# The Economics of Trade Agreements:

## An Introduction

THE AUSTRALIAN APEC STUDY CENTRE
Asia-Pacific Economic Cooperation

In partnership with RMIT UNIVERSITY

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The Economics of Trade Agreements: An Introduction

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# Introduction

The purpose of this paper is to equip readers with an understanding of the economic drivers of free trade and to apply these concepts to the PNG context. The paper will draw on existing literature to discuss the advantages and disadvantages of enhanced liberalisation, the purpose of trade agreements and the implications of global value chains for PNG. Globalisation has brought many benefits to economies including increased jobs, productivity, growth and rising prosperity. However, challenges to globalisation such as increased resource dependence, rising inequality, environmental issues and volatility remain, which can lead to a backlash against globalisation if not addressed. It is therefore important to understand the economic drivers of free trade and consider policy options that ameliorate emerging challenges in PNG.

Section 1 of this paper begins with a brief overview of PNG's trade profile, its major exports and imports and their evolution over time. Section 2 discusses the benefits and challenges arising from trade liberalisation based on studies in several economies across the globe. It briefly describes the type of modelling required to assess these effects on the PNG economy as they are highly specific to the trading partners involved and the terms of any agreement. Section 3 goes on to consider why countries liberalise trade using different mechanisms such as unilateral measures, the multilateral WTO process or bilateral/regional trade agreements. Section 4 explains the economics of global value chains and the internationalisation of production. It considers the implications of this shift in production for new generation trade agreements and the role they could potentially play in the development of PNG. Section 5 concludes with a consideration of the complementary policies that PNG must enact to ensure the benefits of trade are widely distributed.

## Section 1. Overview of PNG's Trade Profile

At a macroeconomic level, the PNG economy is highly dependent on trade. In 2017, PNG's exports of goods and services reached K32.5 billion which is 44.0 percent of GDP (Table 1). Imports of goods and services were less than half of this at 18.5 percent of GDP leaving a considerable trade balance surplus of 25.5 percent of GDP. However, a large proportion of these exports are from mining, oil and gas sectors. A smaller proportion of the value of these exports flow back to the PNG economy. Adjusting for the foreign income that is not converted back to kina leaves a true trade surplus of just 4.7% of GDP (Table 1).

Table 1 — Macroeconomic structure of trade, 2017

| | Million Kina | % of GDP |
|---|---|---|
| Exports – goods | 31,714 | 42.9% |
| Exports – services | 814 | 1.1% |
| Exports – total | 32,528 | 44.0% |
| Estimate of export value not converted to kina | 15,395 | 20.8% |
| Estimated true value of exports for PNG | 17,133 | 23.2% |
| Imports – goods | 9,084 | 12.3% |
| Imports – services | 4,598 | 6.2% |
| Imports – total | 13,683 | 18.5% |
| Trade surplus | 18,845 | 25.5% |
| Estimated true trade surplus | 3,450 | 4.7% |

*Source of data: BPNG Quarterly Economic Bulleting.*
Note: The estimate of the export value not converted to kina is calculated as the addition of debits on "other investments" and "income" in the balance of payments statistics.

At the sectoral level, mineral resources accounted for 78 percent of all exports of goods and services in 2017 (Table 2). Almost all of this comprised of exports of gold, copper, nickel, oil, gas and associated condensates. In contrast, coffee production accounted for just 1.6 per cent of exports. Moreover, the value of coffee exports has changed little over the past two decades, and the volume of coffee exports has fallen to about half of what it was during the 1990s (Table 2 and Figure 1).

In total, agriculture accounted for 8.2 percent of exports in 2017 with forestry products making up a further 3.2 percent and marine products 4.0 percent. Most marine exports are the products of tuna canneries, which are another export success story for PNG. In 2017, 164,000 tonnes of marine products were exported which compares with an average of less than 5,000 tonnes a year in the 1990s and 40,000 a year during the 2000s.

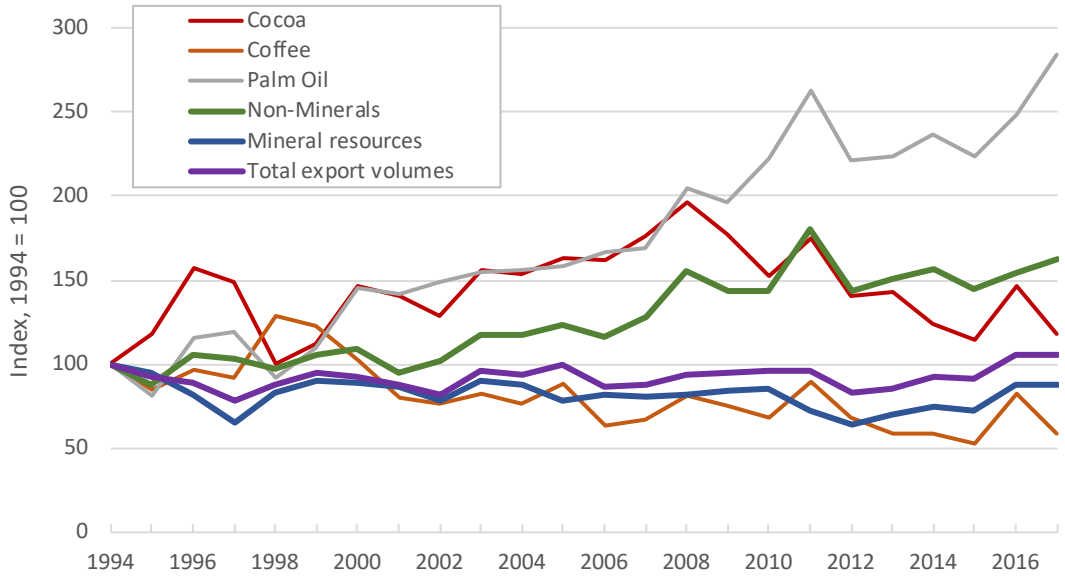
The volume of non-minerals exports have increased steadily over the past two decades. The gains have been underpinned by palm oil, canned tuna, and the manufacture of refined petroleum at the Napa-Napa oil refinery near Port Moresby (Figure 1). Looking ahead, sustained growth in palm oil production is unlikely due to growing global concerns of the environmental impact. Significant growth in exports from the oil refinery is also unlikely as the main focus is the domestic market. However, there remains substantial potential for further growth from the tuna canneries.

Table 2 — Industry composition of exports, 1990-2017 (K million)

| | averages | | | | |
|---|---|---|---|---|---|
| | 1990s | 2000s | 2011-16 | 2017 | Share |
| Coffee | 218 | 360 | 539 | 450 | 1.4% |
| Cocoa | 51 | 227 | 261 | 202 | 0.6% |
| Copra | 67 | 103 | 115 | 193 | 0.6% |
| Palm oil | 145 | 502 | 1,055 | 1340 | 4.1% |
| Other agriculture | 43 | 223 | 241 | 495 | 1.5% |
| Total agriculture | 524 | 1414 | 2,211 | 2,680 | 8.2% |
| Forestry and wood | 303 | 458 | 872 | 1,028 | 3.2% |
| Fresh & processed seafood | 15 | 172 | 454 | 1,309 | 4.0% |
| Refined petroleum | 0 | 236 | 735 | 1,197 | 3.7% |
| Other manfactures | 8 | 52 | 59 | 134 | 0.4% |
| Mining | 1241 | 5415 | 8,066 | 11,709 | 36.0% |
| Oil & gas | 677 | 2188 | 6,524 | 13,659 | 42.0% |
| Total mineral resources | 1918 | 7603 | 14,590 | 25,367 | 78.0% |
| Total commodity exports | 2768 | 9935 | 18,920 | 31,714 | 97.5% |
| Total services exports | | 824 | 708 | 801 | 2.5% |
| Total exports | | 10759 | 19,628 | 32,515 | 1.4% |

*Source of data: BPNG Quarterly Economic Bulletin*

Figure 1 — Export volume indices, 1994-2017 (1994 = 100)




Source of data: BPNG Quarterly Economic Bulleting

Imports tend to be dominated by non-agricultural consumer products and business inputs. Two key sectors of commodity imports are food, beverages and tobacco; and machinery and equipment. The latter has been fuelled by increasing affluence in PNG's urban centres which has seen a surge in the take up of private motor vehicles. However, machinery and equipment imports have fallen sharply in recent years due to fiscal constraints and the winding up of the investment phase of the LNG Project.

Imports of services have also collapsed to nearly half the levels experienced in the early part of the decade. The biggest casualty has been the import of construction services which in 2017 was just K0.2 billion representing 2 percent of all imports of goods and services, compared with K3.2 billion in

2013. Business services now make up more than a third of services imports and 12 percent of all imports. This is reflective of an underdeveloped business services sector in PNG.

The overall average level of protection on PNG's imports is low at just 2.7 percent (Table 3). This is calculated from K246 million in tariff revenue that was raised in 2017 versus total commodity imports of K9,084 million. WTO data on nominal tariffs appear to be quite high, ranging from 11 percent to 75 percent (Table 3). However, estimates of average tariff protection based on actual tariff collection suggest low levels of effective tariffs. There appears to be some variation with high rates for horticulture, moderate rates in fish products, processed food, beverages and tobacco, and fuel, and low or very low rates for all other manufactures (Table 3). The explanation for the discrepancy with World Trade Organisation information is likely to be due to a number of factors, including (1) high levels of exemptions; (2) lack of enforcement; and (3) low levels of imports on goods subject to high tariffs.

Table 3 — Average tariff rates on PNG's imports, 2016

| | Data from PNGGEM | WTO data |
|---|---|---|
| Horticulture | 39.8% | 60% |
| Other agriculture | 3.1% | 21-41% |
| Seafood | 7.8% | 54% |
| Processed seafood | 14.9% | 54% |
| Processed food | 14.0% | 21-75% |
| Timber | 9.8% | 58% |
| Beverages and tobacco | 21.4% | 68% |
| Metals | 2.0% | 28% |
| Machinery | 2.6% | 28-36% |
| Fuel & chemicals | 21.9% | 19-33% |
| Other manufactures | 3.0% | 11-35% |
| Average all commodities | 2.7% | |

*Source of data: Compiled from data in the PNGGEM database in Levantis (2018), BPNG, Budget Papers, and WTO.*

## Section 2. What are the advantages and disadvantages of free trade?

The economic case for free trade goes back to David Ricardo, writing in the 19th century, who argued that countries should specialise in producing what they are good at and then trade across borders. He demonstrated that two countries may benefit from trade with each other even when one country is able to produce all of its goods more efficiently as long as they each specialise in the area of their *comparative* advantage. This means that even for a small developing economy, gains from trade are possible when dealing with a larger partner that is more efficient at producing all goods. This is subject to the assumptions of the model[1]. Later models like Heckscher-Ohlin and Stolper-Samuelson demonstrated that trade can cause a redistribution of resources (labour and capital) within the domestic economy creating winners and losers. An extensive array of empirical studies have sought to evaluate these theories based on the liberalisation experiences of countries across the globe. This section provides a brief summary of this literature in terms of the advantages and disadvantages of trade liberalisation.

The liberalisation of trade barriers has been known to bring several economic benefits such as enhanced jobs, growth, productivity and lower consumer prices. At the same time, critics argue that globalisation increases inequality, heightens uncertainty and damages the environment. Each of these issues will be discussed in turn based on the theoretical framework outlined above and empirical studies from economies across the globe. Estimating the effects of trade liberalisation on the PNG economy is beyond the scope of this paper as they are highly specific to the trading partners involved and the terms of any agreement. However, the paper does describe the type of modelling required to determine these effects.

### Advantages

#### *Jobs*

The link between open trade and employment is well established in theoretical and empirical economic literature. As import tariffs increase the price of importable goods relative to exports they create an anti-export bias. On removal of this bias, through trade liberalisation, countries will shift resources to the export sectors which will generate growth in the short to medium run. The Heckscher-Ohlin theorem predicts that developing countries typically abundant in labour will specialise in labour intensive exports thereby increasing the demand for labour, generating growth and possibly reducing poverty. These predictions are subject to the assumptions discussed previously.

The empirical evidence finds support for the view that trade is associated with the creation of jobs in some areas and loss of jobs in others. A study by McMillan and Verduzco (2011) shows that in high-income countries the collective employment in manufacturing fell from 61 million in 1980 to 54 million in 2005 while manufacturing employment in East Asia rose from 27 million to 69 million over the same period. At the same time, many high-income economies have also experienced an increase in employment in the services sector (Gonzales et al. 2012). It should be noted that trade is only one of the many factors that influence job creation and destruction. Technological change is considered by many economists to be the most dominant factor influencing wages and employment (Hoekman & Winters, 2007).

[1] The typical Ricardian model assumes there are two countries, producing two goods using one factor of production (labour). All markets are perfectly competitive, goods are homogenous and there are no transportation costs.

### *Growth*

The evidence linking trade and economic growth finds that on balance trade is a key factor in promoting growth but that the effect is not automatic and requires complementary policies to be in place. Early studies looked for a systematic relationship between openness and growth. Dollar (1992), Sachs and Warner (1995) and Edwards (1998) all found openness and growth to be positively related, however; these studies were criticised by Rodriguez and Rodrik (1999) on methodological grounds.

Subsequent studies that used a variety of methods continued to find a positive relationship between trade and growth (Winters, 2004; Hallaert, 2006). Case studies of the best performing economies provided further evidence linking trade and growth as they were able to capture effects that could not be seen from econometric studies (Srinivasan & Bhagwati, 2001). The East Asian Tiger economies namely (Singapore, South Korea, Hong Kong and Taiwan) demonstrated tremendous growth and development after adopting export promotion strategies. At the same time, it is argued that developing countries must pay close attention to the sequencing and pacing of trade liberalisation based on their stage of development (Stiglitz & Charlton, 2007). Studies also found that trade openness on its own was not sufficient to promote growth but needs to be accompanied by stable macroeconomic policies, labour flexibility, ease of business, education and health amongst others (Winters, 2004; Chang, Kaltani & Loayza, 2005; OECD, 2012; WTO, 2009). These complementary policies will be discussed further in Section 5.

### *Productivity*

There are several channels through which trade can boost productivity. As countries specialise in their area of comparative advantage, they enjoy economies of scale. Exporting firms, in particular, tend to be larger, more productive and pay higher wages (Hallward-Driemeier, et al. 2002). Increased competition through trade can also lead to the expansion of more productive firms into export markets and contraction of less productive firms, leading to an overall increase in industry productivity (Melitz, 2003). Foreign investment is thought to bring with its superior technology, management practices, access to markets and linkages with global value chains. Reduction of import tariffs can also improve productivity of firms as they now get access to cheaper or higher quality inputs. This feature is particularly important with the rise of global value chains (Baldwin, 2016) which will be discussed in more detail in Section 5.

### *Consumer prices*

In addition to lower input prices for businesses, trade liberalisation also reduces the domestic price of imported goods for consumers. The extent to which domestic prices change depends on the magnitude of tariff liberalisation and the presence of non-tariff barriers that may continue to restrict imports (McCulloch et al., 2001). Empirical estimates of the welfare gains from the Uruguay Round were quite modest with gains of only 0.4% of global GDP (Harrison et al. 1996 cited in McCulloch et al., 2001). However, these static estimates fail to take into the account the dynamic effects that arise from increased competition and specialisation. Moreover, Romer (1994) argues that the largest welfare gains exist where goods become available that were simply not available before. (On this point, see the video on Globalization and Chocolate)

## Disadvantages

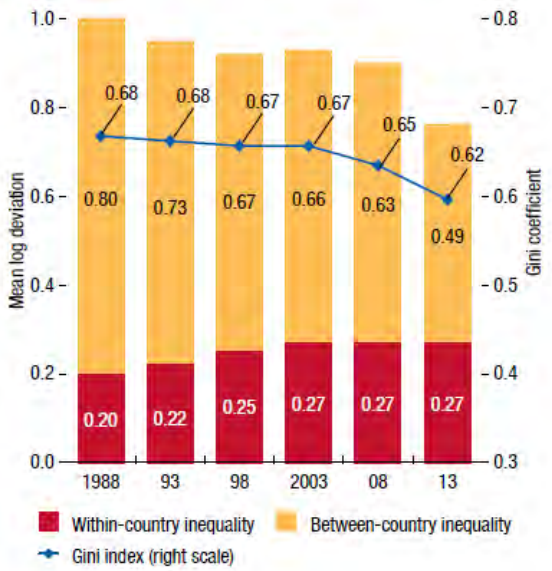
### *Inequality*

The Stolper-Samuelson theorem predicts that on opening to trade developed economies will see rising skilled wages and declining unskilled wages while developing economies will experience the opposite effect. Theoretically, the Hecksher-Ohlin theorem predicts that developing countries typically

abundant in unskilled labour will specialise in unskilled labour-intensive exports thereby increasing demand for unskilled labour. Stolper-Samuelson makes clear this ought to have significant effects on wages. Therefore, wage inequality in developed economies is predicted to increase while in developing economies it would fall.

A multitude of factors can be expected to affect inequality besides trade including local conditions and technology. Recent data examining inequality levels suggest that advanced economies have experienced rising inequality while developing economies have had mixed results. Economies in Eastern Europe, Central Asia and Latin America have experienced an increase in inequality in the 1980s and 1990s followed by a decline afterward, though absolute levels remain high (IMF, 2017). A study by Gourdon, Maystre and de Melo (2008) found that trade liberalisation was associated with higher inequality in countries with abundant capital and high skilled workers as well as in countries with an abundance of non-educated labour and those dependent on a few natural resources. Other studies have pointed out that trade is not the only driver of inequality and that in fact technology improvements contribute to the skill premium as higher educated workers have skills complementary to new technologies (Card & DiNardo, 2002) leading to a hollowing out of middle-class jobs in advanced countries (Goos & Manning, 2007). At the same time, inequality *between countries* has been decreasing at the global level as several emerging economies including China and India move up the income ladder leading to income convergence across countries (Bourguignon, 2015). Figure 2 below displays the extent to which global inequality is driven by within-country and between-country effects.

Figure 2. Decomposition of Global Income Inequality, 1998-2013




*Source: IMF 2017*

Note: Bar height indicates level of global inequality. Red bars show corresponding level of population-weighted inequality within counties; yellow bars show level of between-country inequality, which captures differences in average income across countries.

### *Race to the bottom*

Some critics argue that open borders will lead to enhanced competition between countries to lower environmental and labour conditions to attract foreign investment. As multinational companies are internationally mobile, they are able to shop around for the most profitable destinations to build their factories. Governments, it is argued, will compete to lower worker wages, corporate taxes, environmental and safety regulations to attract their capital. These critics point to factory workers in developing countries working in sweatshop-like conditions for long hours at low wages as indicative

of exploitation by global markets. Defenders of globalisation suggest that the proper comparison is not conditions in advanced countries but other opportunities available in developing countries. Studies suggest that FDI-linked export-oriented firms pay higher wages than domestic equivalents (Javorcik, 2015). Moreover, foreign companies consider more than just labour and environmental standards and may examine the suitability of infrastructure, regulatory certainty, predictability of the legal system, and the skill level of the workforce amongst other factors. The leading recipient of FDI in the world is the United States, though inflows have been falling in recent years (UNCTAD, 2018).

*Resource curse*

As seen in Section 1, the PNG economy is highly dependent on natural resource exports. Over-specialisation in this sector does not always lead to sustained growth and development and can have the opposite effect, a phenomenon known as the 'resource curse'. There are a few mechanisms through which it can operate (WTO, 2010):

(1) The increased foreign revenue can appreciate the exchange rate making other sectors less competitive. This phenomenon has been called 'Dutch Disease'. In the case of PNG, non-mineral resource exports in agriculture, fishing and forestry stand to be most affected.
(2) The booming natural resource sector can pull inputs (like labour) away from the rest of the economy. This increases the costs of domestic manufacturing production which can be problematic if it reduces the positive spill-overs for the local economy (such as jobs).
(3) The additional spending of natural resource revenue raises the relative price of domestic goods making them less competitive overseas and increasing inflation which disproportionately hurts the poor.

Although the resource curse is problematic, it is not inevitable. Through good public management, it can largely be avoided. An example is Botswana, a country similar to PNG in many respects. It is relatively small, with a population of just over 2 million, and the economy is heavily dominated by the mining industry- particularly diamonds but also copper and nickel to a smaller extent. In 1989, mining accounted for 50% of GDP and 90% of exports (WTO, 2010).

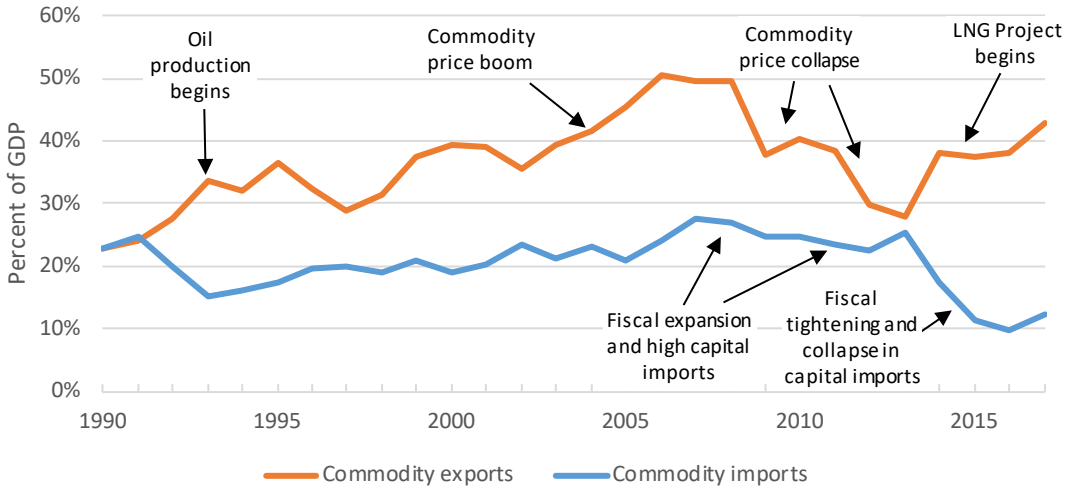
Botswana avoided the resource curse thanks to sound macroeconomic policies and prudent management of windfall gains. The government did not increase public spending whenever mineral exports increased but instead based expenditure on longer-term expectations of export earnings. Excess revenues were used to accumulate foreign reserves and government savings which could be drawn-down in leaner years. Holding foreign reserves also helped Botswana avoid 'Dutch Disease' as the domestic currency was not affected by increased mineral revenue (WTO, 2010).

*Volatility*

Increased trade openness can expose countries to foreign shocks as many experienced during the Global Financial Crisis. Inter-linked capital markets can increase the risk of financial contagion, while enhanced trade can be affected by recessions or protectionism in foreign countries. Countries that specialise in exporting primary commodities are particularly at risk as supply is not very sensitive to price changes leading to dramatic fluctuations and terms of trade volatility (McCulloch et al., 2001). PNG's experience is a case in point. Commodity trade over the past three decades has been one of high volatility with exports mainly in mining, oil and gas.

In 1990, both commodity exports and commodity imports stood at 23 per cent of GDP (Figure 3). By 1995, this pattern changed drastically as a result of PNG's first oil production kicking off in the Kutubu oil fields. Commodity exports jumped to 37 percent of GDP while commodity imports fell to 17 per cent of GDP (Figure 3).

Figure 3 — Commodity exports and imports as a share of GDP, 1990-2017




*Source of data: BPNG Quarterly Economic Bulleting*

The patterns of both exports and imports are heavily influenced by commodity prices. In times of high commodity prices, profits rise sharply for mineral resource companies leading to sharp rises in tax revenues for the government as well as income from the government's stake in a number of resource operations. As a result, when commodity prices rise fiscal spending also rises, and in turn, this feeds through to rises in imports. Higher prices led to commodity exports jumping to 50 percent of GDP by 2007 — despite no new mines and no discernible change in export volumes. After 2007, things went into reverse as commodity prices collapsed. By 2013, commodity exports had almost halved to 28 percent of GDP. By 2017, commodity exports had recovered to 43 percent of GDP and should rise further in 2018 as a result of commodity prices continuing to strengthen.

Despite the collapse in commodity prices, commodity imports held firm over the period 2007-2013. There were two driving forces behind this. First, the LNG Project had been commissioned leading to considerable capital imports entering the balance of payments statistics — albeit most of it being accounting entries as there was little-associated currency exchange. Second, in anticipation of the LNG Project, the government fast-tracked development spending on its PNG Development Strategic Plan and financed this with large fiscal deficits. In turn, the surge in fiscal spending fuelled imports.

The collapse in commodity imports since 2013 was a result of the end of the investment phase of the LNG Project, and a severe tightening of fiscal spending. The fiscal tightening occurred in the wake of the collapse in commodity prices and a failure of the anticipated revenue flows from the LNG Project to come to fruition. Commodity imports as a share of GDP bottomed out in 2016 at 10 percent of GDP before recovering to 12 percent of GDP in 2017. With commodity prices continuing to gain traction and with government revenue from the LNG Project expected to increase markedly across the next decade, commodity imports as a share of GDP should continue to recover.

**Box 1. How to Model the Impact of Trade Liberalisation on the PNG Economy**

Estimating the impact of trade liberalisation on PNG's growth, jobs, household income and inequality is beyond the scope of this paper. Nevertheless, policymakers must be aware of the modelling approaches available to determine these effects.

In a general sense, models create a theoretical linkage between trade liberalisation and the various issues of interest. Although based on assumptions of how key economic variables interact, models do seek to resemble empirical reality by using parameters based on real data.

The advantage of modelling is that it allows policy-makers to view the linkages between trade reform and economic variable such as household income to determine the importance of different links, the impact of different reforms and effects of complementary policies. The disadvantage of modelling is that it is highly sensitive to the assumptions made in the model. Assumptions are unavoidable; the key is to make sure assumptions are appropriate for the problem at hand.

Different types of models can be used depending on the purpose of analysis.

Household and community level modelling: This approach is typically used to estimate the impact of trade-induced price changes on agricultural households. These households are often both producers and consumers of agricultural outputs so the impact on them cannot be easily determined a priori. Such models typically examine the impact of price changes on agricultural output, consumption, labour demand and supply, poverty and income from exports.

National level modelling: This approach moves the focus of analysis to national policy changes. Computable General Equilibrium (CGE) models offer a useful tool for policy simulation and counterfactual analysis. They can be used to provide a comprehensive approach to assess how policy affects various sectors and households. The advantage of CGE models is that they map the entire economy and capture the linkages between different parts of the economy — including labour markets, capital markets, producers, government, foreign trade — and so map the feedback effects of policy changes. In this way, they can inform of the full impacts within each part of the economy, at the industry sector level, and at the macroeconomic level. However, CGE models also have limitations in that results are highly sensitive to the assumptions of the model and can be difficult to explain to non-technicians.

Nevertheless, modelling can be useful to PNG policymakers as they seek to negotiate trade agreements and enact liberalisation policies. The PNG Government has CGE modelling capacity with the model PNGGEM which has for some time been used to help guide development policy. PNGGEM is managed under a joint University of Queensland and NRI program.

*Source: (McCulloch et al, 2001); Levantis (2018)*

## Section 3. Why do countries sign trade agreements?

Having evaluated the advantages and disadvantages of trade liberalisation, it becomes apparent that many of the gains from liberalisation can be obtained by countries lowering their tariffs unilaterally, regardless of the actions of their partner countries. In recent history, several economies have experienced success through such unilateral liberalisation including Singapore, South Korea and other APEC economies. However, some particularly large countries are able to use tariffs to influence world prices and thereby improve their terms-of-trade at the expense of their partner. A tariff causes a fall in demand for the good, leading to a fall in the world price thus allowing the large country to improve its terms of trade. Box 2 below explains this process in more detail.

This 'terms-of-trade' manipulation is a 'beggar-thy-neighbour' policy as it enriches one country at the expense of their neighbours. If each country acts selfishly in this manner, it would lead to inefficient outcomes for all compared to a scenario where they agree to co-operate and refrain from using these tactics. Trade agreements are just such a commitment device as it allows countries to sign onto binding agreements to reduce their trade restrictions thereby overcoming this inefficiency (WTO, 2009).

**Box 2. Terms-of-trade and international cost-shifting problem**

This box examines why countries may be tempted to exploit terms-of-trade effects and why such unilateral behaviour leads to an efficient outcome, i.e. a reduction in global welfare. Consider tow large trading partners, Country A and Country b. Each government can choose free trade or impose a tariff on imported goods. What will be the welfare effect if Country A imposes a tariff on imports from Country B? How will the tariff affect the welfare of Country B?

When the government of a large country imposes a tariff on an imported good, it reduces the demand for that good in the international market as domestic residents will buy less of it at the higher domestic price. Because the consumers in Country A represent such a large proportion of the market, this fall in demand for the good produced in Country b depresses its price in the international market, which in turn implies that Country A obtains its imports at a lower international price than before. This positive effect of a tariff on the country's welfare is the terms-of-trade effect. Country A will set this benefit against the costs of trade restrictions, which arise because of the expansion of inefficient domestic production and the reduction in consumer choice that the tariff introduces.

Importantly, however, terms-of-trade manipulation is a "beggar-thy-neighbour" type of policy. The benefit to Country A comes at the expense of Country B. This is because the tariff can be seen as a tax partly paid by foreign producers who cannot fully pass it on to domestic consumers and, therefore, end up bearing part of the burden. As the government in Country A does nothing to offset the negative effect that the tariff imposes on foreign producers, it has adopted a policy which is inefficient from the point of view of global welfare. This is the beggar-thy-neighbour that the terms-of-trade theory identifies.

The last step is to understand what would be the optimal trade policy in Country B given the strategy of the government in Country A. If the government in Country B choose free trade, it is hurt by the tariff imposed by its trading partner. If, on the other hand, the government in Country B imposes its own tariff on goods produced in Country A, it will also benefit from an improvement in its terms-of-trade. This is why unilateral policy setting leads trading partners to retaliate against each other. Both governments impose trade restrictions, creating a situation often called "trade war". In this situation, the benefits of the terms-of-trade are generally cancelled out (with neither country gaining from it) while the imposition of the tariffs reduces global welfare.

*Source: WTO (2009). World Trade Report*

The multilateral GATT/WTO system was created precisely to prevent such 'beggar-thy-neighbour' policies. Over 164 countries are now members of the WTO and abide by its rules. Its key principles

of reciprocity, most-favoured-nation and non-discrimination are key to sustaining this cooperation (Bagwell & Staiger, 2002). While the WTO facilitates cooperation, it does not eliminate the temptation for countries to renege on their commitments. The WTO's Dispute Settlement Process serves as an independent umpire to determine whether violations have taken place or if there were mistaken perceptions (Maggi, 1999). If a rule is found to have been broken, the offending party has the option of changing the relevant policy, paying compensation or else face retaliatory tariffs from the complainant.

The *WTO Trade Facilitation Agreement*, concluded at the 9th Ministerial in Bali in 2013, could be beneficial to small island economies like PNG. The agreement seeks to cut red tape and reduce transaction costs of moving goods across borders which can help to overcome problems from geographic distance and isolation that island economies face. It aims to streamline customs procedures allowing perishable goods to move through in the shortest possible time. The agreement also includes special and differential treatment for developing economies by linking commitments to capacity to implement them. Aid-for-trade opportunities are also increasingly available to help developing economies increase their capacity.

Another reason that countries may wish to sign trade agreements is that they serve as an external commitment device to lock in domestic policy reforms. Governments face pressure from domestic constituencies and special interest groups to retain protectionist barriers. Typically the import-competing sectors tend to be concentrated in a few industries which are capable of exerting political pressure through lobbying to maintain high barriers while some beneficiaries like consumers are too (distributed) to organise collective action (Olson, 1965). By simultaneously negotiating for market access in a foreign country, political support from the export sector is able to counteract opposition from the import-competing sector (Maggi & Rodriguez-Clare, 1998).

As the Doha Development Round of negotiations at the WTO remains stalled, many countries have turned to bilateral and regional trade agreements (WTO, 2009). These agreements have proliferated in recent years resulting in almost 300 in-force today. These are several reasons why countries may seek to sign such agreements:

- The small number of negotiating partners increases the chance of success.
- To guarantee market access to trading partners. Particularly important in large-small country negotiations.
- Signing RTAs can increase bargaining power with third countries.
- To cement strategic/security relationships.

The phenomenon of 'domino regionalism' also plays a role in driving countries to sign onto regional trade agreements (Baldwin 1993; Baldwin & Jaimovich, 2010). The argument here is that the export sector in a particular economy will find itself at a disadvantage if neighbouring countries were to sign onto a regional agreement granting each other preferential access. The fear of trade being 'diverted' will lead countries to sign similar agreements. This puts even more pressure on non-member economies to sign RTAs/FTAs as they now face discrimination in a larger number of markets. This cascading effect seems to explain the rapid pace and at which FTAs and RTAs have spread in recent years (Baldwin & Jaimovich, 2010).

One of the downsides of the proliferation of FTAs and RTAs is that the trading environment becomes increasingly complex. Critics argue that the 'spaghetti bowl' of overlapping FTAs (or 'noodle bowl' in Asia) can harm trade by increasing transaction costs for businesses dealing with variable tariffs and complicated rules of origin (Bhagwati, 2008). However, results from an ADB multi-country survey of manufacturing exporters in East Asia revealed that businesses in the region viewed FTAs as a benefit rather than a burden. Although they faced administrative costs from dealing with rules of origin, they were not viewed as a significant hindrance. At the same time, bilateral and plurilateral FTAs were seen

as countering protectionism and as a valuable stepping stone towards broader trade liberalisation (ADB, 2010).

In recent years the proliferation of global value chains has caused countries to go beyond tariff liberalisation and consider 'beyond-the-border' measures. The new generation of trade agreements includes provisions on investment, competition, intellectual property, public procurement, labour environment and E-commerce amongst others. The function that these comprehensive agreements serve in the context of global value chains is explored in more detail in the next section.

### *Implications for PNG*

Small island developing states (SIDS) like PNG face inherent challenges in negotiating trade agreements. Their small market size limits their bargaining power. Their remote location, poor infrastructure and lack of scale, increases costs and reduces their global competitiveness. They also face increased pressure from climate change and ensuring sustainable development. In negotiating international trade agreements, the SIDS have tried to ensure that their special circumstances are reflected in the terms of any agreements. New generation trade agreements now frequently include chapters on development co-operation, environment and labour conditions to address many of these challenges. Labour mobility is also a topic discussed in new trade agreements, potentially allowing Papua New Guineans greater access to employment in regional partners. Trade facilitation and aid-for-trade offer opportunities for SIDS to address infrastructure bottlenecks and improve the capability of their exports to meet quarantine requirements in developed economies.

PNG's major trading partners are Australia, China, Japan, Philippines, Malaysia, Singapore amongst others (Table 4 and 5). PNG's exports remain dominated by commodities, but as the economy diversifies its exports, it will need to secure market access to its trading partners. Based on the previous discussion, bilateral/regional trade agreements can give PNG:

- Increased certainty that trading partners will not raise tariffs or other forms of protection arbitrarily
- Greater domestic support for trade liberalisation
- Reduced preference dis-advantage compared to other countries that have signed agreements with PNGs major trading partners

Table 4 — The destination of PNG's commodity exports, 2005-2017 (K million)

| | | | | | Share of total | |
|---|---|---|---|---|---|---|
| | 2005 | 2010 | 2015 | 2017 | 2005 | 2017 |
| Australia | 4,384 | 7,278 | 5,778 | 6,960 | 50% | 22% |
| China | 372 | 1,036 | 4,257 | 5,802 | 4% | 19% |
| Japan | 1,148 | 2,320 | 6,027 | 6,592 | 13% | 21% |
| Phillipines | 533 | 1,141 | 392 | 1,088 | 6% | 3% |
| Singapore | 107 | 307 | 1,893 | 3,694 | 1% | 12% |
| South Korea | 754 | 580 | 233 | 416 | 9% | 1% |
| Taiwan | 11 | 20 | 2,121 | 2,403 | 0% | 8% |
| Other East Asia | 144 | 255 | 207 | 357 | 2% | 1% |
| Pacific Islands + NZ | 9 | 21 | 24 | 42 | 0% | 0% |
| Total East Asia & Pacific | 7,462 | 12,957 | 20,933 | 27,353 | 85% | 88% |
| Germany | 737 | 615 | 535 | 755 | 8% | 2% |
| United Kingdom | 188 | 296 | 245 | 594 | 2% | 2% |
| Netherlands | 96 | 398 | 500 | 1209 | 1% | 4% |
| Other Europe | 132 | 459 | 535 | 958 | 2% | 3% |
| Total Europe | 1,153 | 1,768 | 1,815 | 3,516 | 13% | 11% |
| North America | 147 | 123 | 158 | 235 | 2% | 1% |
| Uncategorised | 1,386 | 754 | 397 | 610 | 16% | 2% |
| TOTAL | 10,148 | 15,602 | 23,303 | 31,714 | | |

Source of data: Compiled from data in BPNG Quarterly Economic Bulletin
Note: Shares are calculated against total exports less that which is uncategorised

Table 5 — The source of PNG's commodity imports, 2005-2017 (K million)

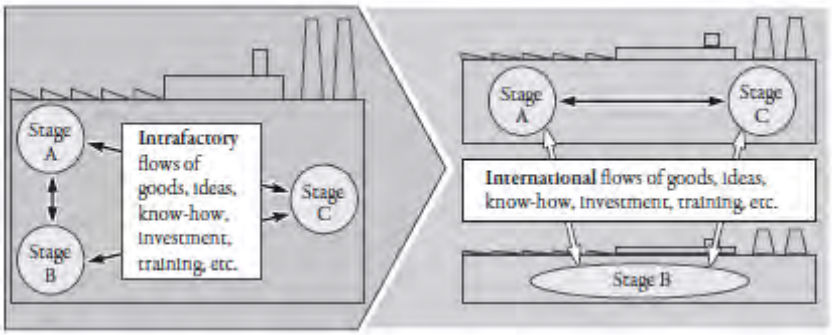
| | | | | | Share of total | |
|---|---|---|---|---|---|---|
| | 2005 | 2010 | 2015 | 2017 | 2005 | 2017 |
| Australia | 2,113 | 3,919 | 2,718 | 3,862 | 52% | 52% |
| China | 94 | 355 | 502 | 433 | 2% | 6% |
| Japan | 182 | 441 | 185 | 117 | 5% | 2% |
| Malaysia | 80 | 230 | 223 | 266 | 2% | 4% |
| Phillipines | 23 | 26 | 33 | 311 | 1% | 4% |
| Singapore | 300 | 1,440 | 369 | 638 | 7% | 9% |
| Other East Asia | 186 | 256 | 271 | 424 | 5% | 6% |
| Pacific Islands + NZ | 246 | 271 | 227 | 198 | 6% | 3% |
| Total East Asia & Pacific | 3,222 | 6,938 | 4,528 | 6,248 | 80% | 85% |
| Total Europe | 134 | 86 | 82 | 113 | 3% | 2% |
| North America | 671 | 1,945 | 1,852 | 1,016 | 17% | 14% |
| Uncategorised | 684 | 586 | 601 | 1,707 | 17% | 23% |
| TOTAL | 4,712 | 9,556 | 7,064 | 9,084 | | |

Source of data: Compiled from data in BPNG Quarterly Economic Bulletin
Note: Shares are calculated against total imports less that which is uncategorised

## Section 4. Why do global value chains require regional trade agreements?

Rapid advances in information and communications technology have radically transformed modern production processes. Goods that were once produced in a single factory/country and then traded across borders now have components produced in multiple locations across the globe. Modern production processes can be thought of as splitting factories across borders (Figure 4). This phenomenon is referred to as 'global value chains'. Value chains, from a business organisation perspective, describe the sequence of value-added (productive) activities used by firms and workers to produce a good/service from the conceptual stage to the finished product. They are considered 'global' as these value chains now cross national borders. The iPhone is one of the most celebrated examples of a global value chain with the product designed in California, parts and components made in dozens of other countries and finally assembled in China. (See Globalization Video on the iPhone). However, the same phenomena also applies to automobiles, electronics, apparel and many other sectors.

Figure 4. Factories crossing borders




*Source: Baldwin (2016)*

The rise of global value chains (or GVCs) has profound implications for how we think about comparative advantage and trade; the implications for developing countries; and the role of trade agreements.

### Comparative advantage is denationalised

The previously discussed economic models of comparative advantage and trade only imagined trade in finished goods. The argument there was relatively simple, that free trade pushes countries to produce what they are relatively good at and import what they are relatively bad at producing. This argument still applies to trade in many primary commodities and natural resources. With the rise of global value chains, however, comparative advantage has been denationalised (Baldwin, 2016). The reason is that firms can now specialise in certain stages of production without having to produce the entire good. While previously cars made in say Japan would compete against cars made in Germany, now competition takes place between cross-national production networks, i.e. GVCs.

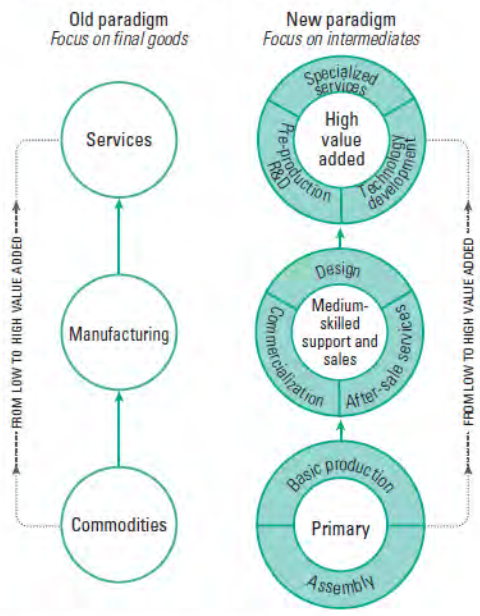
Typically in a GVC, a lead-firm from an advanced economy will bring technology, management practices and know-how which, when combined with low-cost labour from developing economies, increases the competitiveness of the product. A decision by Honda (from Japan) to shift some labour-intensive activities of its motorcycle supply chain to Vietnam substantially improved Vietnam's production capabilities. Vietnam's newfound comparative advantage in motorcycle parts production now consists of a combination of Japanese comparative advantage in know-how and one of Vietnam's source of comparative advantage- low-cost labour (Baldwin, 2016). This combination

drives competitiveness of the GVC overall and puts pressure on Germany's BMW-led GVC and other competitors to do the same. That is why resistance to GVC integration through raising protectionist barriers is ultimately futile as it punishes companies in an internationally competitive landscape.

## Implications for developing economies

The implications of this shift for developing economies are quite substantial. The path to industrial development no longer requires the creation of an entire industrial ecosystem from scratch, as Japan and Korea did in the 20th Century. Instead, firms in developing countries can specialise in specific tasks in the value chain thus making it easier to get a foot on the development ladder. Economic development can then be boosted further through functional upgrading rather than relying on specific sectors or industries (Taglioni & Winkler, 2016).

Figure 5. From Sector to Functional Upgrading




*Source:* Adapted from Cattaneo and Mirodout 2013.
*Note:* R&D = research and development.

The old paradigm thought of upgrading in terms of moving from agriculture to manufacturing and then services (Figure 5). In the new paradigm, 'functional upgrading' focuses instead on using better skills, know-how, technology, capital and processes to achieve higher value-added production. Even within the food sector, Denmark has been able to successfully improve its value-added contribution (see Box 4)

In a world of global value chains, countries are no longer simply trading finished goods but are working together in vertically integrated production systems allowing firms in developing countries to learn state-of-the-art production processes and gain tacit knowledge at a much more rapid pace. SMEs, in particular, have new opportunities to develop their productive capacities and access to international markets.

**Box 4. Food production in Denmark**

Although Denmark is a relatively small country with a population of just under 6 million, it has been able to establish and maintain its position as one of the top eight world exporters of food products. Exports of agricultural and agri-food products currently account for 20% of total exports. Denmark is home to some of largest food processing companies: Arla Foods (dairy), Danish Crown (meat), Carlsberg (beer), Christian Hansen (food ingredients) and Royal Greenland (fish and seafood).

There are various factors that contribute to Denmark's success:

- Quality and regulatory standards: As more than two-thirds of agricultural products are exported, farmers have a keen focus on maintaining a reputation for quality and safety.
- Farmer co-operatives: Over 200,000 family farms were able to improve their productivity after forming cooperatives[1]. This enabled collective investment in equipment and machinery. There is substantial collaboration between the government, farmers and industry to find solutions to common problems.
- Investment in R&D: There is a strong focus on food-related research across the board from primary production to process technology. The research innovations are also shared broadly to enhance the productivity of the sector as a whole.

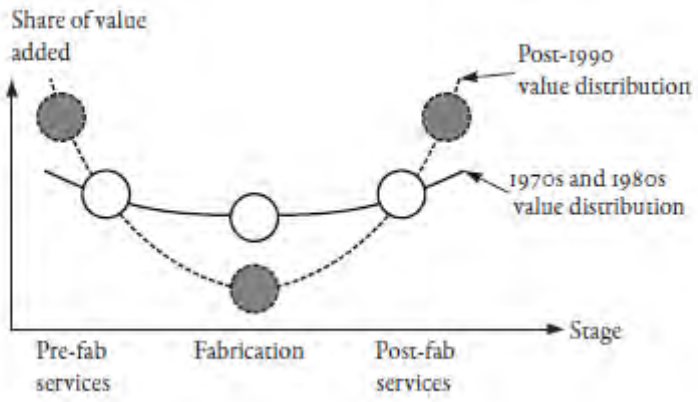
Thus Denmark's application of technology, innovation, organisational approach and quality focus have allowed it to upgrade its products, processes and functions to increase the value contribution of its agricultural sector.

*Sources:*

*(1) http://denmark.dk/en/lifestyle/food-drink/from-famine-to-food-mecca*

*(2) http://www.legco.gov.hk/research-publications/english/1314fsc46-food-processing-industry-in-denmark-20140902-e.pdf*

Figure 6. The Services Smile Curve




*Source: Baldwin (2012)*

GVCs also have important implications for the rise of services. In a GVC world, services and manufacturing are increasingly intertwined. Services are often bundled together with manufactured goods (for example installation and repair services), but they can also be outputs of value chains. The so-called 'servicification' of manufacturing refers to the fact that the manufacturing sector is increasingly relying on services, as inputs, as activities within firms or as outputs bundled with goods. According to the OECD's Trade in value-added (TiVA) database, the services industries accounted for a third of value-added in manufacturing sales and exports. This proportion increases to a half when in-house services are included (Miroudot, 2017).

Services also have an impact on the distribution of value-added along the value chain as seen in Figure 6. A typical value chain is made up of three stages: pre-fabrication activities (design, finance, organisational services), fabrication activities (done in factories), and post-fabrication activities (marketing and customer service). The manufacturing stages are out-sourced to low-cost locations the value-share of this stage decreases while the pre- and post-fabrication share of value-added increases.

The provision of services in GVCs is another avenue that PNG could explore as part of its development strategy. For example, India and the Philippines have benefited through services outsourcing. PNG has been held back due to the high cost of internet and telecommunications connectivity, but the recently announced under-sea internet cable could enable new opportunities.

At the same time, GVCs also present challenges to policymakers. Participating in GVCs requires more than mere tariff liberalisation. A seen in Section 1, effective tariffs for PNG are already moderate to low. Greater efforts are required to reduce the non-tariff barriers which inhibit domestic private sector development. These include infrastructure, the rule of law, improve ease of doing business and other complementary policies discussed in Section 5.

Attracting FDI from multinationals though important is not sufficient. Further efforts are also required to ensure that linkages are created with domestic firms and that the host economy benefits from technology transfers, knowledge spill-overs and increased value-added. The benefits of GVC participation should also be distributed more broadly through society through increased wages, living standards and social security (Taglioni & Winkler, 2016). The increased complexity of supply chains also brings with it increased uncertainty and volatility which needs to be managed. A full exposition of the development policies required for GVCs is beyond the scope of this paper, but one tool that is increasingly being used by countries to participate in GVCs are new generation trade agreements.

## The role of New Generation Trade Agreements

To understand the role of trade agreements in facilitating GVCs, we first need to understand the requirements of GVC lead firms when making decisions on the location of new production facilities. These firms obtain many benefits from international production, but they also face increased complexity and risk which must be managed. These firms require two broad sets of disciplines: (1) protecting assets and (2) connecting factories (Baldwin, 2016).

Protecting Assets:

- Strong property rights systems for physical and intellectual property are essential for attracting foreign investors. These firms bring with them valuable machinery, technology, know-how, patents, trademarks and other assets which they would only deploy in a relatively safe environment.
- GVCs necessarily involve contractual relationships with various suppliers and buyers, and so the strength of the legal system in adjudicating disputes is highly relevant.
- Foreign investors need to develop long-term business relationships and therefore require assurances that they will not face anti-competitive practices.
- Capital flows must be un-restrictive so that new FDI can be brought in or profits re-patriated.

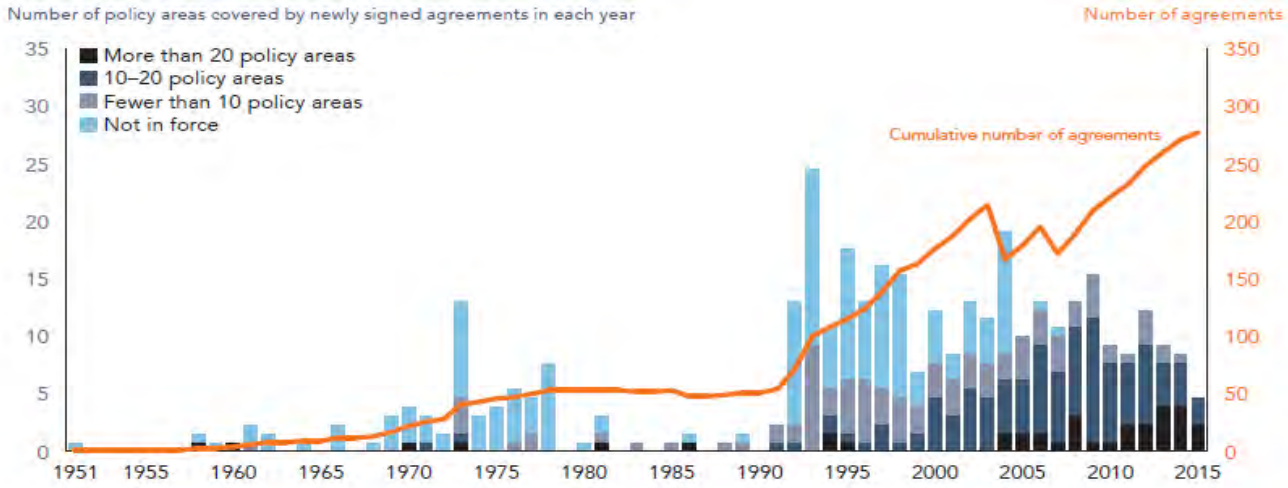
Connecting Factories:

- Modern supply chains with features such as just-in-time delivery require reliable, predictable and timely access to inputs and final products. Well-developed infrastructure and smooth customs procedures are therefore essential.
- Tariffs and other border measures can impose significant costs as parts and components move back and forth across borders.
- Ease of movement for short-term visits by managers, technicians and business people.

Many countries are now signing new generation trade agreements that go beyond 20th-century issues of tariffs and market access to include provisions on competition policy, capital flows, intellectual property, investment disciplines, dispute settlement, business mobility, labour and environment amongst others. The purpose of these agreements is to ensure the smooth functioning of international commerce. As factories are now split up across borders, they require harmonization of rules across borders to function effectively. The imposition of trade barriers is akin to a building wall in the middle of the factory floor.

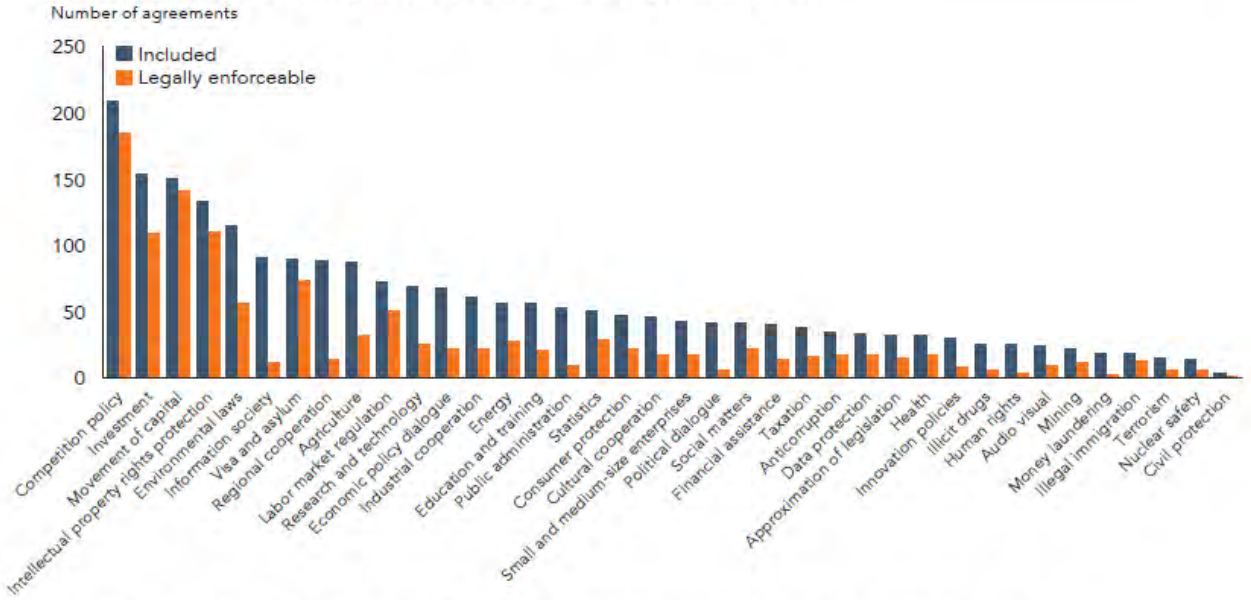
Recent years have witnessed an explosion of trade agreements that address so-called 'behind-the-border' issues. Figure 7 below shows how the number of policy areas covered in trade agreements has been increasing substantially over the last few decades. Figure 8 below provides a list of the WTO-extra provisions and the frequency with which they appear in new trade agreements.

Figure 7. The number and content of preferential trade agreements, 1951-2015




Source: World Bank Content of Deep Trade Agreements Database (http://data.worldbank.org/data-catalog/deep-trade-agreements).

Figure 8. The number and content of preferential trade agreements, 1951-2015




Source: World Bank Content of Deep Trade Agreements Database (http://data.worldbank.org/data-catalog/deep-trade-agreements).

Note: WTO-extra refers to provisions on some policy areas in preferential trade agreements that fall outside the current mandate of the World Trade Organization.

# Section 5. Conclusion

PNG is located on the doorstep of East Asia, a region that has delivered by far the strongest economic growth and trade growth on the globe for a number of decades. However, the growth performance of PNG has largely been at odds with its neighbours.

There remain substantial opportunities for PNG to exploit its trade potential fully. As was seen in Section 1, exports remain highly concentrated in primary commodities. Trade liberalisation can bring many benefits as well as challenges (Section 2). Trade agreements can provide greater certainty and improve market access (Section 3), and global value chains offer new opportunities (Section 4). However, trade agreements are not the policy equivalent of a magic wand. Complementary policies are required to ensure the benefits translate into inclusive outcomes like employment and income growth.

The government's PNG Development Strategic Plan, 2010-2030 articulates many of the binding constraints that have been holding PNG back for decades. Addressing these constraints is crucial to allow the benefits of trade to spread more widely. The following issues will require greater attention:

- Macroeconomic stability is the bedrock on which private sector development and trade can take place. Unstable interest rates and exchange rates can be very disruptive to economic growth.
- Prudent fiscal management is particularly important in the context of variable income from resource exports. Having expenditure based on long-term expectations of export earnings, saving excess revenues and drawing them down when revenue falls are key to avoiding the resource curse discussed in Section 2. Lost tariff revenue must be replaced by other sources to limit the impact on the government's budget.
- A well-functioning business environment is required to enable broad-based economic growth and employment in agriculture, tourism, manufacturing and other sectors. Improving the ease of doing business, enforcement of property rights and contracts, efficient access to licenses and permits will be beneficial.
- Education and skills training are important to ensure that workers can make the most of trade opportunities. In the context of GVCs, this becomes even more important in order to compete in an increasingly knowledge-based global economy. The rapid pace of technological change calls for a greater focus on life-long learning.
- Social protection systems are required to facilitate labour market adjustment as some workers experience a decline in income while others must undergo retraining to work in a growing export sector.
- Poor transport and utility infrastructure continues to hold back PNG's trade potential. Aid-for-trade could be a potential source of external funds that can be used to improve trade-related infrastructure.
- Enforcement of the rule of law is an absolute necessity to ensure the safety of citizens and protection of property.

The global economy is becoming increasingly interconnected. Developing economies no longer face the question of whether to engage in trade but rather to determine how best they can do so. As we have seen, enhanced trade can provide great opportunities to boost growth, jobs and productivity. Domestic policy reforms together with well-crafted trade agreements can ensure these gains are maximised and distributed widely through society.

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