestic trade, international trade theories would predict some additional substitution of domestic trade via bilateral cross-border trade. Furthermore, and as demonstrated by Heid et al. (2021) the inclusion of domestic trade flows is a prerequisite for the identification of unilateral trade policy measures, such as e.g., the extent of product regulation or the amount of non-tariff trade policy measures. The Brussels Effect might also be driven by changes in such unilateral policies and, therefore, we want to include domestic trade flows to be able to also account for this potential dimension in the data.

The empirical specification of the gravity model applied in the present study can, at the country-level of aggregation and for panel data, generically be written as follows:

$$X_{ijt} = \exp(\alpha B_{ij} t + \chi_{it} + \lambda_{jt} + \mu_{ij} + z'_{ijt} \beta + \text{Brussel_effect}'_{ijt} \delta) + \epsilon_{ijt},$$

where X_{ijt} denotes trade between country i and j at year t , \exp is the exponential function that guarantees that the estimated trade flows are never negative and ϵ_{ijt} is an error term clustered at the exporter, importer, and year level. For domestic trade flows the exporting and importing country is the same such that $i=j$.

χ_{it} and λ_{jt} are the structural components of the gravity model and capture the so-called multilateral resistance terms which are implemented by means of exporter-time and importer-time fixed effects, respectively. The multilateral resistance terms thus control for any exporter and importer characteristics that change over time. The designation as multilateral resistance terms implies that this set of exporter-time and importer-time fixed effects capture the "remoteness" of two trading economies. The level of trade between two countries crucially depends on the relative trade costs which are implicitly determined by all their other possibilities (and costs) for trade. To give an example, relative trade costs for a country pair will relatively increase whenever one of the countries concludes a free trade agreement with another country. For the country participating in the free trade agreement, costs for trade with the other participating economies will decrease (for example via a reduction in tariff rates) which makes the trade with the non-participating economy relatively more expensive, even if the direct trade costs do not change. This is an example for trade diversion induced by a free trade agreement. The direct effects of such a change for trade flows between this country pair is controlled for by

the inclusion of the multilateral resistance terms. Furthermore, all other country-time specific effects that had been considered in traditional ad-hoc specifications of gravity models such as e.g., GDP and GDP per capita are also controlled for by the exporter-time and importer-time fixed effects.

μ_{ij} is a country pair fixed effect which controls for all time-invariant bilateral characteristics that might affect trade volumes. Among other variables these fixed effects cover the effects of geographical distance between the two countries as well as the role of a common language or common (historical) law system for the observed cross-border trade flows.

The inclusion of an interaction term for cross-border trade flows with a linear time trend (B_{ijt}) intends to capture the trade patterns stemming from the last globalization wave. This variable is zero for domestic trade flows and thus measures the substitution of within-country trade by cross-border trade over time. Previous literature has shown that the inclusion of a linear time trend is, in general, sufficient, for capturing the secular globalization trend in trade data that span the last two to three decades (see e.g., Oberhofer and Pfaffermayr 2021). We thus expect the parameter α associated with this interaction term to take on a positive value, indicating that bilateral cross-border trade flows on average gained at the expense of domestic trade.

Another set of variables included in the above specification aims to control for standard trade policy measures that have been identified as important drivers of changes in bilateral trade flows over time. The corresponding vector of covariates is denoted by z'_{ijt} . The vector or related parameters is denoted by β and can be portioned into β_1 , β_2 , and β_3 for the specific variables of interest. In line with the discussion from above, the empirical specification of the gravity model includes an indicator variable for EU membership as well as one for free trade agreements. The former takes on a value of one for country pairs, which are simultaneously members of the EU at time t , and zero otherwise including domestic trade flows. The associated parameter β_1 captures the average increase in bilateral trade flows between any two member states of the EU. The FTA indicator is defined in a similar manner. It takes on a value of one when two trading partners share a common free trade agreement with each other, and zero otherwise. β_2 delivers an empirical estimate for the average bilateral trade agreement of a free trade agreement. On top of these two indicators, we also control for accession to the WTO. Becoming a member of the WTO results in the application of the full set of WTO regulation including e.g. the most favoured nation principle. The WTO regulation, in general, intends to liberalize trade policies, which can be expected to exhibit positive international trade effects. In the utilized dataset the WTO indicator takes on a value of one for country pairs where both countries took part in the formation of the WTO in 1995 or are new member states that joined the WTO. In terms of larger trading economies, this is specifically the case for China's WTO accession in December 2001. The parameter β_3 captures the effect of joint WTO membership for bilateral trade.

The final set of covariates included in the gravity model aims at identifying Brussels Effects for bilateral trade that go beyond the ones directly related to multilateral or bilateral trade policy measures such as EU membership, the formation of a free trade area or the accession to the WTO. For this purpose, we define the vector *Brussel_effect'* $_{ijt}$, which contains three different variables, that are either defined for country pairs ij or capture unilateral trade policies that might be related to a potential Brussels Effect. In the empirical analysis, we separately test for the relevance of these empirical measures for the Brussels Effect.

The first variable of interest aims at capturing indirect trade policy effects via EU's free trade policies. We consider whether two countries that do not share a preferential free trade agreement with each other, but at the same time are members of separate trade agreements with the EU experience a trade enhancing effect. The theoretical reasoning behind this measure is that the regulatory standards of the two economies without a joint free trade agreement might be indirectly harmonized as both have incentives to implement the EU standards agreed on in the individual free trade agreement with the EU. In empirical terms, that might be one of the most direct measures for a potential Brussels Effect, because it actually aims to capture whether the EU's free trade policies exhibit spillover effects on economies that do not share any trade liberalizing measures above the ones agreed on within the WTO frame.

The second measure investigates whether signing a trade agreement with the EU also has effects on international trade with countries that neither are EU countries nor have an agreement of their own with the EU. From a theoretical point of view, the Brussels Effect could in this case be trade enhancing or distorting. On the one hand, EU standards could be relevant for many countries, also outside of formal EU trade agreements and hence putting standards in line with EU regulation may foster trade flows with other countries irrespective of whether the individual countries in consideration have signed a trade agreement with the EU or not (similarly to what Larch et al., 2021 find for the Turkey-EU's Customs Union on Turkish trade flows with the rest of the world). On the other hand, harmonizing regulation with the EU may also move countries away from other trading partners' standards (which e.g. link more closely to US or Chinese standards instead) and therefore could also induce additional frictions for trade with these other partners. The parameter estimate related to this measure thus allows to assess whether signing a free trade agreement with the EU comes with additional net gains or losses for the signing countries' trade with unaffected third countries. In order to be able to identify this overall effect, we need to rely on the relative change of the countries' inter- vs. intranational trade and hence have to use data on domestic trade besides international trade data.

Third, we will consider an explicit channel for how the Brussels Effect can affect international trade flows via non-tariff protection measures, using a two-part procedure. In the first step, we will estimate how signing a trade agreement with the EU affects the number of NTMs put in place by a country. This first step allows to empirically study whether signing an agreement with the EU forces the country to bring down non-tariff barriers as they might partly be not in line with EU's standards. Alternatively, it could be the case that the country compensates for regulatory changes induced by the free trade agreement with the EU by putting in place new, alternative unilateral non-tariff measures. In the second step, we estimate the effect of NTMs on international trade flows. As non-tariff barriers are of a unilateral nature and most often restrict trade with all partner countries, rather than being targeted against specific exporters, we once again have to rely on both inter- and intranational trade flows for identification of this unilateral policy instrument. Equipped with both an estimate of an agreement with the EU on non-tariff barriers and of these barriers for trade frictions, we can assess how the trade agreement affects the signing country's trade frictions with all other countries not covered by the trade agreement with the EU.

We estimate the different gravity model specifications using a standard Poisson Pseudo Maximum Likelihood (PPML) estimator as suggested by Santos Silva and Tenreyro (2006) in STATA applying the "ppmlhdfe"-package (Correia et al., 2020). This algorithm is specifically suitable for

estimating gravity models with a relatively large cross-section- and time-dimension as such data require the estimation of large number of fixed-effects for the structural components of the model.

4.2 Data

The quantitative analysis follows a two-step approach applying different data sources for the estimation of the Brussels Effect in the structural gravity and for the general equilibrium effects in the KITE model. The conceptional background for empirical measures of the Brussels Effect requires specific characteristics of the trade data applied. In order to accurately account for trade effects that go beyond the ones associated with the formation of the EU and its Single Market as well as from the conclusion of free trade agreements, the data set needs to account for as many as possible bilateral trade relationships that are affected by neither of those trade policy measures. Furthermore, as the targeted Brussels Effect might be promoted via unilateral policy decisions of third countries, we need to rely on data that allow to empirically identify unilateral policy effects in structural gravity models. Finally, the inclusion of fixed effects in non-linear settings can be problematic because the estimation of the resulting large number of so-called nuisance parameters can contaminate the estimation of the policy effects of interest and lead to biased coefficients. This phenomenon is known as incidental parameter problem. Weidner and Zylkin (2021) assess the incidental parameter problem in the context of three-way fixed effects PPML estimation as used in this study and show that there is no such bias as long as the number of time periods is sufficiently large.

These three necessary conditions require trade data that are available for a large set of countries that also includes information on domestic trade flows and also spans a relatively long time period. Based on these considerations, many frequently used data sources such e.g., the UN Comtrade or the Global Trade Analysis Project's GTAP database that only include cross-border trade are not suitable for estimating Brussels Effects. From the remaining available data sources, the World Input-Output database (WIOD) and the OECD's Trade in Value Added (TiVA) database only account for a relatively small number of countries that are heavily engaged in international trade activities and policies. WIOD covers 43 and TiVA 66 countries, respectively. Most of the included countries are either members of larger economic areas such as the EU or frequently conclude free trade agreements. The number of third countries that might be indirectly affected by regulation stemming from the EU, therefore, is rather small making both these data sources not very suitable for the study's main research question.

The WTO offers the so-called structural gravity database, which circumvents both problems stated above (Monteiro, 2020)¹²). This dataset contains consistent data for both cross-border trade flows in a bilateral fashion as well domestic trade. The latter is calculated based on the difference between a country's total gross production to its overall international exports. The dataset spans a time period from 1980 to 2016 in an unbalanced fashion and covers 132 countries. This is almost double the amount of the countries considered by OECD's TiVA database, which is the second largest one that would also include domestic trade flows.

¹²) For details on the structural gravity database see https://www.wto.org/english/res_e/reser_e/structural_gravity_e.htm (accessed July 29, 2022).

The structural gravity database, however, also comes with one drawback. It does not provide detailed industry level trade data but only reports aggregated trade flows for manufacturing goods. For each country pair and year, we only observe one trade flow containing exports of all manufacturing goods. This renders the estimation of individual Brussels Effects at a detailed industry level impossible. However, and as already mentioned above, the two-stage approach proposed in this study allows to introduce a homogenous relative trade cost effect from the gravity model into the KITE model. The multi-country, multi-sector structure of the general equilibrium model permits to estimate potentially heterogeneous overall trade and production effects associated with the trade costs change from the Brussels Effects identified in the gravity model. Given the relatively vague concepts underlying the potential Brussels Effect, it seems to be a good starting point to concentrate on manufacturing trade in the gravity model, as the EU is most active in terms of regulations and harmonization measures implemented in these industries.

For the estimation of the gravity model, the domestic and cross-border trade data are merged with information on trade policies. As discussed in Chapter 4.3, we include data on EU membership, free trade agreements and WTO accession as control variables that directly affect trade policy effects which we do not want to attribute to the (additional) Brussels Effect. These data are obtained from the CEPII gravity database, which offers comprehensive trade policy information for all country pairs for the years from 1948 to 2019 (Head and Mayer, 2014). The data from the structural gravity database fall into this interval and, therefore, we are able to match data for all observed bilateral and domestic trade flows.

Data on non-tariff trade policy measures are gathered from the Vienna Institute's for International Economic Studies (wiiw) NTM database which records non-tariff measure notifications to the WTO for more than 100 importers for the years from 1995 to 2019 (Ghodsi et al, 2017). Focussing on the larger part of non-tariff measures that are not targeted towards specific partner countries, we aggregate the number of active non-tariff measures in place by each importing country and year and interact this information with the border dummy for cross-border trade flows. This approach allows identifying the effect of this unilateral trade policy tool. Given the time span covered by the NTM database, the sample period for the analysis including NTMs is restricted to the years from 1995 to 2016.

4.3 Structural gravity model estimation results

This chapter presents the estimation results for the empirical gravity model specification discussed in Chapter 4.1. The results are summarized in Table 4.1, where the three different columns each include one of the variables that aim to capture the Brussels Effect. To start our discussion, with the control variables first, the proposed gravity model specification delivers estimation results that are well in line with previous findings in the literature (see e.g., Oberhofer and Pfaffermayr 2021). The parameter estimate associated with the interaction term between cross-border trade flows and a linear time trend suggests that from 1980 to 2016 domestic trade flows have been substituted by bilateral cross-border trade. The relative percentage change in trade flows from gravity models can be approximated by taking the exponential value of the reported parameter estimates minus a value of one times 100. The first two columns of Table 4.1 thus suggest that, on average and by year, cross-border trade flows grew by approx-

imately 2.59% $((\exp(0.0256)-1)*100)$ faster than their domestic trade flow counterparts. This effect is statistically highly significant and suggests that international trade grew at the (relative) expense of domestic trade.

Table 4.1: Brussels Effect - structural gravity model estimation results

	(1) Exports		(2) Exports		(3) Exports	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
Border * time trend	0.0256***	0.00546	0.0256***	0.00545	0.0226***	0.00655
FTA	0.143***	0.0486	0.14***	0.0537	0.0574**	0.0247
WTO	0.206***	0.0766	0.206***	0.0765	0.147	0.093
EU	0.732***	0.207	0.728***	0.205	0.682***	0.152
Brussels bilateral	-0.128	0.0785				
Brussels unilateral			-0.0355	0.0441		
NTMs					-0.000511**	0.000229
Constant	26.14***	0.0318	26.14***	0.0319	26.34***	0.0319
Observations	678,683		678,683		523,963	

Note: * ** and *** indicate statistical significance at the 10%-, 5%- and 1%-level, respectively. Columns (1) and (2): 1980-2016; Column (3): 1995-2016.
Source: WIFO calculations.

With regard to the direct trade policy variables collected in the vector z'_{ijt} we are also able to identify quantitative effects that are similar to the related international economics literature. Accordingly, the trade enhancing effect of EU membership is statistically as well as quantitatively most pronounced. Based on the parameter value amount to 0.732 in Column (1), EU membership increases bilateral trade between two member states on average by approximately 108% relative to a country pair where neither one has a free trade agreement with the EU in force nor is WTO member and also do not have a free trade agreement which each other. This effect is followed, in quantitative terms, by the trade enhancing effect induced by the WTO formation and its accession with a 22.9% increase between two WTO member states. Finally, an average free trade agreement further increases bilateral trade flows between two participating economies by approximately 15.4%. These effects are all smaller in Column (3). The main reason for this is, as mentioned already in Chapter 4.2, that the sample period is reduced to the years from 1995 to 2016 in the specification including non-tariff measures. For the WTO effect, for example, this implies that the remaining effect in Column (3) only picks up WTO accession effects while the full sample also contains the formation effect in 1995¹³).

Turning our attention to three candidate variables for a potential Brussels Effect we obtain mixed evidence where two out of those variables do not turn out to be specifically relevant empirically. In the first column of Table 4.1, the dummy variable which takes on a value of one for cross-border trade flows of a country pair, where each of the two has a free trade agreement with the EU in force while they do not share a free trade agreement which each other, labelled as "Brussels bilateral", is negative but statistically not different from zero. Accordingly, such countries do not experience systematic changes in their respective cross-border trade relationships that could be attributed to the indirect effect stemming from the conclusion of

¹³ In Column (3) the level effect for the year 1995 is fully absorbed by the combination of all fixed effects constituting the structural components of the model.

trade agreements with the EU. In a similar vein and as documented in Column (2), the successful negotiation of a free trade agreement of one specific country ("Brussels unilateral") does not systematically affect its trade with all other third countries that do not have a free trade agreement with the EU in force. This latter finding might imply that the two opposing effects of adopting EU regulation, as discussed in Chapter 4.1, might offset each other resulting in a net zero effect. With the data at hand, it is unfortunately not straightforward to separate the two potential effects from each other as we are not able to directly account for "regulatory distance" between the involved trading partners.

Column (3) by contrast indicates a significant and negative effect of the overall number of non-tariff barriers of the importing country (NTMs) for cross-border exports into this economy. The associated effect is statistically significant at the 5%-level and in magnitude implies that ten additional non-tariff measures imposed by the importing economy decrease exports to this destination by approximately 0.5%. Note, however, that ten additional non-tariff measures are a large change: in the last year of our data set (2019), ten additional measures on average correspond to a 47% increase in non-tariff measures for a non-EU WTO member country.

We also considered a specification including all three potential Brussels Effect variables and the results did again not support a Brussels Effect beyond an effect via non-tariff measures. To the contrary, the Brussels bilateral coefficient even got more negative and statistically significant.

In a next step we assess whether the overall amount of non-tariff measures of an importing economy is affected by EU's trade policy. For this purpose, we run a reduced-form regression at the country-time level of aggregation, in which we relate this number to a set of country-specific characteristics. Among these are country- and time-fixed effects together with a dummy variable for EU membership, the number of free trade agreements the country has currently in force and an indicator whether the country has signed a free trade agreement with the EU. The resulting model is estimated via Poisson Maximum Likelihood. The estimation results are reported in Table 4.2. Standard errors are clustered at the country-level.

Table 4.2: Reduced-form NTM regression results

	(1)		(2)	
	Coefficient	Standard error	Coefficient	Standard error
EU membership	1.309***	0.348	1.553***	0.338
FTA with EU	-0.279**	0.137	-0.34**	0.159
Number of FTAs			-0.00855*	0.00492
Constant	3.645***	0.141	3.835***	0.203
Observations	3,057		3,057	

Note: Clustered standard errors. *, ** and *** indicate statistical significance at the 10%-, 5%- and 1%-level, respectively. Column (1) and (2): 1995-2016.
Source: WIFO calculations.

The findings suggest that EU member states are much more heavily engaged in using non-tariff trade policy measures while the number of successfully concluded free trade agreements reduce a countries non-tariff measure activities. The first finding is indicated by the negative, large and statistically significant effect reported in the first row of both columns. The free trade agreement becomes visible from the second column of Table 4.2. For the purpose of our study and the counterfactual scenario analysis, we are, however, most interested, in the effect of a

free trade agreement with the EU on non-tariff measure activities of the non-EU member countries. The corresponding effect is reported at the row labelled as "FTA with EU". In terms of the quantitative magnitude of the estimated effect the interpretation of the coefficient is similar to the one from the structural gravity model. Accordingly, having a free trade agreement with the EU in force, decreases the number of unilateral non-tariff barriers signed by the EUs trading partner between 24.35% ($(\exp(-0.279)-1)*100$) from Column (1)) and 28.82% ($(\exp(-0.340)-1)*100$) from Column (2)). This effect is also economically significant as it implies that in 2019 countries with a trade agreement with the EU, on average, reduce their number of non-tariff measures from a counterfactual level of 24 in the absence of an agreement by approximately seven to the observed level of 17 due to their free trade agreement with the EU.

We can put together the estimation results from the gravity model with the reduced-form estimates from the non-tariff measures model to get a first impression of the trade effects of the EU trade agreement induced by the lowering of non-tariff measures in terms of partial equilibrium effects. In a partial equilibrium consideration, a decrease of an average of seven non-tariff measures induces a trade increase with every international trade partner by an average value of 0.36%. In the next subchapter, we will consider the general equilibrium implications of two non-tariff measure policy scenarios.

4.4 General equilibrium effects

Out of the three variables considered that could potentially capture a broadly defined Brussels Effect, only the number of unilaterally imposed non-tariff measures is found to have a significant effect on bilateral international trade flows. We therefore simulate two policy scenarios based on the regression results from the third and final gravity specification, combined with the results from the country level non-tariff measure regression. In particular, we consider how (i) the lowering of non-tariff measures due to current trade agreements between the EU and third countries affects trade flows and welfare both in these partner countries and globally and (ii) world trade and welfare would be affected if all countries that so far have not concluded a free trade agreement with the EU would implement the same reduction in non-tariff measures.

For the first scenario, we first obtain the fitted values for the number of non-tariff measures put in place by a country based on the regression discussed in the previous subchapter, the results of which are shown in Table 4.2. We then calculate a hypothetical alternative fitted value that would be predicted for the EU trade agreement partner countries if they had not signed a trade agreement with the EU. The difference between this fitted and hypothetical number of non-tariff measures depends on the level of measures put in place, because the estimated effect captures a percentage change. We then combine this difference with the estimated effect of non-tariff measures from Table 4.1 to calculate by how much trade openness – an inverse measure of trade costs – towards all international trading partners is changed by the EU agreement induced non-tariff measure reduction. Specifically, for every additional non-tariff measure more predicted due to the counterfactual absence of an agreement with the EU, openness to all partners is reduced by 0.05%. On average, EU free trade agreement partners are estimated to lower their number of non-tariff measures taken by seven in response to entering such an agreement. Hence, a removal of this type of Brussels Effect would lead to a 0.36% reduction of trade openness of these partner countries towards all international partners. We feed this trade cost shock into our quantitative trade model and compare the actual world

trade equilibrium to the counterfactual one that would follow from such an increase in international trade costs to quantify the implications of this non-tariff measure Brussels Effect. We will refer to the scenario with this counterfactual trade cost change as the "no EU agreements" scenario.

For the second scenario, we once again compare the actually fitted value of non-tariff measures to a hypothetical counterpart. This time, we change the number of measures of countries not currently in a trade agreement with the EU to the number we would expect after the introduction of an EU agreement. For all affected countries, this hypothetical lower number of non-tariff measures would imply greater trade openness towards all international partner countries, including EU member states and non-EU countries. Once again, we feed this shock to international trade costs into our quantitative model to investigate how the whole global trade network would be affected. We will refer to the scenario with this counterfactual trade cost change as the "all in EU agreements" scenario.

4.4.1 KITE model

We now simulate the impact of the two scenarios' shocks to international trade costs on the global trade network with the KITE model (Kiel Institute Trade Policy Evaluation Model), a computable general equilibrium model of the global economy and international trade. The model explicitly considers intra- and international input-output linkages that reflect the cross-border nature of production today. This feature of the global economy is particularly important in the context of the Brussels Effect, as changes in standards and non-tariff measures likely affect final goods trade and intermediate goods, i.e., inputs into the production processes of other products. An initial effect would propagate to other parts of an economy through domestic input-output linkages and to other countries through global supply chains. The KITE model, originally based on the quantitative trade model proposed by Caliendo and Parro (2015), thus captures this important facet of today's global economy.

The KITE model can thus be used to quantify long-term direct and indirect trade effects (e.g., trade diversion and third-market effects) for European economies, particularly production effects at a sectoral level, next to price-level and general welfare effects. Since long-term trade effects are simulated, the model estimates permanent level shifts in price levels and real consumption. Changes in welfare are measured as changes in real income. The simulation is run for 65 sectors and 141 countries, covering more than 90% of global economic activity.

For the calibration of the model, we use commonly-used data sources with the base year 2016, which coincides with the latest years used above in the estimation of the coefficients. The global input-output database GTAP 10 (Aguilar et al., 2019) provides detailed information on intranational sectoral linkages and global value chains. In addition, standard databases such as the UN Comtrade for trade data and the WITS and MacMaps databases for customs data are used to define the baseline scenario in our model. Finally, certain parameters that enter the model but are not directly observed are taken from the related literature. These include the so-called "trade elasticity" which measures the sensitivity of sectoral trade flows to changes in trade costs in those sectors, e.g., due to tariffs or non-tariff barriers. We obtain these required parameters from Fontagné et al. (2022), who use state-of-the-art statistical techniques for their estimation.

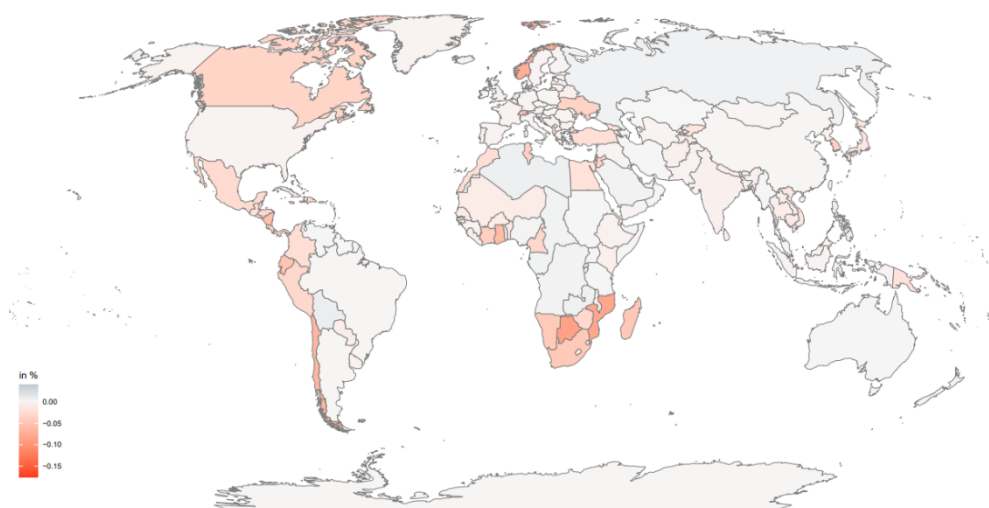
4.4.2 Simulation results

For this study, we primarily focus on presenting results on the impact of the Brussels Effect on the EU-27 and Austria, as well as those other countries most impacted. For the two scenarios described above, (i) the 'no EU agreement' scenario; and (2) an 'all countries in EU agreements' one, we report changes in welfare and sectoral changes in production.

Scenario 1: No EU agreements

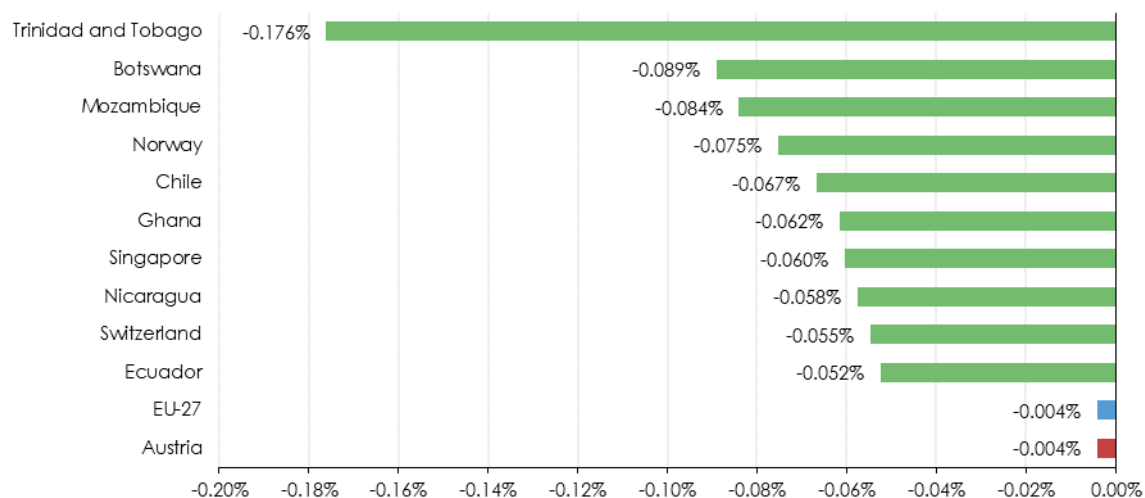
Figure 4.1 and Figure 4.2 show the global impact of the already realized gains likely induced by changes in non-tariff measures that could be coined a Brussels Effect.

Figure 4.1: Map of global welfare changes – no EU agreements



Source: IfW calculations, KITE model.

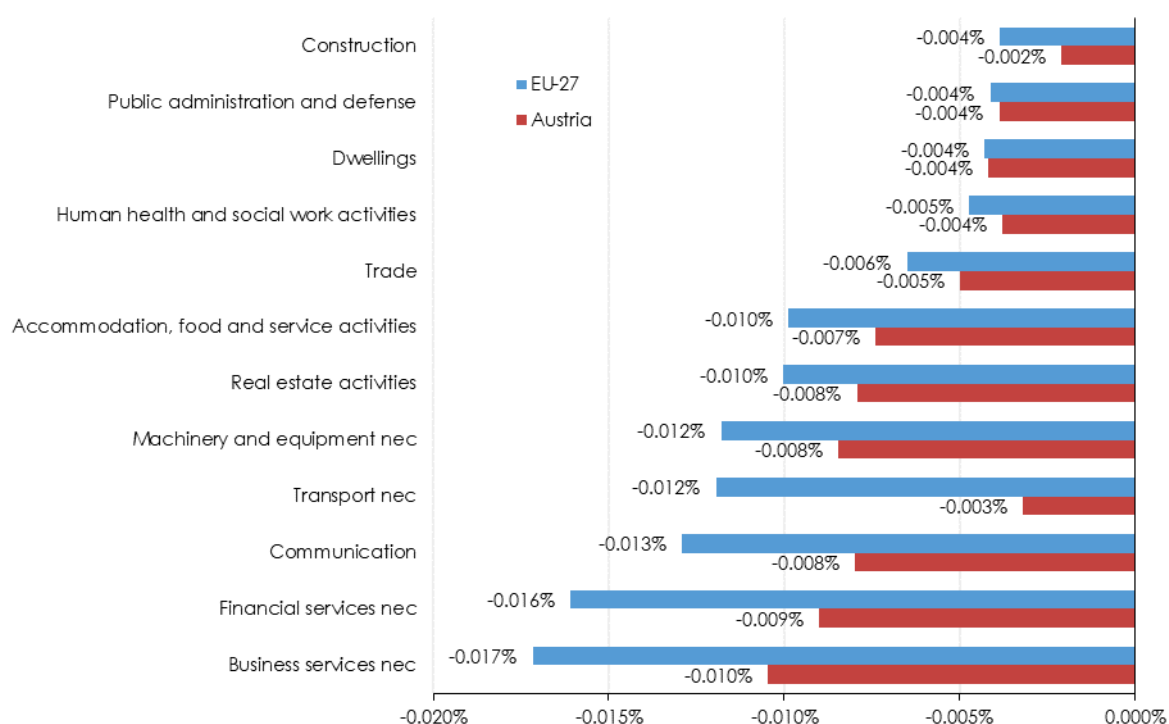
Figure 4.2: Welfare changes of selected countries – no EU agreements



Note: Top-10 countries with the largest effects, EU-27 and Austria displayed.
Source: IfW calculations, KITE model

Overall, the bulk of the impact outside the EU is seen in Western and Southern African economies and select countries in the Americas. Switzerland, Norway, and Singapore also report comparatively large welfare effects, likely due to either their special relationship with the European Union for the former two or its unique status as a global trading hub for the latter. Figure 4.2, however, also shows that overall welfare gains are modest - at best. The greatest change in welfare is reported for the relatively small island economy of Trinidad and Tobago at -0.176%, i.e., without the globally implemented non-tariff measure changes due to the Brussels Effect, welfare in the Caribbean country would be smaller by this percentage. Welfare effects in all other countries are smaller than a tenth of a percentage point. Note also that globally the average impact is one order of magnitude smaller, clocking in at -0.015%. The average effect for the EU-27 and Austria is simulated to be -0.004%.

Figure 4.3: Real production changes in % by sector size – no EU agreements



Source: IfW calculations, KITE model.

Focussing on the impact within the European Union, we now dissect the impact by sector. Figure 4.3 displays the changes in real production (i.e., the value of production deflated by changes in input prices) in each of the ten largest EU or Austrian sectors. The x-axis reports the sectoral output change in percent, and the y-axis the sector's initial share in the overall economy. Overall, the magnitude of the impacts is again rather small. However, there is some heterogeneity across sectors. Both EU-wide and in Austria, a few smaller sectors would gain without existing NTM changes in third countries, among them the automotive industry and economically much less important ones like gas production and metal works. On the other side, other sectors would see small but non-negligible decreases in production in a world without the NTM reductions mentioned above. Notably, these include services sectors like general business services, financial services and communications. Note that these different sectoral effects stem

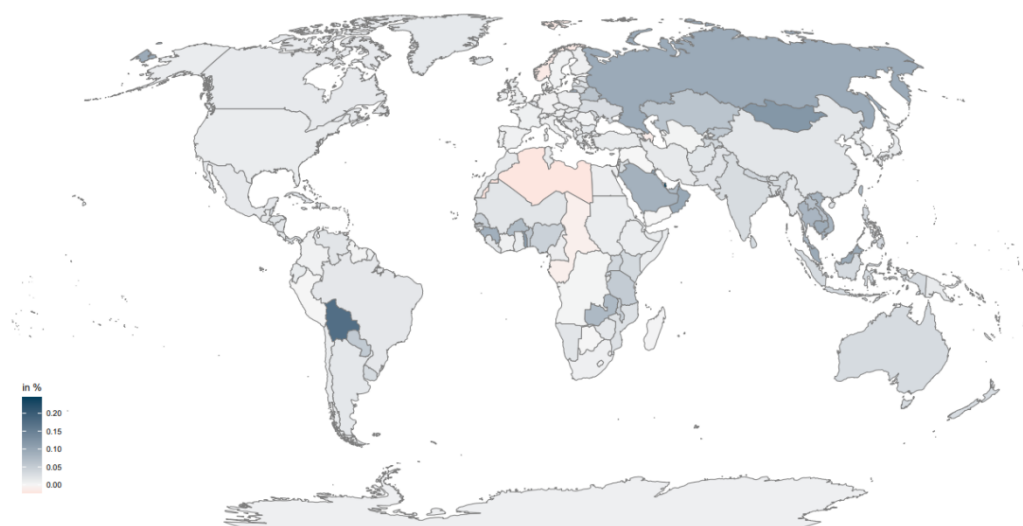
from a homogenous shock to trade costs in all sectors based on the estimates using aggregate trade flows. International input-output linkages and changes in comparative advantage nevertheless translate the homogenous shock into heterogeneous effects.

All in all, the simulation results for scenario 1 reveal that the overall welfare effects of the realized Brussels Effect as measured by unilateral non-tariff measure reductions are relatively small. At the same time, there is heterogeneity in their impact across countries, as well as within the EU and Austria across sectors.

Scenario 2: all in EU agreements

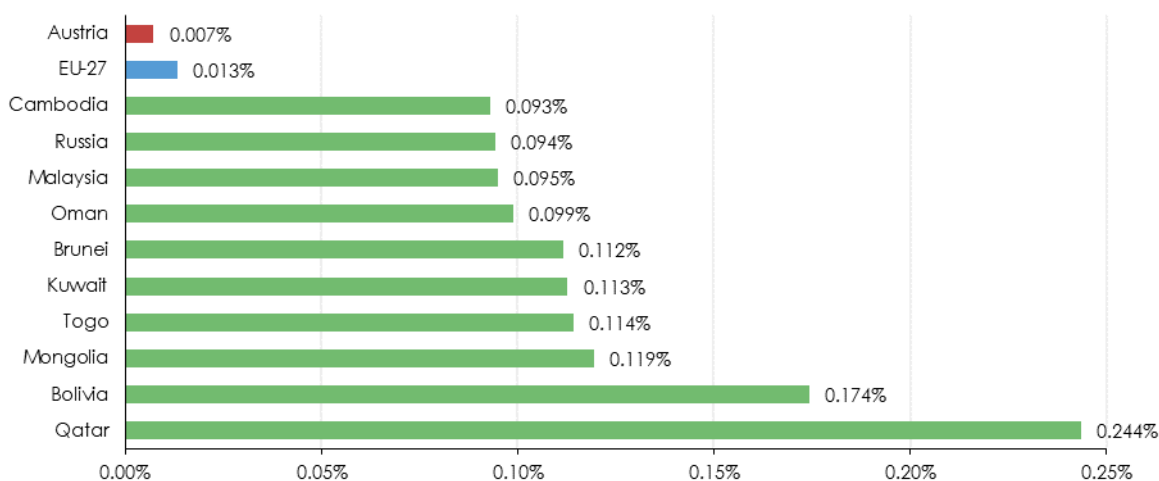
We now turn to the simulation of scenario 2, which assumes NTM reductions associated with a Brussels Effect would extend to all countries globally, i.e., a maximum effect of what could be attributed to the EU extending its reach in setting standards and regulations worldwide.

Figure 4.4: Map of global welfare changes – all in EU agreements



Source: IfW calculations, KITE model.

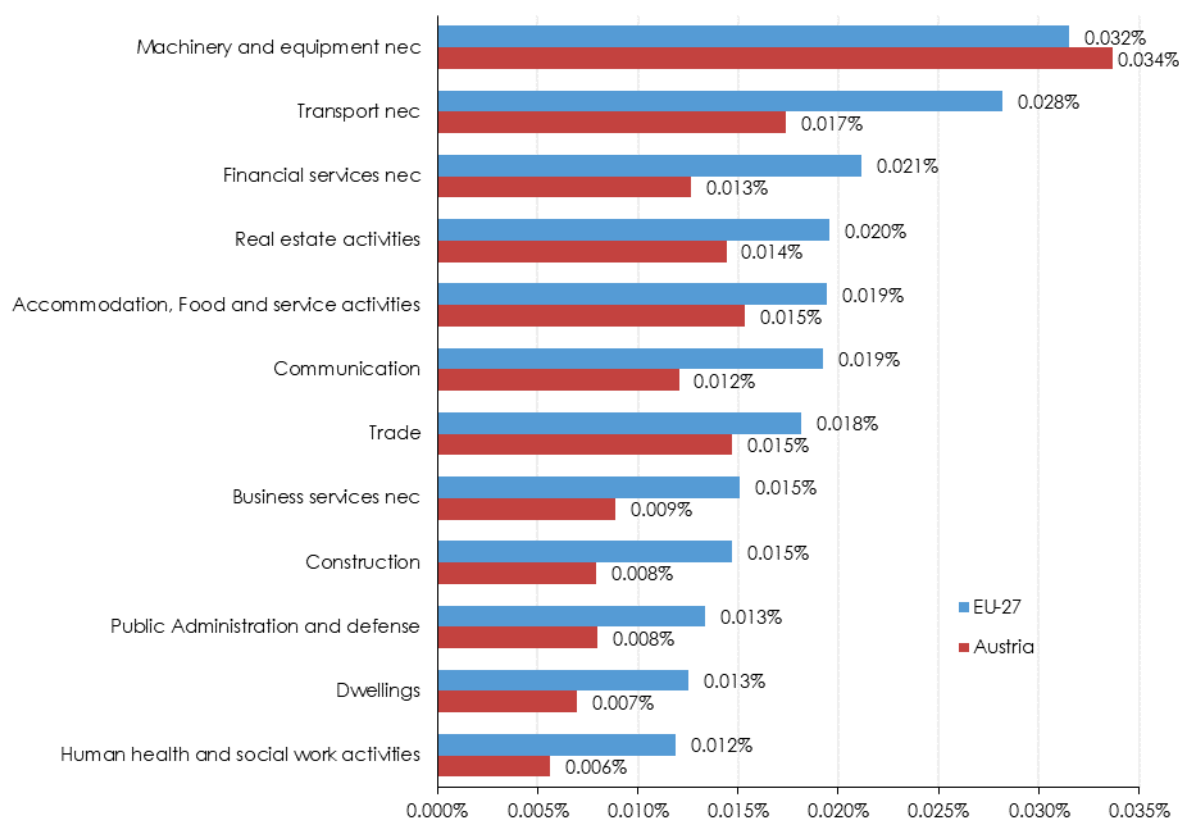
Figure 4.5: Welfare changes of selected countries – all in EU agreements



Source: IfW calculations, KITE model.

Figure 4.4 and Figure 4.5 again show the global distribution of changes in welfare in a simulated counterfactual where all countries reduce non-tariff measures unilaterally. The expected gains complement those realized in scenario 1, in that most of the gains would be expected in regions so far less impacted by the existing NTMs. Specifically, the largest welfare increases would be expected in the Gulf region, select West and East African countries, and countries in South-East Asia, as well as Russia, Mongolia, and Bolivia. As Figure 4.5 shows, the list of top-10 hypothetical gains would see Qatar, a major producer of fossil fuels, experience the highest welfare gains with +0.244%, and also include other major gas and oil-exporting countries like Kuwait, Brunei, and Russia. On average, the European Union was to gain +0.013% in welfare, about twice as much as Austria (+0.007%). The higher EU average is driven by larger gains of small European economies with strong trade ties to Russia, as Russia is an important and geographically close EU trading partner that lowers its NTMs in this scenario. The Austrian effect is, however, very close to the median effect of the EU member countries. Overall, these results again point to only minimal, economically effectively insignificant welfare changes for the EU. This is because EU trade costs are only lowered with the countries reducing their number of non-tariff measures, while these countries increase their openness vis-à-vis all trading partners. Further, the same change in international openness tends to have larger welfare implications for smaller economies.

Figure 4.6: Real production changes in % by sector size – all in EU agreements



Source: IfW calculations, KITE model.

These country-wide results are mirrored by looking at a sectoral disaggregation of the effect of extending the Brussels Effect to all countries globally. Figure 4.6 shows for the ten largest sectors in either EU or Austria that both on average in the European Union as well as in Austria specifically, experience changes in real production close to zero. The largest relative change is again registered for the gas sector, which is, however only marginal in its absolute importance in EU economies. In absolute terms, services sectors again would see the largest increases in real production, however still only ranging in economically largely insignificant values. Overall, the results of simulating scenario 2 suggest that global welfare gains from expanding unilateral NTM changes brought about by a Brussels Effect are modest at best. A select few countries could see a measurable positive impact in terms of welfare, while the effects would likely be near invisible across and within the European economies.

5. Future of the Brussels Effect – potentials and limits of influential spheres

The quantitative assessment as well as the illustrated selected applications of the Brussels Effect in the previous chapters show that the Brussels Effect is on one hand difficult to capture in its various dimensions and on the other hand quite heterogeneous across countries and sectors. Among those sectors with potential increases in real production in case of expanding unilateral NTM changes is the services sector, including financial services, business services, and ICT related aspects (like digital services and communication).

In alignment with the results that highest potential, though still small, welfare gains can be expected in African countries, in the Americas, and the Gulf region, the EU recently put special emphasis in its strategic outreach on cooperation and partnerships with these regions. As stressed in the EU's recent standardization strategy (European Commission, 2022), particularly partnerships with Africa shall be intensified in the coming years. The EU standard setting organizations decided in 2018 to strengthen the partnerships with African standard setting organizations in the context of the creation of the African Continental Free Trade Area as well as with the Gulf region¹⁴) to establish a closer cooperation in technical regulations and standards, particularly for new technologies in the extraction sector as well as smart technologies. In Africa, a Task Force for a closer cooperation with African standard setting organizations was established to enable and support the development of economic, green and digital infrastructure to remove non-tariff barriers to trade¹⁵). However, as the EU is more and more challenged to position itself in the context of the growing rivalry between the USA and China, it has become crucial to sharpen the geoeconomic profile by extending the available set of instruments, in order to maximize the potential economic benefits of the Brussels Effect for all involved economies

In the following, we discuss selected areas for further potentials and limits of the EU to spread its unilateral regulations and values outside its jurisdiction in more detail. The different potentials are grouped according to their predominant impact mechanism, however, the boundaries of the spheres of influence are often blurred.

5.1 Policy regulations

First, we look at further potentials in the domain of policy regulations. We focus particular on geoeconomics aspects to enhance the EU power surplus (Chapter 5.1.1), financial regulations affecting third countries (Chapter 5.1.2) and the EU's efforts to combat climate change with the help of the EU Green Deal (Chapter 5.1.3).

5.1.1 Further potentials to enhance the EU power surplus

Building upon the EU's exclusive expertise in trade policy, one promising and obvious way is the promotion of bilateral and multilateral partnerships (see e.g. Fusiek, 2020). However, apart from

¹⁴) See also the text box on Partnerships of EU standard setting bodies in Chapter 2.

¹⁵) <https://www.cencenelec.eu/european-standardization/international-cooperation/global-outreach/priority-partners/> (accessed June 14, 2022).

the important mission to foster multilateralism on the global level and to extend its trading relationships, there are also other instruments with which the EU could extend its geoeconomic reach.

One particular area that is of similar importance for trade is to enhance the EU's capacity to threaten with and to impose trade sanctions. As a reaction to violations of WTO law sanctions are actually considered to be existential for the stability of the international trade order (Bagwell and Staiger, 2004). Sanctions have to be credible *ex ante* to work without being imposed. To foster its credibility, the EU has to build a reputation as a credible sanction sender but also to work on solutions to compensate domestic losers of sanctions. The anti-coercion instrument, which has been presented by the EU recently, is an important step into that direction. Furthermore, this instrument is particularly important as it takes effect right where the Brussels Effect has its limits: when other economic powers make compliance with even stricter rules a precondition for market access, EU companies must submit to foreign regulation. Prominent examples are the US sanctions regimes against Iran or Russia (Kamin et al., 2021).

In the macroeconomic area, the internationalization of the Euro is important to enhance the competitiveness of the domestic European economy (Abels et al., 2020). Further, Europe should play a proactive role in the development of the digital Euro. In order to expand the reach and possibilities of a digital Euro, the EU should first work on creating national legal frameworks for supervision and regulation of private payment instruments (Kamin et al., 2021).

5.1.2 Financial regulations with third countries

Within the EU (and European Economic Area, EEA) financial services are determined by passporting system, which allows banks and financial service providers to offer financial products and services across borders with minimal additional licensing requirements. These passports are based on a unified EU regulatory framework with mutual recognition of individual member state regulations for the financial sector and are therefore not available to firms based outside the EU/EEA. Certain EU standards contain third country regulations that allow firms considered as third countries (like the UK post-Brexit, or Switzerland) to provide a limited number of services within the EU, if the legislation is recognized as "equivalent" in outcome to EU standards (European Parliament, 2017). In addition, financial services providers also face restrictions regarding market access that vary across individual EU countries. Before Brexit, the United Kingdom served as major financial centre and around 45% of UK's financial services exports were destined for the EU Single Market. Because of Brexit, market access for financial services firms changed substantially and is no longer possible under EU passporting rights. Thus, financial service providers need to comply with individual legal obligations and apply for licensing in each individual EU member country. Hence, alignment with EU's regulations in the sense of a Brussels Effect is still critical for UK financial services providers, especially regarding the legal concept of "equivalence regimes" (see also Chapter 2.1). However, different equivalence regimes apply for the financial services sector, narrowing the scope of cross-border service provision, while some financial services, including basic banking services such as lending and deposit-taking, are not covered by equivalence regimes at all. The EU-UK Trade and Cooperation Agreement contains some specific rules for the cross-border supply of financial services between the UK and the EU, leaving trade to be managed through mutual unilateral equivalence decisions. Thus, it does not grant market access for a broad range of services on the basis of a general

equivalence regime. Moreover, regulatory cooperation has been addressed separately in a Memorandum of Understanding. Currently, the EU needs to grant equivalence decisions, at the same time the UK intends to reform its financial services regulatory framework in favour of a departing regulatory environment and to foster new relationships with other third countries outside the EU, especially Singapore, the USA and Switzerland.

Switzerland as a key financial centre that is closely intertwined with other countries, especially access to the EU financial market is of particular importance for Swiss financial services providers. As no bilateral agreement has been concluded between the EU and Switzerland in the financial market sector, market access for Switzerland is based on third-country rules that include different requirements for market access. These third-country provisions offer reduced regulatory requirements if the third country can prove equivalent regulations. However, the equivalence procedures are defined unilaterally by the EU. While the implementation of international standards partly ensures regulatory convergence, the literature finds various areas in which the EU diverges from international standards. Hence, equivalence decisions by the EU tend to include a political dimension, which in the case of the UK is often argued as divergence from EU rules as justification for withholding equivalence decisions (Nästega, 2022).

5.1.3 Climate change and EU Green Deal

An important policy that has major geoeconomic repercussions and can possibly be turned into a soft-power instrument for the EU is the European Green Deal. The European Green Deal is an initiative of the European Commission and aims a reduction of 55% of greenhouse gases in 2030 compared to 1990 and net-zero emissions by 2050. In addition to the motivation of reducing climate risks, this of course also means the opportunity for the EU to improve its long-term economic perspective and to exert soft influence on other countries, especially its neighbouring countries (Leonard et al., 2021). To achieve this, six policy instruments can be cited, which will be briefly explained below. For example, the Carbon Border Adjustment Mechanism (CBAM), as part of the Green Deal, aims to ensure that the EU's climate targets can be met by reducing greenhouse gases, but also avoid carbon leakages caused by higher carbon prices in the EU. This requires great diplomatic efforts and understanding of economic, legal and political sensitivities of trading partners (Kamin et al., 2021).

Another instrument is international carbon trading. This, e.g., in the form of an EU-led Carbon Buyers' Club with strict certification and assessment standards, would reduce the global costs of climate action by shifting emission reductions to countries where marginal abatement costs are lowest, or in the form of allowing countries that have over-achieved their climate targets to sell them on to countries that have not met their targets (Kamin et al., 2021). While this may have the disadvantage of countries lowering their decarbonization ambitions, it could make the EU take a leadership position, set and raise international standards, and strengthen the Euro as an international currency.

One possibility to reduce greenhouse gas emissions is to use green hydrogen, i.e., hydrogen produced from renewable energies, so the European Green Deal contains a hydrogen strategy to install 40 gigawatts of renewable H₂ electrolyzers within its borders and the neighbourhood regions by 2030. This also offers the opportunities just mentioned, on the one hand to shift the production of hydrogen to regions where it can be produced most cost-effectively (and then to transport it as efficiently as possible, e.g., Morocco), and on the other hand the EU can act as a pioneer in international trade and set the necessary standards (Kamin et al., 2021). As

part of the EU's new standardization strategy (European Commission, 2022) the EU aims to develop standards to support the development and use of clean hydrogen and low-carbon technologies with significant emission-saving potential.

However, beyond these potential trade relationships, it is also important to enable an appropriate transition and promotion of sustainable energy in the Global South. This is only possible through international cooperation and can be realized, for example, through a conditional financing mechanism in which loans are only granted for climate-friendly investments (Kamin et al., 2021). Realized by the EU, it would give it the opportunity to help these countries achieve climate neutrality in a direct way and to outbid China with its massive investments to Africa, as well as to create a (new) market for European producers and standards.

In order not to repeat past mistakes in creating the necessary structures for e.g., green hydrogen or electricity from renewables, the EU needs to build a framework in which energy supply security is ensured at all times and is not dependent on particular countries, especially in the case of possible geopolitical tensions (see dependence on Russian gas; Eurostat, 2019), but creates market-based incentives so that enough alternative suppliers can step in times of shortfalls. Thus, EU's efforts to address climate change needs to address geopolitical repercussions in terms of economic diversification, energy security, the global energy markets and global trade patterns, which need to be captured by a foreign climate policy agenda, that include joint initiatives and close partnerships with other countries to boost climate action (Leonard et al., 2021).

Lastly, transparent labelling of how carbon-intensive the individual products are can be cited as a tool that allows consumers to contribute to carbon neutrality when purchasing low-carbon products (Kamin et al., 2021). Once this is sufficiently established, governments could ban products from carbon-intensive processes. The establishment of these monitoring and labelling systems must emerge from international collaboration. The EU could function as a pioneer and set standards in the context of product labelling (Gerres et al., 2021 and Sartor et al., 2021).

The EU needs to manage these challenges and consequences wisely, by e.g. amongst others, engaging with affected neighbours and global players, enhancing supply diversification of critical inputs, and establishing a Climate Club (see Leonard et al. 2021; Kamin et al., 2021).

5.2 Technical convergence

Another sphere of influence of EU power are advancements in technical convergence. As stressed in Chapter 3.2 and in alignment with the quantitative results in Chapter 4, trade and investment agreements appear to be a major factor in the convergent development of regulatory standards coming from the EU. The services sector, which includes financial services, business services, and ICT-related features such as digital services and communication, is one of those with potential gains in real production as a result of expanding unilateral NTM developments.

5.2.1 ICT and digital economy

As discussed in Chapter 3.1.1, the GDPR, including the EU Cloud Code of Conduct that outlines specific requirements for cloud services providers, is a great success in providing a regulatory framework that initiated a process of digital European re-sovereignization. Due to the necessity

to govern the complex and transnational digital development and technological advancement in the information and communication technology (ICT), the EU has declared gaining more digital and technological sovereignty as one of its aims in its standardization strategy. Against the backdrop of a high concentration of power of leading non-EU tech giants, the EU aims to gain gradually independence from the USA and China. The recent COVID-19 pandemic amplified the need of the EU to reduce its external dependence in key inputs and advanced technologies, including the supply of semiconductors as critical input for the digital economy. The emerging EU regulations in the digital sphere are summarized in Table 5.1.

Table 5.1: Recent developments of EU regulations in the digital and technological sphere

Norm	Regulation	Description	Year of introduction
Digital Service Act and Digital Markets Act	COM(2020) 825 final and COM(2020) 842 final	Transparency requirements for large-scale digital platforms to create a safer digital space	Proposed in 2020
Open Data Directive	(EU) 2019/1024	Open data and the re-use of public sector information	2019
Data Act	2022/0047 (COD)	Fair access to and use of data	Proposed in 2022
Data Governance	COM(2020) 767 final	Framework for the re-use and sharing of data	Proposed in 2020
Digital Identity	2021/0136 (COD)	Provision of a European digital identity that can be used online, offline, in private and public sectors across the EU	Proposed in 2021
NIS Directive (NIS 2.0 Directive)	(EU) 2016/1148	Network and Information security that regulates capabilities, cross-border collaboration, and national supervision of critical sectors	2016, re-calibration for an improved framework (NIS 2.0) since 2021
EU Cybersecurity Act	(EU) 2019/881	Cybersecurity certificate framework for information and telecommunication products and services for products for the EU Single Market, controlled by the EU Agency for Cybersecurity	2019
Artificial Intelligence (AI) Act	2021/0106 (COD)	Risk-assessment framework to regulate the access of AI technological products to the EU Single Market	Proposed in 2021
Chips Act	COM(2022) 46 final	Framework of measures for strengthening Europe's semiconductor ecosystem	2022
Radio Equipment Directive	2021/0291 (COD)	Common charger for electronic devices	2022

If the EU Commission can resist the urge to enact regulations on cost of non-European businesses leading to inefficiencies and fragmentation of the digital market, then the EU might have success to influence global standards in the technological and digital sphere, following up on the success of the GDPR. However, in its regulatory capacity, the EU has to consider not only businesses inside Europe, but also outside Europe to not risk that Europe miss most innovative technological developments and digital solutions. Nevertheless, as Renda (2022) stresses, the EU might only be able to retain a leading role in the digital sphere if it builds strategic cooperation as well as it develops a self-standing, semi-open technology stack. Forging coalitions with developed and developing partners may trigger the adoption of proposed technological solutions. Bendiek and Stürzer (2022) note that the EU lacks production capacities, big tech players and partly also relevant digital infrastructure. Therefore, corporations are needed to secure the geoeconomics position of the EU and to ensure safeguarding of citizens and an inclusion of values and fair conditions.

In the last decade, China has become one of the global leaders in the manufacturing of digital devices. The Digital Silk Road as part of the Belt and Road Initiative has given China a first mover

advantage in shaping the global digital infrastructure, particularly in Asia and Africa. As response, the EU initiated in 2021 the Global Gateway Initiative that shall strengthen the EU's share of global digital infrastructure. Further, the EU initiated a Trade and Technology Council (TTC) in 2020 with the USA to cooperate closer in terms of trade and the development of common technology standards for a "values-based global digital transformation"¹⁶). While the EU is dependent on US technologies, the US companies are dependent on access to the EU Single Market. Nevertheless, due to Europe's inability to exercise legal empathy and cooperate closely with other legal systems and multilateral organizations in the past, these ambitious initiatives might be too late to lead the world in the digital era.

Fast changing technical protocols and standards in the digital economy and ICT provide another challenge for the EU. Thus, the continuation of the Brussels Effect in the digital sphere (i.e. the continuation of the success of the GDPR) rests on the EU's ability to gradually develop technology-enabled tools that guarantee stronger compliance and more effective implementation and enforcement of its proposed regulations and to cooperate with multiple stakeholders.

5.3 Transmission of values

The EU can use its regulatory power in combination with its development policy as well as tool to support sustainable and responsible business conduct along global value chains.

5.3.1 Due diligence in global value chains

The promotion of economic, environmental, and social progress and the prevention and remedy of adverse effects associated with a company's business activity is the core principle of responsible business conduct (RBC). RBC's fundamental values encompass not just adherence to legal requirements, such as those pertaining to the protection of human rights, the environment, labour rights, or financial accountability, but also the adoption of social, environmental, and sustainable business practices. Numerous international initiatives, such as the establishment of the OECD Guidelines for Multinational Enterprises, emphasize firms' due diligence in adhering to these principles and applying them to the company's immediate and indirect surroundings by highlighting companies' responsibility for their whole global supply chain. Additionally, these activities have helped to boost the acceptance of ethical corporate practices in international and national legally binding rules.

The most recent of these developments is the EU proposed Directive on Corporate Sustainability Due Diligence in Supply Chains (2022/0051 (COD)). The proposal for a Directive of the European Parliament and of the Council on Corporate Sustainability Due Diligence (2022/0051 (COD)) requires large EU-based companies and multinationals with large net sales in the EU to ensure compliance with minimum standards along their supply chain. The draft covers EU-based companies with more than 500 employees and a net turnover of more than 150 mn €, and companies with more than 250 employees and a net turnover of more than 40 mn €, more than half of which is generated in high-risk sectors such as textiles, clothing and footwear, agriculture, forestry, fisheries, food and extractive industries. It also covers non-EU companies that generate more than 150 mn € in net sales in the EU or more than 40 mn € in net sales in the EU and generate half of their global net sales from activities in high-risk sectors.

¹⁶) https://ec.europa.eu/commission/presscorner/detail/en/ip_21_2990, (accessed June 10, 2022).

To comply with due diligence along the supply chain, non-EU companies must designate an EU resident representative to liaise with EU regulators. The scope of the proposed supply chain legislation includes activities that go beyond direct supplier relationships and include "established business relationships" throughout the supply chain. The extraterritorial scope of the draft EU Directive may thus have a significant impact on multinationals based in the USA, United Kingdom and Asia that generate a high turnover in the EU. In case of non-compliance with due diligence requirements, Member States should impose effective, proportionate, and dissuasive sanctions.

Besides this general due diligence scheme, the EU recently implemented sectoral and country-specific initiatives to promote responsibility along global supply chains. The EU implemented a second regime to regulate conflict minerals¹⁷⁾ that entered into force in 2021 that requires importers of tin, tantalum, tungsten and gold from conflict and high-risk areas to mandatory due diligence reporting. Moreover, in 2021 the EU proposed a mandatory due diligence to ensure sustainable and deforestation-free supply chains for products entering the EU market¹⁸⁾. Furthermore, since particularly human rights violations and the reported exploitation of the Uyghurs in China raised concerns in the EU, the EU announced a regulation to introduce an import ban on products made by forced labour¹⁹⁾.

These well intended due diligence laws might increase the cost per supplier relationship as importing companies in the EU must ensure the compliance of each supplier with human rights and environmental standards, and additional costs for risk management and potentially increased input prices. Even many companies in Austria already exert some level of responsible business conduct, not even half of the firms that need to adhere to the proposed due diligence regulations is yet prepared to fully audit the suppliers, manage the supply chain risk and respectively annually reports its due diligence (Meyer and Reinstaller, 2022). This increased documentation obligation and efforts might lead to loss of competitiveness of affected EU companies, particularly with respect to competitors from China in less developed countries. From the perspectives of suppliers, the due diligence law might particularly affect suppliers offering the best working and environmental conditions in the regions affected. Thus, by imposing EU values through the due diligence law to such countries, the human rights and environmental situation could be worsened in such countries. However, due to the extraterritorial application of the general due diligence law, the increased social responsibility efforts for EU firms and firms involved in EU value chains could also be a huge chance to an overall increase in responsible business conduct beyond the EU borders.

5.4 Limits

The power of EU's regulatory framework is key for the functioning of the Single Market and the EU possesses essential resources, such as the large consumer market, sophisticated regulatory capability, and a stringent regulatory framework, that attribute the EU an influential role as

¹⁷⁾ The conflict Minerals Regulations 2017/821 entered into force on 1 January 2021. (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L:2017:130:TOC> (accessed July 29, 2022).

¹⁸⁾ European Parliament Resolution of 15/1/2020 (https://www.europarl.europa.eu/doceo/document/TA-9-2020-0005_EN.html (accessed July 29, 2022).

¹⁹⁾ See the resolution of the European Parliament of September 16, 2021 on a new EU-China strategy (https://www.europarl.europa.eu/doceo/document/TA-9-2021-0382_EN.html (accessed June 25, 2022)). A draft proposal of the European Commission to combat forced labour is expected in autumn 2022.

global regulator. However, the benefits of the Single Market cannot be easily transferred abroad and emulating regulatory concepts to third countries often refers to regulatory competition rather than regulatory cooperation given the attractiveness of the integrated EU market (Damro, 2015). Since the EU's regulatory influence varies systematically across different forms of regulatory interaction, external regulatory cooperation mechanisms are based on market forces, political negotiations or policy diffusion (see also Chapter 2.1). In this context the EU seems to perform less well (Young, 2015). As the EU recognizes in its standardization strategy (European Commission, 2022), a closer coordination of EU member states, the industries and the standardization bodies are needed to effectively coordinate and transparently support the international standardization process. For the EU, the main limitation in practice is the issue whether the WTO principles of non-discriminatory, scientifically based and de-politicized implementation of standards and trade policies are respected. The external factors that determine the chances of the EU to export its regulatory framework to other countries is examined by Newman and Posner (2015). According to their concept EU's capacity to influence the regulatory globalization in the sense of the Brussels Effect is highest whenever (i) there is a relative regulatory capacity difference between the EU and other regulatory powers, (ii) the density of international institutions is low or (iii) the EU has gained a first-mover advantage. Hence, the rise of regulatory initiatives in other parts of the world, especially in China and the USA but also other countries, as well as the deterioration of the multilateral rule-based system are likely to reduce the EU's global regulatory reach. In the past, ineffective coordination in support of principles of international standardization processes and principles of the WTO like consensus, openness and transparency hindered leadership of the EU in international standard setting processes in sensitive areas, leaving the door open for other global competitors in standard setting. Thus, the EU passed the opportunity to lead e.g. in developing standards for lithium batteries, facial recognition or other important industrial standards in sensitive and critical areas and to promote EU values and safety concerns in technological solutions. Moreover, leadership of other global competitors like China or the USA can lead to technological developments that might be incompatible with EU regulations and the EU's ambition to promote its values also outside its jurisdiction.

Further, the EU's reservation towards other legal systems may further hamper opportunities to develop coalitions with developed and developing countries to foster future global regulation and governance of technology (Renda, 2022). Due to a lasting expansion of Chinese initiatives in African markets and the lack of support in the development of crucial ICT infrastructure in Africa by major aid donors, China dominates the technological sphere in Africa by penetrating all layers of African ICT (Agbebi et al., 2021). With its Digital Silk Road, a key pillar of the Belt and Road Initiative, China has placed ICT development and the interconnection of ICT at the forefront of its global strategy. Just recently, with the announcement of the Global Gateway in 2021²⁰⁾, the EU started to mobilize investments in global infrastructure development, including digital and climate related investments. By building up infrastructure in developing countries and strengthening partnerships around the world, the Global Gateway Initiative aims to promote European values and high European standards. However, given the dominance of other

²⁰⁾ https://ec.europa.eu/info/strategy/priorities-2019-2024/stronger-europe-world/global-gateway_en.

global competitors in other potential partner countries, e.g. of China in the African market, the spheres of influence for the EU is limited.

5.5 Competition for spheres of influence in standard setting

As mentioned before, the international arena has shifted towards a more power-based order. The geostrategic rivalry between the USA and China is dominating a lot of economic spheres, ranging from industrial over macroeconomic to trade policy. It is thus important to not only focus on the aims and perspectives of the EU, but to also account for what other global players are doing while the EU is ramping up its geoeconomic outreach. This section therefore focuses on the competition for spheres of influence in standard setting between the USA, China and the EU. It will highlight the most important projects and advances of the two biggest geostrategic global players, namely the USA and China. From an EU point of view, the direct positive trade potentials from future bilateral trade agreements, still seem to be sizeable as the quantitative analysis suggests. Therefore, we also discuss the role a potential free trade agreement between the USA and the EU could play.

5.5.1 USA

Foreign policy

Generally, two priorities that are guiding US foreign policy can be identified. The 'Build back better' initiative is being pursued not only at home, but also in the international arena. Further, to counter threats by authoritarian powers, cooperation with allies but as well tactic cooperation with said powers in fields where interests overlap is being pursued (Parry, 2021).

In March 2021, the Biden administration published the Interim National Security Strategy Strategic Guidance (INSSG) which is still to be updated by a complete National Security Strategy (NSS). The final strategy was expected to be released between the end of 2021 and the beginning of 2022. While the Russian invasion of Ukraine might at least in the short run shift some objectives, countering threats to US interests posed by authoritarian states such as China and Russia is of course already included in the INSSG. The INSSG identifies three key objectives: (1) countering threats from great powers and violent actors as well as transnational threats such as diseases, climate change and cyberattacks; (2) redefining economic interests with respect to living standards of workers; (3) strengthening democracy domestically and internationally. Following from that, the INSSG identifies important immediate tasks to pursue these objectives. The geopolitical relevant immediate tasks are the lead and the promotion of the open and multilateral rules based international system and the objective of a "favourable distribution of power" to deter and prevent adversaries from threatening the USA and its allies, inhibiting access to the global commons or dominating key regions" (Biden, 2021).

The obvious overlap between economic and security aspects in the strategy is not new to US National Security. In his NSS in 2017, President Trump declared the competition with adversaries such as China a strategic security priority. Nonetheless, the stance to ramp up democratic institutions within the USA as one aspect of the fight against rising authoritarianism is new. Additionally, it is worthwhile noting that the USA have increased their military budget (+1.7% compared to 2021) and that the budget for diplomacy and foreign aid has been raised (+12% compared to 2021). The proposal for the defence budget puts more emphasis on pressing issues such as deterring China. (Parry, 2021)

When it comes to China, one particularly important issue in US foreign policy is Taiwan. On May 23rd, President Biden articulated again that a military aggression of China directed towards Taiwan would be countered by the USA militarily. China responded to President Biden's remarks with the entering of two aircrafts in the Taiwanese air defence identification zone in order to conduct strategic deterrence, displaying the sensitivity of the issue. Although subsequently US Defence Secretary Lloyd Austin clarified that the USA did not change its "one China policy", it was not the first such remark by the US President. The USA have adopted "strategic ambiguity" when it comes to Taiwan, accommodating the normalization of its China relations. However, the USA have provided military assistance to Taiwan and have gradually displayed a position of challenging China since 2016 on the Taiwan issue²¹).

Trade agreements

US-EU Transatlantic Relationship

Although European hopes for a full reversal of the Trump administrations' policies were disappointed in the first year of President Biden, promises to reverse some policies have been fulfilled. The "Buy American" initiative could for example be a sign that President Biden is not supporting free trade without limits (Bardt and Kolev, 2020). While the new administration has affirmed the importance of the Transatlantic Relationship and re-entered the Paris Agreement, some elements of the previous administration's policies remain, particularly with regards to trade policy.

After a period of high trade tensions between the USA and the EU with imposed tariffs on steel and aluminium products under President Trump, and the dispute over aircraft subsidies, which led to mutual high countervailing duties, the Biden administration signalled willingness to cooperate with the EU. Punitive tariffs over aircraft subsidies against the USA were suspended in March 2021 and it was agreed to extend the tariff truce to five years in June 2021 (European Commission, 2021b). Furthermore, tariffs on steel and aluminium were suspended by the EU in May 2021, and it was agreed to avoid changes on these tariffs that negatively affect bilateral trade.

Although geostrategic objectives differ between the EU and the USA, data from Eurostat show that economic ties and thus the logic for transatlantic cooperation are very strong. The current account amounted to 823 bn € on the credit side (inflows) and 670 bn € on the debit side (outflows) in 2019 (Kamin et al., 2021). This level of bilateral exchange implies that reductions of trade costs via a trade agreement would yield significant welfare gains on both sides (Egger et al., 2015 or Felbermayr et al., 2015). If, in line with our empirical evidence for previous EU trade agreement partners, the USA were to additionally lower its number of non-tariff measures taken against all trading partners, an EU-US trade agreement could also lower US trade costs with other countries, fostering further the US gains and counteracting concerns about trade diversion.

After the Transatlantic Trade and Investment Partnership (TTIP) negotiations were closed in 2019, the EU and the USA continued their dialogue on trade and other related issues. A joint state-

²¹) <https://thediplomat.com/2022/06/bidens-taiwan-policy-is-the-most-dangerous-issue-in-china-us-relations/> (accessed May 15, 2022)

ment was released after the EU-US summit in June 2021, proclaiming a renewal of the Transatlantic Relationship with a focus on trade relations, green growth, democratic values and health challenges. At this summit, the partners as well announced the launch of the EU-US Trade and Technology Council (TTC). The TTC aims at deepening transatlantic cooperation in key technological areas such as semiconductor supply chains, but also focuses on restricting non-market trade practices and while respecting each other's regulatory autonomy, finding a more concerted action on the regulation of global technology firms. Furthermore, a deepened exchange on information regarding investment trends and related security risks for sensitive data and technology are envisaged²²). At the second meeting of the TTC in May 2022 in Paris and against the backdrop of the Russian invasion of Ukraine, both sides reaffirmed their strengthened cooperation and dialogue in fields such as information integrity, trade and labour, export controls, secure supply chains, technology standards, artificial intelligence, platform governance, SMEs access to technology, environmental and climate aspects of trade and technology and trade barriers²³).

United States-Mexico-Canada-Agreement (USMCA)

The successor agreement to the North American Free Trade Agreement (NAFTA), which made trade in products originating within and a certain percentage of originating materials from the free trade area duty-free, entered into force on July 1, 2020 and is valid for 16 years. Although NAFTA went far beyond tariff dismantling with regulations on services, government procurement, investment and intellectual property, President Donald Trump made it his mission during the election campaign to renegotiate the agreement. The reason was the view that US companies were benefiting too little from NAFTA due to overly lax rules of origin.

As a result, the USMCA now specifies tighter rules of origin, such as in increasing the value added content from 62.5% to up to 75% in the automotive sector. In addition, the agreement includes, among other things, improved protection of intellectual property and mutual recognition of regulatory requirements, particularly in the pharmaceutical products, medical devices and chemicals sectors²⁴).

US-Japan Trade Agreement (USJTA) and US-Japan Digital Trade Agreement

Declared as "stage one" of a broader trade agreement between the USA and Japan by the Trump administration, two trade agreements were signed in October 2019 and entered into force in January 2020. While the aim of USJTA is an improvement of market access via limited tariff reductions and quota expansions, the US-Japan Digital Trade Agreement is concerned with regulations on digital trade. Both deals were enacted without formal action by Congress. However, further negotiations on a broader agreement were not pursued by the Biden administration²⁵).

²²) https://policy.trade.ec.europa.eu/eu-trade-relationships-country-and-region/countries-and-regions/united-states_en (accessed May 30, 2022)

²³) https://ec.europa.eu/commission/presscorner/detail/en/ip_22_3034 (accessed May 12, 2022).

²⁴) <https://www.gtai.de/de/trade/usa/zoll/united-states-mexico-canada-agreement-usmca--269346>, <https://www.cbp.gov/trade/priority-issues/trade-agreements/free-trade-agreements/USMCA> (accessed May 30, 2022).

²⁵) <https://csreports.congress.gov/product/pdf/IF/IF11120> (accessed May 5, 2022).

Economic and Trade Agreement (ETA)

The ETA, signed by the USA and China in 2020, was intended to deescalate the trade dispute by committing China to import an additional 200 bn \$ worth of US goods and services in 2020 and 2021 and by committing the USA to waive further tariffs. Since the reduction of tariffs to around 20% on both sides following the Phase-I-Deal (Bown, 2020), tariffs have remained unchanged. Both partners have fallen short of their offtake promises, partly due to the COVID-19 pandemic (Kamin et al., 2021). In October 2021, talks to resolve the trade war have resumed between US and Chinese negotiators, after the USA presented their new trade strategy towards China. Both sides agreed to continue consultations in order to enforce the Phase-I-Deal.

Further trade developments

The USA are negotiating the United Kingdom-United States Free Trade Agreement (UKUSFTA) since May 2020 with the aim of addressing both tariff and non-tariff barriers and to achieving fairer and deeper trade between the two parties. Negotiations are currently in the fourth round and include a broad range of topics, among others trade in goods and services, digital trade and cross-border data flows, investment and competition policy²⁶). As the negotiations are stalling and no agreement is being expected soon²⁷), the UK is seeking to strike agreements with single US states: In late May 2022, the UK signed its first agreement with Indiana.

Notably for US trade matters, the Biden administration did not prolong the White House's Trade Promotion Authority (TPA), which expired on April 1, 2021. The TPA, formerly known as "fast track authority", ran under the authority of the President of the United States and was used for negotiating trade agreements with limited congressional oversight. During the last phase of the TPA only one trade agreement, namely the USMCA was approved²⁸).

5.5.2 China

Foreign policy

China is envisaging a multipolar world order, where different global players are coexisting next to each other. China's core goals are military strength and technological supremacy as well as strategic independence. The biggest perceived threat for China is a unipolar US-led liberal democratic international order, as it regards US hegemony as predatory. It aims at challenging US hegemony in different ways. First, a clear focus is on being a great power within Southeast Asia. This is achieved by creating more economic interdependence via trade agreements such as the Regional and Comprehensive Economic Partnership (RCEP) and thus increasing the cost for its partners to weigh in against them. By demonstrating the ability and willingness to cooperate, China erects a counterweight to often hostile maritime disputes in the region. Second, Beijing sees development cooperation as an important tool to form a coalition with developing countries in search for leadership. Third, although Chinese officials have at times

²⁶) https://ustr.gov/sites/default/files/Summary_of_U.S.-UK_Negotiating_Objectives.pdf (accessed May 20, 2022).

²⁷) <https://commonslibrary.parliament.uk/research-briefings/cbp-9314/> (accessed June 5, 2022).

²⁸) <https://www.politico.com/newsletters/weekly-trade/2021/06/28/say-goodbye-to-trade-promotion-authority-796173> (accessed June 5, 2022).

been reserved against the backdrop of the Russian invasion of Ukraine, the Sino-Russian Relationship is important as both countries share the same aim when it comes to hegemony of the USA. Lastly, although an important trade partner, China is viewing the EU as a weak and non-unified geopolitical actor (Mardell, 2021).

China actively uses lending and development assistance as a strategic tool for gaining influence. External loans go mainly to developing countries, with contracts being not transparent and containing extensive confidentiality clauses. Furthermore, contracts often contain political conditionality (Gelpern et al., 2021). The Belt and Road Initiative (BRI) plays an important role in China's international lending activities. Large-scale investments in the Asia-Pacific region, but also in Africa and Europe aim at improving intercontinental connectivity and regional cooperation (Bandiera and Tsiropoulos, 2019). Generally, China's interests connected to BRI remain debateable, but certainly reflect the needs of a growing internal market for expanded access to markets and resources (Kamin et al., 2021).

In early June 2022, reports emerged stating that China is secretly installing a naval base in Cambodia²⁹). Although Cambodia dismissed these reports stating that the country bars foreign military bases³⁰), concerns in the West are that China might seek a military outpost in the Gulf of Thailand by investing in the project at the Ream Naval Base, where Chinese grant aid is used to renovate the port.

Furthermore, China is showing growing interest in Micronesia. Since 1990, it has invested 100 mn \$ in aid and has funded infrastructural projects throughout the Federal States of Micronesia (FSM) more recently. The primary reason is the expiration of the Compact of Free Association (COFA) – the compact of independence of FSM which at the same time outlines the relationship with the USA – in 2023. The COFA serves the USA to expand its sphere of influence into the Pacific by giving it the sole right to operate installations and serves the FSM by being protected by the USA and by profiting from the high amounts of US financial aid as well as remittances. As the prolongation talks of the COFA have stalled between the USA and the FSM, China sees its opportunity to position itself in this geographically and strategically important area³¹).

When it comes to the Taiwan issue, China has notably surpassed the US Navy when it comes to total number of ships. China's increasing economic and military strength underscore the sensitivity of the Taiwan issue, and it can be expected that China will seek to solve it by forced reunification in the long term. Thus, Taiwan will be the linchpin in the great power competition between China and the USA³²).

²⁹) <https://www.washingtonpost.com/national-security/2022/06/06/cambodia-china-navy-base-ream/> (accessed June 10, 2022).

³⁰) <https://www.bloomberg.com/news/articles/2022-06-07/cambodia-denies-report-china-secretly-building-naval-facility#xj4y7vzkg> (accessed June 10, 2022).

³¹) <https://hir.harvard.edu/micronesia-the-next-us-china-battleground-2/> (accessed May 20, 2022).

³²) <https://thediplomat.com/2022/06/bidens-taiwan-policy-is-the-most-dangerous-issue-in-china-us-relations/> (accessed June 11, 2022).

Trade agreements

Regional and Comprehensive Economic Partnership (RCEP)

In January 2022 the largest free trade area in the world, encompassing 15 countries accounting for 30% of the world's population and 30% of global GDP, entered into force. Overall, while the agreement represents an important milestone and acts as a counterweight to other mega-agreements such as the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), it is not as ambitious in terms of the scope and depth of its commitments (Kamin et al, 2021). Furthermore, modest trade, income, and welfare gains for most members of RCEP and even welfare losses for some members due to increased competition from other RCEP members (e.g., South Korea's loss of market share in China) are to be expected. Nevertheless, the deepening of regional value creation and production networks could lead to dynamic processes and regional technology development (Felbermayr et al., 2021).

Further developments

In September 2021, China officially applied to join the CPTPP. The CPTPP went into effect in 2018 and has been ratified by six of the 11 members. It includes elimination of tariffs, agreements on free movement of workers, market access and government procurement. Members are Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore and Vietnam. Should China join (it was not originally included in the group of negotiating countries), the total population of the group would increase to about 2 bn people³³).

Furthermore, China is pushing for a free trade agreement with Uruguay. In September 2021, China made a formal proposal for an agreement to Uruguay. With 30% of Uruguay's exports going to China, it is already Uruguay's main trading partner. Uruguay's objective is to become the "gateway" to Mercosur for China. However, the bilateral negotiations between the two countries have led to tensions among Mercosur members Argentina, Brazil and Paraguay, as agreements are brokered by the South American trading bloc and not by single countries³⁴).

5.5.3 United Kingdom

Brexit challenged the EU in an unprecedented way: besides the economic impact, the leaving of the United Kingdom had a geoeconomic effect by weakening the EU and the United Kingdom in both, economic and foreign policy terms. This impact will be examined in the following by describing the United Kingdom's foreign and security policy behaviour as well as its trade relations since Brexit. Financial aspects of the Brexit are discussed in Chapter 5.1.2.

Foreign policy

With Brexit, the United Kingdom has withdrawn not only from the Single Market but also from foreign and security policy. Based on the assumption made in the strategy document "Inte-

³³) <https://www.reuters.com/world/china/china-officially-applies-join-cptpp-trade-pact-2021-09-16/> (accessed May 5, 2022).

³⁴) <https://www.reuters.com/world/americas/uruguay-advances-free-trade-talks-with-china-aims-be-mercosur-gateway-2021-09-08/> (accessed May 5, 2022).

grated Review" (adopted in 2021) that the United Kingdom will secure a global leadership position by bypassing the EU, which is assumed to be weak in foreign and security policy terms, the main focus of the United Kingdom has been on building bilateral relations with EU Member States. However, these efforts have been not structured and very selective, with the exception of Northern Ireland. There have been some exchanges between the United Kingdom and the EU on the multilateral level, e.g. as the UK held the presidency of the G-7 in 2021. It became clear, however, that the UK does not view the EU but the USA as primary cooperation partner when it comes to foreign, security and defence policy. In this regard, the United Kingdom has been very active and communicating on topics such as sanctions against China in 2021 and Russia in 2022. It is noteworthy that the UK is acting as one of the central NATO states, by e.g. sending their own weapons to Ukraine. The United Kingdom thus wants to signal their commitment as well as the notion that it is a strong, reliable, and effective partner when it comes to foreign and security policy. The communication between London and Brussels also has been intensified over the course of the Russian war in Ukraine (Intel and von Ondarza, 2022).

The bilateralization strategy of the UK is not very different from its strategy when it was still an EU member. Thus, Brexit de facto did not achieve gains in sovereignty here. After Brexit, the United Kingdom has signed partnership declarations with Germany, Latvia, Denmark, and Belgium. Further declarations or statements of intent have been reached with Greece, Estonia, Iceland and San Marino, with the German-British declaration being the most detailed one. However, bilateral cooperation cannot replace regular and intense consultations processes that happened when the UK was still an EU member (Intel and von Ondarza, 2022).

For its part, the EU is not interested in the UK extending its bilateral relationships. This is mainly due to the conflicting goals of the UK being an important partner in security and foreign policy issues and the overall aim of European strategic sovereignty, which is undermined by bilateral relations (Intel and von Ondarza, 2022).

Trade agreements

With Brexit, the United Kingdom had to start negotiating bilateral trade agreements to ensure business and trade could be maintained. As the UK is no longer a member of the EU Customs Union or Single Market, it was particularly important to reach an agreement with the EU.

Signed trade agreements

The Trade and Cooperation Agreement with the EU came into effect on January 1, 2021. Under that agreement, trade remains tariff and quota free. However, Brexit increased EU-UK trade costs and resulted in a major disruption of trade between the EU and the United Kingdom (Freeman et al., 2022).

Additionally to the Trade and Cooperation Agreement with the EU, the UK has signed two new trade agreements with Australia (signed in December 2021) and with New Zealand (signed in February 2022). Both agreements are not yet in force. Together with the trade negotiations with

the USA, these three agreements are and have been the UK's top priority³⁵). Furthermore, it signed an agreement on digital trade with Singapore entered into force in June 2022.

Current and planned negotiations

As mentioned above, the USA are of particular importance to the UK. Negotiations with the USA are ongoing, but an agreement is not expected soon. Additionally, the UK has started negotiating trade agreements with several countries and/or existing trade agreements. The Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) is the only one where negotiations started before 2021 and where the United Kingdom hopes that they will be concluded by the end of 2022. In 2022, negotiations have started with India, Canada, the Gulf Co-operation Council (GCC), Mexico and Israel (in both cases an update of the existing agreements is being negotiated). Furthermore, the UK is preparing for a new trade agreement with Switzerland³⁶).

³⁵) <https://www.gov.uk/government/collections/the-uks-trade-agreements#trade-agreement-with-the-eu> (accessed August 5, 2022).

³⁶) <https://commonslibrary.parliament.uk/research-briefings/cbp-9314/> (accessed August 5, 2022).

6. Conclusions

Regulatory cooperation and regulatory convergence are key elements of the EU and the European Single Market. They also build a cornerstone of EU enlargement, association and partner agreements as well as for the new generation of free trade agreements. While formal agreements with a focus on integration and market access reveal the strongest impact for regulatory cooperation and alignment to EU standards and regulatory practices, the informal spread of EU regulations driven by market dynamics and international economic actors only occurs in specific areas (e.g. chemical industries, data protection) and is independent from EU's proactive trade policy. While the primary goal of EU's regulatory activity focuses solely on establishing and strengthening its Single Market, the external dimension in terms of technical convergence and the shaping of the global regulatory environment happened rather unintended as "incidental externality", as the Single Market imposes costs on third countries. However, the EU also exerts regulatory influence over foreign countries through legislative mechanisms, such as extraterritorial application of EU law. In recent years the EU also applies trade agreements as tool to promote its regulatory preferences together with the EU's principles and values. The strength of the Brussels Effect thus depends on the size of the market and its net value for foreign exporters, as the EU can demand cooperative behaviour from trading partners in exchange for access. Additionally, 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 neighbourhood such as the United Kingdom, Switzerland, or Turkey.

Despite various examples of EU's regulatory impact, the scope and depth of the Brussels Effects are not unambiguous and unquestioned in the economic literature. The main driver for regulatory cooperation is given by trade enhancing effects and cost reduction benefits. While positive trade and welfare effects of free trade agreements are well documented in the economic literature, there is little empirical evidence on the impact of regulatory cooperation on trade and investment flows. Contributing to this gap is the subject of the present study.

The empirical part of the study aimed at quantitatively assessing the trade and welfare effects of a potential Brussels Effect by means of structural gravity estimation and general equilibrium counterfactual scenario analysis. The structural gravity model separately studies the potential trade effects from three alternative measures aiming at capturing trade effects induced by the Brussels Effect, that goes beyond "traditional" trade effects stemming from direct trade policies such as EU membership, free trade agreements or the formation of and accession to the WTO. The empirical findings indicate that a non-EU country that signs a free trade agreement with the EU reduces the number of non-tariff measures it issues by 24% to 29%. At the same time and as expected, the overall number of non-tariff measures enforced by an importing country reduces its bilateral trade with all its partner countries. In quantitative terms, ten additional non-tariff measures imposed by the importing economy decrease exports to this destination by approximately 0.5%. EU's free trade agreement policy thus induces direct and indirect positive trade effects. The first one is materialized via the reduction of bilateral trade costs with the free trade agreement partner economies. The indirect Brussels Effect stems from the reduction of non-tariff barriers by countries that enforce a free trade agreement with the EU.

These findings are used for the counterfactual policy analysis carried out with the KITE model, a multi-country, multi-sector general equilibrium new quantitative trade model. The findings

from this exercise reveal the following: the effects of a lower number of non-tariff measures by countries that have signed a trade agreement on the EU on the global trade system are small. In terms of welfare, only a single country (Trinidad and Tobago) gained more than a tenth of a percent and welfare of EU countries was hardly affected. While the trade liberalization shifted production within the EU across sectors, the quantitative impact was also minor in the sectoral dimension. In a second scenario that counterfactually considers all countries to lower their non-tariff measures as if they signed an agreement with the EU has similarly small overall production and welfare effects, though some of the countries that currently are not part of an EU agreement could realize non-negligible welfare gains of up to 0.24%.

From a policy point of view, the quantitative analysis indicates that until now the trade and welfare effects induced by EU's regulatory regime (i.e., the Brussels Effect) are still rather limited in quantitative terms. Out of three empirical measures considered, only one, the number of non-tariff barriers, showed significant effects in the econometric analysis and even for this measure, the general equilibrium analysis unveiled rather small overall effects. Reasons for this could include regulatory competition between the three global economic powerhouses USA, China and the EU. Until recently, it seems that third countries do not uniformly prefer EU's regulatory regime over alternatives and, therefore, indirect trade and welfare gains from EU's standard setting seem to be limited.

In line with the quantitative assessment, the findings from the literature review on selected applications of the Brussels Effect reveal that the geoeconomics and geopolitical tensions and repercussions are likely to reduce the EU's global regulatory reach. The rise of regulatory initiatives in other parts of the world, especially in China and the USA but also other countries, as well as the deterioration of the multilateral order and pressing global issues, such as climate change, are challenging the strategic position of the EU and it has become crucial for the EU to sharpen its geoeconomic and geopolitical profile. Hence, EU's regulatory attractiveness in the future will depend on the solidity of the regulatory framework and EU's openness for a trade-regulation nexus together with third countries. To foster its geopolitical influence and its regulatory impact (as identified in its trade policy strategy) the EU needs to strengthen synergies between EU trade, regulatory and development cooperation policies to better integrate its different policy objectives. In this respect, EU's external regulatory policy will also demand sufficient enforcement, especially with respect to the implementation of new instruments in line with its "open strategic autonomy", and a review of appropriate tools, including active participation in international institutions, plurilateral agreements and equivalence agreements, to ensure EU's opportunities in different approaches of international regulatory cooperation. This also implies that the EU needs to identify key strategic priorities for regulatory cooperation. Given pressing global challenges these will include the digital and green transition, as well economic and geopolitical cooperation to reinforce the role of the WTO in terms of regulatory initiatives and "regulatory clubs" to enhance the joint participation in European standardizing bodies.

To achieve the climate targets set in the Paris Agreement is affecting many policy areas in the coming years, making skilful diplomatic negotiations and international cooperation a high priority. The EU should seize the opportunity of change to take a leading role in climate protection and set new standards in the international context in the areas of carbon trading, the structural development of new green technologies such as hydrogen, carbon product labelling and in the financial support of the Global South for the development of renewable energies. Further,

to lead the digital transition, the EU needs to take the chance to provide digital solutions and enhance its competitiveness for technical standard focusing particular on artificial intelligence or quantum technologies. In these areas, the EU faces strong global competition for technological leadership, particular from China and the USA. To strengthen EU values in global trade, the EU can use its regulatory power in combination with its development policy as tool to support responsible business conduct along global value chains.

The EU should in general watch the strategies of other global players, namely China and the USA, more closely, when it comes to extending spheres of influence. Although the USA have not returned fully to their hegemonial role under President Biden and appear more reluctant in trade matters, they acknowledge the geopolitical rivalry with China and other autocracies in their National Security Strategy. The main aim is to lead and promote the multilateral rules based international system including a "favourable distribution of power" to the detriment of adversaries. Furthermore, President Biden stresses the importance of the Transatlantic Relationship. China's ultimate foreign policy goal is the containment of US hegemony, and China tries to achieve that goal with a set of instruments, namely by extending its reach in Southeast Asia via more economic interdependence and by extending its development cooperation and thus creating a counterweight to the West. China actively uses lending and development assistance as a strategic tool for gaining influence. Furthermore, it encroaches upon traditional US spheres of influence in South America and the Pacific. In order to be a geoeconomic force and counterweight to be reckoned with, the EU needs to finalize existing partnerships, as e.g. the Mercosur Agreement and its partnership with Africa.

Thus, the future of the Brussels Effect, i.e. the "Brussels Effect 2.0" depends particularly on the EU's strategy to foster cooperation and partnerships outside of Europe. Therefore, the reinforcement and strengthening of partnerships beyond trade relations, e.g. as emphasized in the Global Gateway Initiative or the recent EU standardization strategy are important instruments for the EU to gain more influence in the geoeconomics sphere.

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