Miracle or Mirage: What role can trade policies play in tackling global trade imbalances?

Dorothee Flaig,

David Haugh,

Przemyslaw Kowalski,

Dorothée Rouzet,

Frank van Tongeren

OECD

Organisation de Coopération et de Développement Économiques
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MIRACLE OR MIRAGE: WHAT ROLE CAN TRADE POLICIES PLAY IN TACKLING GLOBAL TRADE IMBALANCES?

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By Dorothee Flaig, David Haugh, Przemyslaw Kowalski, Dorothée Rouzet and Frank van Tongeren

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ABSTRACT/RÉSUMÉ

Miracle or Mirage: What role can trade policies play in tackling global trade imbalances?

Global trade imbalances narrowed in the aftermath of the global financial crisis. They have remained at a lower level but are still of concern to policy makers because of the risks they pose to individual economies, as well as globally. However, the ultimate causes of these imbalances are not fully clear. Current account positions reflect the gap between national saving and investment, which are in turn affected by policy distortions, including in trade policy. Simulations of the OECD's METRO model show liberalisation of existing trade distortions would modestly narrow aggregate trade imbalances in the medium term for some countries. Reducing tariffs, non-tariff measures and the combined market access and productivity-enhancing effects of pro-competitive measures in services all have some rebalancing potential. Liberalisation would also offer economically significant income gains for all countries. By contrast, narrowing trade imbalances using trade restrictions would come at disproportionately high economic costs for all countries.

JEL classification: C68; F13; F17; F32.

Keywords: current account, balance of payments, global imbalances, trade imbalance, bilateral trade balance, trade policy, tariffs, non-tariff measures, services trade, exchange rate, savings, investment, foreign direct investment, productivity, trade liberalisation, trade restrictions, welfare, efficiency.

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Miracle ou Mirage : Quel rôle les politiques commerciales peuvent-elles jouer pour remédier aux déséquilibres commerciaux mondiaux ?

Les déséquilibres commerciaux mondiaux se sont réduits à la suite de la crise financière mondiale. Ils sont demeurés à un niveau plus modéré, mais restent une source de préoccupation pour les décideurs de politique économique en raison des risques qu'ils entraînent pour certaines économies, ainsi qu'au niveau mondial. Néanmoins, les causes profondes de ces déséquilibres ne sont pas entièrement établies. Les soldes des balances courantes reflètent l'écart entre l'épargne et l'investissement nationaux, qui sont eux-mêmes influencés par les distorsions induites par certaines politiques économiques, y compris les politiques commerciales. Les simulations conduites en utilisant le modèle METRO de l'OCDE montrent que la libéralisation des distorsions commerciales existantes réduirait légèrement les déséquilibres commerciaux au niveau agrégé à moyen terme pour certains pays. Une réduction des droits de douane et des mesures non tarifaires, ainsi que les effets combinés d'accès aux marchés et d'amélioration de la productivité résultant de mesures pro-compétitives dans les services, peuvent tous trois avoir un effet de rééquilibrage. Une telle libéralisation promettrait également des gains de revenu économiquement significatifs pour tous les pays. En revanche, une réduction des déséquilibres commerciaux au moyen de restrictions des échanges ne pourrait s'opérer qu'à un coût économique disproportionné pour tous les pays.

Classification JEL: C68; F13; F17; F32.

Mots-clés: balance courante, balance des paiements, déséquilibres mondiaux, déséquilibre commercial, solde commercial bilatéral, politique commerciale, droits de douane, mesures non tarifaires, commerce de services, taux de change, épargne, investissement, investissement direct à l'étranger, productivité, libéralisation commerciale, restrictions commerciales, productivité, bien-être économique, efficacité.

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MIRACLE OR MIRAGE: WHAT ROLE CAN TRADE POLICIES PLAY IN TACKLING GLOBAL TRADE IMBALANCES?

By Dorothee Flaig, David Haugh, Przemyslaw Kowalski, Dorothée Rouzet and Frank van Tongeren[1]

1. Introduction and summary

1.   The large and persistent current account surpluses and deficits concentrated among a relatively small group of countries, commonly referred to as "global imbalances", have long raised concerns about the vulnerabilities they may pose to the global economy. These concerns have resurfaced in recent years, when trade imbalances started growing again after narrowing in the aftermath of the economic crisis. Yet, it remains unclear to what extent bilateral and aggregate balances reflect the efficient allocation of resources across countries and time rather than policy and other distortions, which may result in a sub-optimal build-up of external positions and create a risk of unruly and costly adjustments.

2.   Aggregate current account positions are determined first and foremost by factors that drive the gap between national saving and investment. Due to their direct links with saving and investment, fiscal, monetary and structural policies are thus considered the primary policy levers to shape current account positions. Through this lens, trade itself is not the direct, or the primary, cause of current account and trade imbalances but rather a channel through which they materialise, including at the bilateral or industry level. That is, for a given saving-investment imbalance, the forces of comparative advantage as well as the relative price effects induced by trade and exchange rate policies will determine how a deficit or surplus is distributed across partners and products.

3.   Trade policy may play an indirect role to the extent it can affect savings and investment (Obstfeld and Rogoff, 1999). Saving and investment decisions made by consumers and producers are likely to depend on current and expected productivity, relative prices of factors of production and relative prices of imported and domestic intermediate and final products. To the extent that trade policy changes can influence these variables on a large enough scale, they can also influence the pattern of aggregate trade balances (Barratieri, 2014; Joy et al., 2018). As a result, distortive or welfare-reducing trade policies (e.g., tariffs and discriminatory regulations) could create frictions that alter saving and investment behaviour and hence contribute to excessive trade balances. Evidence that restrictive trade policy contributes to imbalances would give further grounds to liberalise trade policy settings and, beyond benefits for output and consumption, harness the potential of such liberalisation to also reduce "excessive" imbalances, those not warranted by economic fundamentals.

4.   The role of trade policy in global rebalancing thus deserves further investigation:

- To what extent could trade imbalances be due to trade policy distortions?

- Which trade policy reforms could hold the most potential both for reducing trade imbalances and improving aggregate efficiency, GDP and welfare?

5.   This paper reviews recent developments in current account and trade balances. It then explores a suite of simulations of trade policy changes using the OECD's computable general equilibrium model, METRO. The model reflects the latest insights from applied trade policy analysis and incorporates detailed information on the structure of world trade in order to capture economy-wide effects and interactions between economies. As many models of this kind, however, it also has limitations which need to be taken into account when interpreting the results. Overall, the simulation results indicate that:

- Ambitious but realistic liberalisation of existing trade distortions, including import tariffs and the main forms of non-tariff measures in the goods and services sectors, would narrow aggregate trade imbalances in the medium term, although not in all countries. Overall, the sum of absolute values of worldwide trade deficits and surpluses would decrease by a small margin – from 4.3 to 4.2% of global GDP – in the comprehensive liberalisation scenario but the effects of trade policy on trade imbalances would be stronger for some countries, depending among other factors on the their remaining trade barriers.

- Among trade policies, lowering remaining tariffs, and the combined market access and productivity effects of reducing barriers to services in a coordinated manner, tend to have the largest effect on trade imbalances in simulations.

- However, liberalisation of services trade through foreign direct investment (FDI) is not explicitly modelled. Due to its effects on both structural outcomes and capital flows, the liberalisation of FDI in services sectors in the most protected economies could further shift balances beyond the effects shown in simulations.

- With conservative assumptions about the nature[2] of non-tariff measures (NTMs) and the share considered to be reducible, the effects on trade balances of reducing the regulatory costs associated with NTMs are found to be smaller than that of lowering tariffs. However, the lack of explicit modelling of productivity effects puts those estimates at the lower bound of possible gains.

- Importantly, coordinated trade liberalisation across goods, NTMs and services measures would have sizeable positive effects on real GDP in all countries. Trade policy can therefore offer economically significant income gains for all countries.

- The modelling includes a stylised trade-restricting scenario. The results indicate that narrowing trade imbalances via trade restrictions would come at disproportionately high economic costs for all countries.

6.   The remainder of this paper is organised as follows. Section 2 presents the main trends in global current account and trade imbalances and their composition. Section 3 expands on the conceptual frameworks linking trade policies to global trade imbalances and Section 4 then analyses the potential effects of trade policy in a general equilibrium model of global economic interactions.

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2.   Only sanitary and phytosanitary measures (SPS) and technical barriers to rrade (TBT) are considered in this exercise.

2. Global trade imbalances: Trends and composition

The regional composition of imbalances has shifted towards advanced economies

7.   After widening in the pre-crisis period, global current account imbalances narrowed in the aftermath of the crisis and have remained at a lower level overall but expanded again in some economies (Figure 1). In the mid-2000s China was the main contributor on the surplus side to widening external balances; relative to global GDP, its surplus reached a peak at the onset of the global crisis, when it accounted for one quarter of global current account surpluses. In subsequent years, Germany outstripped China as the economy with the largest nominal surplus. At the same time, the United States' share of all current account deficits declined from over 70% in the early 2000s to less than one-third in 2013, but has recently started widening again to almost 40%.

Current account balances tend to move in tandem with trade in goods balances

8.   In most countries merchandise trade balances account for the largest share of current account balances. Changes in trade balances over time are closely associated with developments in goods trade balances, while services trade appears at first glance to play a secondary role (Figure 2, Panel A). This reflects the fact that goods account for the majority of global cross-border trade. Nevertheless, imbalances in services trade have gained relative importance over the past decade.

Figure 1. Composition of global current account balances by regions, 2000-2016
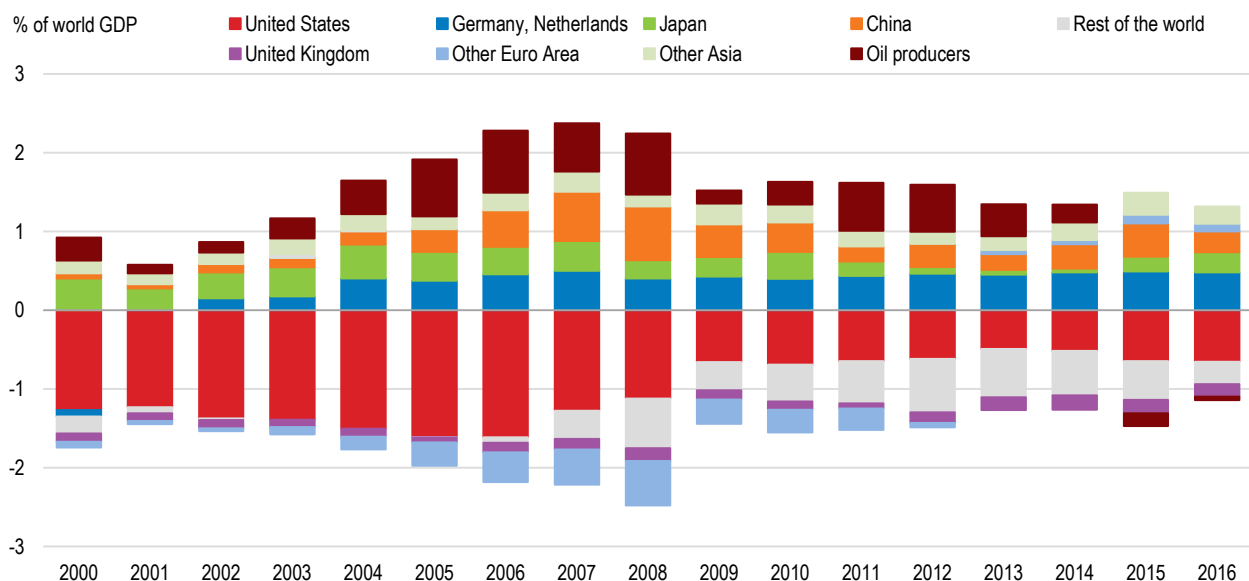
Note: Other Asia: Indonesia, Korea, Malaysia, Philippines, Singapore, Thailand, Vietnam and Hong Kong, China.
Oil producers: Algeria, Angola, Azerbaijan, Bahrain, Brazil, Brunei, Congo, Ecuador, Gabon, Iran, Iraq, Kazakhstan, Kuwait, Libya, Nigeria, Oman, Qatar, Russia, Saudi Arabia, Sudan, Timor-Leste, Trinidad and Tobago, Venezuela, Yemen.
Other Euro Area: All euro area countries except Germany and the Netherlands. See Annex figure A.1 for indicators of current account balance dispersion and persistence.

Source: OECD calculations based on IMF Balance of Payments Statistics.

Figure 2. Trade imbalances

A. Gross trade balances

B. Trade balances in value added
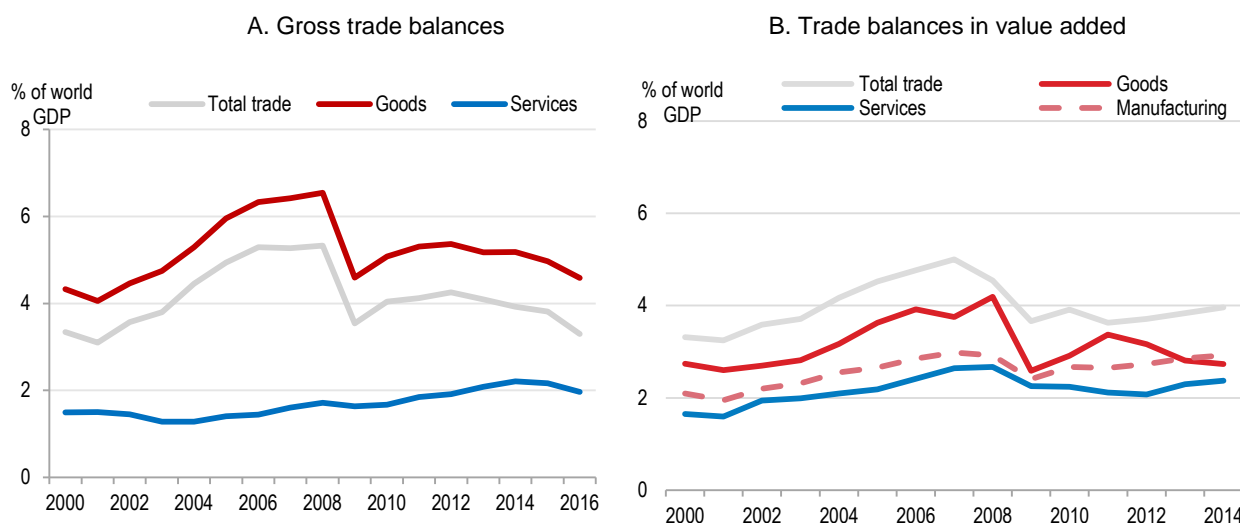
Note: Sum of absolute values as percentage of world GDP. Services include construction activities. Trade balance in value added refers to the difference between domestic value added embodied in foreign final demand and foreign value added embodied in domestic final demand as defined in the TiVA database, where the sector name denotes the sector in which the value added is originally generated.

Source: OECD calculations based on IMF Balance of Payments Statistics, OECD-WTO TiVA database and OECD TiVA nowcast estimates.

9.   For most non-commodity producers, trade deficits or surpluses are highly persistent over time. However, euro area economies have witnessed a relatively fast-shifting pattern of trade imbalances since the turn of the century. After building up large trade deficits in the run-up to the crisis, economies such as Italy, Spain and Ireland experienced a sharp turnaround from being among the top 10 deficit economies in 2007 into the top 15 surplus economies in 2015, largely driven by domestic demand and import compression rather than increases in exports (Annex Table A.1). Regional shifts are even more striking relative to each economy's size, with Germany's trade surplus as high as 8% of its GDP in 2016, compared to China's narrowing trade balance of 2.2% of GDP (Figure 3). The largest increase in a trade surplus as a percentage of GDP over the past decade was recorded by Korea.

Figure 3. Evolution of trade balances in main surplus and deficit economies
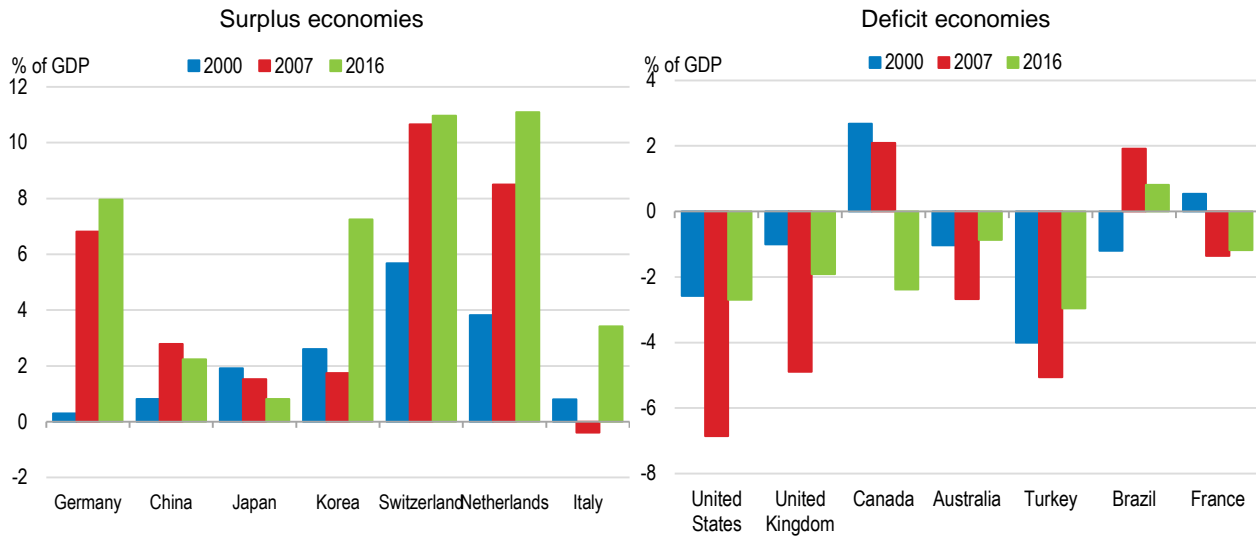
Note: Countries are sorted by the size of their absolute surplus or deficit in 2016. Trade balances comprise goods and services.

Source: OECD calculations based on IMF Balance of Payments Statistics and World Bank, World Development Indicators.

10.   Furthermore, countries with trade surpluses tend to have surpluses in goods trade and deficits in services trade, while countries with trade deficits tend to have goods deficits and services surpluses, especially among advanced economies (Figure 4). These patterns have become more pronounced over time, particularly in the pre-crisis period (Figure 5).[3] Specialisation in services is a result of structural drivers of comparative advantage, as countries tend to specialise more in tradable services when they have an abundant supply of high-skilled labour, a well-functioning digital infrastructure and a large middle-class consumer market; this is more often the case of high-income economies, but also some emerging markets such as India.

11.   At the same time, services trade remains overall at a less advanced stage of liberalisation than manufacturing trade (Miroudot et al., 2013; Rouzet and Spinelli, 2016; Benz, 2017). This raises the question of whether countries specialised in services would earn greater income and save more if they were able to fully exploit their comparative advantage in the global marketplace. The role of services in driving trade balances is however also influenced by the contribution of services inputs such as transport, finance or business services to goods exports. As manufacturing dominates the flows and balances of products crossing borders, the contribution of services to trade is to a large extent channelled through the exports of goods to which services are inputs. This suggests that the impact of policy changes in services on trade balances could also materialise through these indirect channels.

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3.   Kowalski and Lesher (2011) and Barattieri (2014) found that deficit countries tend to have a revealed comparative advantage (RCA) in services sectors, and surplus countries a RCA in goods sectors.

Figure 4. Composition of trade balances in main surplus and deficit economies, 2016

Surplus economies
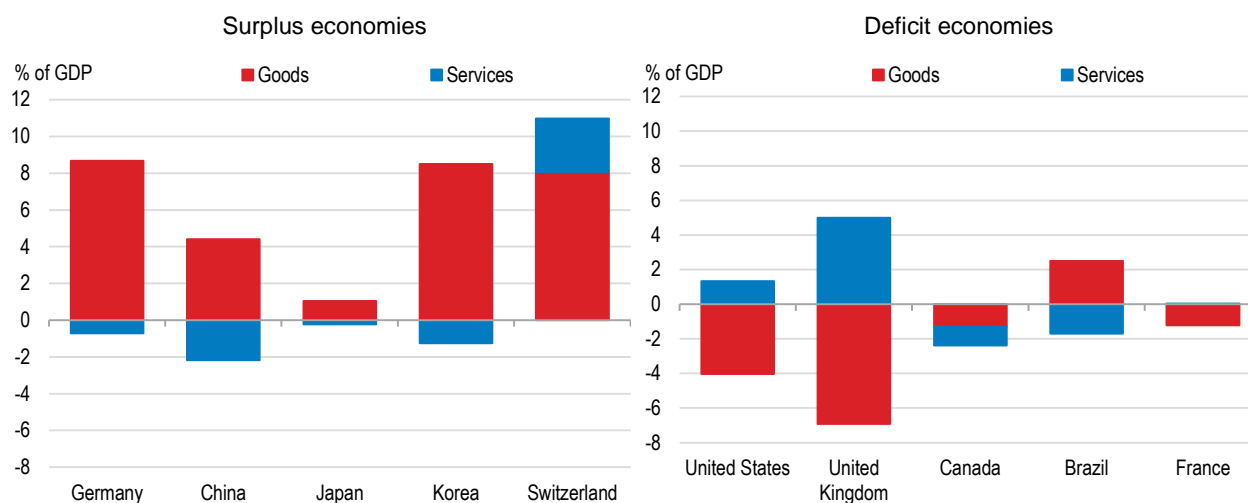
Deficit economies

Source: OECD calculations based on IMF Balance of Payments Statistics.

Figure 5. Changes in trade balance composition in main surplus and deficit economies, 2000-2016

Surplus economies

Deficit economies
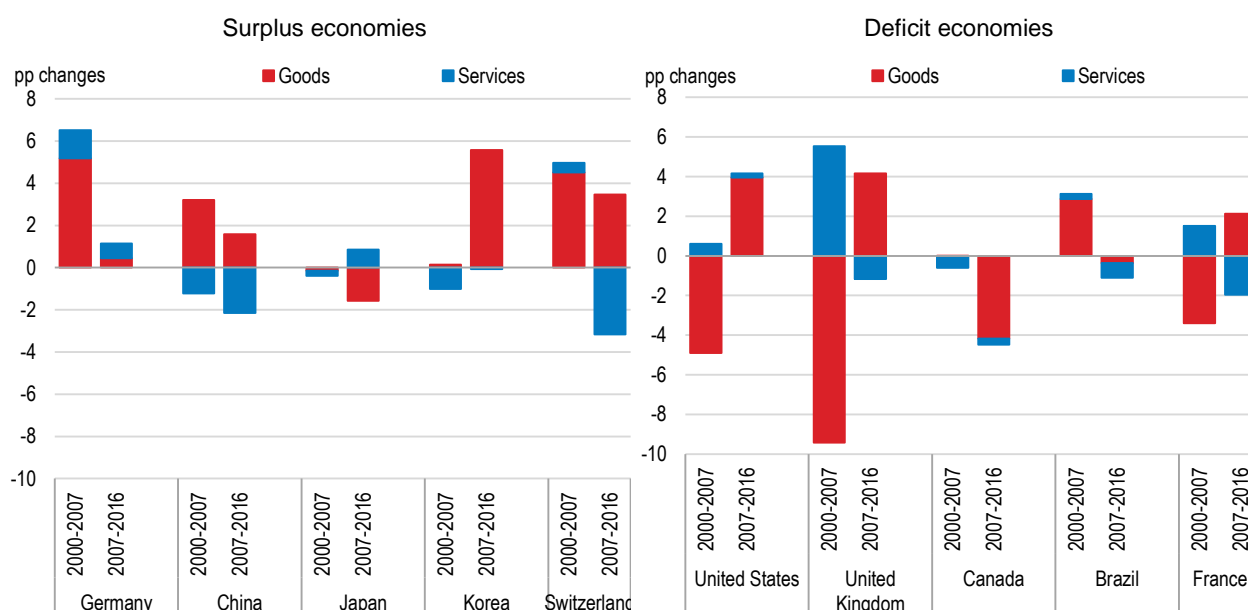
Source: OECD calculations based on IMF Balance of Payments Statistics.

Services activities underpin an important share of trade in goods

12.   The role of services in trade flows and trade balances is more visible when the contribution of services inputs to other products is taken into account, through the lens of trade in value added (TiVA) data (Box 1). In a world characterised by global value chains, tracing the value added by inputs at every stage of the production process reveals the sectors and countries whose labour and capital contribute to final products consumed in a given country. A larger share of manufacturing value added tends to stem from inputs – domestic and imported – supplied by services and commodity producers than is the case for manufacturing inputs into services, resulting in a larger contribution of services to trade flows in value-

added terms than in gross terms. In fact, services trade balances in value added terms add up to almost as large a share of world GDP as manufacturing balances (Figure 2, Panel B). In value added terms, the global sum of services balances is highly correlated over time with the sum of aggregate trade balances (0.82), and more so than manufacturing (0.75) and mining (0.54). This pattern indicates that services activities, including those underpinning global trade, are likely to have a larger influence on trade balances than may be evident from the analysis of gross trade flows.

Box 1. Distinguishing between gross and value added balances

A key feature of the global economy is that production takes place along supply chains with different activities contributing to the value of final goods and different stages of the production process undertaken increasingly in different countries. This implies that the value of bilateral trade in a particular product expressed in gross terms only partially reflects where the underlying value added has been created, which sectors contributed to this value added, and where it will be eventually consumed.

Gross international trade data measures the value of goods and services crossing borders. The value of gross exports reflects both domestic value added (the value added by the exporting industry itself and locally sourced inputs) and foreign value added (e.g. the value of components purchased abroad and processed for further exports domestically). Similarly, the value of gross imports reflects both foreign value added (value added in the exporting country itself as well inputs from third countries) and domestic value added (e.g. the value of domestic components that are assembled abroad and imported for domestic consumption). In trade in value added (TiVA) data, trade flows are allocated to source industries and to partner countries to link the origin of value added (payments to labour and capital) to the point of final consumption (OECD, 2013). Thus trade in value added measures the interdependence between production activities in a country and consumption in others, regardless of whether value added transits through a number of processing stages and third countries before reaching final demand.

Measurement in value added terms eliminates the double-counting of intermediates in gross trade flows when production is geographically fragmented in international supply chains. The best illustration is that China's bilateral value added balance with the United States is smaller by a third than the headline gross measure. To a significant extent, the value of China's exports to the United States contains value added originating in other Asian countries as well as 4% from the US itself.

Both gross and value added trade data have their advantages and disadvantages; they offer complementary insights into the analysis of trade developments. Distinction between the gross and value added trade is particularly important in the context of political discussions. For example, policies that apply at the border and have their incidence on the value of products crossing the borders (e.g. tariffs, customs fees, etc.) may have more direct effects on gross trade. Value added-based trade statistics on the other hand account for the origin and destination of the traded value added – where income is generated and where it is spent. They may therefore help better measure the impact of international trade on jobs, domestic consumption or wages. Usually, useful insights can be obtained from combining the analysis of gross and value added trade data.

In the case of trade balances, combining the analysis of the two types of data yields insights into the relation between trade and the creation of value added and incomes. At the country level, by definition the sum of gross trade balances equals the sum of value-added balances, but the two types of balances can present very different pictures when considered on a bilateral or industry basis. A way of defining industry-level value added balances is as the difference between the domestic value added embodied in foreign final demand for a certain product (an equivalent of exports in value added terms) and the foreign value added embodied in domestic final demand for the same product category (an equivalent of imports in value added terms). For instance, domestic services that serve as inputs into the production of manufacturing exports are considered as exports of services in value-added terms, but do not appear in gross trade statistics as they are directly sold by domestic services suppliers to domestic manufacturers. Conversely, export-oriented industries that are reliant on imported raw materials and components tend to display smaller balances in value-added terms.

13.   Comparing the composition of gross and value added balances, most deficit economies see their manufacturing deficits considerably reduced in value added terms compared to gross terms. For instance, the United States' gross trade deficit in manufacturing shrinks by 60% in value added terms, and is smaller as a share of GDP than the manufacturing deficits of Australia, Brazil, Canada, France and the United Kingdom (Figure 6).[4,5] France's services surplus more than triples when the origin of value added is considered, indicating the high services content in French manufacturing exports.

Figure 6. Sectoral composition of trade in value added balances, 2014
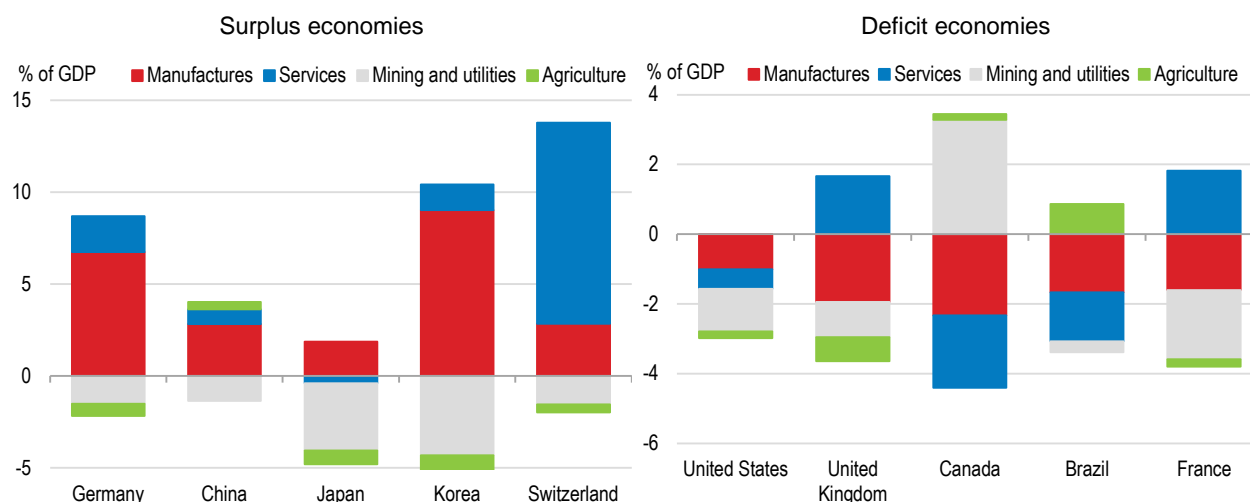
Note: Services includes construction activities. Utilities include electricity, gas and water supply. The sector name denotes the sector in which the value added is originally generated. The shares are calculated on the basis of value added content of gross exports.

Source: OECD calculations based on OECD TiVA nowcast estimates.

14.   In the same fashion, the goods surpluses of the largest manufacturing hubs shrink in value added terms, as the value of their manufacturing exports incorporates imported manufacturing inputs as well as indirect exports of embodied services. China's trade surplus in manufacturing nearly halves in value added terms (Figure 6), being offset by increases in the balance of services and agriculture. Korea follows the same pattern. This reflects the reliance of China and Korea's manufacturing exports on imported parts and components as well as locally provided services. By contrast, Germany's manufacturing surplus remains high in value added terms despite its manufacturing being strongly reliant on domestic services inputs.

15.   In sum, while manufacturing dominates the flows and balances of products crossing borders, the contribution of services to trade is to a large extent indirect. This may partly be an outcome of the still limited direct tradability of some services, but also of the structure of existing trade barriers where cross-border services transactions remain more restricted than in goods, which could hinder the international trade performance of countries with a comparative advantage in services.

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4.   See also Annex Figures A.2 and A.3. Because of different methods of calculation, the estimates of gross trade balances according to the Balance of Payment Statistics (used above) may differ from those relying on the customs data underlying TiVA estimates of trade in goods.

5.   A country's aggregate trade balance is identical in gross and value-added terms, but is reallocated across sectors – and across partner countries as discussed further below – based on the origin of value-added (upstream in value chains) and the place of final consumption (downstream in value chains).

Who trades with whom, and who produces for whom – a value-added view of bilateral balances

16.   Bilateral trade positions can be informative of the relative competitiveness of the trading economies, including comparative advantage, relative productivity developments, as well as some protectionist and other policies that may be argued to be unfair trade practices. Analogously to aggregate balances, many bilateral trade balances likely reflect a mutually-beneficial and efficiency-increasing international division of production across space and time. But, unlike their aggregate counterparts, bilateral balances can also reflect differences in countries' specialisation and preferences as well as policies that influence them; most countries with large imbalances run both deficits and surpluses across their trading partners. Many individual bilateral balances are interlinked via global value chains, with deficits in some industries and towards some partners underpinning surpluses with others.

17.   As an illustration of the complex nature of bilateral balances, some of the major shifts over time in the composition of balances reflect the growth of China's "triangular trade": China's surplus with the United States built up at the same time as its deficits with Korea and Germany. Given that third-country production accounts for a significant share of the value of Chinese exports, China's surpluses with the United States and other advanced economies drop considerably when expressed in value-added terms (Figure 7). "Triangular trade" means that third country production and demand matter for the determination of bilateral imbalances. A substantive part of China's deficit with its neighbours may well be driven by US final demand. Production costs in Korea are likely to be passed on to US consumers – potentially impacting the US-China deficit – more than the direct trading relationship between the United States and Korea suggests.

Figure 7. Bilateral composition of China and US trade balances
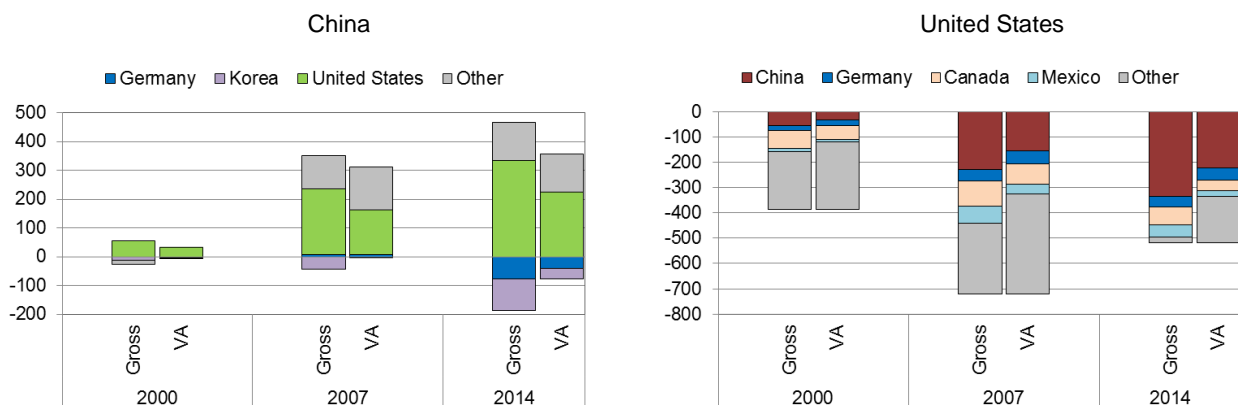
Source: TiVA database and TiVA nowcast estimates.

3. How are trade imbalances linked to trade policies?

18.   Trade balances and net domestic saving are jointly determined. This is shown by a well-known identity derived from the national income accounting, where the difference between a country's exports and imports (i.e. trade balance) plus net income and transfers equals the difference between domestic saving and domestic investment (including the private and government sector) and mirrors the difference between financial account balance and changes in reserve assets:[6]

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6.   The equation is derived from the income accounting $Y=C+I+G+X-M$ where $C=Y-S-T$ and Y is the country's national disposable income (GDP plus net income and unilateral transfers received from abroad), C is private consumption, S is the amount of disposable income that is saved, I is private investment, T are

(1) $\qquad CA = (X - M) + \text{net income} + \text{transfers} = (S - I) + (T - G) = (FAB - CRA)$

19. A straightforward interpretation of this identity is that, for any country, investment must be financed either by its domestically generated savings or by funds made available from the rest of the world. Another interpretation is that importing more than a country exports must mean that economic agents abroad are willing to channel their savings to lend to domestic economic agents and to finance the country's trade deficit. Finally, capital flows can also drive the trade balance adjustments, for example through their impact on domestic demand or the real exchange rate. In practice, in many countries current account balances are predominantly composed of trade balances. This discussion thus focuses on trade balances.

20. The identity illuminates the joint determination of net saving, trade balances and international financial flows, but does not explain the mechanisms underlying why countries may be investing more than they save (or importing more than they export), or whether the causality runs from the saving-investment balance to trade balance or the other way around. The trade balance is determined first and foremost by factors that drive the gap between national saving and investment (e.g., Bracke et al., 2010; PIIE, 2017). Because of their obvious linkages with saving and investment, fiscal, monetary and structural policies are thus considered the primary policy levers to rebalance trade accounts by addressing, for instance, weak internal demand or insufficient incentives to save. However, trade policy can also play a role in saving and investment decisions because it affects relative prices of imported and domestic intermediate and final products across countries as well as relative prices of factors of production. This in turn will lead to changes in productivity, incomes and production methods. To the extent that trade policies can influence these variables, they can also influence the pattern of aggregate trade balances and net savings (Box 2; Barratieri, 2014)..

Box 2. Selected examples of channels through which trade policies can affect trade imbalances

Shifts in relative prices and distortions created by trade and other policies can lead to a different pattern of trade across products and countries, compared with what would happen in the absence of the trade restrictions. This in turn affects aggregate productivity, aggregate incomes and industrial restructuring and feeds back into the absolute size of imbalances.

The empirical literature suggests that, at least in the short and medium run, trade imbalances are driven by the joint effects of a variety of cyclical and structural factors such as near-term cyclical variations in output and demand, oil and commodity prices, demographics, FDI attractiveness or financial depth. In this context, a range of policy settings, including trade, have been found to influence medium-run imbalances, either as they target trade balances directly or as they affect public and private saving and investment (Koske, 2011; Guillemette and Turner, 2013; Kerdrain et al., 2010; Kowalski and Lesher, 2011, Barratieri, 2014; Joy et al., 2018).

Among potential channels from trade policies to aggregate imbalances are:

- Trade-restricting policies generally lower real incomes, which can reduce saving. The effect will depend on whether the trade policy change is expected to be short-lived or permanent and on the willingness of households to substitute consumption across time. If trade restrictions are expected to be temporary, households should reduce saving more in order to smooth consumption if the intertemporal elasticity of substitution is sufficiently low, but should reduce saving less to delay consumption until the elimination of protectionist policies lowers prices if the intertemporal elasticity of substitution is sufficiently high.

- Trade policy changes can influence the relative profitability of investments in different countries and sectors and thus aggregate investment depending on the pattern of international specialisation. The interaction of

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taxes, G represents government expenditure, X is exports, M represents imports, and X-M signifies the trade balance. CA, FAB and CRA signify respectively the current account balance, the financial account balance and changes in reserve assets.

trade policies and factor-based comparative advantage affects capital flows between industrialised and emerging economies (Ju et al., 2012; Jin, 2012). In capital-abundant (advanced) countries, trade liberalisation should raise the return to capital and lead to a reallocation of resources towards capital-intensive sectors, triggering capital inflows that mirror a trade deficit. In capital-scarce (developing) countries, however, the same mechanism leads to capital outflows in response to trade integration, and a trade surplus.

- The sequencing of trade liberalisation between sectors affects the intertemporal choices of countries with different comparative advantage (Barattieri, 2014). Faster liberalisation of goods than services can lead to deficits in countries specialised in services, where households with forward-looking behaviour would anticipate a path of rising real incomes. Countries specialised in manufacturing display surpluses as households delay consumption in anticipation of future declines in the price of imported services.

- Similarly, Joy et al. (2018) shows that an asymmetric trade policy shock which lowers the costs of services trade triggers an increase in capital production and consumption in all countries but, at the time of liberalisation, services exporters have faster rising incomes and save more, inducing capital flows from services exporters to goods exporters.

- Moreover, as investment is typically highly intensive in imports, policies that raise the price of foreign capital goods are likely to depress investment even more than household or government consumption. This effect can outweigh that of lower saving to improve the trade balance, but at the cost of aggravated inefficiencies from restricting trade in investment goods. More generally the effect of trade policies on investment and savings will depend on the types of goods affected: a tariff on consumer durables will have a different effect compared to a tariff on non-durables. If consumers defer durables spending, the savings rate may rise.

The trade balance effects of trade policy changes will also depend on the structure of initial trade barriers and the specifics of trade reforms. For example, an even across-the-board lowering of initially uniform trade barriers (e.g. MFN tariffs) offers less scope to substitute imports from alternative suppliers, and the main effects may be overall import-increasing. A preferential liberalisation scenario may offer more scope for re-orienting imports across suppliers (including trade diversion) with possibly a smaller impact on aggregate imports.

In short, trade policy can plausibly affect both the size and the distribution across countries of trade surpluses and deficits. The international fragmentation of supply chains renders its effects yet more complex to trace. In particular, changes in industrial structure and relative incomes in response to trade policies involve sectors that may only trade indirectly as suppliers of intermediate inputs. Trade balances may also be influenced by trade restrictions in third countries further up or down the value chain.

Finally, trade surpluses and deficits can either be the direct outcome of a mutually beneficial international division of labour and reflect the efficient allocation of resources responding to market signals, or result from policy-induced distortions. From the trade theory point of view, excessive trade balances can then be defined as those arising from distortive or welfare-reducing trade policies (e.g. tariffs or discriminatory regulations), and are therefore more likely to be narrowed by the removal of such distortions than those due to fundamentals.[7]

4. The role of trade policies in tackling trade imbalances: insights from the OECD METRO computable general equilibrium model

21.   The descriptive statistics and the theoretical background presented above raise two important issues: (1) what could be the contribution of trade policy to the currently observed imbalances, and to what extent could they be due to certain types of trade policy distortions; and (2) which trade policy reforms may hold the most potential for both narrowing trade balances and improving aggregate efficiency, GDP

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7.   Deardorff (2011) for example shows that certain patterns of policy intervention, which contradict comparative advantage, may result in welfare-reducing trade. This extends also to trade across space and time where, depending on the policy environment, the observed pattern of trade balances can reflect either mutually beneficial or welfare-reducing trade between countries that differ with respect to their ability to produce now or in the future (Deardorff, 2010). This suggests that the mechanisms underlying the observed pattern of balances are important.

and welfare? The remainder of this paper explores a suite of simulations of trade policy changes using the OECD's computable general equilibrium model, METRO, in order to shed some qualitative and quantitative light on these questions.

The METRO Model

22.   METRO is a static computable general equilibrium (CGE) model described in detail in OECD (2015) and Annex 2. CGE models rely on a complete specification of all economic activity within and between countries based on macro- and microeconomic theory. Global CGE models capture economic linkages of domestic and foreign sectors and agents across the entire economy.[8] This makes them useful for examining economy-wide effects of trade and other structural policy reforms. The novelty and strength of the METRO model lies in the detailed trade structure, related policy instrument representation, and the differentiation of products by use – products and thus trade flows are distinguished by use category, i.e. whether these are designed for intermediate use, used by households, for government consumption or as investment inputs. This draws on the OECD-WTO Trade in Value Added (TiVA) database, providing a platform to more fully integrate structural policy issues in the analysis of trade policy (see Box 1). METRO also features an extensive library of trade-related policy instruments, including current border tariff rates and export restrictions, as well as domestic taxes and support.

23.   For the purposes of the current study, the METRO database has been aggregated so as to represent separately each of the G20 economies and a rest of the world. This aggregation gives a balance of large economies with sizeable trade surpluses and deficits. However, not all countries considered can be seen as having persistent imbalances; the IMF estimates that 14 of the G20 economies have current account gaps at or exceeding 1% of GDP (IMF, 2017). EU trade policy changes are implemented by all member states and the results are reported both for the EU aggregate and large individual EU members. Economic sectors have been aggregated to 20 main sectors so as to capture key trade specialisation and trade policy barriers in the main primary, manufacturing and services sectors (see Annex Table A.2).

24.   Similarly to other CGE models developed for the purposes of modelling the effects of trade and other structural policies, METRO features a representation of microeconomic relationships linking global factor, product and consumer markets through a system of supply and demand relationships derived from the underlying utility, production and trade functions. The macroeconomic side incorporates standard national income accounting relationships and a number of METRO's features allow modelling different aspects of private and government sector consumption, saving and investment behaviour. Nevertheless, certain traits of the model, such as the absence of money markets, its static nature and the representation of multinational enterprises and FDI, limit the analysis of impacts of some policies on trade balances. Key features of the model that need to be kept in mind when interpreting the results in this context include:

- METRO is comparative static, meaning that the model moves instantaneously from an initial equilibrium to a new post-shock equilibrium. It cannot inform about a time path for transition and it does not model intertemporal decision-making. Its time horizon can be considered to be medium-term, with production factors mobile across sectors, but not expanding endogenously; a shock to the model can be thought of shifting the economy from one medium-term equilibrium to another.

- GDP is mostly determined by factor supply, which does not change endogenously. This has the implication that, in the standard configuration, shocks to the model manifest themselves more through changes in the composition of GDP expenditure and production rather than changes in its

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8.   The underlying approach of METRO is the construction of a series of single-country CGE models that are linked through detailed trade relationships.

level. For example, a productivity shock in services can result in a shift in production away from manufacturing and towards the services sector.

- The model contains a nominal exchange rate defined in the standard way as a rate of conversion between two currency units, converting, for example, export prices in foreign currency into domestic currency units. However, there is no financial market in the model, so the exchange rate is not influenced by interest rate differentials and the resulting capital flows. In order to balance the foreign account, either the exchange rate or the trade balance can be selected to adjust. For the purpose of this study, the trade balance is free to adjust to changing trade flows and the nominal exchange rate is fixed. In this type of model, simulations with a fixed nominal exchange rate illustrate adjustments through inflation or deflation (Lemelin, 2017). As each region has its own price level, the movements of the real exchange rate ultimately reflect adjustments of domestic factor prices.

- The fixed exchange rate closure allows investigating how trade policy shocks can shape trade balance positions under the fixed nominal exchange rate scenario. An alternative, flexible nominal exchange rate closure could in principle be used to investigate what magnitude of nominal exchange rate adjustments would be needed to keep trade balances unchanged given the assumed trade policy shocks. In reality, at least some of the adjustment would occur through the nominal exchange rate. In this respect, our modelling approach therefore gives an upper bound estimate of the potential impacts of trade policy changes on trade balances. With flexible nominal exchange rates the effect of trade policy on imbalances may indeed be more moderate than shown in this paper, although generalised predictions are difficult to make (Rose and Ostry, 1989). The more moderate effects are due to the at least partially offsetting changes in nominal exchange rates that the trade policy could bring about. The exact reaction would depend on monetary policy rules at home and abroad, as well as the exchange rate reaction to interest rate changes (Dornbusch, 1987, Lindé and Pescatori, 2017).[9]

- Total saving consists of saving from private households and government and the external balance on the trade account (foreign saving). Private domestic saving is assumed to be a fixed proportion of disposable income and investment is free to adjust.[10]

- The pro-competitive effects of market entry and exit of firms are not captured in the model. In addition, it explicitly captures cross-border trade in services and goods, but not goods or services delivered through foreign commercial presence, i.e. FDI.[11] As a result, particularly the pro-competitive effects of services sector regulation and NTM-related policy changes are not captured directly. Some of these shortcomings are however alleviated through a reduced-form design of policy shocks as described below.

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9. For example, even if not fully passed through to domestic prices (Feenstra, 1989, Bendictow and Boug, 2013), a rise in tariffs would increase inflation directly. The rise in relative price of imports would also increase demand for domestic goods, creating medium-term inflationary pressures. This may induce the domestic central bank to increase interest rates, leading to an appreciation of the exchange rate. This in turn would help to offset the increase in relative import prices due to the tariff increase, and therefore the expenditure switching and trade balance effects.

10. This follows insights from the empirical literature finding that investment tends to adjust more than private consumption and savings, which are normally highly sticky (Olivei, 2000).

11. Technically, production by foreign affiliates is treated as domestic.

Policy scenarios

25.   An ambitious trade liberalisation is expected to shape trade flows significantly by opening domestic markets to imports and at the same time improving access to export markets. The overall impact on the trade balance of a country is however not straightforward and depends on several factors such as: the initial trade policies a country has in place; the restrictions it faces in foreign markets; trade specialisation patterns; whether the country's trade flows are large enough to affect prices notably; and the modalities of the implemented liberalisation, including liberalisation by trading partners. In addition, international supply chain links, where cheaper imports of intermediate inputs make exports more productive, may make the impacts on trade balances less immediately intuitive; for example, lowering of import barriers can have a positive impact on exports and the trade balance.

Table 1.   Trade policy change scenarios

Scenario	Change
Tariff reduction	A 50% reduction of all remaining applied tariffs
Removal of NTMs	Elimination of all "removable" NTMs (15% considered as removable)
Services liberalisation	A 50% cut in the gap between the estimated tax equivalent of services trade restrictions for a specific country and the best performing country in the sector
Trade liberalisation	Combination of all three scenarios above
Trade restricting	A 10 percentage point increase in all tariffs

Note: The trade policy changes are applied jointly and simultaneously by all G20 economies.

26.   The trade liberalisation package simulated in this paper consists of a 50% reduction of all applied import tariffs, elimination of 15% of the trade costs related to non-tariff measures (NTMs), and in services a 50% cut in the gap between the estimated tax equivalent of services trade restrictions for the country and the best performing country in the sector (Table 1). Trade policy changes are assumed to be implemented in a coordinated manner by all G20 regions, including all EU member states.

27.   Concerning the tariff reduction scenario, the initial tariffs are sourced from the standard databases which rely on the WTO and UN tariff reporting and are adjusted in order to fill the gaps and fit the model's country and product aggregation.[12] The tariff rates are import duties actually applied by the countries in the base year and take into account preferential trade agreements and other preferential schemes in force as of 2011 (Figure 8).[13]

28.   Non-tariff measures (NTMs) are incorporated through estimates of ad valorem equivalents (AVEs) of trade costs associated with sanitary and phytosanitary (SPS) measures and technical barriers to trade (TBTs) (OECD, 2018 forthcoming; Box 3). The assumption that only a relatively small part of the measured trade costs related to NTMs (15%) is removable is based on the notion of 'actionability' of measures, which is assessed against a benchmark of intra-EU trade costs.[14] For the moment, the most

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12.   Tariff data are sourced from the GTAP database which in turn is based on the MAcMap database of the International Trade Centre (ITC) for 2011 based on methodology developed by CEPII and ITC (Guimbard et al., 2012)

13.   The data does not reflect the implementation of free trade agreements (FTAs) agreed since 2011.

14.   The 15% represents about half the reduction that could be achieved by moving to the level of NTM-related trade costs that remains for intra-EU trade after some six decades of integration efforts. The cut implemented in this report therefore incorporates the notion of 'actionability' assessed against an historical

reliable estimates of NTM ad valorem equivalents are available at the sector level (Figure 9). Thus country-specific effects of this scenario are driven by the underlying trade structures; everything else equal, countries with more imports in sectors characterised by higher NTMs will be expected to see higher increases of imports when NTMs are reduced. An important caveat associated with this approach to modelling NTMs in a CGE model is that regulatory reforms that reduce trade costs related to NTMs would also be expected to result in market entry and productivity gains in the domestic economy and abroad. How to correctly model NTMs is a subject of the above-mentioned ongoing OECD study; currently available estimates do not allow distinguishing the productivity-enhancing effects. Hence in this paper, NTM reforms are modelled purely as trade cost reducing scenarios.

29.   CGE modelling of quantitative impacts of services trade and services trade policy reforms is also a subject of ongoing OECD work. Among other goals, current work aims to shed light on the most adequate ways of using the information contained in the OECD Services Trade Restrictiveness Index (STRI) data (Figure 10) so as to model the gains from services trade reform in terms of lowering costs of both cross-border trade and foreign commercial presence. This is a particularly important challenge for services sectors given that sales of foreign affiliates typically account for the largest share of international trade in services.[15] Furthermore, apart from market access effects, services liberalisation is also likely to boost the productivity of export sectors, through a higher quality of services inputs and increased competition among domestic services suppliers (see Miroudot and Cadestin, 2017). Without prejudice to the results of the ongoing work, this paper proposes a first pass at modelling services trade liberalisation using the readily available evidence on tax equivalents of trade costs associated with the OECD STRI (Rouzet and Spinelli, 2016). Services trade liberalisation is modelled as having two complementary sides: an opening of the domestic market to services imported from abroad, and a productivity shock to the domestic services industry that could result from the opening. In particular, the 50% cut in the gap between the estimated STRI tax equivalent of services trade restrictions for the country and the best performing country in the sector is split equally into a percentage decrease in trade costs and an increase in total factor productivity.[16]

Box 3. Quantifying non-tariff measures

The term "non-tariff measures" (NTMs) covers a diverse set of measures in terms of purpose, legal form and economic effect. NTMs comprise all policy measures other than tariffs and tariff-rate quotas that have a more or less direct incidence on international trade as they affect the price of traded products, the quantity traded, or both. Most importantly, domestic regulations may prescribe specific requirements for products to be sold on a given market. Generally, such measures aim to overcome or reduce the impacts of perceived market imperfections, such as those related to negative externalities, risks for human, animal or plant health, or information asymmetries. However, they also tend to increase production and trade costs and may affect, positively or negatively, the development of new technologies or production methods.

The diversity of NTMs makes their quantitative analysis difficult, and they have been the subject of substantial academic and policy attention. NTMs can become non-tariff barriers if they are explicitly introduced as a masked way

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benchmark. The benchmarking approach is detailed in OECD (2011), but the current paper uses more recent ad valorem estimates of NTMs.

15.   For instance, services exports through the sales of US majority-owned foreign affiliates are twice as large as services delivered on a cross-border basis by US exporters; and EU28 services sales to extra-EU countries through foreign affiliates are 2.8 times larger than the corresponding cross-border services trade flows recorded in the balance of payments.

16.   The split – necessarily stylised – is motivated by the fact that domestic regulatory measures (barriers to competition and administrative red tape), account for about half of the STRI ad valorem equivalents on average across sectors and countries. Such restrictions are expected to affect primarily competition and productivity in the services sector concerned (see Egert and Gal, 2017) rather than pure market access.

to reduce or stop imports from certain exporting countries, or if they impose unnecessary costs and compliance burdens. Regulations may have adverse effects on imports particularly if they differ from those applied in the exporting country, as foreign suppliers wishing to export to regulated markets generally face additional trade costs.

While empirical work on the effect of NTMs has long been hampered by the scarcity of comparable data, since 2011 UNCTAD, in collaboration with a number of other agencies, has assembled a large database of NTMs. The dataset contains 121 measures in 86 countries, classified according to the MAST nomenclature.

The conventional approach to the measurement of the trade-restricting effect of NTMs is to estimate ad valorem equivalents (AVEs) from the partial correlation between the presence of NTMs at the importer-product level and the value of trade flows. In a pioneering paper, Kee et al. (2009) performed the estimation product by product at the HS6 level (5,000 regressions), aggregating imports from all sources. One problem with this approach is that it does not allow for the retrieval of country-specific AVEs since these are predicted AVEs on the basis of cross-country information, not country-specific estimates. Another technical problem is that the number of degrees of freedom is low and severely constrains the number of NTM types that can be included as explanatory variables. Lastly it requires the use of estimated import demand elasticities to retrieve an AVE (tariff equivalent) from the effect of NTM on trade flows.

In ongoing work, OECD uses trade unit values (equivalent to prices) to directly retrieve AVEs from the coefficients in the estimation without needing to estimate separately an import demand elasticity. This alternative approach relies on the estimation of bilateral trade flows on two-way panels (product importer exporter) at the GTAP sector level with importer, exporter and product fixed effects and interaction terms between different NTM variables and importer dummies. Consequently the estimated AVEs are not product-specific but rather pertain to groups of products. The current study uses preliminary estimates from this ongoing OECD work, and since results are not yet final only the product group-specific AVEs are used for two types of technical barriers (SPS and TBT).

Further ongoing work aims at discerning importer-specific effects. This work also distinguishes the effects on prices (through AVEs) from effects on traded volumes. This enables identifying potential trade-enhancing effects of regulations, such as for example demand-enhancing effects of sanitary measure that contain a signal to consumers by reducing information asymmetries between sellers and buyers. This work also investigates whether similarities of regulatory measures help reduce trade frictions.

Figure 8. Tariff barriers imposed on imports and faced on exports

Applied tariffs, Percent, trade weighted average – before 50% reduction in simulation
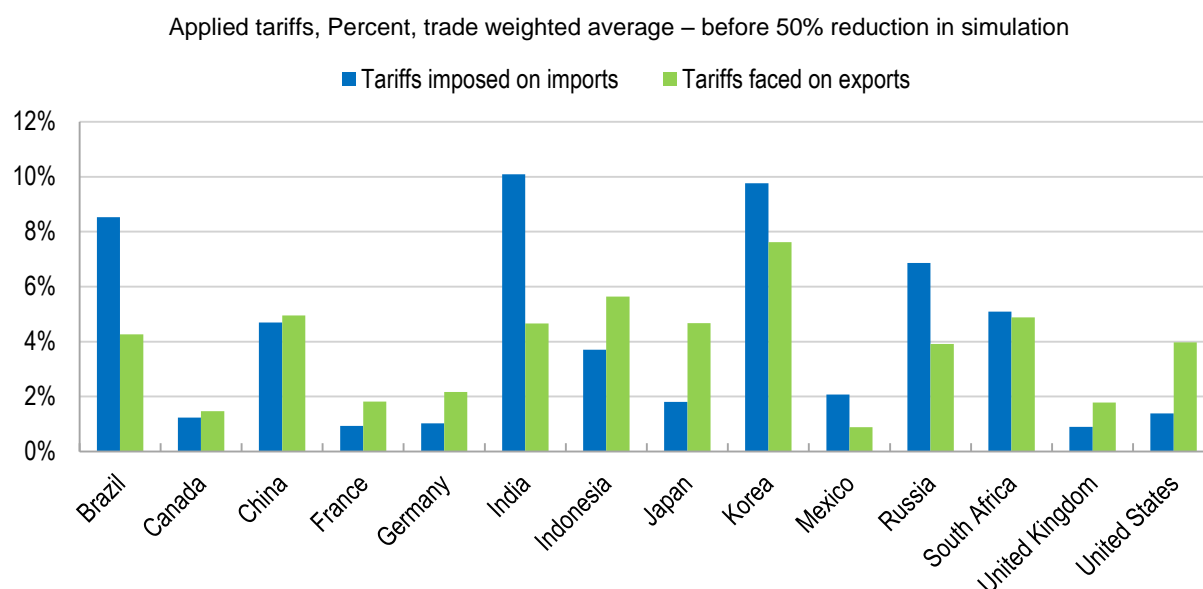
Notes: The data shown does not reflect FTAs agreed since 2011. Annex Figure A.4 shows tariffs imposed on imports and faced on exports distinguishing between agricultural and manufacturing products.

Source: METRO model database.

Figure 9. AVEs for NTMs on goods, percent, trade-weighted average - before 15% reduction in simulation
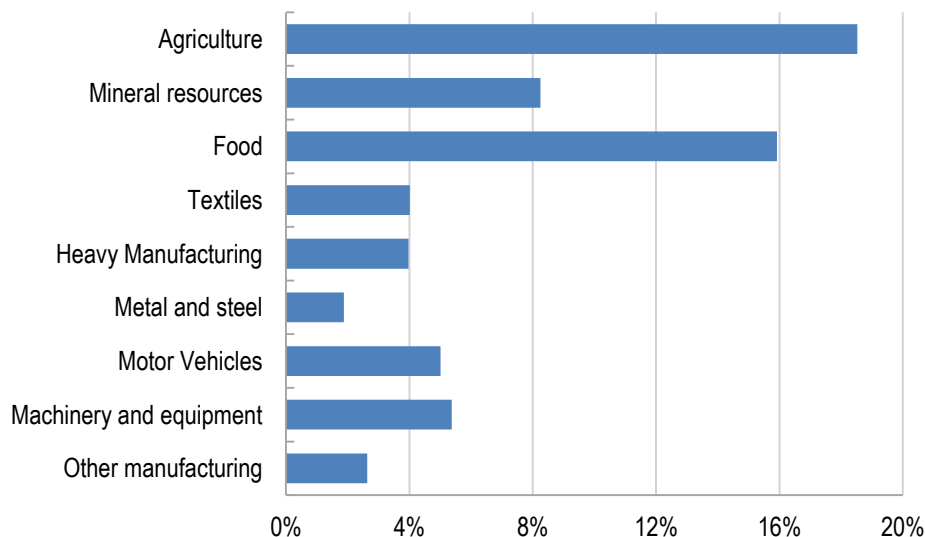
Note: The preliminary estimates take only SPS and TBT related technical measures into account. Other NTMs in the UNCTAD database related to pre-shipment inspection and quantitative restrictions, such as quotas, are not taken into account.

Source: METRO model database.

Figure 10.   Tax equivalent estimates of services trade restrictions - before reduction in simulation

Average, minimum and maximum among 42 countries
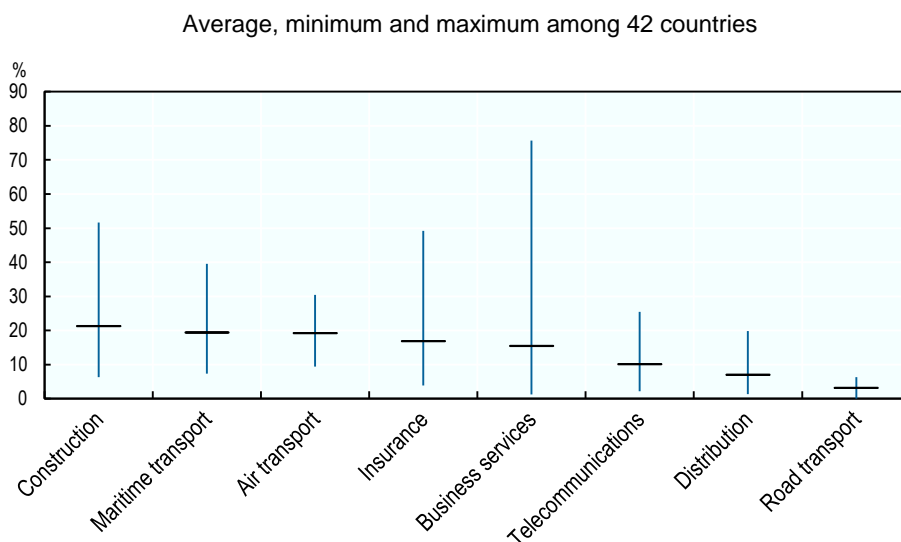
Note: For the "other services" category, a proxy is used based on an average across sectors covered.

Source: OECD calculations based on the BvD Orbis and STRI databases; see Rouzet and Spinelli (2016).

Results

Realistic but ambitious trade liberalisation would make a small contribution to narrowing trade imbalances

30.   Coordinated trade liberalisation across goods, NTMs and services measures would have sizeable effects on exports, imports and real GDP in all countries (Figure 11), and make a small contribution to narrowing overall trade imbalances.[17] It would increase the trade balance in five out of the nine G20 countries with trade deficits (Figure 12 and Table 2), for which exports increase more than imports. In Australia, for example, the comprehensive liberalisation scenario could almost close the initial trade deficit, while in France and the United Kingdom there would be significant reductions. In the United States, the comprehensive liberalisation scenario also increases exports more than it increases imports (Figure 11, Panel A) and the overall trade deficit is reduced, although only by a small amount as the difference between the magnitude of export and import increases is not large enough to significantly decrease the initially large deficit. However, not all deficit countries would see their balances improve. In Mexico and Canada, which are both strongly dependent on the US economy, the overall liberalisation translates into the loss of preferential market access within NAFTA.[18]

31.   Among the eleven surplus countries, five would experience a drop in their surplus, driven by strongly increasing imports relative to exports. This is most notably the case for Korea, where a large surplus is reduced by almost a third, and in Russia where a moderate surplus turns to a small deficit. In Indonesia and South Africa small initial surpluses are, respectively, erased and turned into a small deficit. In China, imports increase by more than exports but the difference in these percentage changes is not large enough to significantly reduce the surplus, which remains largely unchanged. However, other surplus countries see an increase in their positive trade balance with, for example, Germany and Japan benefitting from improved market access in China, Russia, Korea and the rest of the world. Overall, the sum of absolute values of worldwide trade deficits and surpluses, often used as a measure of global imbalances, decreases from 4.3% to 4.2% of global GDP in the comprehensive trade liberalisation scenario. Thus, coordinated liberalisation results in significant economic gains and makes a small contribution to narrowing global trade imbalances.

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17.   Economic welfare, as measured by the concept of equivalent variation, also increases in all regions.

18.   In Mexico and Canada over 50% of imports come from and 60%-70% of exports go to the US (in contrast to the US for which trade with Canada and Mexico accounts for about 20% of its total trade).

Figure 11.   Trade liberalisation would have a notable effect on exports, imports and production

Panel A. Imports and exports of goods and services (nominal), percentage change

Panel B. Real GDP, percentage change
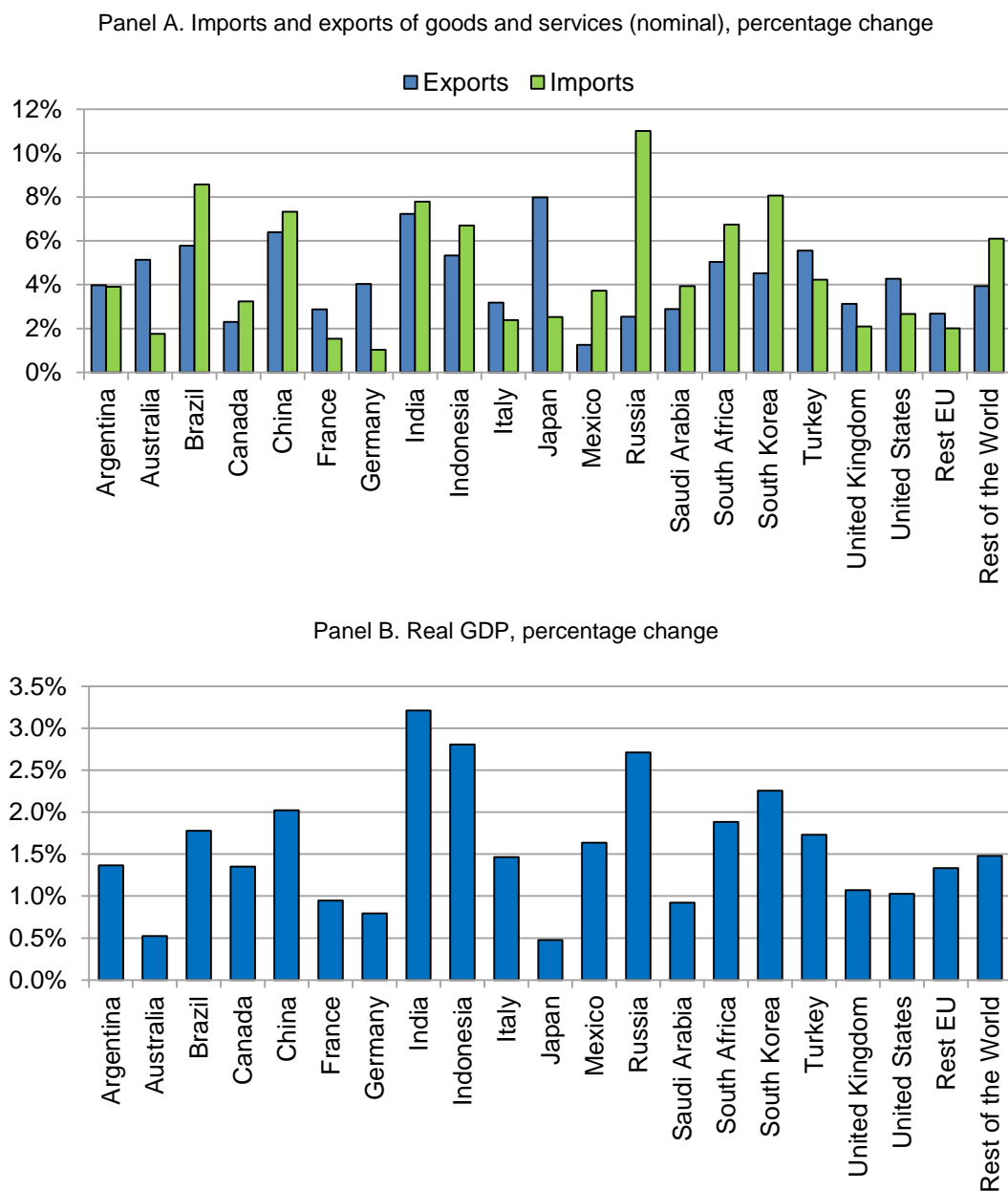
Note: The effects may be lower than shown for countries having entered since 2011 into FTAs with significant trade partners, which are not reflected in the baseline tariff data.

Source: METRO model simulations

Figure 12.   Liberalising trade policy would narrow some trade imbalances

% of GDP

A. Comprehensive trade liberalisation

B. Tariffs

C. Services liberalisation – combined

D. NTMs

Source: OECD Economic Outlook Database No. 101; METRO model simulations.
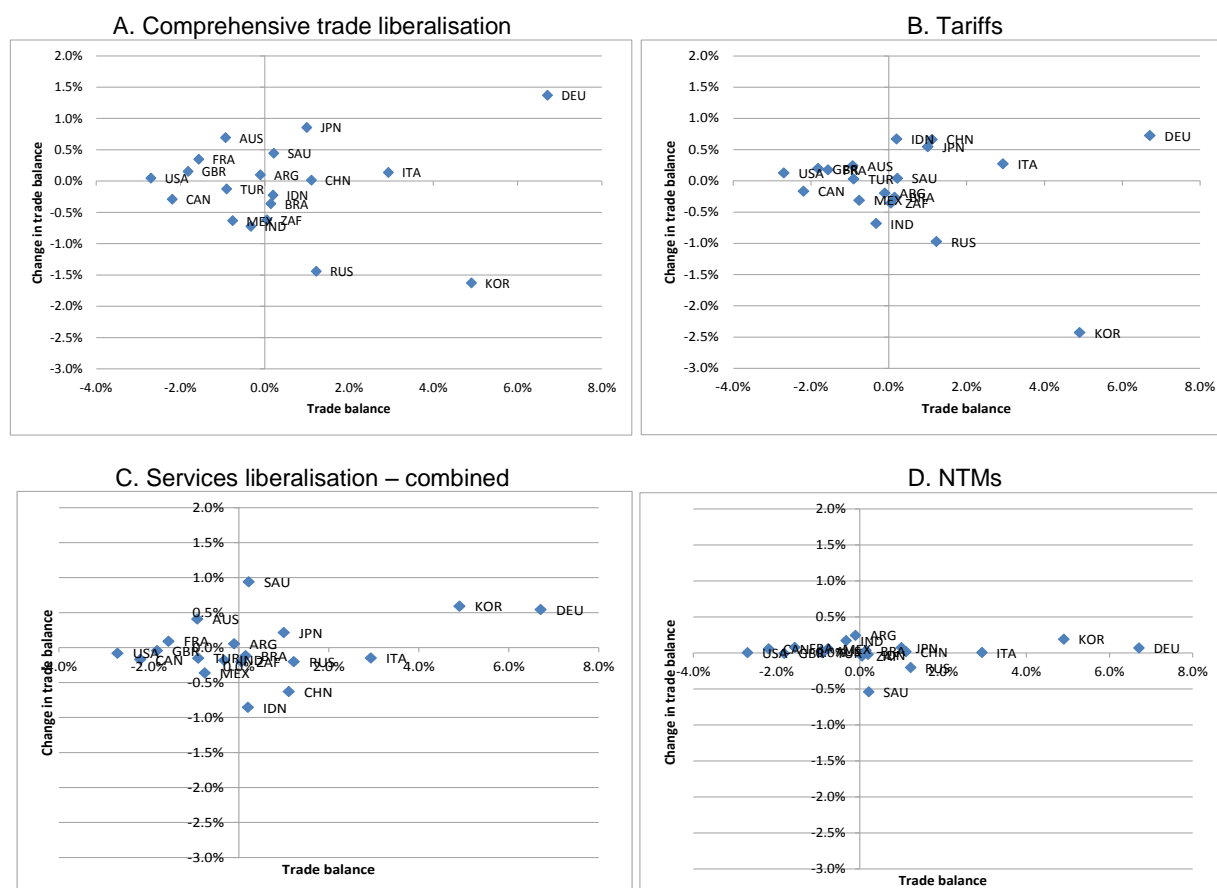
Table 2. Quantitative impacts of trade policy scenarios on trade balances

	Trade Balance 2016 (level)	individual country balances and changes					
		change with respect to initial level (% of the country GDP)					
		comprehensive	tariffs	NTMs	services market access	services TFP	restrictions
ARG	-0.10%	0.10%	-0.20%	0.24%	0.02%	0.03%	-1.30%
AUS	-0.93%	0.69%	0.24%	0.03%	0.07%	0.33%	-0.54%
BRA	0.15%	-0.36%	-0.26%	0.03%	-0.01%	-0.10%	-0.14%
CAN	-2.19%	-0.29%	-0.17%	0.05%	-0.01%	-0.16%	-0.67%
CHN	1.11%	0.01%	0.66%	0.01%	-0.07%	-0.56%	-0.49%
DEU	6.71%	1.37%	0.72%	0.07%	0.07%	0.47%	0.92%
FRA	-1.56%	0.35%	0.17%	0.07%	0.03%	0.06%	0.65%
GBR	-1.82%	0.15%	0.20%	-0.01%	0.03%	-0.07%	0.64%
IDN	0.20%	-0.23%	0.67%	-0.02%	-0.05%	-0.81%	-0.94%
IND	-0.33%	-0.72%	-0.69%	0.17%	-0.12%	-0.06%	-0.50%
ITA	2.94%	0.14%	0.27%	0.00%	-0.02%	-0.13%	0.88%
JPN	1.00%	0.86%	0.54%	0.07%	0.02%	0.19%	-0.03%
KOR	4.91%	-1.63%	-2.43%	0.19%	0.08%	0.51%	-1.37%
MEX	-0.76%	-0.63%	-0.31%	0.06%	-0.01%	-0.36%	-1.67%
RUS	1.22%	-1.44%	-0.97%	-0.21%	-0.08%	-0.12%	-1.67%
SAU	0.22%	0.44%	0.04%	-0.54%	-0.11%	1.05%	-1.98%
TUR	-0.90%	-0.13%	0.03%	0.00%	0.02%	-0.17%	1.27%
USA	-2.70%	0.05%	0.12%	0.00%	0.01%	-0.10%	0.82%
ZAF	0.05%	-0.62%	-0.36%	-0.05%	0.05%	-0.25%	-0.44%
EU as a block	1.1%	0.49%	0.34%	0.04%	0.02%	0.07%	0.93%

		sum of absolute values of deficits and surpluses (% of world or G20 GDP)					
		comprehensive	tariffs	NTMs	services market access	services TFP	restrictions
all countries and regions	4.30%	4.24%	4.20%	4.27%	4.29%	4.33%	3.86%
G20 countries	4.52%	4.54%	4.53%	4.50%	4.51%	4.50%	4.06%

Source: OECD Economic Outlook Database No. 101; METRO model simulations

32.   The aggregate effects of the trade liberalisation tools on the trade balance are a complex mix of shifting bilateral balances by trading partner, product and end use (Box 4). Often the main effects are concentrated in one or two sectors. For example, the Korean trade balance increases when NTMs are liberalised, but around 40% of the increase in exports following liberalisation is due to greater exports to China of intermediate goods in only two sectors, heavy manufacturing and machinery, making the liberalisation in these two sectors the key to the result.

Box 4. Decomposing policy effects by sector and use

In the trade liberalisation scenario, in part because the Brazil imposes relatively high tariffs compared to those it faces, the trade deficit in dollar terms more than doubles. This aggregate is a mix of increasing its balance (exports minus imports) with some countries (e.g. Mexico and Russia) and decreasing it with others (e.g. Germany and the United Kingdom). For example, Brazil's overall bilateral balance with Germany decreases by 29% in this scenario (Figure 13). This is mainly due to a reduction in the balance on intermediates and capital goods trade in motor vehicles and machinery and equipment. By contrast Brazil increases its trade balance with Germany, particularly in intermediates trade in agriculture, food and natural resources.

Figure 13.   Brazil-Germany trade balance by sector and by product end-use

Brazil exports to Germany minus Brazil imports from Germany, percentage point contribution to growth of the trade balance
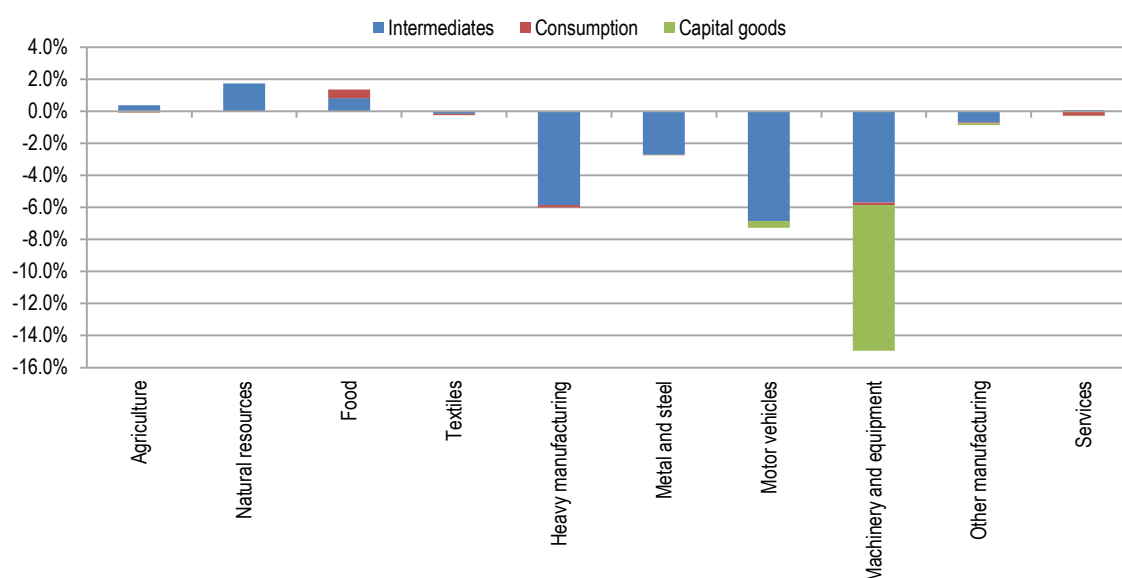
Source: OECD Calculations and METRO model simulations

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33.   The overall results also depend in part on the initial relative level of trade restrictions the country imposes and those it faces on export markets (see Figure 8). Countries that initially face relatively high barriers compared to those they impose tend to experience an increase in the trade balance and vice versa. The asymmetric structure of remaining trade barriers explains in part why trade liberalisation would have a larger effect on trade balances in emerging market economies than in advanced economies.

34.   For example, Brazil, India and Korea all impose higher tariff barriers than they face overall, although they also face higher than tariffs on their exports than the average G20 economy. They would experience a decline in their trade balance in response to a reduction of tariff barriers, but their economic activity would stay stable or increase. By contrast, China increases its surplus when tariffs and trade costs related to NTMs are lowered multilaterally, benefitting from increasing market access worldwide. But the Chinese surplus decreases when liberalising services trade. Because its domestic services barriers are initially high, a multilateral opening of services markets would lead to an increase in China's imports that is not matched by a similar increase in services exports. In addition, the productivity-enhancing effects of removing services restrictions lead to a shift in China's production from goods to services (see also below for a more detailed discussion of effects of services scenarios). The US trade deficit decreases when barriers to goods trade are lowered as it increases exports more than imports, notably to emerging markets

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where it faces higher tariffs than it imposes on its own imports. The German surplus increases when market access in goods and services is improved, driven by increased surpluses with emerging economies, Australia and Canada, but Germany's bilateral surpluses with the United States, the United Kingdom and France are narrowed.

Trade policy restrictions would significantly reduce GDP and welfare with only small effects on imbalances

35.   The trade restrictions scenario assumes that raising import barriers by any one country would provoke retaliation by trade partners. Hence, a large fictitious tariff increase of 10 percentage points is assumed to occur in all G20 economies, roughly equivalent to an average increase of tariffs to the bound tariff rates in 2001 when the trade negotiations under the Doha Development Round started.[19] Such an increase in trade restricting measures across all G20 countries would come at the significant cost of lower economic activity. Although some countries may experience a reduction of their aggregate imbalances, this narrowing of trade balances through higher trade barriers would be detrimental to their own activity (Figures 14 and 15).[20] For example, in the United States a reduction of the trade deficit of 0.8% of GDP would be coupled with a fall in real GDP by 0.8%, reducing employment, incomes and welfare of households. Some of the economic costs stem from the increase in the price of imported intermediate inputs, hurting domestic producers integrated in global value chains. By contrast, as discussed above, real GDP would increase in all G20 countries under the trade liberalisation scenario.

Figure 14.   Effects of trade restrictions on imbalances

% of GDP
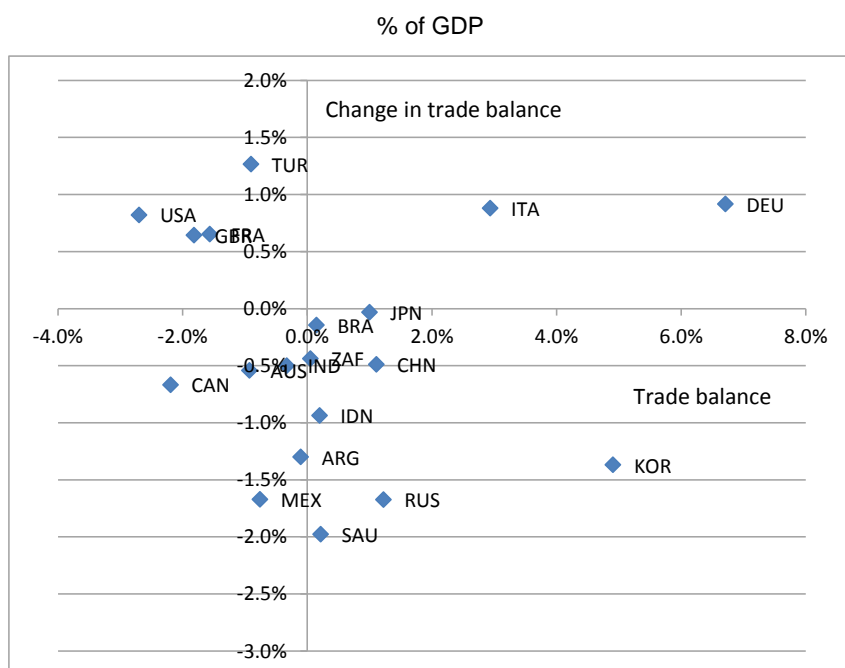
Source: OECD Economic Outlook Database No. 101; METRO model simulations.

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19.   See OECD (2016) where a similar simulation was conducted to assess the potential impact of higher trade barriers in the major global trading economies – Europe, the United States and China.

20.   These results are consistent with those of Barattieri et al. (2017), who show in a dynamic macroeconomic model that raising import tariffs would only slightly improve trade balances while having recessionary effects, as expenditure-switching effects on output are more than outweighed by those of the tariff-induced reduction in real incomes and a contractionary monetary policy response.

Figure 15. **Increasing trade protection measures would reduce output almost everywhere**
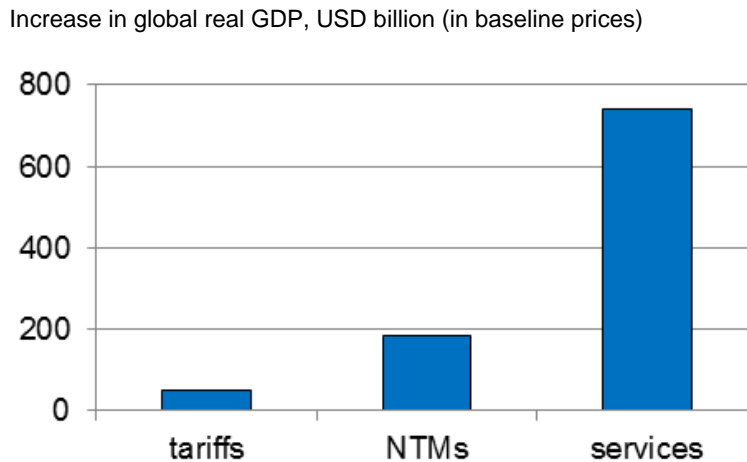
Total production, percentage change
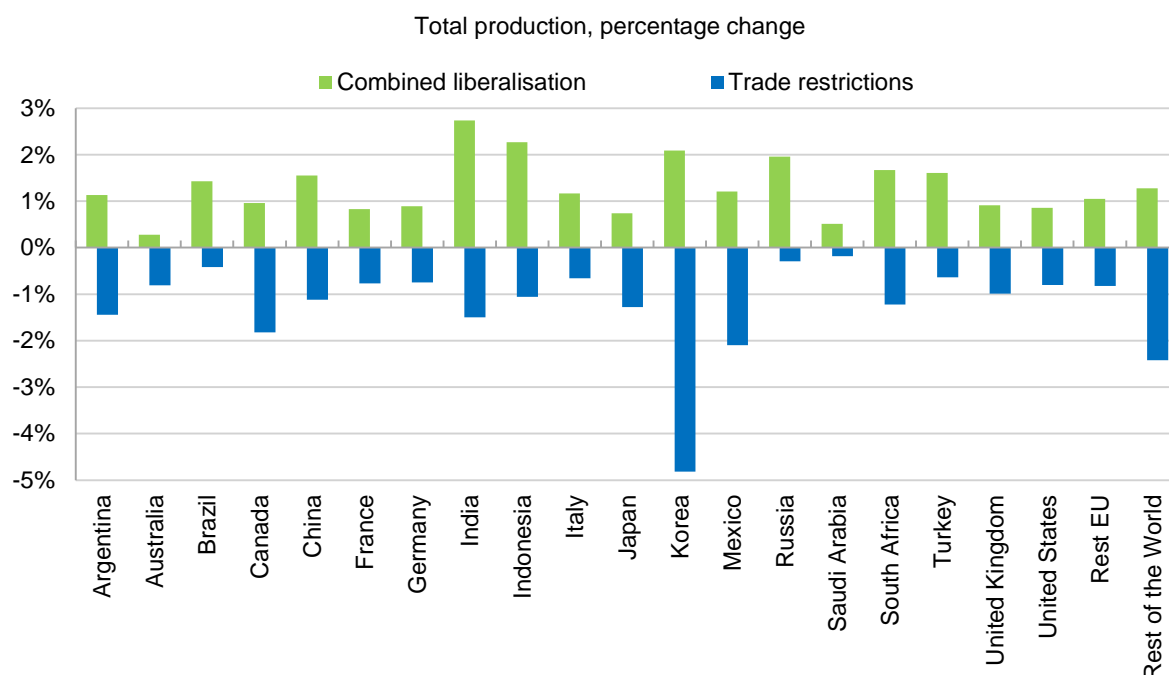
Note: The government balance is fixed, and higher tariff incomes are balanced by higher government spending.

Source: METRO model simulations.

Impact of services liberalisation on trade balances and incomes

36.   Gains from services trade liberalisation dominate the real GDP increase from comprehensive liberalisation (Figure 16), which can be expected given that services account for a high share of most economies and at the same time tend to face higher barriers to trade than goods. This is in line with, for example, the econometric modelling using the framework in Egert and Gal (2017), which indicates that reducing services trade restrictiveness indices has indeed a positive and significant effect on aggregate total factor productivity.[21] The effects of services deregulation are also to reduce overall trade balances, particularly as services market access reforms are concerned, but their impact on the overall size of global trade imbalances is smaller than that of the tariff reduction scenario (Table 2). Still some very significant rebalancing effects of services liberalisation are observed for China, Indonesia and Australia.

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21.   Nevertheless, due to limited time series data for the STRI the magnitude of gains from services using this modelling framework remains uncertain.

Figure 16. **Gains from services trade liberalisation dominate the real GDP impact**

Increase in global real GDP, USD billion (in baseline prices)

Note: Government balance is fixed, and reduced tariff incomes are balanced by reduced government spending.
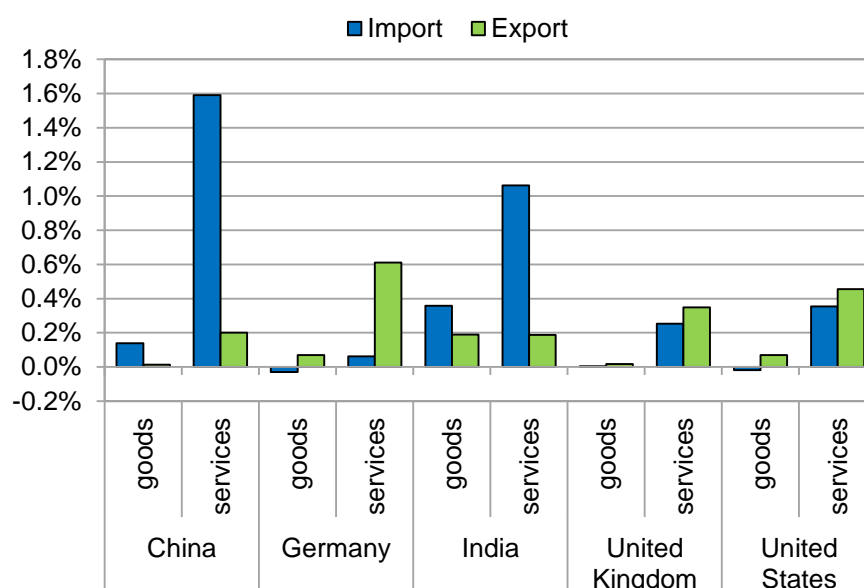
Source: METRO model simulations.

37.   It should be kept in mind that the modelling framework only explicitly takes into account cross-border trade in services, which accounts for a modest share of global trade – on average no more than a third in OECD countries. It also makes a simplifying assumption about the expected impact of services deregulation on productivity in the liberalising sectors. As discussed above, the assumed shock is a coordinated reduction in the tariff equivalent of restrictions on services imports, which is split into: the effect on greater market access and therefore larger trade flows; and the effect of services deregulation on productivity in the sectors concerned. Some trade rebalancing effects are related to the fact that emerging market economies have higher remaining services trade barriers than advanced economies, and therefore would increase services imports faster than services exports as market access in services is liberalised (Figure 17, Panel A). However, the rebalancing effects are limited due to the small size of cross-border trade in services.[22]   Given this, and the fact that mode 3 is not covered, the effects on services trade balances are likely to be underestimated.

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22.   The modelling framework tends to make the size of the impact dependent on the initial economic and trade structure. It is not well-suited to account for large-scale structural change, such as the emergence of new sectors or a vast expansion in services over time.

Figure 17.   Services liberalisation boosts trade in services but also in goods

A. Change in exports and imports of goods and services – market access component of services liberalisation scenario

B. Change in exports and imports of goods and services – productivity component of services liberalisation scenario
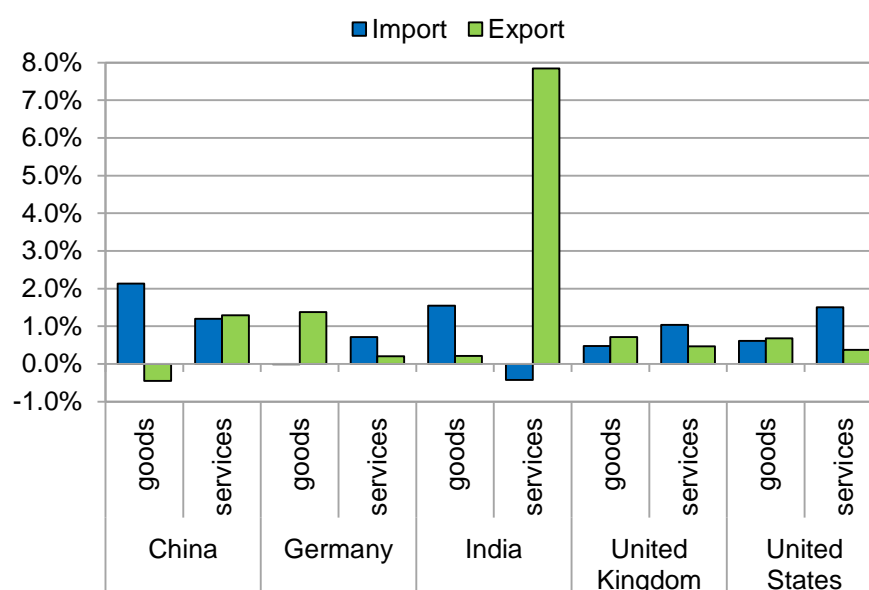
Source: METRO model simulations

38.   At the same time, the increases in services sector productivity, which have a greater impact on GDP and welfare, have less clear effects on trade balances. This is because these effects combine three channels. First, the productivity shock affects the allocation of resources between goods and services. This in turn depends on the balance of a substitution effect away from the services sector because it needs fewer resources to produce the same output, and an expansion effect due to lower costs and prices allowing demand for services to rise. The expansion effect prevails in almost all cases, so that production shifts towards the services sector, which is more domestically focused than goods, reducing exports and the trade balance. Second, higher services productivity translates into higher incomes, which are partly spent on imports, deteriorating the trade balance. Third, the high content of services in manufacturing production

means that a positive productivity shock in services strongly boosts goods exports (Figure 17, Panel B). Both imported and domestic services inputs contribute significant shares of the value added in exported goods, suggesting that this effect is likely to be a large component of the total effect of higher services productivity as compared to its impact on direct exports of services (see Annex Figure A.5).[23]

Summing up

39.   Taking stock, while trade policy can make only a small contribution to narrowing aggregate trade balances for some countries, it can offer economically significant production and income gains for all countries. Reducing tariffs, NTMs and the combined market access and productivity-enhancing effects of pro-competitive measures in services all have some rebalancing potential. The effects of coordinated trade policy actions on trade balances would be stronger for some countries, depending among other factors on their remaining trade barriers. Some other effects of trade liberalisation not fully captured in the model, such as the role of FDI in services, could amplify these effects further. The potential to reduce NTMs has also been modelled conservatively in this paper and productivity effects of reducing NTMs have not been modelled. For these reasons the effects of this policy lever on trade balances could be much higher than shown. Importantly, coordinated trade liberalisation across goods, NTMs and services measures would have sizeable positive effects on real GDP in all countries. By contrast, narrowing imbalances via trade restrictions would come at disproportionately high economic costs for all countries.

40.   Overall, the results of the modelling exercise provide information on the directions and magnitudes of potential adjustments and suggest that trade policy can play only a small role in rebalancing. These results should be considered in the context of the main goals of trade policy reforms, most notably economic efficiency and consumer welfare. They should also be interpreted as one of several policy levers within the broader policy objective of removing distortions, including sources of macroeconomic and financial frictions beyond trade policy, which may contribute to the build-up of internal and external imbalances. Future work could focus on further model development to address some of its key limitations including a more accurate representation of macroeconomic policies, FDI and capital flows, more detailed modelling of effects of non-tariff barriers in goods and services sectors, as well as further improvements in the representation of trade in GVCs.

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23.   A future extension of this work could explore the extent to which the services value added content of gross exports responds to the trade policy changes considered.

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ANNEX 1: ADDITIONAL TABLES AND FIGURES

## Table A.1. Top fifteen surplus and deficit economies

World ranking by absolute value

Surplus in 2016					Deficit in 2016				
	2000	**2007**	**2016**	**Trend**		**2000**	**2007**	**2016**	**Trend**
Germany	140	2	1		United States	1	1	1	
China	4	1	2		United Kingdom	3	3	2	
Japan	1	3	3		Canada	148	162	3	
Korea	9	14	4		Australia	8	4	4	
Switzerland	3	7	5		Turkey	11	6	5	
Netherlands	15	5	6		Brazil	6	142	6	
Singapore	10	8	7		France	147	18	7	
Italy	25	165	8		India	13	21	8	
Thailand	11	12	9		Mexico	7	15	8	
Russia	2	4	9		Indonesia	137	21	9	
Denmark	17	25	10		Argentina	13	154	10	
Spain	139	170	11		Colombia	124	25	11	
Sweden	7	9	12		South Africa	67	11	12	
Norway	3*	6	13		New Zealand	19	16	13	
Hong Kong, China	14	11	14		Pakistan	85	20	14	
Ireland	N/A	161	15		Morocco	45	100	15	

Note: Red dots in trend line indicate negative values. 2016 data for India and Thailand corresponds to 2015. Data for Norway starts in 2001 and for Ireland in 2005 . The ranking is among all countries ranked by current account surplus in the left column, and ranked by current account deficit in the right column.
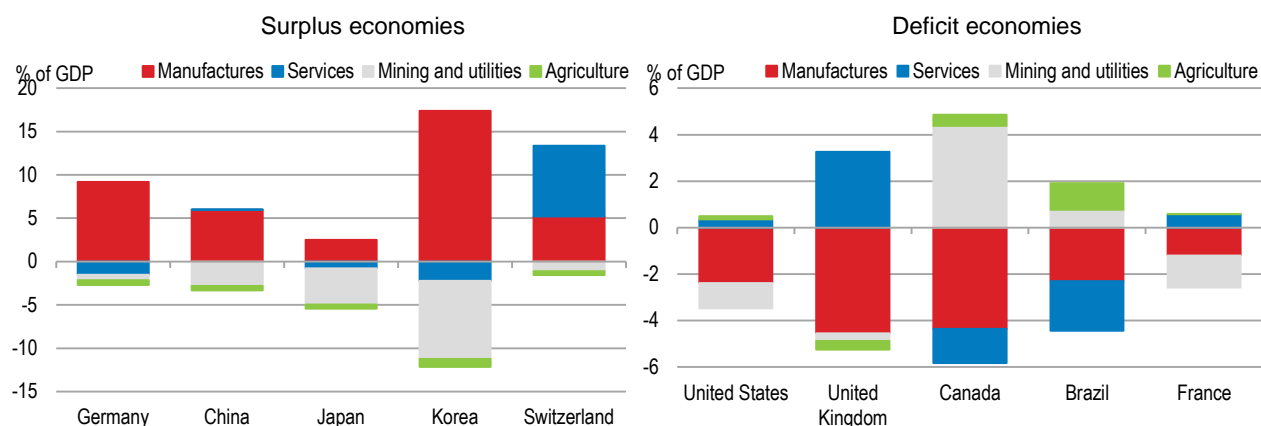
Source: OECD calculations based on IMF Balance of Payments Statistics.

## Figure A.1. Dispersion and persistence in current account balances, 1980-2016
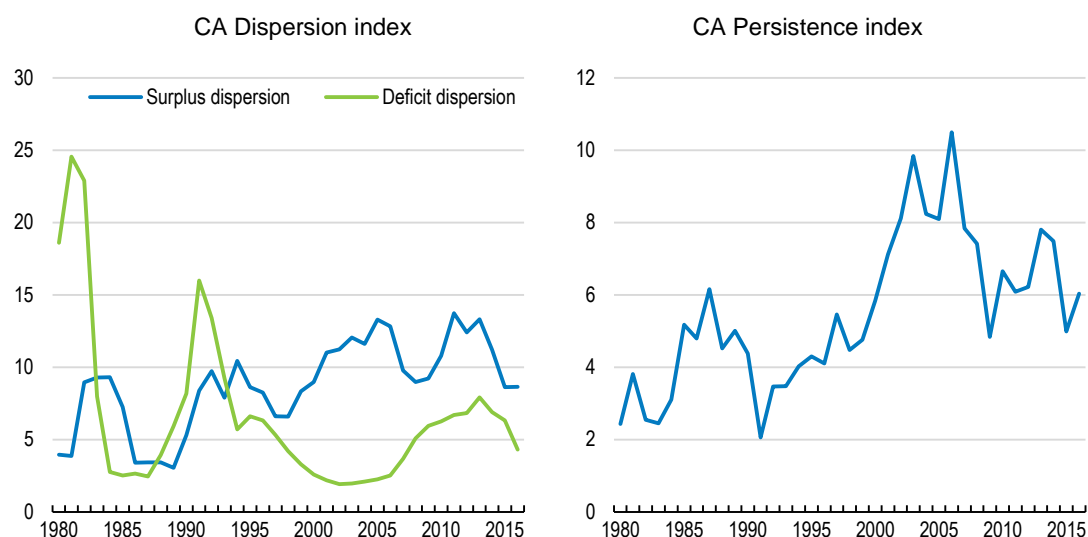
Notes: The calculation of the indices follows Bracke et al. (2010). A higher dispersion index indicates lower concentration of current account imbalances across countries. The dispersion index is bounded between 1 and n, where n is the number of countries in the sample. A value of 1 indicates that a single country accounts for the total, i.e. concentration has reached its maximum. A value of n means that all countries have equal shares of the total, i.e. concentration has reached its minimum. A higher persistence index indicates that countries' nominal current account balances tend to be more similar to those of the previous year.

Source: OECD calculations based on IMF Balance of Payment Statistics.

Figure A.2. Gross trade balances by sector, 2014

Surplus economies

Deficit economies

Note: Services includes construction activities. Mining and utilities includes electricity, gas and water supply.

Source: OECD calculations based on TiVA database and TiVA nowcast estimates.

Figure A.3. Value added trade flows by sector, 2014

Domestic value added embodied in foreign final demand
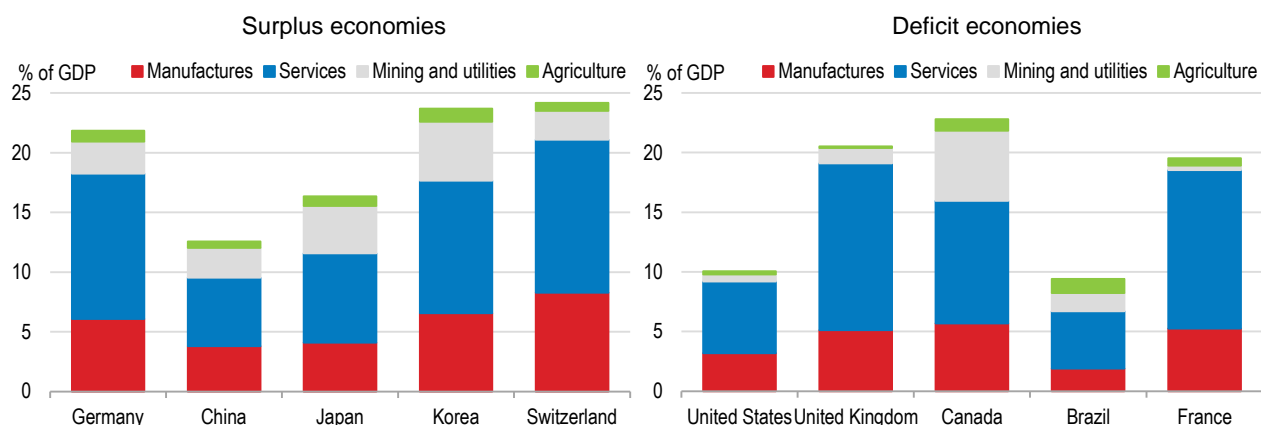
Surplus economies

Deficit economies

Foreign value added embodied in domestic final demand

Surplus economies

Deficit economies
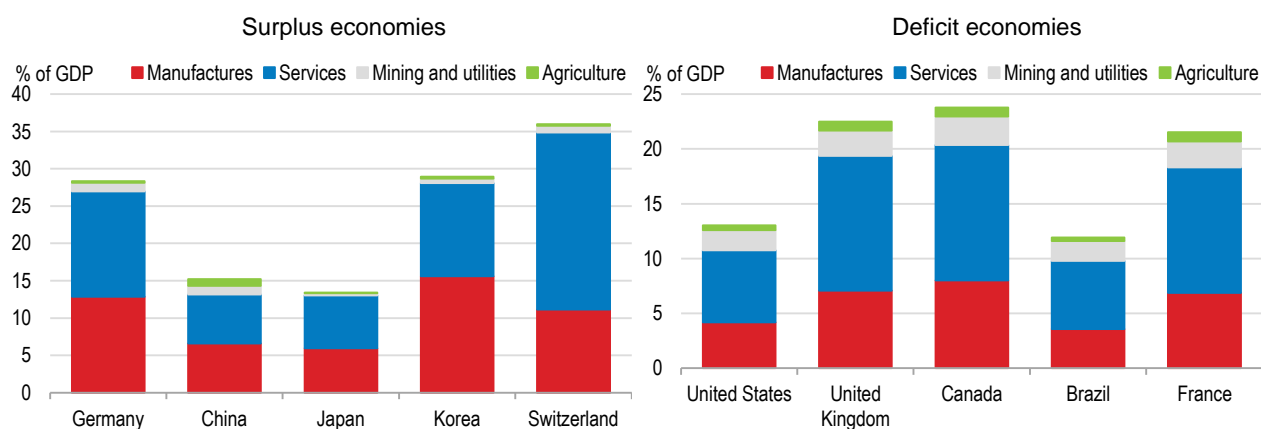
Note: Services includes construction activities. Mining and utilities includes electricity, gas and water supply.

Source: OECD calculations based on TiVA database and TiVA nowcast estimates.

Figure A.4. Tariff barriers imposed on imports and faced on exports

Applied tariffs, Percent, trade weighted average – before 50% reduction in simulation

Agriculture and food

■ Tariffs imposed on imports   ■ Tariffs faced on exports

Manufacturing

■ Tariffs imposed on imports   ■ Tariffs faced on exports
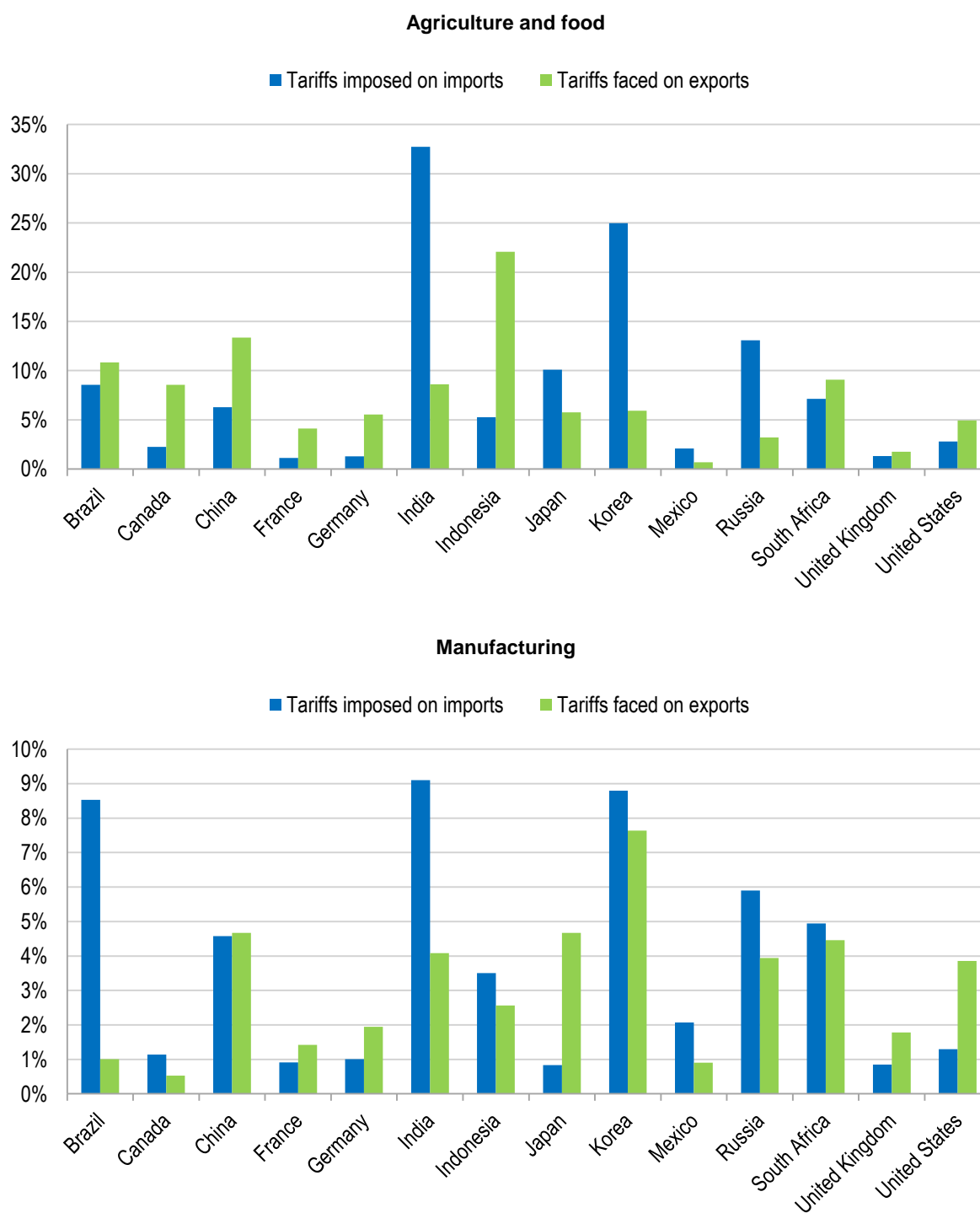
Note: The data shown does not reflect FTAs agreed since 2011.

Figure A.5. Services value-added in gross exports, 2014

Manufacturing

Agriculture
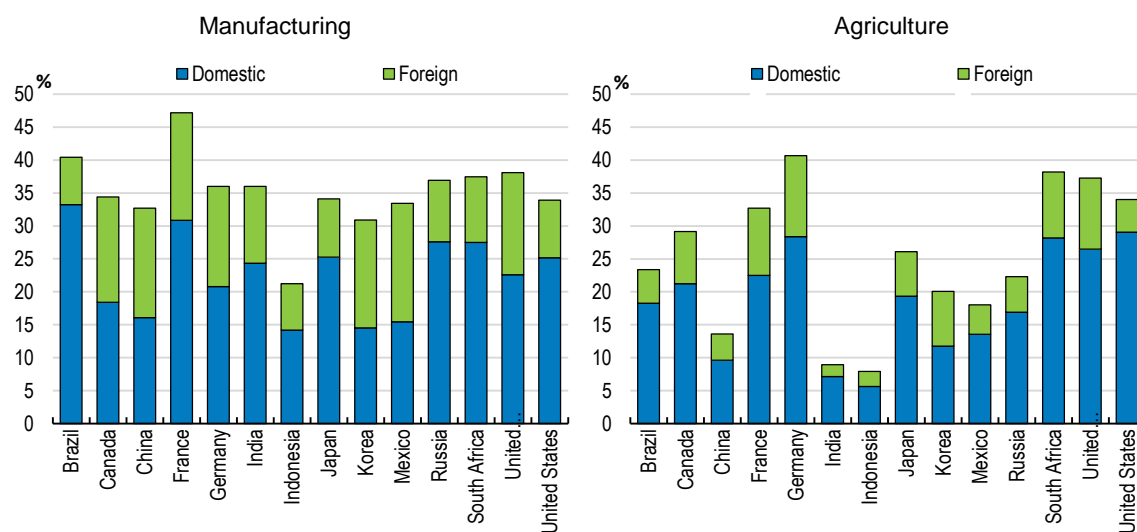
Source: OECD TiVA nowcast estimates.

ANNEX 2: THE OECD METRO MODEL

The model

The OECD METRO model is a static computable general equilibrium model (CGE) (OECD, 2015). The Model is derived from the Social Accounting Matrix (SAM) based CGE model GLOBE developed by McDonald and Thierfelder (2013).[24] As the model's name implies, CGE models rely on a comprehensive specification of economic activity within and between countries, and therefore of the different inter-linkages that tie these together.

Agents (depicted by the four use categories) consume composite commodities, which are formed as three-level nested Constant Elasticity of Substitution (CES) aggregates of imports and domestic goods following the Armington assumption of imperfect substitutability (Armington, 1969). At the third level, imports from various sources form a CES aggregate while allowing for imports in small shares, which are aggregated at the second level to the other imports in fixed shares, forming aggregate imports. This small shares feature avoids large terms of trade effects for very small trade flows. At the first level, domestic goods and aggregate imports form a composite commodity using a CES technology. On the export side, METRO also employs the assumption of imperfect transformability using a two-level CET structure: products are allocated to the domestic or export market depending on relative price changes employing CET technology, and are subsequently allocated to the different export destinations.

The underlying approach for the multi-region model is the construction of a series of single country CGE models that are linked through trade relationships. As is common in CGE models, the price system in the model is linear homogeneous, which puts the focus on relative, not absolute, price changes. Each region has its own numéraire, typically the Consumer Price Index (CPI), and a nominal exchange rate (an exchange rate index of reference regions serves as model numéraire). Thus, price effects inside a country are fed through the model as a change relative to the country's numéraire, and prices between regions change relative to the reference region. Finally, the model contains a 'dummy' region to allow for inter-regional transactions where full bilateral information is not available, i.e., data on trade and transportation margins.

The model distinguishes sectors that produce commodities. Sectors maximise profits and form output from primary inputs (i.e. land, natural resources, labour and capital), combined using CES technology, and intermediate inputs in fixed shares (Leontief technology). Households are assumed to maximise utility subject to a Stone-Geary utility function, which allows for the inclusion of a subsistence level of consumption. All commodity and activity taxes are expressed as ad valorem tax rates and taxes are the only income source to the government. Government consumption is in fixed proportions to its income and government saving is defined as a residual. Closure rules for the government account allow for various fiscal specifications (e.g. fixed nominal expenditure).

Total saving consists of saving from households, the internal balance on the government account and the external balance on the trade account. The external balance is the difference between total exports and total imports in domestic currency units. While income to the capital account is defined by several savings sources, expenditures by the capital account are based solely on commodity demand for investment.

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24. The original model and a detailed documentation are available at http://www.cgemod.org.uk/ Developing from the GLOBE model, the model is a direct descendant of an early US Department of Agriculture model (Robinson et al., 1990) and NAFTA (Robinson et al., 1993) and follows trade principles deriving from the 1-2-3 model (de Melo and Robinson, 1989; Devarajan et al., 1990).

The METRO database derives from the GTAP V9 (Global Trade Analysis Project) database, currently covering 61 economies across 57 economic sectors (Aguiar et al., 2016). It disaggregates imports based on use categories derived from OECD sources, as opposed to the widely applied proportionality assumption. For the purpose of this study, the database is aggregated reflecting G20 countries and a rest of the world as well as 20 sectors as detailed in Table A.2.

Table A.2. Regions, sectors and factors in METRO

arg	Argentina	Agriculture	Labour:
aus	Australia	Natural resources	• Technical and Assistant Professionals
bra	Brazil	Food	• Clerks
can	Canada	Textiles	• Service and shop assistants
chn	China	Heavy manufacturing	• Office managers and Professionals
fra	France	Metal and steel	• Agricultural and other low skilled workers
deu	Germany	Motor vehicles and transport equipment	Capital
ind	India	Machinery and electronic equipment	Natural Resources
idn	Indonesia	Other manufacturing	Land
ita	Italy	Utilities	
jpn	Japan	Construction	
mex	Mexico	Trade	
rus	Russia	Other transport services	
sau	Saudi Arabia	Water transport services	
zaf	South Africa	Air transport	
kor	South Korea	Communication	
tur	Turkey	Financial services	
gbr	United Kingdom	Insurance	
usa	United States	Business services	
reu*	Rest EU	Other services	
ROW**	Rest of the World		

*Aut, Bel, Cyp, Cze, Dnk, Est, Fin, Grc, Hun, Irl, Lva, Ltu, Lux, Mlt, Nld, Pol, Prt, Svk, Svn, Esp, Swe, Bgr, Hrv, Rou

**Nzl, Hkg, Twn, Brn, Khm, Mys, Phl, Sgp, Tha, Vnm, Chl, Col, Cri, Che, Nor, Isr, Tun, Row

Underlying economic conditions

CGE models resemble a closed system of economic flows and markets must be balanced. So-called closure rules specify how markets balance. METRO allows for several general closure rules that relate to macroeconomic considerations, e.g., if investment is saving-driven or exogenous, and specific closure rules that capture particular features of an economic system, e.g., the degree of inter-sectoral capital mobility

For the purpose of this study the macro-economic setup is specified as the following:

- Total investment must equal total saving which consists of private and public saving, the trade balance and depreciation. Investment is flexible and balances the account, with government and private saving being predetermined.

- The government balances its account by adjusting expenditure to changing tax income and with a fixed government balance.

- In factor markets, all factors (labour, capital, land and natural resources) are fully employed and mobile across sectors.

The static nature of the model accounts only for efficiency increases through better resource allocation and improved consumption possibilities. To take into account linkages through investment and growth, i.e. capital accumulation effects, movements between steady states are assumed. The implementation assumes a fixed saving rate, and follows Francois et al. (1996).

Scenarios

The set of trade scenarios considers if and how various constellations of trade policy reforms could facilitate the global rebalancing process. Trade liberalisation scenarios address tariffs, non-tariff barriers and service trade restrictions. The liberalisation is decomposed to evaluate the effects of each measure. Trade liberalisation scenarios are implemented in a <u>coordinated manner</u> by all G20 regions.

A hypothetical trade restriction scenario demonstrates a possible reduction of some of the trade imbalances through increasing trade barriers; it also highlights the associated possible welfare, production and employment costs for the restricting countries. As increasing trade barriers most likely causes retaliation, the trade restriction scenario is implemented in a <u>coordinated manner</u> by all G20 regions.

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