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MARKET OPENING, GROWTH AND EMPLOYMENT

What can further market integration contribute to growth and employment? A series of hypothetical trade reform scenarios explores what countries at different levels of development can expect to gain from reforming tariffs, non-tariff barriers, trade facilitation and domestic support to agriculture. Simulations of multilateral and regional trade agreements with the OECD METRO model show that positive effects are higher when more countries participate in trade integration because it broadens market opportunities, widens the range of products at lower prices, and reduces trade diversion. Smaller economies especially benefit. Firms in these economies can better specialise in international production networks as they have access to larger and more differentiated markets and also benefit from enhanced market access on the products they already produce. While trade integration boosts demand and lifts wages and factor returns, the required production adjustments also leads to reallocation of workers between sectors. The analysis highlights some of the distributional implications and emphasises the need for labour force adjustment policies to accompany trade integration.

Key words: International trade, market access, agriculture support, Asia, CGE model, regional trade agreements, income distribution

JEL codes: C54, C68, F13, F15, F16, Q17

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Table of contents

Executive summary 6
1. Introduction 8
2. In or out? Theory and evidence of being a member or non-member in a RTA 9
3. Room for further integration: Remaining barriers to trade in the METRO database 10
4. Simulation design and model 14
5. Effects of multilateral trade reform 16
6. Regional Trade Agreements 19
7. Households and labour markets: How are they affected? 25
8. Conclusions 29
Annex A. 32

Tables

Table 1. Region and sector aggregation 16
Table 2. Multilateral Agreement: Effects on production and trade (real) 17
Table 3. Effects with a flexible income tax, selected regions 18
Table 4. RTAs: Macroeconomic effects 20
Table 5. RTAs: Real bilateral trade effects 21
Table 6. HI-RTA effects on trade flows 21
Table 7. RTAs: Costs of intermediate inputs 23
Table 8. RTA-ALL: Effects on motor vehicles production in Viet Nam and Thailand 24
Table 9. RTAs: Effect on wages 25

Table A A.1. Multilateral Agreement: Effects with flexible income tax 32
Table A A.2. Multilateral Agreement: Effects on welfare and household income 33

Figures

Figure 1. Frequency of legally enforceable 'deep' provision 8
Figure 2. Overview: Tariffs in the database, trade weighted average, for 2011 11
Figure 3. *Ad valorem* estimates of NTMs in the database, trade weighted average, for 2014 12
Figure 4. TFI estimates in the database, trade weighted average, for 2015 13
Figure 5. Domestic support: OECD Producer Support Estimate, for 2011 13
Figure 6. Multilateral agreement: Effects on wages 19
Figure 7. RTAs: effects on production by sector 23
Figure 8. Effects on production and household income 26
Figure 9. Multilateral Agreement: Breakdown of the contribution to income growth 26

Figure A A.1. Multilateral Agreement: Production by sector 34
Figure A A.2. Effects on production and household income: Comparison between scenarios 35

Boxes

Box 1. The Metro model 15
Box 2. RTA effects in detail: Motor vehicles and parts in Viet Nam and Thailand 24
Box 3. Labour market movements across sectors 27

Abbreviations

AVE	*Ad Valorem* Equivalent
CGE	Computable General Equilibrium model
EV	Equivalent Variation (welfare measure)
GDP	Gross Domestic Product
HI	High Income (countries)
LI	Low Income (countries)
LMI	Lower Middle Income (countries)
NTB	Non-Tariff Barrier
NTM	Non-Tariff Measure
ROW	Rest of the World
RTA	Regional Trade Agreement
SPS	Sanitary and Phyto-Sanitary measure (technical non-tariff measure)
TBT	Technical Barriers to Trade (technical non-tariff measure)
TFI	Trade Facilitation Indicator
UMI	Upper Middle Income (countries)

Highlights

Trade integration increases production and income. The positive effects are higher when more countries participate because it broadens market opportunities, widens the range of products at lower prices, and reduces trade diversion.

The benefits stem importantly from strengthening production networks, driven by trade in intermediates and decreasing input costs, and thereby allowing firms to improve their productivity.

Smaller economies especially benefit from trade integration: firms in these economies can better specialise their contributions to production networks as they have access to larger and more differentiated markets and also benefit from enhanced market access on the products they already produce. As larger economies already have a broader resource base and larger internal market the specialisation benefits are lower but they nevertheless gain from improved market access.

Trade integration boosts demand and lifts wages and factor returns, but the required production adjustments also leads to reallocation of workers between sectors. While the net impact is positive for the economy, the distribution of benefits is uneven. There is thus a need for labour force adjustment policies to accompany trade integration.

EXECUTIVE SUMMARY

The G7 Ise-Shima Leader's Declaration (26-27 May 2016) recognizes "the need to shed a new light on the positive role of trade on growth and development". This study addresses the question what countries (developed, emerging, developing, and least developed) can expect to achieve from further market integration, and as a corollary to this, the forgone benefits of not participating in further market integration.

For this purpose a set of hypothetical trade reform scenarios has been developed that consist of a combination of full (multilateral) reforms in which all countries participate in contrast to partial (regional) reforms that resemble big regional trade agreements in a stylized form. The scenarios are assessed and quantified with the OECD's METRO model, and draw on the inventories of trade measures maintained by the OECD. In particular the study considers four areas of possible action: tariffs, non-tariff barriers, trade facilitation and domestic support to agriculture.

The simulations with different configurations of regional and multilateral trade agreements find that:

Trade liberalisation increases trade and production in all member regions. Regions where trade increases strongest show also the highest production increases. When Regional Trade Agreements include more regions there is clear **trade creation between RTA members**. **Trade effects for non-members are mixed**.

The positive effect on participants is larger when the agreement covers more countries because it broadens market opportunities and reduces possible trade diversion. For example, GDP increases are doubled when moving form a configuration that includes only High Income Asian economies to an agreement that embraces all Asian economies. A multilateral agreement would yield even greater benefits.

While production effects are linked to trade effects this does not imply that exports increase stronger than imports. Indeed, **the change of import and export flows is a poor indicator of production effects.** Lower consumer prices through reduced costs for imported final and intermediate goods drive demand for domestic products and imports.

There is a strong **relationship between production effects and integration in trade** in **intermediate inputs**. In Viet Nam, Thailand and Malaysia, for example, there is a high share of imported intermediates in GDP (over 57%) and these countries also show the strongest potential production effects in the simulated trade agreements. These countries benefit the most from lower import prices and export market access.

Trade barriers, in particular those on intermediates, affect firm productivity and competitiveness negatively. Decreasing input costs through decreasing trade barriers on intermediates boosts productivity.

Decreasing input costs and increasing demand encourage production activities, resulting in an increase in demand for production factors. The **higher demand lifts wages and factor returns**. The effects on wages and factor returns are stronger for labour categories which are needed in the specialising sectors.

The production shifts lead to reallocation of workers between sectors. For example, up to 6% of workers would change sectors in response to the multilateral agreement. Wages and labour reallocation effects are strongest in low income regions. The labour categories estimated to experience the most pronounced reallocation between sectors are also the ones which have a relatively low wage increase compared to other categories in the region. Those estimated labour movements may be relatively modest when compared with the changes that would occur irrespective of reform. For countries covered by OECD data, average annual sector movement in 2014-16 across 5 broad sectors (agriculture, construction, industry, manufacturing and services) ranges between close to 5% to 0%, with considerable variations across countries.

Private consumption and welfare increases in all regions. Consumers receive benefits from two sources: first through lower prices for imports and second through lower prices for domestic products. This increases real disposable household income and stimulates demand.

While trade liberalisation is beneficial for the overall economy and increases production and welfare **not all groups in the economies benefit by the same amount from trade liberalisation**. The sectoral analysis shows which parts of the economy benefit more than others and where contraction of activities can be expected to occur. Factor reallocation causes adjustment costs for individuals and firms.

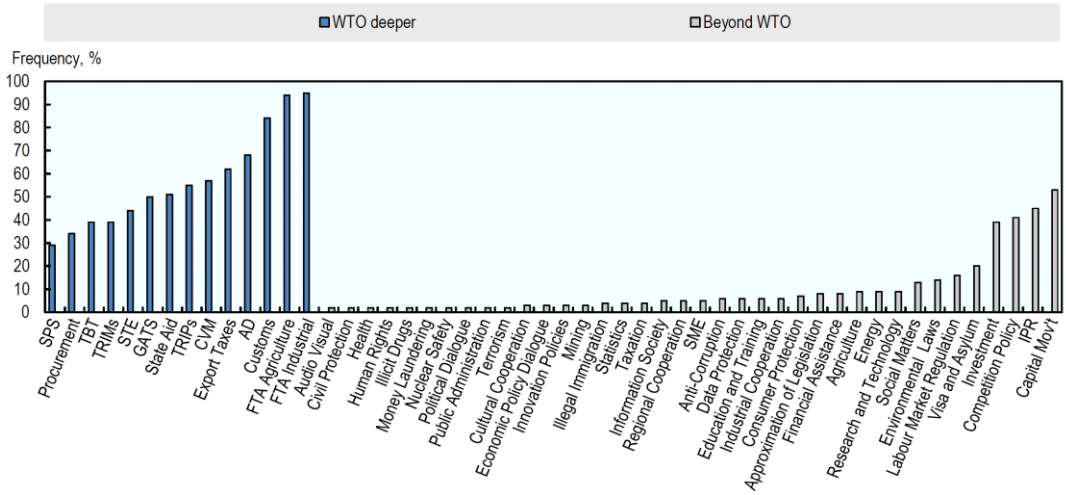
The size of these adjustment costs depends on the flexibility of the factor market and the structure of the economy. Addressing adjustments requires **integrated trade and domestic policies** that target not only labour markets and social safety nets, but also equality of opportunity. Health and education, anticipation of needs and development of skills are amongst the policy areas that need attention.

1. Introduction

Multilateralism and regionalism have long been re-enforcing forces and have been evolving in parallel since the creation of the GATT in 1947. The evolution of global value chains has fragmented multilateral production networks and has drawn the attention of trade policy makers towards a broader range of policies than just the traditional import barriers and export competition issues. Agreeing disciplines on policy measures that are behind the border is arguably even more difficult than negotiating tariff reductions at the multilateral level, and this may have contributed to the increasing number of regional trade agreements, with often 'deep' provisions (Baldwin, 2014) to ensure a competitive business environment for foreign firms.

The WTO provides information for 100 Regional Trade Agreements (RTAs) and on 52 categories of provisions that appear in these trade agreements and go beyond WTO provisions. Figure 1 shows how often these agreements mention the respective provisions in a legally binding language.[1]

Figure 1. Frequency of legally enforceable 'deep' provision



Source: WTO RTA database, 2011, in Baldwin, 2014.

Despite these historical achievements, efforts to enhance integration have recently slowed down, or even reversed. The G20 stocktake of measures taken after the financial crisis shows an increasing trend (OECD/WTO/UNCTAD, 2016); Agricultural markets remain highly protected in many countries through border measures and domestic support to the farm sector; progress at the multilateral level remains slow, and RTAs are facing increasing domestic opposition in many countries.

This stagnating progress to trade integration can be particularly problematic for developing countries. The challenge today is to participate successfully in global value chains, building on the comparative strengths of countries, which can be in natural resources, services, or labour. Well-designed trade integration, at both the regional and multilateral level, should foster economic growth and income generation for those who need it most.

[1] Note that these agreements include the European Union agreements which go far beyond trade issues.

This study addresses the question of what countries with different level of development can expect to achieve from further market integration, both regionally and multilaterally. To analyse this question the study develops a set of trade reform scenarios which are quantified with the OECD METRO model. Because enhancing domestically created value added, and hence income, is a central aim of trade reforms, the analysis focusses specifically on changing patterns in trade in value added (GVC effects) and on employment and wage effects of trade reforms.

The hypothetical trade reform scenarios consist of a combination of full (multilateral) reforms in which all countries participate in contrast to partial reforms that resemble regional trade agreements in a stylized way. Drawing on the OECD's inventories of trade measures, the simulations consider tariff- and non-tariff measures as well as trade facilitation for agriculture, manufacturing and services. It fleshes out the various economic effects for individual countries and country groupings, with a focus on those within Asia and with varying levels of development and specialisation of activities. This provides a means to disentangle the effects of participating or not in further market integration.

2. In or out? Theory and evidence of being a member or non-member in a RTA

The economics of RTAs are quite well understood. A traditional RTA that decreases tariffs between members results in lower prices for imports and higher prices for exports on the trade that occurs between members – promoting a growth in trade between members. The magnitude of the price changes depend on the responsiveness of import demand and export supply and on the size and structure of the economies involved. For governments, as tariffs are brought down, less tariff revenues will be collected, impacting their budgets.

As the tariff reductions are preferentially applied to members of the RTA, non-participant countries will experience an impact on their trade. Their export volumes to the RTA members will typically decrease as trade is diverted from them to RTA members. While this trade diversion is disadvantageous for non-member countries, it but might also be negative for RTA members when trade shifts to less efficient producers inside the trade agreement (RTA members). The trade diversion effect can even be larger than the trade creation effect, resulting in an overall negative balance for individual RTA member countries. Complicated rules of origin are needed to assure that no outsider can 'free ride' on the preferential market access generated by the trade agreement. These limit the gains on offer for members as they create costs and may require changes in input sourcing that limits the potential competitive advantages from regional integration.

Provisions related to reducing the trade costs arising from regulatory differences are increasingly included in recent RTAs. Examples include disciplines that help underpin global value chains, such as Sanitary and Phytosanitary regulations; intellectual property rights; capital movement; and competition policy. Provisions related to non-tariff measures have specific characteristics that render their analysis different from the analysis of tariffs. First, there is no simple measurement of the trade costs related to NTMs. Second, since NTMs have their rationale in domestic regulations that address various concerns such as consumer safety and health they have domestic benefits that are hard to quantify. Even if estimates of NTM-related trade costs are available, any analysis cannot rely on a simple reduction of them, as that would imply a simplification of the question to trade costs alone. A more comprehensive approach would have to investigate the scope for reducing NTM-related trade costs through regulatory cooperation. Third, the

discriminatory nature of tariffs that causes trade diversion may not be relevant in many RTA provisions on NTMs. Recent OECD work explores the scope for trade-related regulatory co-operation in greater detail (von Lampe et al., 2016; OECD, 2017a).

An example of a non-discriminatory provision is the automation of border procedures. This lowers the transaction costs of importing not only for RTA members but also for non-members. The absence of such trade facilitating measures introduces a price gap similar to a tariff, although in most cases it does not generate government revenues. Automation of border procedures can be analysed as a reduction of the price gap for all importers, RTA members and non-members alike.

The main determinant for effects on non-member countries is the discriminatory nature of provisions in the RTA. Acharya et al. (2011) present trade creation and trade diversion effects for 21 trade agreements using a gravity model. The study finds that most of the trade agreements reviewed trade more with non-member countries than would otherwise be expected without the RTA, indicating a negative trade diversion effect. However, five of the trade agreements are trading less with the non-members than expected without the RTA and members of four RTAs are showing less trade with each other. While giving a more nuanced picture, Barbalet et al. (2015), who analyse the effects of 27 agreements, support this finding. The study finds that the participation in RTAs is likely to increase trade, but the extent depends on the nature of the agreement. Barbalet et al. (2015) conclude that non-preferential agreements and agreements based on an 'open regionalism' model such as ASEAN-CEPT and APEC characteristically lead to trade creation with non-members, too.

3. Room for further integration: Remaining barriers to trade in the METRO database

This study covers four areas where there is scope for further barrier reduction:

- tariffs
- non-tariff measures
- trade facilitation
- domestic support to agriculture.

The METRO database contains data on applied bilateral tariffs by sector. Tariff data are sourced from the GTAP database and thus are ultimately 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). The database distinguishes *ad valorem* tariffs and *ad valorem* estimates of specific tariffs including also tariff rate quotas. Tariffs are differentiated by partner country and commodity.

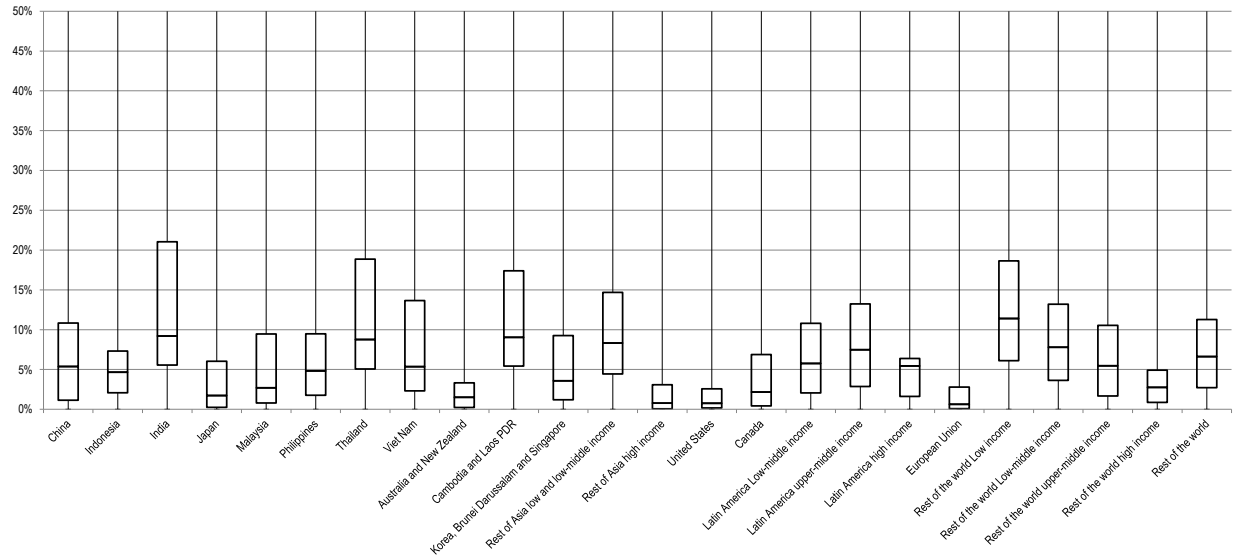
Figure 2 gives an overview of the distribution of tariffs in the database. All covered regions have high tariffs for few sensitive products. High income (HI) countries tend to have lower applied tariff rates compared to low income (LI). Specific tariffs are less widely applied and concern mainly agricultural products.

Non-Tariff Measures (NTMs) are incorporated in METRO through new estimates of ad valorem equivalents (AVEs) of trade costs (OECD, 2018). The AVEs are econometrically estimated with a gravity model that includes the presence of NTMs at the importer-product level amongst the explanatory variables for the unit value of trade flows. The type of NTMs included are technical measures, that is, sanitary and phytosanitary measures (SPS) and technical barriers to trade (TBT). Non-technical measures, such as pre- shipment inspection and quantity restrictions, are included in the trade facilitation

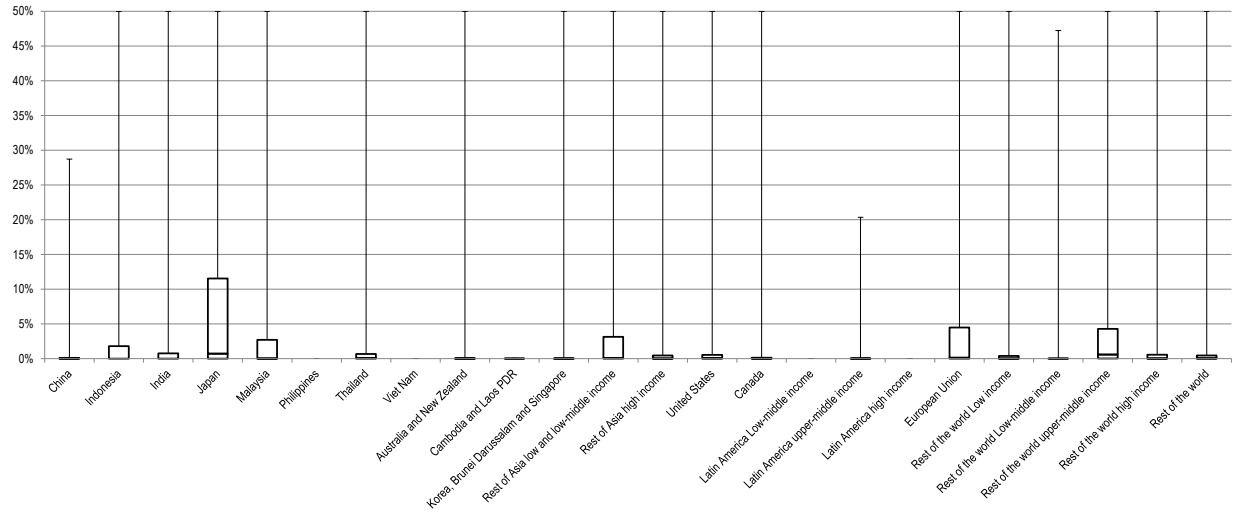
indicator (TFI) and estimates of tariff rate quotas are already included in the specific tariffs estimates. The information on technical measures is based on the MAST collection of NTMs and the unit value of imports by product comes from CEPII (Berthou and Emlinger, 2011).

Figure 2. Overview: Tariffs in the database, trade weighted average, for 2011

a) Tariffs (based on model aggregation, truncated at 50%)



b) Specific tariffs (based on model aggregation, truncated at 50%)

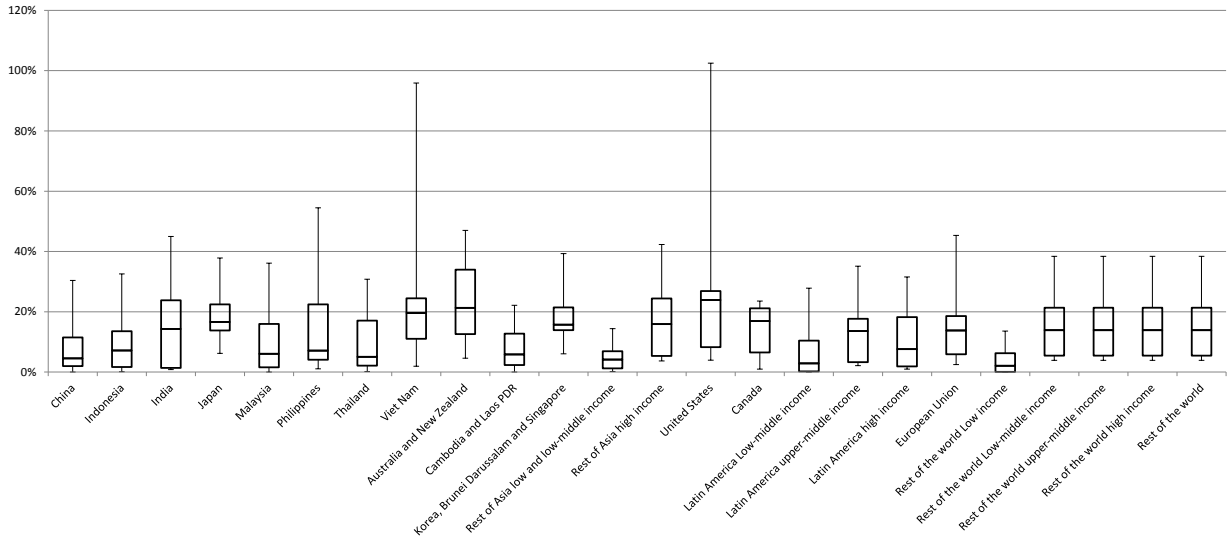


Note: Graphs show the distribution of tariffs by region: minimum, maximum, median, and second and third quartiles.
Source: Calculations based on GTAP, in Aguiar et al. (2016), http://dx.doi.org/10.21642/JGEA.010103AF.

Figure 3 shows the distribution of the ad valorem equivalents of NTMs (SPS and TBT) estimates in the database. Those estimates tend to be higher for high income countries compared to lower income groups. With few outliers the majority of estimates are between 0% and 20%. Trade costs implied by SPS and TBT measures can be different across partners.

Deep provisions in an RTA would reduce the trade costs related to NTMs, but would not completely eliminate the entire cost of complying with relevant regulations in partner countries. What is called the 'actionable' (that is, the amount of the cost that can be removed) or non-tariff barrier (NTB) is only a part of the AVEs.

Figure 3. *Ad valorem* estimates of NTMs in the database, trade weighted average, for 2014



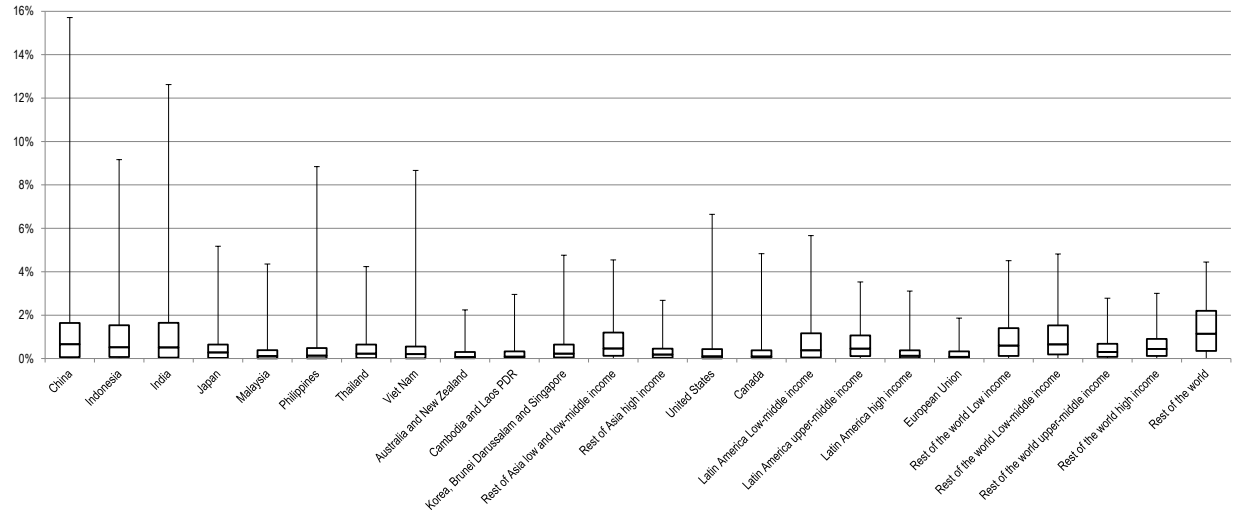
Note: Graphs show the distribution of tariffs by region: minimum, maximum, median, and second and third quartiles.
Source: OECD (2018), "Estimating *ad valorem* equivalent of non-tariff measures: Combining price and quantity based approaches", TAD/TC/WP(2017)12/FINAL.

Trade facilitation policy changes are incorporated in METRO through ad valorem equivalents (AVEs) (OECD, 2017b). The AVEs express the value associated to a reduction in clearance delays triggered by improvements in border procedures and are obtained in two stages. First, the improvements in clearance times are estimated, which are triggered by implementation of provisions in the trade facilitation agreement. These improvements in provisions are based on the OECD trade facilitation indicators. Second, these clearance time improvements are linked with the "value" associated to one hour "saved" in transit. The "value" associated to time is available at the product level from the database constructed by Hummels et al. (2007) and expressed in ad valorem terms.

Improvements in trade facilitation are focussing on improving administrative procedures at the borders and should therefore be non-discriminatory against trade partners. Figure 4 shows the distribution of TFI estimates in the database, the variations originate from sectoral differences. The implementation of the trade facilitation agreement is estimated to lower trade costs equivalent to up to 2% for the majority of cases (reflecting sector differences by country). The highest potential benefits arise for China, Indonesia, India and some ROW regions which show the highest median and middle quartiles – these countries are also the ones with the highest outliers.

Domestic support to agriculture is based on OECD producer support estimate (PSE) data. The simulation includes only the budgetary support payments measured in the PSE, while the market price support (MPS) component is partly captured by the tariff data used in METRO. The budgetary support includes payments related to farm inputs, as well as less coupled and other direct payments (Figure 5). A detailed discussion of the treatment of domestic support to agriculture in the METRO database is found in OECD (2016).

Figure 4. TFI estimates in the database, trade weighted average, for 2015

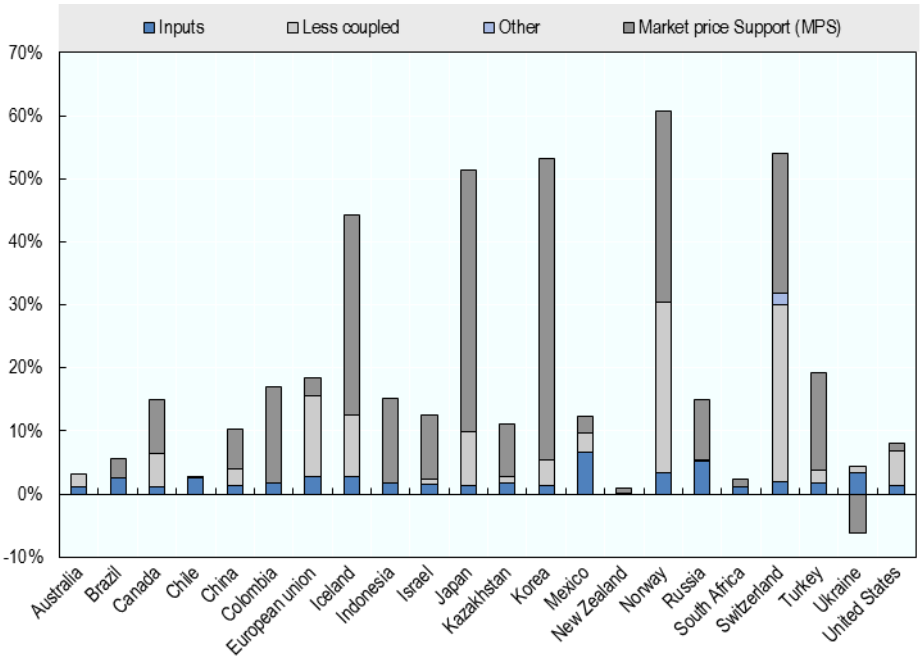


Note: Graphs show the distribution of tariffs by region: minimum, maximum, median, and second and third quartiles.
Source: OECD (2017b), "METRO development: Modelling non-tariff measures and estimation of trade facilitation impacts", TAD/TC/WP(2016)20/FINAL.

.

Figure 5. Domestic support: OECD Producer Support Estimate, for 2011

Included are all but MPS which is partly covered in tariff data



Source: OECD (2016), "Producer and Consumer Support Estimates", *OECD Agriculture Statistics* (database), http://dx.doi.org/10.1787/agr-pcse-en.

4. Simulation design and model

The modelling framework

To analyse the effects from market integration this study employs the computable general equilibrium (CGE) model METRO.[2] METRO is a static computable general equilibrium model (CGE), deriving from the model GLOBE developed by McDonald and Thierfelder (2013). CGE models rely on a comprehensive specification of economic activity within and between countries (and therefore the different inter-linkages that tie these together). The novelty and strength of METRO lies in the detailed trade structure and the differentiation of commodities by use – commodities and thus trade flows are distinguished by use category, whether these are designed for intermediate use, use by households, government consumption as well as investment commodities.

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. Imports and domestic supply are imperfectly substitutable in domestic use. On the export side, METRO employs the assumption of imperfect transformability of supply to the domestic or export market.

Production activities maximise profits and form output from primary inputs, (that is, land, natural resources, various labour categories and capital) combined using Constant Elasticity of Substitution (CES) technology, and intermediate inputs in fixed shares. Households are assumed to maximise utility, while receiving income from labour supply. The model depicts various policy variables such as taxes, tariffs and subsidies. The government receives income from these taxes, pays for subsidies and also engages in consumption. Total savings consist of savings from households, the internal balance on the government account and the external balance on the trade account. The external balance is defined as the difference between total exports and total imports in domestic currency units.

The model allows for a variety of macroeconomic setups, by defining how the markets and accounts mentioned above are cleared, e.g. the labour market, the capital market and the government account. In this study the following standard setup is chosen: the current account balance is fixed to its base level and the exchange rate is floating. In the capital market the savings rate is a fixed share of household income and investment adjusts to balance the account. All tax rates are fixed and Governments are assumed to adjust spending to maintain the balance. In factor markets all factors, labour, capital, land and natural resources, are fully employed and mobile across sectors.

The METRO database derives from the GTAP V9 database (see Aguiar et al., 2016) and disaggregates imports based on use categories (intermediate inputs, final consumption and capital formation) derived from OECD sources. For the purpose of this study the database is aggregated to reflect 24 countries and geographic regions as well as 19 sectors as detailed in Table 1. The database is benchmarked to the year 2011.

[2] For a detailed model description refer to OECD (2015), "METRO v1 Model Documentation", TAD/TC/WP(2014)24/FINAL.

Box 1. The Metro 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).[1]

The novelty and strength of METRO lies in the detailed trade structure and the differentiation of commodities by use – commodities and trade flows are distinguished by use category: whether these are designed for intermediate use, use by households, government consumption as well as investment commodities.

At each of the four use categories composite commodities are demanded, which are formed as three level nested 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. On the first level domestic goods and aggregate imports are forming a composite commodity using CES technology. On the export side, METRO employs also the assumption of imperfect transformability using a 2 level Constant Elasticity of Transformation (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 directs 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. The Model also 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 activities which produce commodities. Activities maximise profits and form output from primary inputs (i.e. land, natural resources, labour and capital), combined using Constant Elasticity of Substitution (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 savings are defined as a residual. Closure rules for the government account allow for various fiscal specifications. Total savings consist of savings from households, the internal balance on the government account and the external balance on the trade account. The external balance is defined as 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.

1. The original GLOBE model and a detailed documentation are available at http://www.cgemod.org.uk/.

Simulation design

The study analyses the effects of membership in multilateral and regional trade agreements. For this purpose three hypothetical trade agreements are simulated and the effects compared against each other (the detailed membership by region in each scenario is depicted in Table 1):

- Multilateral Agreement: The first scenario simulates a multilateral trade agreement including an agreement on trade facilitation, reduction of tariffs (by 50%) and reduction of domestic support in agriculture (50%).[3] An agreement on transparency of standards is assumed to lower trade costs of NTMs by 5%.
- Regional Trade Agreement between high income Asian countries (RTA-HI): The second scenario simulates a trade agreement between high income countries in Asia. This agreement includes reforms in trade facilitation, and the reduction of border restrictions including NTMs (15%) and tariffs (50%).

[3] Domestic support is depicted in the model database using PSE data for the 52 economies covered in the OECD database; for other countries data is sourced from respective national input-output tables.

- Regional Trade Agreement in Asia including all income groups (RTA-ALL): The third scenario simulates a trade agreement between a wide group of Asian countries which includes various income groups. This agreement includes reforms in trade facilitation, and the reduction of border restrictions including NTMs (15%) and tariffs (50%).

Table 1. Region and sector aggregation

Regions	Member in 1/Multilateral Agreement	Member in 2/RTA-HI	Member in 3/RTA-ALL	Sectors
China	X		X	Paddy rice
Indonesia	X		X	Crops
India	X		X	Animals
Japan	X	X	X	Natural resources
Malaysia	X		X	Meat
Philippines	X		X	Dairy
Thailand	X		X	Processed rice
Viet Nam	X		X	Other food products
Australia and New Zealand	X	X	X	Textiles and wearing apparel
Cambodia and Lao PDR	X		X	Light manufacturing
Korea, Brunei Darussalam and Singapore	X	X	X	Heavy manufacturing
Rest of Asia low and lower-middle income (LMI)	X		X	Motor vehicles
Rest of Asia high income (HI)	X	X	X	Machinery and electronic and transport equipment
United States	X			Other manufacturing
Canada	X			Construction
Latin America Lower-middle income (LMI)	X			Trade
Latin America upper-middle income (UMI)	X			Land water and air transport
Latin America high income (HI)	X			Public admin., defence, education, health
European Union (EU)	X			Other services
Rest of the world Low income (ROW-LI)	X			
Rest of the world Lower-middle income (ROW-LMI)	X			
Rest of the world upper-middle income (ROW-UMI)	X			
Rest of the world high income (ROW-HI)	X			
Rest of the world (ROW)	X			

Another simulation is conducted to deepen the understanding of the effects of participating in regional trade agreements by lower income economies. This variant assumes a regional trade agreement between high income Asian economies, as in RTA-HI, while they also lower trade barriers towards all other Asian economies on a non-reciprocal basis.

5. Effects of multilateral trade reform

Effects on trade

Multilateral trade liberalisation increases trade and production in all regions (Table 2). In many regions the volume of imports is found to increase more than exports, and at the same time production increases. For some regions, exports increase stronger than imports, especially in the low income regions: Viet Nam, Thailand, India, Philippines, Cambodia and Lao PDR, Rest of Asia-LMI, ROW-LI, and ROW-LMI. These regions benefit specifically from reduced barriers on intermediate imports, enabling them to reduce input costs for intermediates which in turn improves their export position.

Table 2. Multilateral Agreement: Effects on production and trade (real)

	Production	Imports	Rank	Exports	Rank
	Per cent			Per cent	
Viet Nam	3.0	5.8	(1)	8.2	(2)
Thailand	1.7	4.5	(5)	5.1	(6)
Korea, Brunei Darussalam and Singapore	1.7	3.5	(9)	3.2	(11)
Cambodia and Lao PDR	1.7	5.4	(3)	7.1	(3)
Malaysia	1.4	3.4	(11)	3.4	(10)
India	1.0	4.2	(6)	6.3	(4)
Rest of Asia low and lower-middle income	0.8	5.6	(2)	10.2	(1)
Rest of Asia high income	0.8	2.3	(16)	1.6	(20)
Rest of the world high income	0.6	2.2	(17)	1.8	(18)
Rest of the world Low income	0.5	3.2	(13)	6.2	(5)
Rest of the world Lower-middle income	0.5	2.7	(15)	3.9	(8)
Rest of the world	0.5	3.4	(10)	3.4	(9)
Indonesia	0.4	3.7	(8)	3.0	(12)
Japan	0.4	3.8	(7)	2.9	(14)
Latin America Lower-middle income	0.3	1.5	(19)	1.9	(17)
Australia and New Zealand	0.3	2.0	(18)	1.4	(21)
China	0.3	5.2	(4)	4.4	(7)
Latin America high income	0.2	1.1	(22)	0.4	(24)
Rest of the world upper-middle income	0.2	3.3	(12)	2.7	(15)
Philippines	0.2	1.2	(21)	2.0	(16)
United States	0.2	1.3	(20)	1.7	(19)
European Union	0.1	0.5	(24)	0.5	(23)
Latin America upper-middle income	0.1	2.9	(14)	2.9	(13)
Canada	0.0	0.6	(23)	0.6	(22)

Source: OECD METRO simulation results.

Multilateral reforms would strengthen specialisation patterns. Improved market access would drive growth of agriculture and food exports in Australia, New Zealand (mainly in meat and dairy), Canada (meat and crops) and Latin American regions (other food and meat). For Cambodia and Lao PDR, and Rest of Asia-LMI the export growth is based mainly on textiles. Other Asian regions and the European Union show a relatively strong focus in manufacturing of electronics and machinery.

Production and domestic effects

The regions that show the strongest trade effects are also the regions that have the strongest production increase (Table 2). While production effects are linked to trade effects this does not necessarily imply that exports increase more than imports. Indeed, the change of trade flows is a poor indicator of production effects. For example, the "Korea, Brunei Darussalam and Singapore" grouping and Malaysia are among the five regions where the production increase is the strongest. However, for these economies, imports increase more than exports. Conversely, for the four regions with lowest production increases (Canada, Latin America-UMIC, European Union and United States), exports increase more than imports. Countries that are strongly integrated in trade tend to see the biggest boost to their production. For example, the ratio of intermediate inputs to GDP is high in Viet Nam, Thailand and Malaysia (over 57%) and these regions have also the strongest production effects. They benefit relatively strongly from lower import prices for inputs that are needed for their domestic manufacturing, and at the same time see improved export market access.

The multilateral agreement has two opposing effects on government income: governments lose tariff revenues – especially relevant for some developing countries – and new government income is generated as production and household incomes expand. Strongly decreasing government income through lower tariff revenues will be problematic for the provision of public services if not offset by changes in a country's approach to taxation. To test the effects of a change in government revenues from tariffs to income tax a second set of simulations was run. In the base case, the income tax rate is fixed and government expenditures adjust to maintain a balanced budget. The policy swap, with a flexible income tax rate has only small effects on overall results, but private households would have to carry most of the adjustment. Household consumption would grow at a slower pace in low income countries (Table 3).

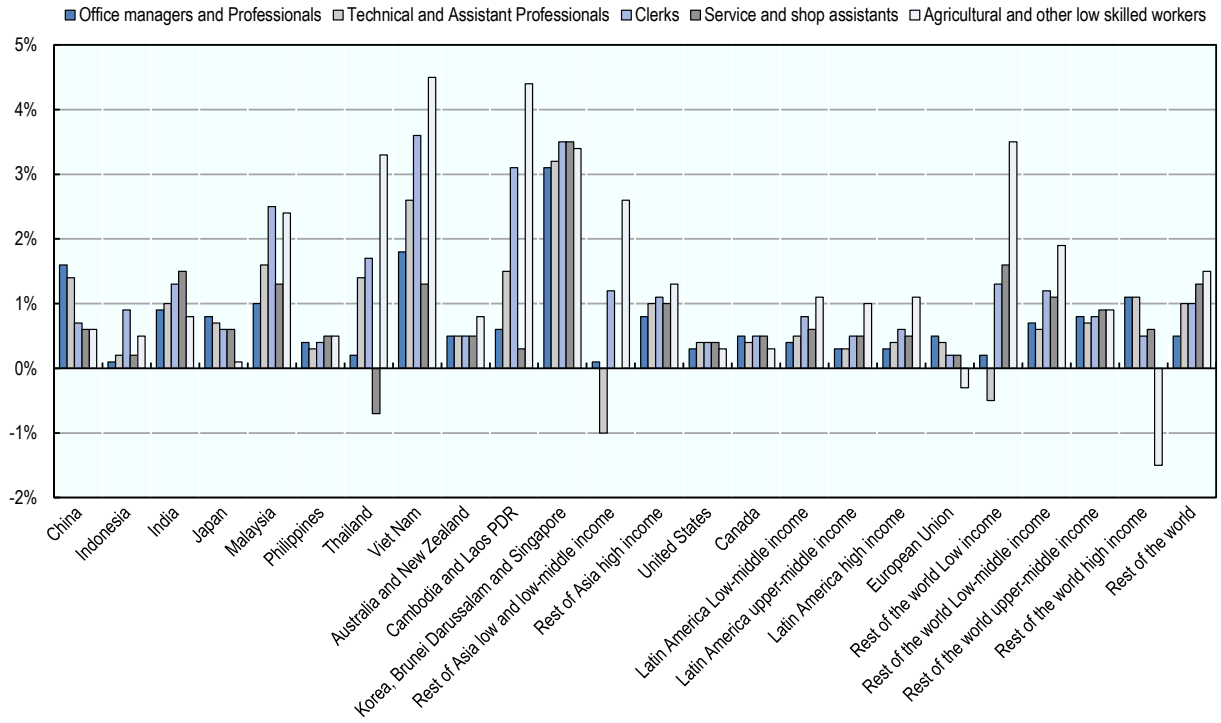
Table 3. Effects with a flexible income tax, selected regions

	Base closure: fix tax rates, flexible expenditure		Policy alternative: flexible income tax		Real GDP		
	Government consumption	Private consumption	Government consumption	Private consumption	**Share of government in total final demand**	Base closure	Flexible income tax
	Per cent						
Laos PDR and Cambodia	-35.1	3.0	-1.0	-0.5	7	1.0	1.1
Viet Nam	-25.1	2.9	-0.9	0.6	6	2.1	2.0
Rest of Asia low and lower-middle income	-11.7	1.6	-0.1	0.0	9	0.8	0.6
Rest of the world Low income	-11.1	2.1	-0.3	0.1	11	1.1	1.0
Thailand	-9.6	1.9	-0.9	0.1	14	1.0	1.0
Malaysia	-6.4	2.2	-0.5	0.7	16	1.0	0.8
Canada	0.2	0.4	0.0	0.5	22	0.3	0.3
United States	0.3	0.3	0.1	0.3	16	0.3	0.3
Japan	0.5	0.6	0.2	0.7	20	0.4	0.4
European Union	0.9	0.1	0.2	0.5	22	0.3	0.3

Source: OECD METRO simulation results.

Multilateral trade reform increases wages across labour types and regions by up to 4%. There are a few exceptions where labour remuneration is expected to decrease, such as wages of agricultural and other low skilled workers in the European Union (Figure 6). Effects on wages vary between and within regions, with low income regions experiencing the strongest increases and widest variations of wage growth between labour categories. This wider variation is explained by more pronounced reallocation of resources between sectors to exploit the benefits of market opening.

Figure 6. Multilateral Agreement: Effects on wages



Source: OECD METRO simulation results.

6. Regional Trade Agreements

Trade effects of regional trade agreements: RTA-HI and RTA-ALL

Two simulations with different configurations of regional trade agreements highlight the effects of broader participation in such agreements. The first hypothetical trade agreement is between a group of high income countries in Asia (*RTA-HI:* agreement between Japan, Australia and New Zealand, and Korea Brunei Darussalam and Singapore, and the Rest of Asia High Income) and the second is a hypothetical agreement between countries in Asia of different development status (*RTA-ALL*).[4] The macroeconomic effects (Table 4) underscore two important findings: first, participation in the RTA leads to production and GDP growth while non-members are slightly negatively affected; second, the economic gains are bigger when the agreement encompasses more countries: for example GDP would grow twice as much in *RTA-ALL* as compared to *RTA-HI* for Japan, Australia and New Zealand, and 'Korea, Brunei Darussalam and Singapore'.

[4] For members in RTA-ALL refer to Table 1

While all participants (indicated in bold in Table 4) would experience notable GDP growth in the scenario *RTA-ALL*, the biggest potential gains are observed for lower income countries. The strongest GDP effects are in Viet Nam, Thailand, Malaysia, India, and Cambodia and Laos PDR.

In contrast, if market opening by high income countries would not be reciprocated by lower income economies they would not gain much. The non-reciprocity nature of such an agreement would not boost domestic manufacturing through cheaper imports of intermediate inputs and would not lead to benefits from lower prices for consumers. The results show that the boost to regional value chains, and economic activity more widely, would be limited to those economies who also participate in market opening efforts.

Table 4. RTAs: Macroeconomic effects

	China	Indonesia	India	Japan	Malaysia	Philippines	Thailand	Viet Nam	Australia and New Zealand	Cambodia and Laos PDR	Korea, Brunei Darussalam, Singapore	Rest of Asia low and lower-middle income	Rest of Asia high income
							Per cent						
							RTA-HI						
Real GDP	0.0	0.0	0.0	**0.2**	0.0	0.0	0.0	0.0	**0.2**	0.0	**0.6**	0.0	**0.6**
Final Demand	0.0	0.0	0.0	**0.2**	0.0	0.0	-0.1	0.0	**0.4**	0.0	**0.6**	0.0	**0.7**
Imports	-0.1	0.1	0.0	**1.3**	-0.1	-0.3	-0.1	-0.1	**1.5**	0.0	**1.3**	0.0	**1.0**
Exports	-0.1	0.0	0.0	**1.0**	-0.1	-0.3	0.0	-0.1	**0.8**	0.0	**1.2**	0.0	**0.9**
Production	0.0	0.0	0.0	**0.1**	0.0	-0.1	0.0	0.0	**0.2**	0.0	**0.4**	0.0	**0.4**
							RTA-ALL						
Real GDP	**0.5**	**0.5**	**0.8**	**0.3**	**1.0**	**0.7**	**1.1**	**3.0**	**0.5**	**1.2**	**1.0**	**0.8**	**0.8**
Final Demand	**0.4**	**0.7**	**0.6**	**0.5**	**1.3**	**0.5**	**0.7**	**1.8**	**0.7**	**0.3**	**1.2**	**0.4**	**1.3**
Imports	**3.1**	**3.5**	**2.0**	**3.6**	**3.3**	**1.6**	**4.1**	**4.4**	**2.7**	**3.6**	**3.0**	**3.3**	**2.5**
Exports	**2.9**	**2.3**	**3.4**	**2.7**	**2.8**	**2.3**	**4.5**	**6.7**	**1.5**	**5.6**	**2.5**	**7.0**	**1.7**
Production	**0.2**	**0.2**	**0.5**	**0.3**	**1.2**	**0.3**	**1.6**	**2.6**	**0.3**	**1.3**	**1.0**	**0.5**	**0.8**
							RTA-HI (and lower import barriers for all Asian regions)						
Real GDP	-0.1	0.0	0.0	**0.3**	0.0	0.0	-0.1	0.0	**0.5**	0.0	**1.0**	0.0	**0.8**
Final Demand	0.1	0.2	0.0	**0.3**	0.3	0.0	0.2	0.2	**0.6**	-0.1	**0.7**	0.0	**0.8**
Imports	0.6	0.9	0.2	**1.7**	0.5	0.2	0.5	0.3	**1.7**	-0.3	**1.8**	0.0	**1.3**
Exports	0.2	0.2	0.1	**1.8**	0.2	0.1	0.1	0.0	**1.3**	-0.2	**2.0**	0.1	**1.2**
Production	-0.1	-0.1	0.0	**0.2**	0.0	0.0	0.0	-0.1	**0.3**	-0.1	**0.7**	0.0	**0.5**

Source: OECD METRO simulation results.

The simulated RTAs lead to trade diversion: trade increases with members and decreases with non-members[5] (Table 5). In scenario *RTA-HI* high income Asian countries increase trade amongst themselves and decrease exports to the rest of the world. This effect is

[5] Recall that only trade facilitation is considered non-discriminatory in this study; the lowering of NTMs and tariffs incorporates preferential treatment.

induced by the trade preferences and reinforced by an appreciation of the exchange rates relative to the rest of the world.[6]

Strong import demand from High Income Asian economies is found to drive exports from lower and middle income Asian economies, especially if the RTA includes more participants. Exports of intermediate goods and natural resource-based extraction activities are particularly strong growth areas.

Trade creation is clearly visible in Table 5b: low- and lower-middle income Asian economies as well as upper middle income Asian economies, increase exports to the Rest of the World, benefitting from increased competitiveness and taking over export market shares from High Income Asia.

Table 5. RTAs: Real bilateral trade effects

a) HI RTA

Importer / Exporter	Low and lower-middle income Asia (LMI-Asia)	Upper-middle income Asia (UMI-Asia)	High income Asia (HI-Asia)	Low and lower-middle income ROW (LMI-ROW)	Upper-middle income ROW (UMI-ROW)	High income ROW (HI-ROW)	ROW
	Per cent						
LMI-Asia	-0.1	-0.1	0.5	-0.2	-0.2	-0.2	-0.1
UMI-Asia	0.1	0.1	-0.1	0.0	-0.1	-0.1	0.0
HI-Asia	-0.7	-0.6	7.6	-0.7	-0.5	-0.6	-0.4
LMI-ROW	0.3	0.2	0.6	0.0	0.0	-0.1	0.1
UMI-ROW	0.2	0.3	-0.3	0.0	0.0	0.0	0.1
HI-ROW	0.3	0.2	-1.1	0.1	0.1	0.0	0.1
ROW	0.1	0.3	0.2	-0.1	-0.1	-0.2	0.0

b) RTA all income groups

Importer / Exporter	Low and lower-middle income Asia (LMI-Asia)	Upper-middle income Asia (UMI-Asia)	High income Asia (HI-Asia)	Low and lower-middle income ROW (LMI-ROW)	Upper-middle income ROW (UMI-ROW)	High income ROW (HI-ROW)	ROW
	Per cent						
LMI-Asia	11.9	5.5	6.8	0.7	1.1	1.6	0.6
UMI-Asia	8.8	6.4	8.6	-0.1	0.1	0.0	0.2
HI-Asia	4.9	7.3	4.9	-2.5	-2.5	-2.9	-2.1
LMI-ROW	0.7	2.2	1.0	0.0	-0.1	-0.4	0.1
UMI-ROW	-1.9	0.0	-0.1	0.0	0.1	0.0	0.3
HI-ROW	-2.4	-1.0	-0.8	0.2	0.2	0.0	0.4
ROW	-0.9	0.2	1.2	-0.1	-0.2	-0.2	0.0

Source: OECD METRO simulation results.

The effects of RTAs on trade depend crucially on the region's trade structure – that is, a country's trade partners and the commodities which it trades. Table 6 shows that the simulated *RTA-HI* increases overall trade of member countries, especially within the RTA. Overall trade with non-members decreases, but specific sectors may see an increase of imports into the RTA. For example Japan increases imports from non-members in

[6] The exchange rates of RTA members increase to balance the current account with increasing imports.

manufacturing and services, and Australia and New Zealand are increasing food and agricultural imports from non-members. The trade creation with non-members is mainly triggered by increasing demand for intermediates.

Table 6. HI-RTA effects on trade flows

		Imports				Exports			
		Total	RTA members	Non-members-Asia	Non-members-ROW	Total	RTA members	non-members-Asia	non-members-ROW
		Per cent							
Japan	**Total**	**1.3**	**7.6**	**1.1**	**-0.5**	**1.0**	**9.6**	**-1.3**	**-1.2**
	Food and agriculture	2.6	33.7	-0.8	-2.5	5.5	16.9	-3.7	-2.7
	Natural resources	-0.2	6.6	0.1	-1.8	-0.3	0.8	-0.8	0.0
	Manufacturing	2.0	7.3	1.4	0.4	1.2	10.4	-1.3	-1.3
	Services	0.8	0.4	0.9	0.9	-0.5	0.4	-0.6	-0.7
Australia and New Zealand	**Total**	**1.5**	**11.6**	**-1.4**	**-2.0**	**0.8**	**8.1**	**-3.0**	**-2.9**
	Food and agriculture	1.8	3.9	1.0	0.9	6.2	30.5	-3.0	-3.5
	Natural resources	1.3	22.4	-2.0	-1.6	0.4	6.1	-3.3	-5.2
	Manufacturing	1.7	14.4	-1.8	-3.7	-1.2	2.7	-2.8	-3.4
	Services	1.3	0.6	1.4	1.4	-0.9	0.0	-1.2	-1.2
Korea, Brunei Darussalam and Singapore	**Total**	**1.3**	**8.6**	**-0.5**	**-0.9**	**1.2**	**5.1**	**1.9**	**1.2**
	Food and agriculture	3.3	39.0	-1.7	-3.0	4.6	14.9	3.1	1.9
	Natural resources	0.1	6.1	0.8	-0.7	4.6	7.4	-4.4	-0.2
	Manufacturing	1.7	10.0	-0.7	-2.1	1.7	5.7	2.1	1.6
	Services	1.0	0.4	1.0	1.1	-0.3	0.8	0.3	-0.3
Other HI Asia	**Total**	**1.0**	**4.1**	**-0.8**	**-0.7**	**0.9**	**3.3**	**1.2**	**0.2**
	Food and agriculture	0.4	7.1	0.1	-0.3	2.4	3.5	-0.4	-1.2
	Natural resources	0.1	-2.1	-0.1	0.4	-0.1	0.9	0.3	0.0
	Manufacturing	1.1	4.7	-1.1	-2.2	1.3	4.3	1.4	0.8
	Services	1.1	0.5	1.1	1.2	-0.5	0.5	0.0	-0.7

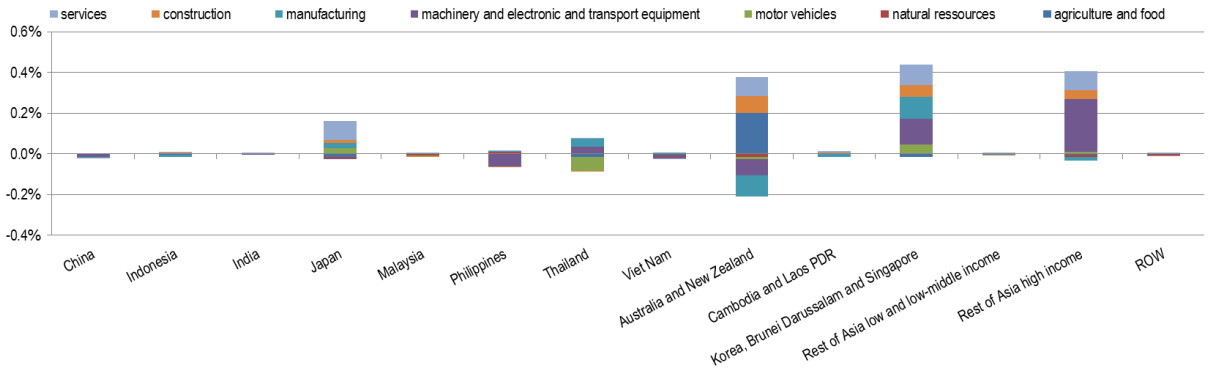
Source: OECD METRO simulation results.

Production and domestic effects

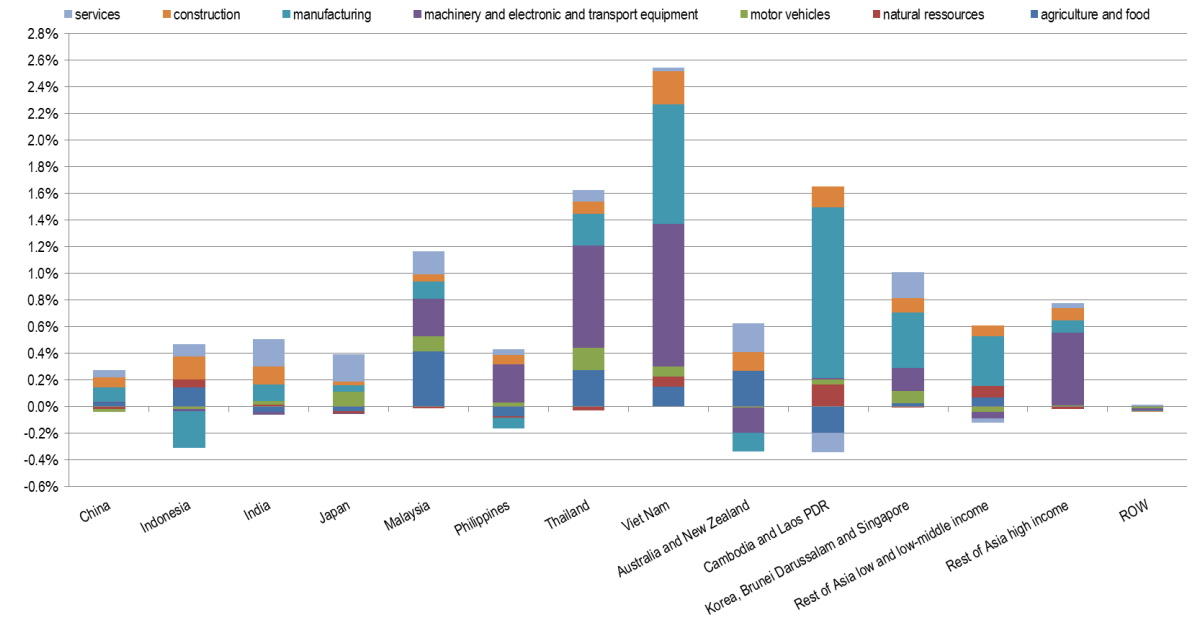
Production growth is found to be much stronger the wider participation in the RTA becomes (Figure 7). Production growth in RTA-ALL is to a large extent driven by manufacturing, although agriculture and services are also growth areas for some countries. Thus, the trade agreement leads to growth and reallocation of production activities across regions where regions focus on their comparative advantage. Reallocation is illustrated in Figure 7b, where for example Indonesia, Australia and New Zealand decrease manufacturing production in favour of agriculture and services. The Philippines shift resources from agriculture and other manufacturing to machinery, electronic and transport equipment; and Lao PDR and Cambodia decrease agricultural and service production in favour of manufacturing. In the case with non-reciprocal opening of markets in Low Income countries in Asia, there are only some small positive production effects in these countries. These effects are limited to an increase in exports that are spurred by faster growth in the high income economies for which they have better access. However, those are mainly driven by exports of food and agriculture (Thailand, Malaysia) and natural resources (Indonesia, Viet Nam).

Figure 7. RTAs: Effects on production by sector

a) RTA high income



b) RTA all income groups



Source: OECD METRO simulation results.

RTA membership decreases costs of intermediate inputs (Table 7). The cost decreases for intermediate inputs are found to be stronger in the wider RTA-ALL. Box 5 illustrates the interplay of cheaper imports of motor vehicle and parts with expansion of domestic production for the domestic market and exports in the cases of Thailand and Viet Nam. Lowering tariffs and other trade costs on intermediate inputs used in those industries benefits domestic producers as well as consumers.

Decreasing input costs and increasing demand encourage production activities. The demand pull raises factor returns, in particular wages (Table 9). Again, the wider the scope of the RTA, the more pronounced are the effects. Increasing specialisation in the wider RTA draws resources into expanding sectors, lifting wages for labour categories which are needed in the specialising sectors. On the other hand, wages in labour categories that are mainly used in sectors where production falls develop less strongly or even negatively (for example, Service and Shop Assistants in Thailand).

Table 7. RTAs: Costs of intermediate inputs

	China	Indonesia	India	Japan	Malaysia	Philippines	Thailand	Viet Nam	Australia and New Zealand	Cambodia and Laos PDR	Korea, Brunei Darussalam, Singapore	Rest of Asia LMI	Rest of Asia HI
							Per cent						
							RTA-HI						
Agriculture and food	0.0	0.0	0.0	**-0.3**	0.0	0.0	0.0	0.0	**0.3**	0.0	**-0.4**	0.0	**-0.2**
Natural resources	0.0	0.0	0.0	**-0.2**	0.0	0.0	0.0	0.0	**-0.2**	0.0	**-0.2**	0.0	**-0.3**
Motor vehicles	0.0	0.0	0.0	**-0.2**	0.0	0.0	0.0	0.0	**-1.2**	0.0	**-0.6**	0.0	**-1.7**
Machinery, electronic, transport equipment	0.0	0.0	0.0	**-0.4**	0.0	0.1	0.0	0.0	**-0.5**	0.0	**-0.7**	0.0	**-0.7**
Other manufacturing	0.0	0.0	0.0	**-0.5**	0.0	0.0	0.0	0.0	**-0.4**	0.0	**-0.6**	0.0	**-0.6**
Construction	0.0	0.0	0.0	**-0.2**	0.0	0.1	0.0	0.0	**-0.1**	0.0	**-0.4**	0.0	**-0.6**
Services	0.0	0.0	0.0	**-0.1**	0.0	0.0	0.0	0.0	**0.0**	0.0	**0.0**	0.0	**0.1**
							RTA-ALL						
Agriculture and food	0.2	-0.1	-0.5	-0.7	0.9	-0.1	0.6	0.2	0.2	1.9	-2.2	0.1	-0.6
Natural resources	-0.3	-0.3	-0.5	-0.2	0.5	-0.4	-0.6	-1.2	-0.5	-3.4	-0.1	-0.3	-0.7
Motor vehicles	-1.1	-1.9	-1.4	-0.7	-2.4	-0.6	-4.3	-10.8	-1.8	-5.4	-0.6	-0.5	-2.3
Machinery, electronic, transport equipment	-0.7	-1.4	-1.1	-0.7	-0.1	-1.1	-1.3	-2.1	-1.1	-3.9	-0.7	-0.2	-1.1
Other manufacturing	-0.3	-0.6	-0.7	-0.8	-0.1	-0.5	-0.5	-1.2	-0.7	-1.8	-0.7	-0.4	-1.0
Construction	-0.4	-0.8	-0.6	-0.4	-0.1	-0.9	-0.8	-1.8	-0.2	-3.4	-0.3	-0.9	-0.9
Services	-0.1	-0.5	-0.5	0.0	0.6	0.0	-0.3	-0.7	-0.1	-2.4	0.4	-0.5	0.1

Source: OECD METRO simulation results.

Box 2. RTA effects in detail: Motor vehicles and parts in Viet Nam and Thailand

The motor vehicles and parts sector in Viet Nam and Thailand is a good example of how trade liberalisation benefits domestic production. The motor vehicles sector in these countries is strongly integrated in trade: in Viet Nam 95% of motor vehicles parts (intermediates) being imported and 63% in Thailand. The RTA decreases the import price of motor vehicles parts by -15% in Viet Nam and -10% in Thailand, lowering total production costs (while wages increase) by -7% (Viet Nam) and -3% (Thailand). This cost decrease boosts exports and domestic supply to consumers, shifting consumer demand towards domestic produce.

Table 8. RTA-ALL: Effects on motor vehicles production in Viet Nam and Thailand
Quantities, % change to the base

Quantity effects of RTA-ALL, in % change to base		**Exports**	**Supply**	**Supply to domestic market**	**Demand**	**Imports**
				Per cent		
Viet Nam	Intermediates	29.1	22.9	1.3	8.6	8.9
	Household demand	13.8	8.8	8.8	8.6	-7.9
Thailand	Intermediates	8.4	3.7	-4.3	3.7	9.2
	Household demand	11.7	7.3	6.2	6.3	22.0

Source: OECD METRO simulation results.

Table 9. RTAs: Effect on wages

	China	Indonesia	India	Japan	Malaysia	Philippines	Thailand	Viet Nam	Australia and New Zealand	Cambodia and Laos PDR	Korea, Brunei Darussalam,	Rest of Asia LMI	Rest of Asia HI
	Per cent												
RTA-HI													
Technical and assistant professionals	0.0	0.0	0.0	**0.3**	0.0	0.0	0.0	-0.1	**0.4**	0.0	**0.7**	0.0	**0.7**
Clerks	0.0	0.0	0.0	**0.2**	0.0	0.0	0.0	-0.1	**0.4**	0.0	**0.8**	0.0	**0.7**
Service and shop assistants	0.0	0.0	0.0	**0.3**	0.0	-0.1	-0.1	-0.1	**0.4**	0.0	**0.8**	0.0	**0.7**
Office managers and professionals	0.0	0.0	0.0	**0.3**	0.0	-0.1	0.0	-0.1	**0.4**	0.0	**0.7**	0.0	**0.6**
Agricultural and other low skilled workers	0.0	0.0	0.0	**0.1**	0.0	0.0	-0.1	-0.1	**0.5**	0.0	**0.8**	0.0	**0.7**
RTA-ALL													
Technical and assistant professionals	0.4	0.2	0.7	0.6	1.5	0.5	1.3	3.0	0.7	0.8	1.8	-0.6	1.2
Clerks	0.7	0.9	0.9	0.6	2.3	0.6	1.5	3.9	0.7	2.5	2.0	0.8	1.2
Service and shop assistants	0.7	0.2	1.0	0.6	1.5	0.8	-0.3	1.9	0.7	-0.1	2.0	0.0	1.2
Office managers and professionals	0.3	0.0	0.6	0.6	1.2	0.6	0.4	2.3	0.7	0.0	1.8	0.1	1.1
Agricultural and other low skilled workers	0.8	0.6	0.9	0.3	2.3	1.0	2.7	4.4	0.8	4.0	2.0	1.6	1.5

Source: OECD METRO simulation results.

7. Households and labour markets: How are they affected?

The simulated trade agreements reduce input costs and increase competitiveness with positive effects on production and income. The benefits for consumers are twofold: first through lower prices for imports, and second through lower prices for domestic products. The lower prices boost demand and re-enforces the positive effect on production.

The results also show that the gains are larger when more parties are involved in the trade agreement. The welfare results show (Annex Figure A.2) that a multilateral agreement would generally be the preferred option, as it does not suffer from the potential negative effects of trade diversion.

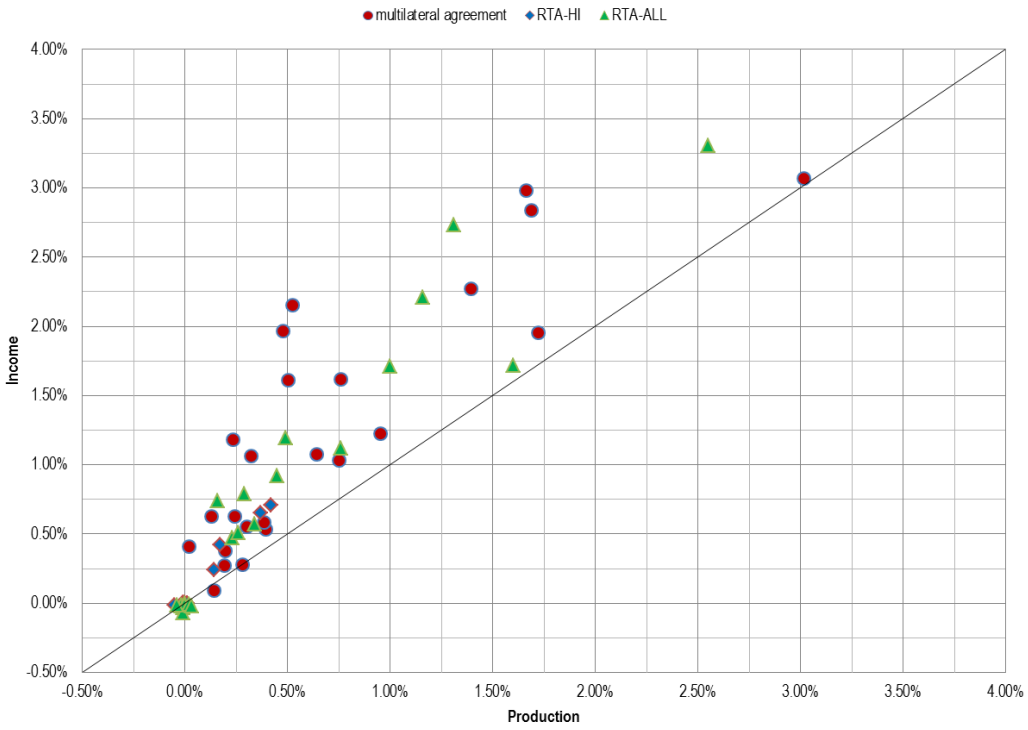
The strongest overall economic gains, measured by household income, consumption and equivalent variation (EV), are found for Viet Nam, Malaysia and Lao PDR and Cambodia. Those welfare effects are positively correlated with production and are more than doubled with a wider participation.

Production and household income are positively correlated, but not perfectly (Figure 8). The difference between the two measures originates in changes to wages and factor returns. Figure 9 shows how much each factor contributes to the overall income increase in the case of a multilateral liberalisation scenario. The owners of those factors gain, or lose, from trade liberalisation. Higher returns to the different types of labour that are distinguished in the analysis contribute between 20% and 60% to the change of total income.

Trade liberalisation has a distributional dimension as some parts of the economy benefit more than others and in some cases production activities and incomes decrease. To take advantage from trade countries need to specialize in activities where they have a comparative advantage. Such shifts within an economy involve job displacement and wage adjustments. These processes take time to occur and require investments by

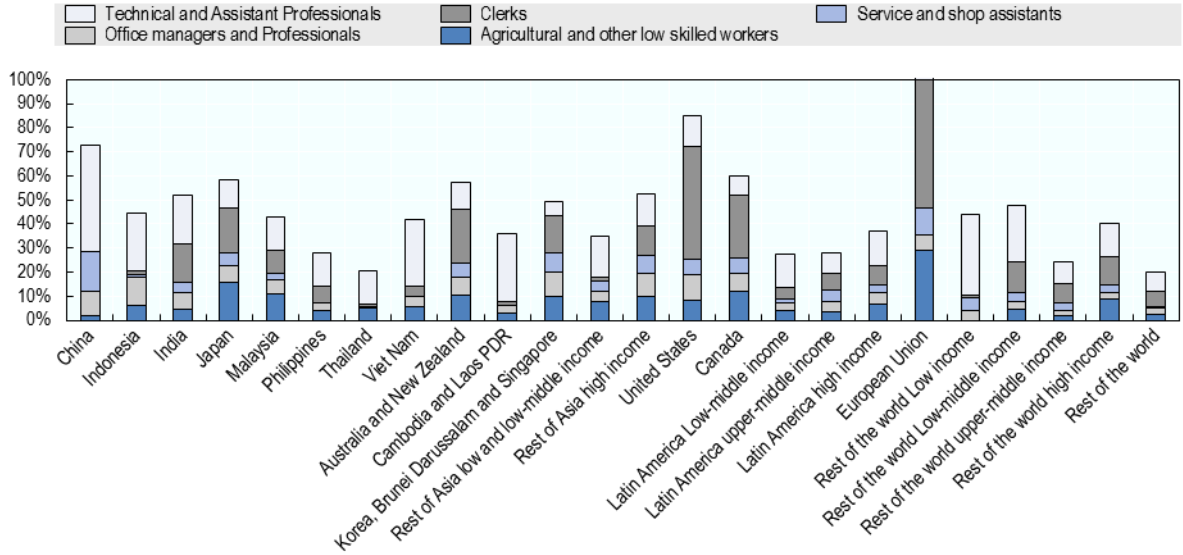
governments to enable workers move between sectors. There are further complications as production is often regionally clustered, meaning there is also a geographical and regional dimension to adjustments.

Figure 8. Effects on production and household income



Source: OECD METRO simulation results.

Figure 9. Multilateral Agreement: Breakdown of the contribution to income growth



Source: OECD METRO simulation results.

The simulations of a multilateral agreement show that up to 6% of workers would change sectors (Figure 11). The reallocation is strongest in low income regions, and the labour categories which would experience most change between sectors are those with the smallest wage increase compared to other categories in the region – this means that the adjustment costs are most likely to be borne by workers themselves as there is little expected wages rises to help facilitate the movement across sectors. In addition, reallocation causes adjustment costs for individuals and firms. The size of these adjustment costs depends on the flexibility of the factor market and the structure of the economy, and is a cost which is not considered in the modelling exercise. Appropriate labour market and education policies are needed to reduce those adjustment costs.

Adjustment policies focusing only on those displaced by trade are not enough. The exact recipe will vary by country, and efforts need to develop integrated trade and domestic policies that target not only labour markets and social safety nets, but also equality of opportunity (OECD, 2017c). Policies include:

- Investments that support both people and growth by ensuring access to good quality health and education for everyone, and strengthening opportunities for the most disadvantaged.
- Effective activation frameworks to bring more people into the labour force and make work pay, while improving their employability and expanding their job opportunities.
- Better anticipation and responses to changing skill needs, and foster better use of skills in the workplace.
- Reforms to promote labour market inclusion for under-represented groups – notably women, youth, and older workers.
- Strengthened effectiveness of redistribution systems; putting in place well-designed income-support policies and counter-cyclical social spending.
- Linking entitlements to individuals rather than jobs so that they can support mobility and be portable from one job to the next.

Box 3. Labour market movements across sectors

The simulation results suggest that up to 6% of workers would need to change the sector in which they work if the economies examined were to reap the benefits from multilateral reform. This means that workers across the different occupation categories need to move from the industry in which they are currently working to another. Labour market movements such as these are not costless and require workers to have the necessary skills to adapt to the new circumstance they face. Estimates from CGE models usually represent a situation post adjustment – so after some time for the reallocation of resources to take place, often thought of as five year period – but do not account for such adjustment costs.

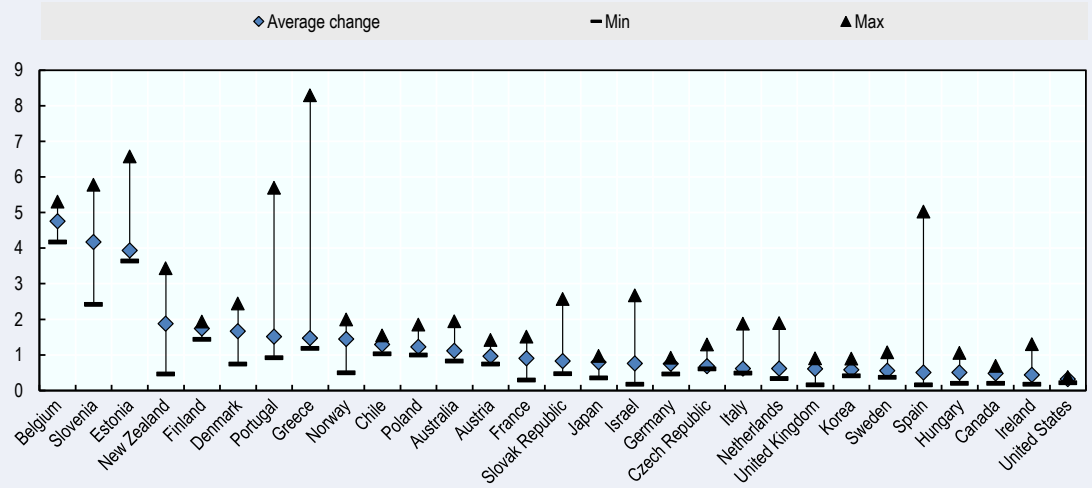
However, even in the absence of reform such labour movement occurs within workforces across the world. Employees change their jobs and there is a significant level of dynamism in any labour force – some become unemployed and then find new employment elsewhere, others change jobs, some enter the workforce for the first time, while for others, a job loss results in a longer term absence from employment. It is worthwhile then putting in context the 6% that the simulations suggest would occur, to see how much this may impact labour markets and if so, signal that governments may need to take a number of additional steps to make the adjustment happen without undue costs.

While there is little data on labour market transitions on a cross-country basis, changes in employment by economic activity (broad industry structure) can shed light on the 'normal' shifts of workers between sectors. Estimates of these shifts can be made by looking at the change in the sector-specific employment levels net of the changes in total employment. Such changes provide rough estimates of the number of workers who shift between sectors in any given year and can be expressed relative terms according to the total number of workers in a country.

Making use of estimates based on employment by economic activity from the OECD, reveals that even in relatively stable periods there is significant movement of workers between sectors. Taking the average of the period between

2014-16, and the minimum and the maximum values over a five-year period (2012-16) reveals that a total of 6% over a five year period is actually relatively modest when compared with the changes that would occur irrespective of reform (Figure 10). For countries covered by OECD data, average annual sector movement across 5 broad sectors (agriculture, construction, industry, manufacturing and services) ranges between close to 5% to 0%. The minimum and maximum values over the period 2012-16 show much higher variation – with sector movements as high as 9% of the workforce in a given year in some countries.

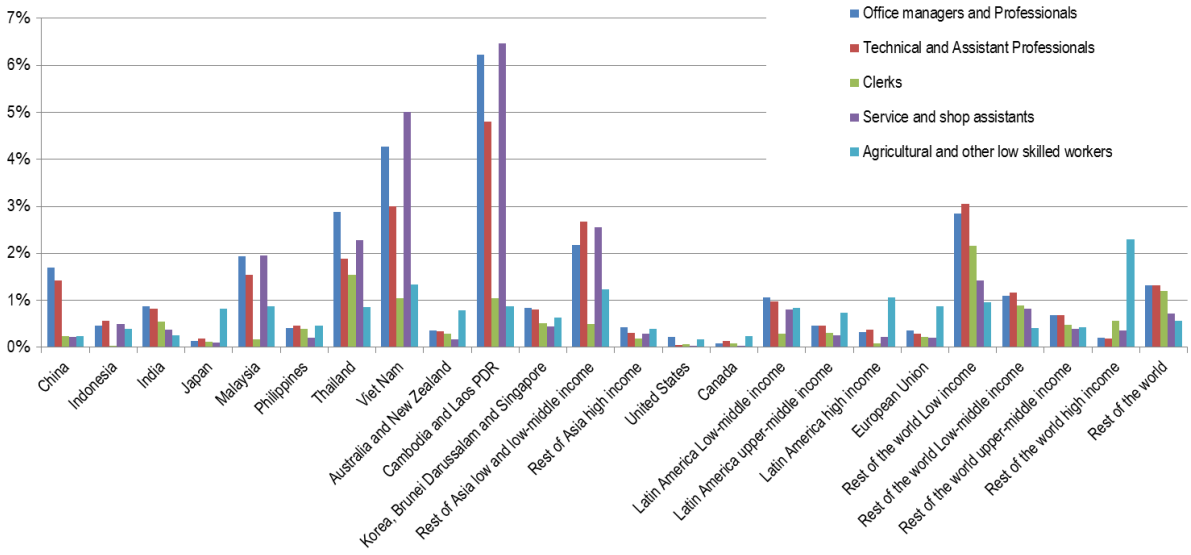
Figure 10. Movements between sectors in selected countries, 2014-16
Average annual change (% of total employed persons)



Notes: Sector movements are based off movements between broad economic activity categories of: agriculture, construction, industry, manufacturing and services. Minimum and maximum value taken from 2012-16 period.
Source: Calculations based on OECD stat.

While these estimates may suggest the employment dislocation from trade reform is relatively modest compared with normal business cycle movements, they do not capture the geographic aspect of employment. Often jobs lost occur in one area and are created in another, meaning movement is limited. However, as trade reforms often re-enforce already present structure forces, the estimates suggest that even here the additionality of the change not be as large as it is often suggested.

Figure 11. Multilateral Agreement: (Net) share of workers changing sectors



Source: OECD METRO simulation results.

8. Conclusions

The G7 Ise-Shima Leader's Declaration (26-27 May 2016) recognizes "the need to shed a new light on the positive role of trade on growth and development …". This study addresses the question concerning what countries (developed, emerging, developing, and least developed) can expect to achieve from further market integration, and as a corollary to this, the forgone benefits of not participating in further market integration.

For this purpose a set of hypothetical trade reform scenarios has been developed that consist of a combination of full (multilateral) reforms in which all countries participate in contrast to partial (regional) reforms that resemble big regional trade agreements in a stylized way. The scenarios are assessed and quantified with the OECD's METRO model, and draw on the inventories of trade measures maintained by the OECD.

The quantitative assessment shows that regional trade integration would bring important economic benefits to all participants. The more countries participate in an agreement the larger the benefits on offer. Wider participation provides more market opportunities and lessens the inevitable trade diversion effects that arise with preferential trade agreements. Smaller economies are the main beneficiaries from trade integration as it provides them with more opportunities to specialize in contributions to production networks. Larger economies also benefit, but on a more diffuse basis as they already have a broader resource base and market.

For most countries and regions, household income is found to increase more with wider participation, and the relative income gains are greatest for smaller economies that participate in a regional agreement (RTA-ALL) or even multilateral agreements.

The estimated gains are for a large part driven by improved efficiency in regional production networks. Smaller economies, such as Thailand and Viet Nam are found to be able to boost manufacturing and industrial sectors: access to cheaper imported intermediate inputs allows their industries to cut costs and better specialise in value chains. Not participating deprives these industries from such cost advantage and reduces their access to foreign markets.

Trade reform leads to labour market adjustment. While wages are overall found to rise for most types of skill categories, people will have to accept changing jobs to those activities that would expand in the wake of trade reform. This highlights the need for governments to action to help adjustment for example through appropriate labour market and education policies. Adjustment policies need to go beyond focusing on those displaced by trade. Efforts need to develop integrated trade and domestic policies that target not only labour markets and social safety nets, but also equality of opportunity.

As the model used in this study is comparative static it cannot shed light on the dynamic gains from trade reform. Foreign Direct Investment, especially in services, can be expected to yield benefits that go beyond the static gains which result essentially from a better allocation of resources within and between economies. Such dynamic gains stem from expanding capital stock, but also from productivity enhancements that typically accompany greater openness (see for example Egert and Gal, 2017). Similarly, technology spillovers embodied in trade an investment play a role, as do pro-competitive effects of openness. Such effects have been found to occur when sectors participate in global value chains, with the use of foreign inputs in production found to have positive effects on sector growth over time – these effects have been found for both manufacturing (Kowalski et al., 2015; Lopez-Gonzalez, 2016) and agriculture and food (Greenville et al., forthcoming).

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Annex A.

Table A A.1. Multilateral Agreement: Effects with flexible income tax

Extension to Table 3

	Base closure		Closure: Flexible income tax			Real GDP		Production	
	Government consumption	Private consumption	Government consumption	Private consumption	Share: government in total final demand	Base closure	Closure: Flexible income tax	Base closure	Closure: Flexible income tax
Laos PDR and Cambodia	-35.11%	2.98%	-1.05%	-0.51%	7%	1.02%	1.06%	1.66%	1.92%
Viet Nam	-25.12%	2.92%	-0.92%	0.57%	6%	2.09%	2.00%	3.02%	2.89%
Rest of Asia LI and LMI	-11.73%	1.63%	-0.14%	0.04%	9%	0.82%	0.63%	0.76%	0.55%
Rest of the world LI	-11.10%	2.12%	-0.29%	0.13%	11%	1.05%	0.98%	0.52%	0.40%
Thailand	-9.63%	1.87%	-0.85%	0.05%	14%	1.03%	1.00%	1.72%	1.44%
Malaysia	-6.42%	2.24%	-0.53%	0.69%	16%	1.04%	0.77%	1.39%	1.11%
Rest of the world LMI	-4.87%	1.60%	0.25%	0.51%	13%	1.06%	0.91%	0.50%	0.42%
Rest of the world	-4.64%	1.93%	-0.13%	0.84%	18%	0.90%	0.91%	0.48%	0.40%
Korea, Brunei Darussalam and Singapore	-4.31%	2.71%	-0.49%	1.87%	15%	1.29%	1.23%	1.69%	1.55%
India	-3.75%	1.17%	-0.04%	0.63%	11%	1.06%	1.07%	0.95%	0.88%
Latin America LMI	-3.69%	1.04%	0.06%	0.61%	10%	0.68%	0.68%	0.32%	0.25%
Philippines	-1.90%	0.39%	-0.16%	0.19%	10%	0.45%	0.47%	0.19%	0.19%
Rest of the world UMI	-1.71%	1.14%	-0.03%	0.60%	20%	0.49%	0.49%	0.23%	0.22%
Rest of Asia HI	-1.55%	1.01%	0.28%	0.71%	12%	0.62%	0.58%	0.75%	0.67%
Latin America UMI	-1.50%	0.61%	-0.06%	0.21%	17%	0.33%	0.31%	0.13%	0.11%
Indonesia	-1.38%	0.51%	0.22%	0.27%	9%	0.48%	0.45%	0.39%	0.37%
Latin America HI	-1.00%	0.60%	0.06%	0.38%	13%	0.20%	0.16%	0.24%	0.20%
Australia and New Zealand	-0.72%	0.53%	0.00%	0.25%	18%	0.33%	0.30%	0.30%	0.27%
China	-0.42%	0.29%	-0.23%	0.26%	14%	0.45%	0.46%	0.28%	0.28%
Rest of the world HI	0.00%	1.04%	0.47%	0.92%	18%	0.86%	0.86%	0.64%	0.64%
Canada	0.20%	0.37%	0.02%	0.45%	22%	0.28%	0.29%	0.02%	0.03%
United States	0.28%	0.27%	0.08%	0.32%	16%	0.29%	0.29%	0.19%	0.20%
Japan	0.50%	0.57%	0.17%	0.68%	20%	0.41%	0.41%	0.38%	0.38%
European Union	0.92%	0.05%	0.18%	0.46%	22%	0.30%	0.34%	0.14%	0.18%

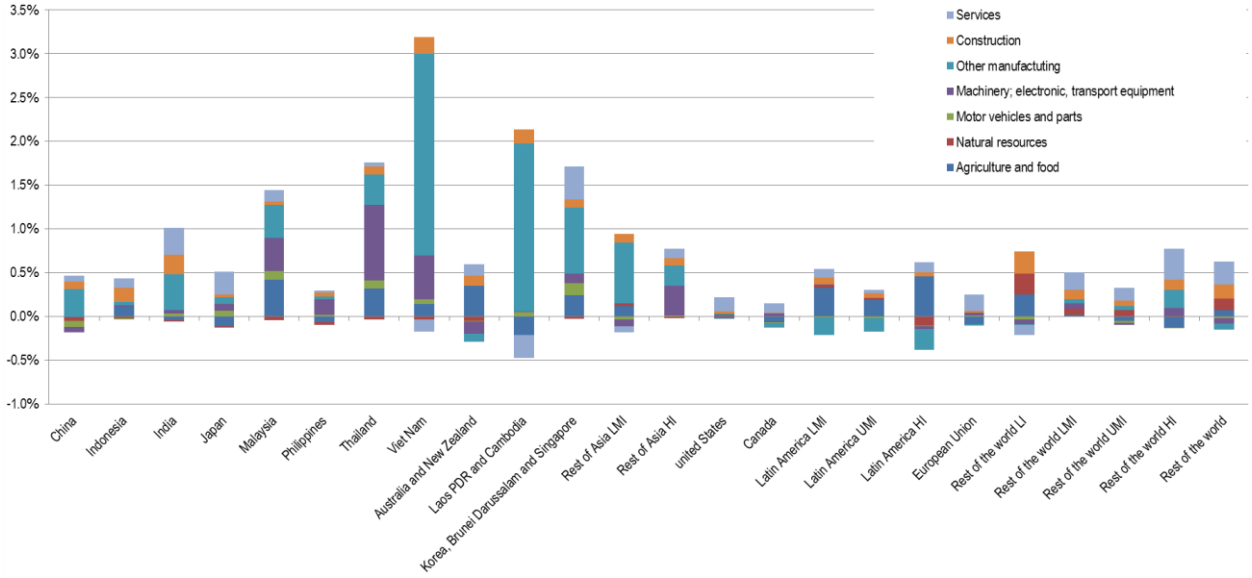
Source: OECD METRO simulation results.

Table A A.2. Multilateral Agreement: Effects on welfare and household income

	Multilateral Agreement: Base closure			Multilateral Agreement: Flexible income tax		
	Equivalent variation (in % of base income)	Household Income	Final Domestic Demand	Equivalent variation in % of base HHD income	Household income	Final domestic demand
China	0.15%	0.28%	0.51%	0.13%	0.29%	0.52%
Indonesia	0.39%	0.53%	0.60%	0.21%	0.51%	0.55%
India	0.76%	1.23%	0.89%	0.34%	1.28%	0.91%
Japan	0.48%	0.58%	0.56%	0.59%	0.57%	0.55%
Malaysia	1.34%	2.27%	0.81%	0.28%	2.15%	0.63%
Philippines	0.30%	0.38%	0.27%	0.11%	0.42%	0.29%
Thailand	1.52%	1.95%	0.54%	0.00%	2.33%	0.62%
Viet Nam	2.59%	3.07%	1.24%	0.19%	3.31%	1.21%
Australia and New Zealand	0.40%	0.56%	0.44%	0.19%	0.53%	0.41%
Laos PDR and Cambodia	2.72%	2.98%	0.47%	-0.63%	3.10%	0.30%
Korea, Brunei Darussalam, Singapore	1.30%	2.84%	1.34%	0.71%	2.91%	1.33%
Rest of Asia LI and LMI	1.54%	1.62%	0.48%	0.00%	1.51%	0.34%
Rest of Asia HI	0.58%	1.03%	1.03%	0.36%	1.02%	1.02%
Unites States	0.24%	0.27%	0.28%	0.30%	0.27%	0.29%
Canada	0.29%	0.41%	0.27%	0.35%	0.40%	0.27%
Latin America LMI	0.87%	1.06%	0.65%	0.48%	1.12%	0.67%
Latin America UMI	0.55%	0.63%	0.31%	0.18%	0.65%	0.30%
Latin America HI	0.51%	0.62%	0.41%	0.32%	0.61%	0.37%
European Union	0.10%	0.09%	0.29%	0.50%	0.09%	0.32%
Rest of the world LI	2.12%	2.15%	0.67%	0.06%	2.42%	0.66%
Rest of the world LMI	1.38%	1.61%	0.79%	0.40%	1.54%	0.66%
Rest of the world UMI	0.80%	1.18%	0.47%	0.37%	1.24%	0.47%
Rest of the world HI	0.64%	1.08%	0.90%	0.55%	1.07%	0.89%
Rest of the world	1.29%	1.96%	0.80%	0.49%	2.07%	0.82%

Source: OECD METRO simulation results.

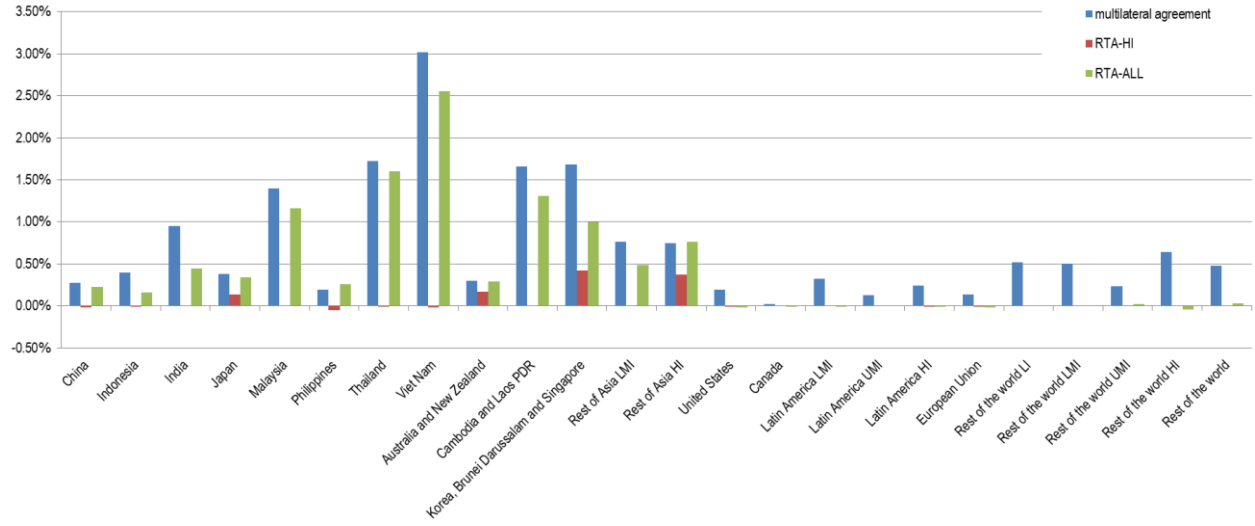
Figure A A.1. Multilateral Agreement: Production by sector



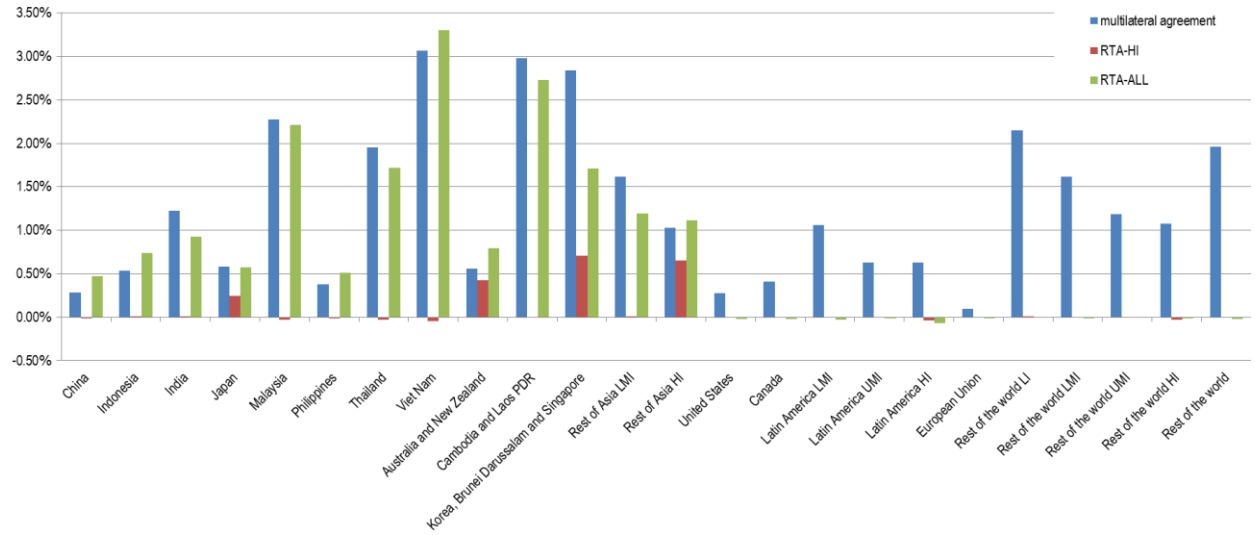
Source: OECD METRO simulation results.

Figure A A.2. Effects on production and household income: Comparison between scenarios

a) Production



b) Welfare (depicted by household income)



Source: OECD METRO simulation results.