



The effects of Mega-Regional Trade Agreements on Vietnam[☆]

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ABSTRACT

While most studies conclude that Vietnam would have benefited greatly from the now suspended Trans-Pacific Partnership, the country nevertheless stands to gain from participation in other still promising regional frameworks, including the EU-Vietnam Free Trade Agreement, the Comprehensive and Progressive Agreement for Trans-Pacific Partnership, the Regional Comprehensive Economic Partnership, and the Free Trade Area of the Asia-Pacific. This paper analyzes how Vietnam's economy is likely to be affected by these regional frameworks. We apply a static CGE model, incorporating the effects of capital accumulation, labor supply changes, and productivity growth stemming from trade liberalization. We also analyze “middle income trap” scenarios, in which Vietnam's growth factors fall below the full-potential level and draw policy implications.

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1. Introduction

Since the Doi Moi policy reform in 1986, Vietnam has made a remarkable transition to a market economy. Reforms took place in various areas such as State Owned Enterprises (SOEs) restructuring, private and financial sector development, public expenditure management, and trade liberalization. Doi Moi facilitated the accession of Vietnam to the World Trade Organization (WTO) in 2007 and created a momentum for joining Free Trade Agreements (FTAs). [Table 1](#) shows the 16 FTAs that Vietnam has signed or is currently negotiating, which include Mega-Regional Trade Agreements (RTAs) such as the Comprehensive and Progressive Trans-Pacific Partnership (CPTPP), the Regional Comprehensive Economic Partnership (RCEP), and the EU-Vietnam Free Trade Agreement (EVFTA).

This paper projects how the structure of Vietnam's economy would change in response to alternative scenarios involving frameworks such as EVFTA, TPP, CPTPP (TPP without the US), RCEP and the Free Trade Area of the Asia-Pacific (FTAAP). In particular, we consider the effects of capital accumulation, labor supply changes, and productivity growth stemming from

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Table 1
Vietnam's Free Trade Agreements.

Free Trade Agreements	Coverage (% tariff lines)	Coverage (% import value)	In effect	Completion
1 ASEAN Free Trade Area	100	–	1993	2015/2018
2 ASEAN-China Comprehensive Economic Cooperation Agreement	95	–	2005	2015/2018
3 ASEAN-Korea Comprehensive Economic Cooperation Agreement	90	–	2007	2016/2018
4 ASEAN-Japan Comprehensive Economic Partnership	93	–	2008	2025
5 Japan-Vietnam Economic Partnership Agreement	92	–	2009	2026
6 ASEAN-Australia and New Zealand Free Trade Agreement	95	–	2010	2018/2020
7 ASEAN-India Comprehensive Economic Cooperation Agreement	80	–	2010	2020
8 Vietnam-Chile Free Trade Agreement	–	94	2014	2030
9 Vietnam-Korea FTA (VKFTA)	93	95	2015	2021
10 Vietnam-Eurasian Economic Union Free Trade Agreement	87	–	2016	2027
11 Vietnam-European Union Free Trade Agreement	99	–	Signed	–
12 Comprehensive and Progressive Trans-Pacific Partnership (CPTPP)	99	99	Concluded	–
13 Regional Comprehensive Economic Partnership (RCEP)	–	–	Under negotiation	–
14 ASEAN-Hong Kong Free Trade Agreement	–	–	Negotiation concluded	–
15 Vietnam-Israel Free Trade Agreement	–	–	Under negotiation	–
16 Vietnam-European Free Trade Association Free Trade Agreement	–	–	Under negotiation	–

Source: The Vietnam Chamber of Commerce and Industry – WTO Center.

trade liberalization. In addition, we analyze a scenario in which Vietnam's labor supply and productivity growth fall below their full potential in order to draw policy implications for Vietnam to avoid a “middle income trap.”

The rest of the paper is organized as follows. Section 2 provides an overview of Vietnam's trade and investment patterns and the major FTAs the country has signed or is currently negotiating. Section 3 reviews the literature on Mega-RTAs in the Asia-Pacific. Section 4 describes our model, data, and main assumptions. Section 5 presents our various scenarios of trade liberalization. Section 6 examines the “middle income trap” scenario and Section 7 concludes.

2. Vietnam's integration in the world economy

2.1. Trade and investment patterns

Vietnam has recorded remarkable growth in trade. The volume of exports and imports in 2015 are respectively nearly 6 times and 7.5 times larger than in 2000.¹ During this period, Vietnam has become increasingly integrated into global supply chains. Fig. 1 shows that East Asia accounts for 68.9% of Vietnam's total imports while its top export destinations are the US and the EU. In this way, Vietnam follows the typical pattern of the East Asian production network, which is characterized by intra-regional trade in primary and intermediate goods and export of final goods to large external markets.

Table 2 shows Vietnam's Top 20 export products at the Harmonized Systems (HS) 2 digit level between 2000 and 2015. In 2000, exports were mainly primary and low-tech manufacturing products such as natural resources, apparel, and footwear. By 2015, significant changes in volume were accompanied by important changes in product categories. Electronic products had become the largest export item and other high-tech manufacturing products such as machinery and medical goods moved up the ranking. The Spearman rank correlation between the two periods is 0.71 suggesting a fairly substantial shift occurred in the composition of exports during this period. However, in contrast to their high trade volumes, high-tech industries generate a small proportion of value-added for the domestic economy. The OECD TiVA database reveals that the domestic value added share of gross exports is 63.7% for all sectors in 2011. Yet it is 51.2% for the manufacturing sector overall and only 30.8% for electrical and optical equipment sector.

Luu, Trinh, and Vu (2017) show that Foreign Direct Investment (FDI) has been an important driver of Vietnam's economic growth from 1996 through 2014. FDI inflows reached a record USD 24.4 billion in 2016. Fig. 2 shows ASEAN has been the largest source of FDI for Vietnam followed by Korea, Japan, Taiwan, and the EU. FDI flows to Vietnam have been concentrated in manufacturing accounting for 59% of total registered capital, followed by real estate accounting for 18%. There is also a trend of increasing FDI flows into services as domestic consumption grows in Vietnam.²

¹ Source: World Development Indicators, World Bank.

² Source: General Statistics Office of Vietnam.

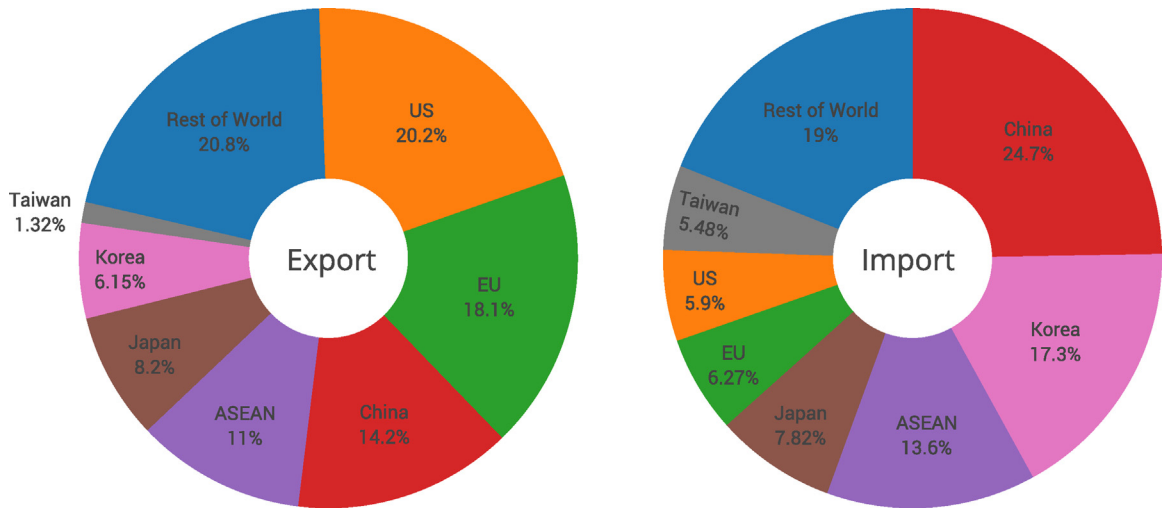


Fig. 1. Vietnam's export and import shares by partner in 2016.

Source: Direction of Trade Statistics, IMF.

2.2. Free Trade Agreements

Vietnam is actively pursuing its FTA policy. Of its 16 FTAs including those under negotiation, eight involve ASEAN. Four are bilateral, involving Japan, Chile, Korea, and Israel. The rest are Mega-RTAs. Of the Mega-RTAs, EVFTA, signed in December 2015, is a comprehensive agreement of the highest standard. EVFTA is expected to bring substantial economic benefits as the EU is Vietnam's second largest export destination accounting for nearly 20% of the country's total exports. The agreement will eliminate 99% of tariffs on the EU side in seven years and on the Vietnam side in ten years. The Rules of Origin (ROO) for

Table 2

Vietnam's Top 20 export products, 2000 and 2015 (million USD).

	2000	2015	
1	Mineral fuels, oils, distillation products, etc.	3825	Electrical machinery and equipment and parts
2	Apparel, accessories, not knit or crochet	1540	Footwear, gaiters, etc.
3	Footwear, gaiters, etc.	1472	Apparel and clothing accessories, not knitted or crocheted
4	Fish, crustaceans, molluscs, aquatic invertebrates nes	1459	Apparel and clothing accessories, knitted or crocheted
5	Coffee, tea, mate and spices	729	Nuclear reactors, boilers, machinery and mechanical appliance
6	Cereals	670	Furniture
7	Nuclear reactors, boilers, machinery, etc.	583	Mineral fuels, mineral oils and distillation, etc.
8	Electrical, electronic equipment	572	Fish, crustaceans, molluscs, aquatic invertebrates
9	Commodities not elsewhere specified	435	Coffee, tea, mate and spices
10	Edible fruit, nuts, peel of citrus fruit, melons	339	Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus
11	Apparel, accessories, knit or crochet	249	Edible fruit and nuts; peel of citrus fruit or melons
12	Furniture, lighting, signs, prefabricated buildings	235	Cereals
13	Rubber	194	Leather; saddlery, harness; travel goods, etc.
14	Leather, animal gut, harness, travel goods	186	Plastics
15	Wood and articles of wood, wood charcoal	135	Rubber
16	Ceramic products	112	Wood and articles of wood; wood charcoal
17	Plastics	100	Iron and steel
18	Other made textile articles, sets, worn clothing etc.	96	Vehicles, parts and accessories
19	Oil seed, oleagic fruits, grain, seed, fruit, etc., nes	92	Iron or steel
20	Dairy products, eggs, honey, edible animal product nes	90	Preparations of meat, of fish or of crustaceans, etc.

Source: UN Comtrade – International Trade Statistics Database.

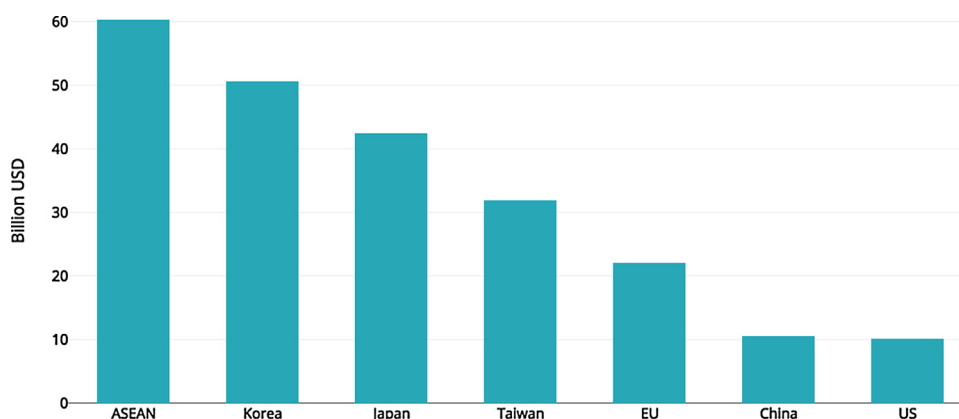


Fig. 2. FDI stock by origin, 2016 (billion USD).

Source: General Statistics Office of Vietnam.

textile products are more relaxed in EVFTA than in TPP as it will be “fabric forward”, allowing, for example, extended cumulation with South Korea for fabric inputs. In EVFTA Vietnam is committed to trade liberalization beyond its WTO commitment in services and investment including rules on intellectual property, SOE reforms, human rights, and sustainable development.

TPP originally encompassed 12 member countries including the US. It is characterized as a trade agreement for the 21st century with comprehensive rules and a high degree of liberalization. TPP also carries important strategic implications as it was integral to the US rebalance to the Asia-Pacific under the Obama administration. [Petri, Plummer, and Zhai \(2012b\)](#) and others project that Vietnam would have benefited the most from TPP relative to other frameworks. Vietnam also placed significant value on the strategic aspect of TPP in its relations with the US, aiming to diversify and strengthen economic ties. However, since President Trump decided to withdraw from TPP, the remaining signatory countries have agreed to move ahead without the US in hopes that the US will return at some point in the future.

RCEP is an agreement between ASEAN and the six states (China, Japan, Korea, Australia, New Zealand, and India) with which the region has existing bilateral FTAs. Notably, RCEP covers Asia’s largest and fastest growing economies – China and India – as well as the extensive East Asian production network. Its negotiation started in November 2012, with 20 rounds as of October 2017. However, the conclusion is not yet in sight.

3. Literature review

The Computable General Equilibrium (CGE) model is widely used to evaluate the impact of policy changes on an economy. [Petri, Plummer, and Zhai \(2012a\)](#) evaluate the benefits of the ASEAN Economic Community using a CGE model. Other CGE studies on Mega-RTAs in the Asia-Pacific include [Petri et al. \(2012b\)](#), [Cheong \(2013\)](#), [Lee and Itakura \(2014\)](#), [Kawasaki \(2015\)](#), [Petri and Plummer \(2016\)](#), and [Gilbert, Furusawa, and Scollay \(2016\)](#). In addition, various governments of TPP member countries and the World Bank released official reports on quantitative assessments of the impact of TPP after the negotiations concluded in October 2015. The reports include [Malaysia Ministry of International Trade and Industry \(2015\)](#), [Japan Cabinet Secretariat \(2015\)](#), [World Bank \(2016\)](#), [US ITC \(2016\)](#), [New Zealand Ministry of Foreign Affairs and Trade \(2016\)](#) and [Global Affairs Canada \(2016\)](#). After the US withdrawal from TPP, [Kawasaki \(2017\)](#) and [Petri, Plummer, Urata, and Zhai \(2017\)](#) estimated the effects of CPTPP and related scenarios.

The recent CGE literature offers innovative approaches with respect to model specification and assumptions as summarized in [Table A1](#). Notable extensions have been made in the areas of (1) capital accumulation, (2) labor supply, and (3) productivity growth. The extensions are aimed at capturing dynamic effects of trade liberalization that were underestimated in earlier model formulations. On capital accumulation, [Kawasaki \(2015\)](#) and [Japan Cabinet Secretariat \(2015\)](#) adopt steady-state closures comprising capital accumulation effects described in [Francois, McDonald, and Nordström \(1996\)](#). On labor supply, [Kawasaki \(2015\)](#), [Japan Cabinet Secretariat \(2015\)](#) and [US ITC \(2016\)](#) introduce an elastic response of to changes in real wages. On productivity growth, [Petri and Plummer \(2016\)](#) and [World Bank \(2016\)](#) incorporate the Melitz effect developed by [Zhai \(2008\)](#) based on [Melitz \(2003\)](#). In another innovation, [Kawasaki \(2015\)](#) and [Japan Cabinet Secretariat \(2015\)](#) introduce endogenous pro-competitive productivity growth stemming from trade liberalization.

Assumptions regarding shocks vary with respect to levels and components of trade liberalization. While ex-ante studies must rely on hypothetical assumptions, some studies incorporate specific tariff reduction scenarios in agriculture and auto industries in TPP and include the effects of implementation of the existing FTAs into the baseline (e.g. [Lee & Itakura, 2014](#); [Petri & Plummer, 2016](#); [World Bank, 2016](#)). Ex-post studies such as [US ITC \(2016\)](#) seek to estimate the net impact of tariff reductions using the International Trade Centre’s (ITC) Market Access Map database, which provides tariff schedule data for TPP and all the existing FTAs of TPP member countries.

In addition to tariff reduction scenarios, several studies include relaxation of Non-Tariff Measures (NTMs). NTM shocks are typically designed as removal of ad valorem tariffs defined as equivalent to import augmenting technological changes that result in lowering prices of import products.³ To date, the NTM indicators in major studies are based on [Looi Kee, Nicita, and Olarreaga \(2009\)](#) for goods, and [Wang, Mohan, and Rosen \(2009\)](#) and [Fontagné, Guillin, and Mitaritonna \(2011\)](#) for services. In addition to a direct shock to NTM variables, several studies include spillover effects whereby a certain portion of the NTM removal is assumed nondiscriminatory for non-member countries.

A number of previous CGE studies have estimated the economic impact of trade liberalization on Vietnam's economy. [Fukase and Martin \(2000\)](#) evaluate the impact of the US granting Most Favored Nation (MFN) status to Vietnam while [Fukase and Martin \(2001\)](#) examine the effect of Vietnam's accession to the ASEAN Free Trade Agreement (AFTA). [Roland-Holst et al. \(2002\)](#), [Dimaranan, Duc, and Martin \(2005\)](#), [Vanzetti and Huong \(2006\)](#), [Boumellassa and Valin \(2009\)](#), and [Doanh and Heo \(2009\)](#) examine the effects of Vietnam's accession to WTO in 2007. [Heng and Gayathri \(2004\)](#) conduct scenario analysis of AFTA and ASEAN plus Japan and China. More recently, [Thu \(2010\)](#) estimates the impact of AFTA, ASEAN-China, ASEAN-Japan, and ASEAN-Korea agreements using a dynamic CGE model. The results show that the largest economic benefits for Vietnam are brought by the ASEAN-China FTA due to the large export and import magnitudes. In particular, liberalizing rice trade generates a substantial welfare effect due to an increase in rice exports, and growth in manufacturing sectors, especially textiles, garments, and leather products is significant.⁴

[Thu and Lee \(2015\)](#) use a dynamic CGE model for Vietnam to examine unilateral trade liberalization involving services, FDI inflows, and trade facilitation. They show that sectoral adjustments occur to reallocate resources in favor of Vietnam's comparative advantage in labor intensive production. Many manufacturing sectors, in particular, the textile and wearing apparel sectors, show positive growth, whereas agriculture, minerals, and fuel sectors contract. They suggest that trade liberalization is an important catalyst for industrialization while there is a need to support the transition and structural adjustments in contracting sectors.

The conclusion of these studies is consistently that Vietnam would benefit more from Mega-RTAs than from more limited agreements. [World Bank \(2016\)](#) estimates that Vietnam's GDP would increase by 10% by joining TPP. [Nguyen, Nguyen, Itakura, Nguyen, and Nguyen \(2015\)](#) simulate tariff reductions, NTM relaxation, and spillover effects of these measures for TPP and AEC member countries. Their results show that while Vietnam's GDP overall gain would be 2.11% for TPP and 2.04% for AEC, at the sectoral level, contractions would occur in agricultural sectors and most manufacturing sectors other than apparel, textiles, leather, and footwear. [Petri et al. \(2017\)](#) conclude that the impact of TPP on Vietnam's GDP would be reduced from 8.1% to 2.2% by the US withdrawal.

4. Modeling framework

4.1. The model and data

We use the static GTAP model described in [Hertel \(1997\)](#). The original model is a multi-region and multi-sector global CGE model. It assumes perfect competition, constant returns to scale production technology, and product differentiation by place of origin. The GTAP database includes five factors of production in fixed supply: land, natural resource, capital, skilled labor, and unskilled labor. We introduce three additional extensions following [Japan Cabinet Secretariat \(2015\)](#). First, we use steady-state closures that involve capital accumulation effects. The assumption of a fixed saving rate implies that the change in steady-state capital stock occurs in proportion to the change in steady-state level of GDP following a shock ([Francois et al., 1996](#)). Second, we adopt an elastic response of total labor supply to changes in real wages.⁵ The labor supply increases when the country's real wage rises and vice versa. Third, we incorporate endogenous pro-competitive productivity growth in response to trade openness (% of total trade to GDP).⁶ It is assumed that trade liberalization would induce pro-competitive effects for industries through increasing returns to scale, diffusing technology from FDI, increasing product and input variety, and improving the market environment. It should be noted that we model neither FDI nor market reform in the model, but

³ Some studies address trade facilitation NTMs such as improving efficiency in custom clearance and logistical performance.

⁴ However, manufacturing growth is moderate compared to scenarios involving more advanced markets such as the US and the EU.

⁵ We add the following equation to the GTAP model: $L(i, r) = qo(i, r) - [0.8 * pfactreal(i, r)]$ where $L(i, r)$ is the labor supply in sector i and region r , qo is the percentage change of labor supply and $pfactreal$ is the percentage change of real wage rate. When L is exogenous, qo and $pfactreal$ are endogenously determined. We set the labor elasticity with respect to the change in real wage to be 0.8 as in [Japan Cabinet Secretariat \(2015\)](#). Estimates of the value of the so-called Frisch elasticity varies depending on methodology and data. One reference is [Kuroda and Yamamoto \(2008\)](#) who estimates the Frisch elasticity ranging from 0.7 to 1.0 using Japan's data. [Huynh, Nguyen, Duong, and Pham \(2017\)](#) study the impacts of Vietnam's macroeconomic policies with DSGE model and set the Frisch elasticity at one.

⁶ We add the following equation to the GTAP model: $T(r) = aoreg(r) - 0.15 * [qiwreg(r) * vi + qxwreg(r) * vx - qgdp(r)]$ where $T(r)$ is TFP in region r , $aoreg$ is the percentage change of the output augmenting technical change, $qiwreg$ is the percentage change of import multiplied by the share of import in total trade (vi), $qxwreg$ is the percentage change of export multiplied by the share of export in total trade (vx), and $qgdp$ is the percent change of real GDP. When T is exogenous, $aoreg$ and trade openness are endogenously determined. We set the elasticity of the output augmenting technological change with respect to the change in trade openness to be 0.15 as estimated by [Japan Cabinet Secretariat \(2015\)](#). Numerous empirical studies such as [Loko and Diouf \(2009\)](#) confirm a positive impact of trade openness on TFP growth. They also find that FDI has a significant positive impact, which is fortified by a higher level of human capital.

our simplified specification aims to capture productivity growth stemming from trade liberalization using trade openness as a proxy.

We use the GTAP database version 9 benchmarked to year 2011. The database covers 140 regions and 57 industrial sectors. We aggregate to 27 regions and 24 sectors (see [Tables A2 and A3](#)). Regarding the baseline, some previous studies update GDP data from an original benchmark year to a new base year. To minimize unnecessary distortion in the baseline data, we do not make such an update. For simulations, we impose three types of policy shocks. They are reductions in (1) tariffs, (2) NTMs on goods, and (3) NTMs on services. As for tariff barriers, the GTAP database contains rich tariff protection data. [Table A4](#) presents Vietnam's current tariff structure for EVFTA, TPP, and RCEP expressed as ad valorem rates. We note that the current tariff structure does not reflect further implementation of trade liberalization and reform policies from 2011 onward.

Vietnam's import tariffs are generally low on agricultural products, whereas they remain relatively high on manufacturing products such as textiles, wearing apparel, leather products, metal, motor vehicles and parts, and machinery and equipment. Generally speaking, higher import tariffs are observed on products from advanced or competitive countries, such as the EU, Japan, the US, China, Korea, and Taiwan. On average, tariffs remain higher on Vietnam's imports from RCEP than from TPP members. Import tariffs on Vietnam's exports are generally low with specific exceptions for certain products and countries. For example, the Philippines imposes a 40% tariff on Vietnam's rice and Thailand imposes a 40% tariff on Vietnam's motor vehicles and parts. Import tariffs ranging from 10% to 30% on textiles and wearing apparel from Vietnam are imposed by the EU, the US, Canada, Mexico, Peru, Thailand, Cambodia, India, and Russia. On average, tariffs remain higher on Vietnam's exports to TPP than RCEP members.

4.2. Main assumptions

4.2.1. Tariff barriers

We assume that TPP would reduce tariffs by 100%, which is close to the actual agreement. RCEP is still under negotiation and we know little about its terms. It is reported that RCEP member countries agreed to eliminate 80% of import tariffs in 10 years.⁷ If this modality holds, the degree of tariff cuts would be the same as or lower than the current ASEAN-plus FTAs. With the ITC's tariff data (ITC, 2016), we calculate the weighted average of the actual tariff cuts for all existing FTAs and TPP. Our estimates show that the level of tariff cuts for existing FTAs is about half of that for TPP. Thus it is reasonable to assume that, while TPP would realize 100% tariff cuts, RCEP would only achieve 50% tariff cuts from existing tariff levels.⁸ In addition, we take into account the effects of Vietnam's current FTAs, such as the Vietnam-Korea and Vietnam-Chile FTAs, on the baseline. This enables us to correct for overestimation due to neglecting the effects of trade liberalization after 2011. Moreover, a significant degree of tariff reduction from the level in 2011 should be expected to originate from FTAs with large trading partners, which came into effect before 2011 but are not yet completed (such as the Vietnam-ASEAN, Vietnam-China, and Vietnam-Japan FTAs).⁹

4.2.2. Non-tariff barriers

It is important to consider the effects of the strict "yarn-forward" ROO on textile and apparel products. The ROO requires final goods to be produced using yarns and fabrics from the TPP member countries to qualify for preferential tariff rates. While this restriction allows some flexibility under the short supply list and special treatment for Vietnam, it is still challenging for the textile and apparel industry to meet these requirements for its exports. One problem is the low capacity of Vietnam's domestic production of yarn and fabric in terms of volume and quality.¹⁰ A further problem is Vietnam's heavy reliance on imports of yarns and fabrics from non-TPP members such as China, Korea, and Taiwan. Incorporating the effects of the "yarn-forward" ROO into our shock assumptions, we assume that only 75% tariff cuts are realized on textile and apparel production under our TPP scenario.¹¹

Only recently have CGE analyses begun to address NTMs on goods and services, and we must therefore rely on external data for an NTM index. For goods, besides policy instruments such as sanitary or environmental protection measures, a major source of implicit trade costs involves inefficient procedures in custom clearance, administration, logistics, and transport. These inefficiencies hinder trade flows and impose economic losses. WTO and numerous FTAs cover trade facilitation as a key agenda item. Mega-RTAs also include provisions on customs administration and trade facilitation that ensure customs cooperation, harmonization, and facilitation among member countries. In addition, TPP includes chapters on cooperation and capacity building that promote aid for trade policies.

⁷ The Japan Times (25 August 2015) "Asia-Pacific nations aim to eliminate 80% of import duties in 10 years."

⁸ 50% tariff cuts are not with regard to tariff lines but reductions from the existing tariff levels of the GTAP data.

⁹ We apply 100% tariff reductions for the Vietnam-ASEAN FTA and 50% for the Vietnam-Korea, Vietnam-Chile, Vietnam-China, and Vietnam-Japan FTAs. See [Table 1](#) for details of Vietnam's current FTAs.

¹⁰ The domestic textile and apparel industry's demand for fabrics was about 8.5 billion square meters in total in 2014. However, Vietnam was able to produce only about 3 billion square meters domestically. Moreover, yarn and fabric produced in Vietnam range from low to medium quality and often do not meet the standard for export products.

¹¹ There is currently a trend of increasing inward FDI in the upstream textile and apparel industries, and the share of local supply is expected to expand in the next decade.

We use time costs to proxy such implicit trade costs. [Hummels, Minor, Reisman, and Endean \(2007\)](#) estimate the value of one day's delay by calculating the willingness of importers to pay for air shipping to avoid the additional time needed for sea transport. [Minor and Hummels \(2013\)](#) convert estimates by [Hummels et al. \(2007\)](#) into GTAP data format. The World Bank's Doing Business Survey compiles the survey data of the time and costs associated with the logistical process of exporting and importing goods for 190 countries. Combining these data sources, we calculate the time costs expressed as tariff equivalents imposed on goods trade (see [Table A5](#)). Based on estimates by [Minor and Hummels \(2013\)](#), we apply ad valorem time costs per day of 1% for all commodities and countries.¹²

Developing countries face relatively serious problems of inefficient trade procedures due to lack of soft and hard infrastructure and human resources. Our data show that Vietnam needs 5.8 days to process border and customs compliance procedures, whereas an efficient country such as Canada needs only 0.1 days. [Hillberry and Zhang \(2015\)](#) find that full implementation of trade facilitation measures would reduce the time in import customs by 48%. Referring to their estimates and taking into consideration the variation in rule coverage, we assume that TPP would cut the NTMs on goods by 60% and RCEP would cut it by 40%. The access to improved trade logistics infrastructure is presumably non-discriminatory for non-member countries. Therefore, we assume a third of the effects will spillover to non-member countries.¹³

Service trade has expanded as development of information technology has enabled more service products to be consumed across borders. Service sectors play a significant role in trade as supporting industries captured on a value added basis ([OECD, 2013](#)). Service liberalization has been promoted by WTO and numerous FTAs through provisions on national treatment, MFN treatment, market access, and local presence. Removal of restrictive barriers could lower the prices of services. [US ITC \(2016\)](#) notes that reduction of specific NTMs, adoption of a negative list for services trade, and implementation of e-commerce modes contribute to NTM reductions in services.

In a CGE framework, [Wang et al. \(2009\)](#) and [Fontagné et al. \(2011\)](#) use a gravity approach to estimate existing barriers on services expressed in ad valorem tariff equivalent. We use the estimates by [Wang et al. \(2009\)](#) for the six service sectors: utilities; construction; trade, transport and communication; private services; and public services (see [Table A6](#)). For Vietnam, more than 50% of barriers remain for the six service sectors. It is challenging to make a reasonable assumption how much Mega-RTAs could remove the barriers. In previous studies, shocks to NTMs for services have been posited at anywhere from 7% to 50%. We leaned toward the low end for our simulations, assuming that TPP would cut service NTMs by 10%, and RCEP would cut them by 7%.¹⁴ For services, spillover effects to non-member countries are not considered.

4.3. Scenarios

We simulate scenarios of six Mega-RTAs to estimate their economic impact on Vietnam. We assume that EVFTA and TPP have the same level of tariff and non-tariff barrier reductions and that these exceed the reductions for RCEP. The US under President Donald Trump having withdrawn from TPP, we also include the CPTPP (without the US). APEC leaders set a long-term goal of finalizing FTAAP based on RCEP and TPP. Therefore, we prepare two hypothetical scenarios. FTAAP1 is based on our TPP template and FTAAP2 on our RCEP template. We note that the simulation period in the static model is just two time points, that is, pre- and post-shocks. In fact, the tariff reductions are phased in, for example, in the case of TPP, about 85% of tariff lines being duty free at entry, rising to 99% after 15 years. Hence, the period of our analysis spans from the current year to around 2035. As discussed in [Section 4.2](#), Vietnam's current FTAs are absorbed into the baseline. Details of our six scenarios are as follows.

- EVFTA: tariff removal of 100%, non-tariff barrier removal of 60% for goods and 10% for services, plus one-third spillover to non-member countries for goods;
- CPTPP: tariff removal of 100%, non-tariff barrier removal of 60% for goods and 10% for services, plus one-third spillover to non-member countries for goods;
- TPP: tariff removal of 100%, non-tariff barrier removal of 60% for goods and 10% for services, plus one-third spillover to non-member countries for goods;
- RCEP: tariff removal of 50%, non-tariff barrier removal of 40% for goods and 7% for services, plus one-third spillover to non-member countries for goods;
-

¹² [Minor and Hummels \(2013\)](#) present three scenarios using values of one day ranging from 0.7% to 1.0%. In short, the lower bound estimates may suffer from a bias due to missing values when converting Hummels' HS4 database into the GTAP database. The upper bound estimates are derived by replacing missing values with the average of significant values. See [Minor and Hummels \(2013\)](#) for more details.

¹³ Spillover assumptions of non-discriminatory NTMs are increasingly used in recent studies (e.g. [Kawasaki, 2015](#); [Malaysia Ministry of International Trade & Industry, 2015](#); [Petri & Plummer, 2016](#)). Spillover ratios range from 20% to 50%. The rationale for the variation is that some FTA provisions related to regulatory components are MFN rather than preferential treatment.

¹⁴ Our first consideration was that a large part of the contribution of FTAs to service liberalization involves FDI through adoption of MFN, regulatory coherence, and sectoral liberalization (e.g., adoption of a negative list). However, the services account of the balance of payments does not include FDI (mode 3) in service transactions. To what extent other elements of FTAs would address NTMs on service trade is not easy to know. Second, provisions of FTAs on service NTMs must differ from one sector to another. Again, it is not easy to know how these differences would play out across sectors. Therefore, we decided to take a conservative stance and choose a low magnitude.

FTAAP1: tariff removal of 100%, non-tariff barrier removal of 60% for goods and 10% for services, plus one-third spillover to non-member countries for goods;

- FTAAP2: tariff removal of 50%, non-tariff barrier removal of 40% for goods and 7% for services, plus one-third spillover to non-member countries for goods.

Our model specifications include the effects of capital accumulation, labor supply growth, and productivity improvement. All these elements are key to Vietnam's economic growth. In the middle-income trap scenario in Section 6, we show the final results change when we constraint these amplifying effects.

5. Results

This section presents the estimated economic impact of each Mega-RTA scenario on Vietnam.

5.1. Overall impact

The estimated results are presented in Table 3. In general, the larger the regional single market, the greater the economic gains. The effects are amplified by the additional specifications we employ. Lowering trade barriers results in increasing exports and imports, making Vietnam a more open economy, which boosts productivity growth. Output expands and the real wage increases, leading to an increase in labor supply. This raises the steady-state level of capital stock. In this way, macroeconomic changes and sectoral changes reinforce each other.

Under EVFTA, Vietnam's real GDP increases by 8.1% (USD 11.0 billion). Income gains for the EU are minuscule as Vietnam's economy is small relative to that of the EU. Under TPP, Vietnam's real GDP increases by 13.2% (USD 20.2 billion). Other TPP member countries also experience substantial income gains while non-member countries experience negative impacts. The US withdrawal from TPP adversely affects Vietnam due mainly to loss of US market access for Vietnam's textiles and apparel. Under CPTPP absent the US, Vietnam's real GDP increase is limited to 6.5% (USD 10.0 billion). It should be noted that although the overall impact of the US withdrawal is considerable, for some countries, in particular Australia, New Zealand, Singapore, and Chile, the effects are moderate due to the removal of US competition.

Under RCEP, Vietnam's real GDP increases by 9.2% (USD 14.0 billion). The benefits under RCEP are larger than under CPTPP but smaller than under TPP as we assume that RCEP would achieve smaller reductions in both tariff and non-tariff barriers. Other RCEP member countries would also benefit while a few non-member countries, in particular Taiwan, experience negative effects. Interestingly, the negative impacts are less significant for almost all non-member countries because spillover effects offset the loss from trade diversion. FTAAP1, based on the TPP template, would generate the largest income gains of any trade agreement increasing Vietnam's real GDP by 27.1% (USD 41.5 billion). FTAAP2m based on the RCEP

Table 3
Real GDP changes (%).

	EVFTA	CPTPP	TPP	RCEP	FTAAP1	FTAAP2
1 Australia	0.0	2.3	2.0	3.3	7.0	3.2
2 New Zealand	0.0	7.5	7.5	2.7	15.6	3.3
3 Japan	0.0	2.1	3.0	4.0	10.2	5.1
4 Brunei	0.0	4.7	5.0	4.6	12.1	5.4
5 Malaysia	0.0	8.1	9.7	8.3	18.3	9.7
6 Singapore	0.0	3.2	3.1	5.3	10.1	5.4
7 Vietnam	8.1	6.5	13.2	9.2	27.1	19.4
8 Canada	0.0	0.8	1.7	0.1	3.3	1.4
9 United States	0.0	0.0	0.9	0.0	3.6	1.7
10 Chile	0.0	1.5	1.1	0.1	4.8	1.9
11 Mexico	-0.1	2.2	3.1	0.4	9.2	3.7
12 Peru	0.0	1.7	2.0	0.1	2.5	0.8
13 China	0.0	0.0	-0.2	5.0	15	7.4
14 Korea	0.0	0.0	-0.3	8.5	34.4	17.5
15 Hong Kong	-0.1	0.2	0.0	0.6	8.1	3.6
16 Taiwan	0.0	0.0	-0.3	-1.0	12.6	6.6
17 Indonesia	-0.1	0.0	-0.4	6.9	15.6	8.2
18 Philippines	-0.1	0.1	-0.4	8.4	21.3	10.8
19 Thailand	0.0	-0.3	-0.7	12.1	27.5	13.9
20 Cambodia	-0.1	0.2	-0.9	16.3	49.3	27.6
21 Laos	0.0	0.0	-0.1	7.8	15.5	8.5
22 India	0.0	0.0	-0.3	6.3	15.5	7.5
23 Russia	0.0	0.1	-0.1	0.5	7.0	3.2
24 European Union	0.0	0.0	-0.2	0.0	0.0	-0.4

FTAAP1 (TPP template).

FTAAP2 (RCEP template).

Table 4
Simulation results on sectoral changes (%).

	EVFTA		CPTPP		TPP		RCEP		FTAAP1		FTAAP2	
	Export	Import	Export	Import	Export	Import	Export	Import	Export	Import	Export	Import
1 Rice	-15.1	14.3	-6.6	16.8	-10.8	23.0	80.5	10.9	274.0	-13.8	202.2	18.8
2 OthCrops	-5.5	9.4	-3.5	6.9	-7.5	15.4	-14.5	4.8	-183.7	-24.8	-49.8	7.5
3 Cattle	-2.1	10.9	-2.1	8.8	-2.6	17.7	-1.2	14.1	56.0	3.6	10.6	35.1
4 MeatProd	-9.8	11.4	-5.9	9.7	-17.7	18.4	2.7	10.7	0.5	31.8	-8.8	24.3
5 Milk	-13.9	12.9	-14.1	13.9	-28.3	23.2	-7.8	18.2	-43.9	69.0	-26.5	38.2
6 Forestry	-1.1	10.4	-0.2	23.3	-1.5	27.1	1.0	13.2	1.4	28.2	-0.2	21.8
7 Fishing	-47.2	172.5	-98.8	165.7	-28.9	367.0	-95.2	200.6	937.5	1094.0	399.2	711.1
8 NaturalRsc	-0.1	6.5	0.5	5.5	-2.8	11.1	5.8	7.5	23.5	21.1	7.7	15.0
9 ProcFood	2.8	10.6	2.2	7.7	-1.7	13.2	1.5	10.1	34.6	11.6	13.3	24.5
10 Wool	0.6	11.0	-4.0	10.4	-11.9	18.0	-3.7	13.4	38.6	56.3	19.3	57.4
11 Textiles	10.6	19.6	8.8	11.5	29.3	37.9	17.7	18.2	85.3	73.5	49.2	48.9
12 Apparel	20.4	13.2	12.8	9.0	49.7	29.0	21.9	19.9	92.4	65.1	64.0	48.4
13 LeaProd	51.5	49.9	16.4	16.3	46.0	44.0	16.9	19.7	73.5	76.4	42.2	45.5
14 WoodProd	0.0	7.8	1.5	7.1	0.1	13.3	2.8	9.8	13.4	28.3	11.0	20.8
15 ChemiProd	3.1	9.9	3.9	8.0	2.5	15.3	9.5	11.2	22.3	34.3	18.5	23.1
16 MetalProd	7.3	9.1	7.7	7.9	9.9	15.0	15.1	12.1	41.2	35.9	32.5	25.1
17 TransProd	12.2	10.4	11.3	9.0	12.2	14.0	21.2	14.0	51.6	37.9	37.9	26.0
18 ElecEquip	7.5	8.0	12.5	7.3	13.8	13.6	18.0	10.2	45.5	30.0	33.1	21.0
19 Machine	6.6	13.3	10.1	15.0	12.3	24.4	14.1	26.0	43.8	76.5	30.5	55.7
20 Utility	-0.7	9.0	0.1	6.0	-5.2	15.8	4.0	15.5	12.0	33.9	6.1	24.0
21 Construct	2.7	12.4	4.0	7.8	2.9	18.9	8.1	10.8	21.5	38.5	13.0	24.7
22 TransComm	0.9	13.6	1.7	7.4	0.2	17.7	4.7	9.1	15.9	26.5	8.3	19.7
23 FinSrv	-3.4	14.0	-2.0	8.2	-7.3	19.5	-0.6	10.3	0.2	30.3	-2.2	22.5
24 PublicSrv	13.7	13.7	14.7	21.0	31.8	38.6	16.8	21.4	52.1	59.3	36.4	41.3

template, would bring an increase of 19.4% (USD 29.6 billion). This suggests that the future economic outlook would be strikingly different depending on which pathway prevails in the region.

5.2. Sectoral impact

Sectoral results for Vietnam's exports and imports are reported in Table 4. The effect on fishing and public service sectors appears to be large percentage terms but absolute magnitudes are tiny to the point of negligibility.

EVFTA expands Vietnam's exports to the EU in the advantaged sectors of light-manufacturing, especially leather products (51.5%: USD 4.9 billion). Exports in other manufacturing sectors, such as motor vehicles and transport (12.2%: USD 1.3 billion) and electronics (7.5%: USD 0.6 billion), grow too. Meanwhile, exports of almost all agricultural sectors contract while imports increase.

TPP expands Vietnam's exports in textiles (29.3%: USD 2.5 billion), apparel (49.7%: USD 7.6 billion), and leather products (46.0%: USD 7.2 billion) driven largely by reductions in initially high tariffs on those goods in the US. MFN rates are already low on manufactured goods in most partner countries but lowering tariffs on intermediate goods makes Vietnam's manufactured exports more competitive. As a result, exports to Japan and the US of metals, motor vehicles and transport equipment (12.2%: USD 1.6 billion), electronics (13.8%: USD 1.3 billion), and machinery (12.3%: USD 0.3 billion) expand substantially. Agricultural sectors struggle in competition with the US and Australia resulting in contraction of exports.

CPTPP expands Vietnam's exports in textiles, apparel, and leather sectors far less than TPP due to the absence of the US market. Other manufacturing sectors are less affected as MFN rates are already low in the US, and lower costs for intermediate inputs procured from other member countries still drive up Vietnam's exports. Exports of agricultural sectors are less negatively affected, especially in meat and dairy products, in the absence of US competition.

RCEP greatly expands Vietnam's exports to East Asian countries by lowering high initial tariffs in these markets and taking advantage of cheaper imported intermediate goods not only in light-manufacturing sectors but also in such capital intensive manufacturing sectors as chemicals (9.5%: USD 0.9 billion), metals (15.1%: USD 0.5 billion), motor vehicles and transport equipment (21.2%: USD 2.7 billion), electronics (18.0%: USD 1.7 billion), and machinery (14.1%: USD 0.4 billion). Notably, India appears to be a growing market for Vietnam's exports. Agricultural sectors are less seriously affected compared to EVFTA and TPP due to weaker competition. Exports of rice (80.5%: USD 0.2 billion) increase to the Philippines in particular and exports of meat (2.7%: USD 1.3 million), forestry products (1.0%: USD 66.1 million), and natural resources (5.8%: USD 63.2 million) grow as well.

Under the two FTAAP scenarios, exports and imports are estimated to increase significantly in almost all sectors. Growth is much higher under FTAAP1 based on the TPP template than under FTAAP2 based on the RCEP template. Results suggest that creating a highly integrated region-wide single market spurs Vietnam's manufacturing sectors and advances its participation in regional supply chains. Notably, the rice and processed food exports show a huge potential for growth. On the other hand, other agricultural crops show sharp contraction in the presence of strong competition from the US,

Australia, and China. Domestic production is largely replaced by imports. In a similar way, milk products also face serious competition.

Across all scenarios, imports increase as much as or more than exports. This is due to Vietnam's heavy dependence on imported intermediate inputs. Thus when exports increase, imports expand also. This indicates a weakness of Vietnam's industrial structure which lacks domestic supporting industries and shows weak integration between exporting firms and domestic suppliers.

6. The middle income trap in Vietnam

6.1. Middle income trap scenarios

Vietnam's average annual GDP growth rate between 1986 and 2015 was 6.5%, making it one of ASEAN's fastest growing economies. GNI per capita in 2015 was USD 1,990, conferring lower-middle-income status according to the World Bank. Many countries have managed to reach middle-income status, but few have moved on to become high-income economies—a phenomenon known as the “middle-income trap.” Moving labor from low-productivity sectors to higher-productivity sectors (typically from agriculture to labor-intensive manufacturing) results in a rise in per capita income. When labor supply then becomes tight and wages begin to rise, those labor-intensive sectors lose competitiveness. Few ASEAN countries have managed to push through to the next stage to build strong domestic supporting industries involving higher skills and more advanced technology (see Ohno, 2009 on four stages of catching-up industrialization).

According to the [World Bank and Ministry of Planning and Investment of Vietnam \(2016\)](#), if Vietnam achieved a GDP growth path of 7% a year, by 2035 its GDP per capita would reach the same level as Korea in 2002 or Malaysia in 2013 (USD 22,200 in 2011 PPP), which would move Vietnam to upper-middle verging on high income status. The estimated results of Mega-RTAs presented in Section 5 indicate Vietnam's potential for growth under assumptions of maximum impact on capital, labor, and technological progress. We now examine scenarios where the power of these factors to augment growth is more subdued. The following three scenarios are examined.

- Capital accumulation, labor supply, and productivity growth all stagnate;
- Unskilled labor supply declines by a half and skilled labor supply stagnates;
- Total Factor Productivity (TFP) growth stagnates.

6.2. Results

Fig. 3 presents the estimated results of our “middle-income trap” scenarios. Absent growth in capital, labor, and TFP, Trap 1 generates growth from trade liberalization of only one-fourth to one-fifth full potential levels across all scenarios. Under Trap 2, stagnating labor supply impairs the impact of trade liberalization in particular for trade agreements that tend to benefit labor-intensive sectors such as textiles and apparel. Under Trap 3, stagnating TFP growth reduces GDP growth outcomes substantially across all trade agreements. This result indicates that TFP growth accounts for a large portion of the amplifying effects. The adverse effects of the middle income trap scenarios appear to be most severe for the FTAAP agreements. This suggests that creating a regional single market does not generate full economic benefits for Vietnam unless it can achieve TFP growth and become more competitive in integrated global markets.

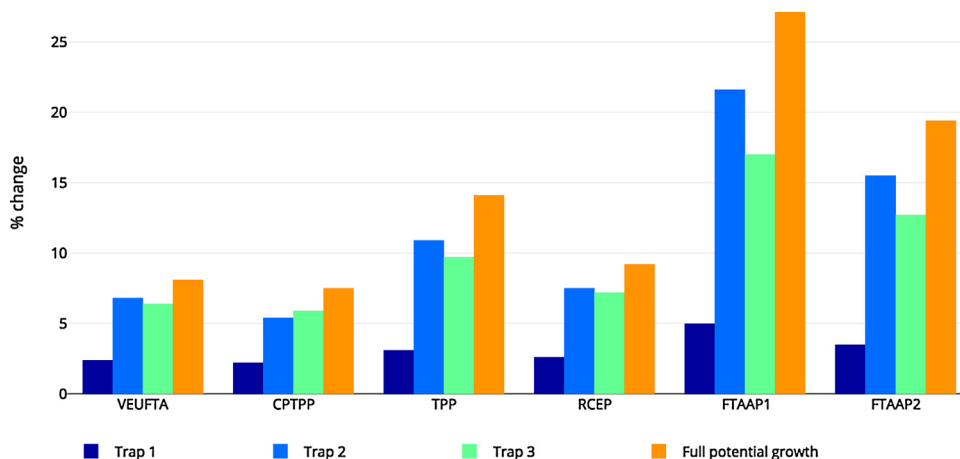


Fig. 3. Real GDP change under three middle-income trap scenarios (% change).

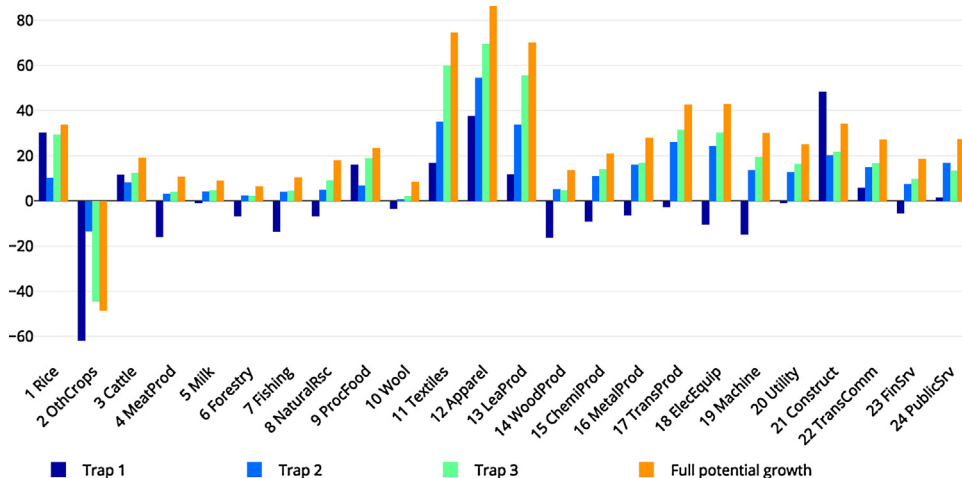


Fig. 4. Sectoral output changes under three middle-income trap scenarios for FTAAP1 (% change).

Fig. 4 presents sectoral output changes under FTAAP1. For Trap 1, output expands in a few advantaged sectors such as rice, cattle, processed food, textiles, apparel, leather products, and construction, but contracts in other sectors. Factors of production are assumed to be fully mobile for reallocation from low-wage/rental sectors to high-wage/rental sectors. Therefore, advantaged sectors draw more resources from other sectors which results in their sharp contraction. Of note, domestic demand for manufactured goods can be satisfied with imports, whereas domestic demand for (non-tradable) services must be satisfied by domestic supply requiring internal resources. Trap 1 implies that limited growth of capital, labor, and TFP leads to concentration of domestic resources in a few advantaged sectors which may impede broader industrial development in Vietnam—the so called “Dutch disease.” For Trap 2, stagnating labor supply mainly affects labor-intensive sectors. Competition for limited labor resources results in reallocation from shrinking to booming sectors. It also drives wages up by 15.8% for unskilled labor and by 25.7% for skilled labor. As labor costs rise, more capital is utilized as its cost becomes cheaper relative to that of labor. For Trap 3, stagnating TFP growth affects all sectors, reducing output and raising prices.

6.3. Policy challenges for Vietnam

6.3.1. Capital investments

The most important source of Vietnam's economic growth over the last few decades has been capital accumulation (cf. Anand, Cheng, Rehman, & Zhang, 2014). Our simulated results suggest that many sectors may contract without continued strong capital accumulation. It will be especially important to continue to invest in emerging high-tech manufacturing sectors. Boosting capital accumulation will require a sound banking system, a stable macroeconomic environment, strong attraction of FDI, and concerted investment in public infrastructure. Vietnam's money and bond markets are presently underdeveloped, and its banking system is in need of reform with non-performing loans an increasing burden due to inefficient credit allocation in favor of the state sector. Small and medium sized enterprises, in particular, face difficulty getting access to finance which impedes their participation in global supply chains (cf. World Economic Forum, 2016). To date, FDI has played an important role in Vietnam's capital formation. To ensure a stable and conducive environment for continued FDI inflows, legal infrastructure and regulatory transparency need to be improved. Vietnam's committed efforts have so far been reasonably successful in building basic infrastructure. ADB (2017) indicates that the infrastructure needs of middle-income economies evolve from basic to more advanced forms of infrastructure involving higher technology in transportation and communication. However, Vietnam's public debt to GDP ratio has been growing at an alarming rate reaching 63.7% in 2016. Limited fiscal space calls for tax and administrative reforms and greater reliance on public-private partnerships.

6.3.2. Human capital

Vietnam cannot rely on the demographic dividend for too much longer as growth in the working age population is predicted to slow down after 2030. Human capital investment should be prioritized to prepare for a changing demographic profile. Our simulated results suggest that stable labor supply is necessary to further develop the advantaged light-manufacturing sectors, and more skilled workers are needed to meet the demand in the emerging high-tech manufacturing sectors. These results are consistent with the findings of Bodewig and Badiani-Magnusson (2014) showing Vietnam's challenges in making its workforce more productive and better equipped with the skills needed for new job demands. In fact, ADB (2017) shows that middle-income economies that succeed in reaching high income status invest more in human capital than those that become trapped. Spending on human capital development raises productivity while also mitigating income

inequality. Vietnam's committed efforts to universal primary education and broader secondary education have aided the transition of workers from agriculture to non-agricultural sectors and the migration from rural to urban areas, but such reallocation of labor has slowed in recent years despite a large population remaining in agriculture and rural areas. Coxhead, Cuong, and Vu (2015) find that the probability of migration is higher for those with post-secondary educations. The government should thus continue its efforts to increase access to primary and secondary education. Moreover, non-agricultural labor markets today demand more advanced technical and cognitive skills than in the past. Vocational schools should play an active role in collaborating with the private sector to upgrade their curricula and provide apprenticeship training. Improving educational quality in the general education system is indispensable for raising cognitive skills that enable workers to learn, solve problems, and create new knowledge leading to innovation-led growth in the long run.

6.3.3. Technological progress

ADB (2017) shows that middle-income economies that are successful in reaching high income status, exhibit relatively high TFP growth. To escape the middle-income trap, it is imperative for an economy to diversify and upgrade its production and export capacity by absorbing new technology. FDI is particularly important to achieving this as it brings with it not only advanced technology but more sophisticated business skills. Policy should focus on the transfer of technology to domestic firms through strategic FDI (cf. ADB, 2017). This is indeed a crucial challenge for Vietnam. Lack of domestic supporting industries and weak linkages with foreign invested exporters are often identified as a weakness for Vietnam.

Nonetheless, one successful case involves motorbike production. Honda Vietnam Co., Ltd. records a localization rate of 95%. Historically, Honda Vietnam has increased local procurement when faced with competition from cheap imported motorbikes from China. Such competition has spurred Honda Vietnam to collaborate with local firms as subcontractors, and this sub-contracting relationship has often entailed transfer of technology and production management skills (cf. Hoang, 2009). This example suggests that that strategic FDI can work to promote upstream development.

Scale is essential to achieve efficiency in production. The government should continue to promote FTAs to tap into large foreign markets as well as to stimulate domestic consumption. Developing the financial sector, too, could help Vietnam attract more FDI into higher value-added sectors, with this benefiting local firms indirectly through technology spillovers.¹⁵

7. Conclusion

Vietnam is integrated more than ever into the global economy and global value chains. However, Asia as a whole faces great uncertainty as the US has shifted its stance toward bilateral deals based on the “America-first” principle. This paper estimates the impact of different Mega-RTAs including EVFTA, TPP, CPTPP (TPP without the US), RCEP, and FTAAP. To fully capture dynamic effects underestimated in previous studies, we extend a static CGE model to incorporate capital accumulation, labor supply changes, and productivity growth stemming from trade liberalization.

Our results show that EVFTA increases Vietnam's real GDP by 8.1% (USD 11.0 billion) while TPP increases it by 13.2% (USD 20.2 billion). Vietnam is found to be more adversely affected by the US withdrawal from TPP than other economies in the region. CPTPP increases real GDP by 6.5% (USD 10.0 billion) while RCEP increases it by 9.2% (USD 14.0 billion). The economic benefits from RCEP appear to be relatively small given a lesser degree of liberalization for tariffs and NTMs. The increase in real GDP is the largest at 27.1% (USD 41.5 billion) for FTAAP1 based on the TPP template while it is 19.4% (USD 29.6 billion) for FTAAP2 based on the RCEP template.

We also examine impacts by sector. EVFTA expands Vietnam's exports to the EU mainly for light-manufactures, especially leather products. Other manufacturing sectors such as motor vehicles and transport equipment, and electronics experience strong growth in production and exports while most agricultural sectors contract. TPP leads to remarkable growth in textiles, apparel, and leather products. Lowering tariffs on intermediate goods imports makes Vietnam more competitive in manufactures, leading to substantial increases in exports. However, agricultural sectors struggle in the presence of strong competitors such as the US. Relative to TPP, without the US market CPTPP results in much lower export growth for textiles, apparel, and leather goods. However, cheaper intermediate inputs still drive up exports. RCEP promotes substantial growth in capital-intensive sectors such as chemicals, metals, motor vehicles and transport equipment, electronics, and machinery. For the FTAAP scenarios, FTAAP1 leads to much higher growth than FTAAP2. The results suggest that creating a highly integrated regional market spurs Vietnam's manufacturing sectors and upgrades its position in regional supply chains. The potential for growth in rice and processed food production is particularly notable.

Lastly, we analyze various “middle income trap” scenarios where we constrain three factors for dynamic growth augmentation: capital, labor, and TFP. The results show that only small benefits are generated from trade liberalization without the contribution of these augmenting factors. The effects from labor supply constraints are fairly significant. The negative impact varies across trade agreement and appears to be more acute for those agreements that tend to benefit labor-intensive sectors. Stagnating TFP growth reduces the economic impact of trade liberalization substantially. This suggests that creating a unified regional market does not guarantee full economic benefits for Vietnam unless the country can muster TFP growth. To avoid the “middle income trap”, Vietnam should reform its financial markets, broaden access to primary and secondary education as well as vocational training, and pursue strategic FDI policies.

¹⁵ See Kikuchi and Wang (2016).

Appendix A.

Table A1

Selected literature on computable general equilibrium modeling.

	Kawasaki (2015)	Japan Cabinet Secretariat (2015)	World Bank (2016) and Petri and Plummer (2016)	US ITC (2016)
Model	Static	Static	Recursive dynamic	Recursive dynamic
Database (base year)	GTAP V8.1 (2007)	GTAP V9.0 (2011)	GTAP V9.0 (2011)	GTAP V9.0 (2011)
Closure	Capital accumulation, endogenous labor, endogenous TFP	Capital accumulation, endogenous labor, endogenous TFP	Capital accumulation, Melitz effect	Capital accumulation, endogenous labor
Type of liberalization	Tariffs, NTMs (goods and services) and 50% spillover	Tariffs, NTMs (Logistics Performance Index) and 50% spillover	Tariffs, NTMs (goods and services) and 20% spillover, investment	Tariffs, NTMs (goods and services), trade facilitation, investment
Results for Vietnam (change in GDP)	TPP (20.1%), RCEP (31.0%), FTAAP (30.0%)	n/a	n/a	TPP (8.1%)

Table A2

Regional aggregation.

Regions	GTAP 140 regions
1	AUS Australia
2	NZL New Zealand
3	JPN Japan
4	BRN Brunei Darussalam
5	MYS Malaysia
6	SGP Singapore
7	VNM Vietnam
8	CAN Canada
9	USA United States of America
10	CHL Chile
11	MEX Mexico
12	PER Peru
13	CHN China
14	KOR Korea
15	HKG Hong Kong, China
16	TWN Taiwan
17	IDN Indonesia
18	PHL Philippines
19	THA Thailand
20	KHM Cambodia
21	LAO Lao People's Democratic Republic
22	IND India
23	RUS Russian Federation
24	EUM Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, United Kingdom
25	OAO Bangladesh, Nepal, Pakistan, Sri Lanka, Rest of South Asia
26	OAM Colombia, Uruguay, Venezuela, Rest of South America, Costa Rica, Guatemala, Honduras, Nicaragua, Panama, El Salvador, Rest of Central America, Dominican Republic, Jamaica, Puerto Rico, Trinidad and Tobago, Caribbean
27	ROW Rest of the World

Source: Authors' aggregation based on GTAP Database 9.

Table A3
Sectoral aggregation.

Sectors	GTAP 57 sectors	
1	Rice	Paddy rice; Processed rice
2	OthCrops	Wheat; Cereal grains n.e.c.; Vegetables, fruit, nuts; Seeds; Sugar cane, sugar beet; Plant-based fibers; Crops n.e.c.
3	Cattle	Bovine cattle, sheep and goats, horses; Bovine cattle, sheep and goat meat products
4	MeatProd	Meat products; Animal products n.e.c.
5	Milk	Raw milk; Dairy products
6	Forestry	Forestry
7	Fishing	Fishing
8	NaturalRsc	Coal; Oil; Gas
9	ProcFood	Vegetable oils and fats; Sugar; Food products n.e.c.; Beverages and tobacco products
10	Wool	Wool, silk-worm cocoons
11	Textiles	Textiles
12	Apparel	Wearing apparel
13	LeatherProd	Leather products
14	WoodProd	Wood products; Paper products, publishing; Manufactures n.e.c.
15	ChemiProd	Petroleum, coal products; chemical, rubber, plastic products; Mineral products n.e.c.
16	MetalProd	Ferrous; Metals n.e.c.; Metal products
17	TransProd	Motor vehicles and parts; Transport equipment n.e.c.
18	ElecEquip	Electronic equipment
19	Machine	Machinery and equipment n.e.c.
20	Utility	Electricity; Gas manufacture, distribution; and Water
21	Construct	Construction
22	TransComm	Trade; Transport n.e.c.; Water transport; Air transport; Communication
23	FinService	Financial services n.e.c.; Insurance; Business services n.e.c.; Recreational and other services; Ownership of dwellings
24	PublicService	Public admin. and defence, education, health

Source: Authors' aggregation based on GTAP Database 9.

Table A4
Ad valorem import tariff rates for Vietnam's imports and exports.

Tariff rates (%)	Import			Export		
	EU	TPP	RCEP	EU	TPP	RCEP
	1 Rice	0.0	1.3	1.8	3.0	0.0
2 OthCrops	10.4	1.8	4.8	0.1	0.4	13.1
3 Cattle	1.6	0.7	1.8	1.3	0.7	3.9
4 MeatProd	0.6	0.4	0.1	0.0	0.0	2.4
5 Milk	12.5	1.9	3.2	2.1	0.2	0.2
6 Forestry	0.0	0.0	0.0	0.0	0.3	0.5
7 Fishing	0.0	0.0	0.0	0.0	0.0	0.0
8 NaturalRsc	4.4	6.6	6.2	1.6	0.2	0.6
9 ProcFood	12.1	7.8	7.2	7.2	6.4	11.6
10 Wool	28.7	31.8	56.5	5.2	17.9	15.1
11 Textiles	10.4	7.2	10.3	7.6	8.4	2.3
12 Apparel	19.6	13.1	19.5	9.2	10.8	2.8
13 LeatProd	10.1	3.6	11.8	10.7	14.6	4.8
14 WoodProd	8.4	7.7	7.5	0.0	0.4	4.1
15 ChemiProd	3.2	3.5	3.6	0.8	1.0	3.1
16 MetalProd	13.8	8.7	9.8	0.5	1.0	3.2
17 TransProd	6.9	2.0	2.5	0.2	0.2	2.6
18 ElecEquip	2.5	3.9	3.8	0.1	0.6	1.4
19 Machine	15.6	18.5	21.9	0.2	1.3	1.9
Total	4.2	4.9	6.2	4.0	4.7	3.9

Source: Authors' calculation based on GTAP 9.

Table A5

Non-tariff barriers for goods.

		Time to import		
		Border compliance (h)	Documentary compliance (h)	Total days
1	Australia	39	4	1.8
2	Brunei	48	140	7.8
3	Cambodia	8	132	5.8
4	Canada	2	1	0.1
5	Chile	54	36	3.8
6	China	92	66	6.6
7	Hong Kong	19	1	0.8
8	India	283	61	14.3
9	Indonesia	99	133	9.7
10	Japan	40	3	1.8
11	Korea	6	1	0.3
12	Laos	14	216	9.6
13	Malaysia	72	10	3.4
14	Mexico	44	18	2.6
15	New Zealand	25	1	1.1
16	Peru	72	72	6.0
17	Philippines	72	96	7.0
18	Singapore	35	3	1.6
19	Taiwan	47	41	3.7
20	Thailand	50	4	2.3
21	United States	2	8	0.4
22	Vietnam	62	76	5.8
23	Russia	96	43	5.8
24	European Union	2	1	0.1

1. TPP and EVFTA 60% cut.

2. RCEP 40% cut.

Note: We assume per Day Ad Valorem equal to 1%.Source: Doing Business, World Bank.

Table A6

Non-tariff barriers for services.

		Utilities	Construction	TransComm	Private services	Public services
1	Australia	14.5	12.3	12.3	12.4	15.9
2	Brunei	26.8	24.5	24.4	24.5	28.4
3	Cambodia	46.9	44.2	44.1	44.2	48.7
3	Canada	13.9	11.7	11.7	11.8	15.3
4	Chile	22.3	20.0	19.9	20.0	23.8
5	China	78.1	74.8	74.7	74.9	80.3
7	Hong Kong	3.0	3.0	3.0	3.0	3.0
8	India	95.8	92.1	92.0	92.2	98.2
9	Indonesia	95.8	92.1	92.0	92.2	98.2
10	Japan	15.1	12.9	12.9	13.0	16.5
11	Laos	46.9	44.2	44.1	44.2	48.7
11	Korea	23.2	20.9	20.8	21.0	24.7
12	Malaysia	26.8	24.5	24.4	24.5	28.4
13	Mexico	42.0	39.4	39.3	39.4	43.8
14	New Zealand	2.8	1.6	2.2	0.9	4.0
15	Peru	33.7	31.2	31.1	31.3	35.3
16	Philippines	52.9	50.0	49.9	50.1	54.8
17	Singapore	3.0	3.0	3.0	3.0	3.0
6	Taiwan	19.1	16.8	16.8	16.9	20.5
18	Thailand	42.0	39.4	39.3	39.4	43.8
19	United States	4.5	3.1	3.6	2.6	5.8
20	Vietnam	57.4	54.4	54.4	54.5	59.3
22	Russia	48.9	46.1	46.1	46.2	50.8
23	European Union	5.1	3.7	4.1	3.2	6.4

1. TPP and EVFTA 10% cut.

2. RCEP 7% cut.Source: Based on Wang et al. (2009). Some missing data were filled in with data from similar economies.

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