

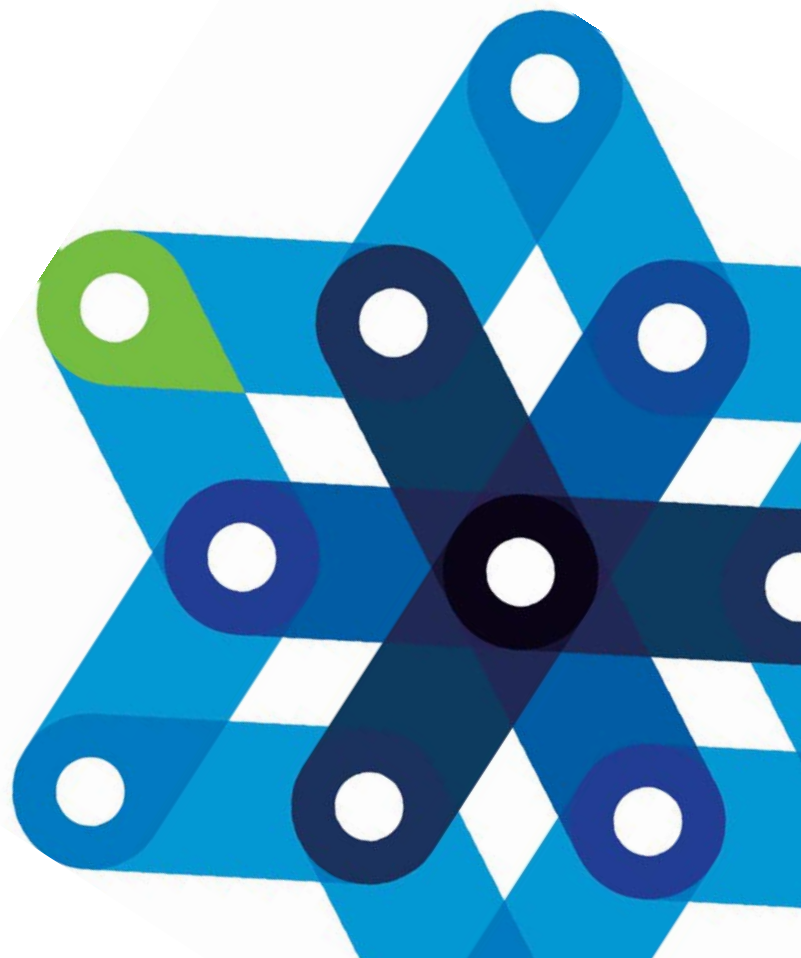


Government of **Western Australia**
Department of **Treasury**

International Trade: Emerging Developments and Prospective Outlook

February 2019

*Based on trade developments
up to 20 December 2018*



About this report

The report was prepared by members of the Western Australian Treasury's Economic and Revenue Forecasting and Economic Policy Divisions. Economic modelling presented in Chapter 5 was undertaken with the assistance of Centre of Policy Studies at Victoria University.

The report covers developments in the US-China trade dispute up to the release of the 2018-19 Government Mid-year Financial Projections Statement on 20 December 2018.

The modelling undertaken on the potential impact of the trade dispute on the State's economy and finances uses the economic and revenue forecasts from the 2018-19 Mid-year Financial Projections Statement which are based on data available at the cut-off date of 3 December 2018. The particular scenarios in Chapter 5 of the report relating to different global responses to the ongoing trade dispute were developed in October 2018 and are illustrative of some of the ways in which the events could impact Western Australia. They are not forecasts. To some extent global developments have moved on since the scenarios were developed. Abstracting from the time that has elapsed since the scenarios were first developed, the analysis provides an indication of the potential economic and financial impacts on Western Australia

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Executive Summary

Western Australia has a globally significant endowment of natural resources and a small domestic market. Consequently, its merchandise trade intensity (exports plus imports over Gross State Product (GSP)) is much higher than the rest of the nation, at 64.7% (relative to 28.3% for the rest of the nation) in 2017-18. This means that Western Australia is much more exposed to dynamics which influence foreign trade than other States.

Over the past year, US trade policy has changed considerably. The US Government has imposed a range of additional tariffs on imported goods, in particular from Western Australia's largest trading partner, China. In response, several countries, including China, have imposed retaliatory tariffs on imports from the US. This paper seeks to explore these developments and how they might impact Western Australia.

A key theme of the paper is that ongoing trade disputes are adding to uncertainty regarding the economic and revenue outlook for Western Australia. However, the long term outlook for Western Australia's exporters is likely to remain positive as economies in our region have a strong growth outlook and trade barriers faced by local exporters continue to decline.

Chapter One outlines the potential benefits from international trade. These include the ability to specialise in areas of pre-existing endowment, the ability to access productive networks of specialists and a significant increase in the range of available goods and services. This chapter demonstrates that: nations which are more open to trade tend to have higher per capita incomes; on average, economies grow faster after periods of trade liberalisation; economies located closer to major markets¹ tend to grow faster; and the consensus view among economists is that trade is usually beneficial for economic growth. Notwithstanding these points, the evidence suggests significant variance in outcomes, particularly for low income countries following episodes of trade liberalisation.

Chapter Two provides some context to recent changes in US trade policy. It notes that there has been a backlash against trade liberalisation among sections of the US population over recent decades. This culminated in the election of a President who vowed to significantly reform US trading arrangements. These views are complex and are likely related to a number of domestic political issues, such as those related to migration and national identity. However, there are a number of underlying economic issues related to the distribution of income and wealth which may have undermined the political sustainability of the global trading environment.

¹ And therefore have greater scope to benefit from trade due to lower transport costs.

Chapter Three outlines key changes to US trade policy since the 2016 US Presidential election and puts the scale of those changes in historical context. To date, the US has imposed or threatened tariffs on around \$US798.7 billion (33.2%) of its imports, with tariff rates ranging from 10% to 50%. However, even if every proposed tariff came into effect, the US average weighted tariff (value of goods subject to tariff multiplied by rate) would only increase to around 8.3% from around 1.7% in 2016.² That is still far lower than the peaks reached in the 1930s by the US (24.4%), UK (47.7%), France (29.4%) and Australia (41.2%) (Bown & Irwin, 2015, p. 21).

Chapter Four offers some insight into the economic impacts of the rise in trade protectionism on the world economy and Western Australia's key trading partners.

There is a significant degree of uncertainty regarding the economic impact. However:

- the available economic data do not indicate any substantive macroeconomic impact at the time this paper was finalised. In part, this reflects the small scale of global tariff increases implemented to date which, as measured by total tariff expense, equate to about 0.2% (\$US67 billion) of the combined GDP of the US and China;
- most of the available analysis suggests that under plausible escalation scenarios, the impact of the tariffs should be relatively manageable. In the context of Western Australia, IMF analysis suggests that economic growth in China might be around 1.6 percentage points lower in 2019 than it would otherwise be if the US and China's trade war escalates significantly; and
- the probability that the trade dispute could trigger a much larger shock to the global economy will depend largely on how trade tensions interact with other dynamics, such as rising US interest rates and how financial markets respond, but is considered relatively low.

Chapter Five explores the potential impact of the trade dispute on the State's economy through three scenarios:

- a scenario where global growth remains largely unchanged but heightened uncertainty causes the value of the Australian dollar to decline, which increases export income. This increases government revenue but has a limited impact on the broader economy;
- a China stimulus scenario, where the State gains an initial boost from policy stimulus in China and then suffers subsequent loss in export income; and
- a broad based downturn in Asia caused by a financial disruption where the trade dispute triggers capital flight in emerging Asia and this significantly impacts export income.

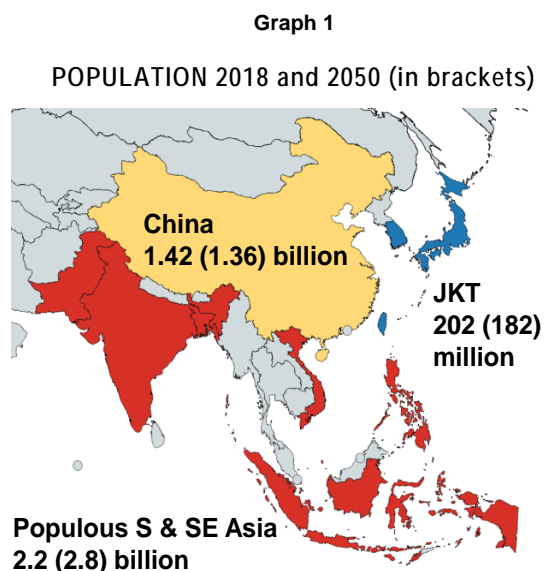
² The increase in the average weighted tariff to 8.3% was calculated with the assumption that the composition of US trade does not change from 2017. In reality, there would likely be some substitution from goods subject to tariffs to ones which are not.

Chapter Six outlines how two dynamics are likely to contribute to an improvement in Western Australia’s trade environment over the medium to long term:

- Western Australia’s exporters will face lower trade barriers over time as a result of progressive reductions in tariffs from historical trade agreements and the likely completion of new trade agreements; and
- the location of global economic growth is likely to continue to be favourable for Western Australia over coming decades.

China will likely continue to grow faster than the global average, at least until the 2030s. Many of Western Australia’s industries, such as lithium and LNG, are currently experiencing rapid increases in Chinese demand, similar to that experienced by iron ore over the past 15 years.

The populous emerging economies in our region, highlighted red in Graph 1, are likely to continue to grow significantly faster than the global average for several decades. Combined, these nations have a population which is significantly larger than China. This offers substantial economic opportunities for the State.



Source: UN Population Prospects
Note: populous S & SE Asia only includes countries with 2018 population of around 100 million or more.

Chapter One: Why do countries trade and what are the potential benefits

Introduction

This chapter illustrates the potential benefits of international trade. It outlines the theoretical advantages and establishes that lower trade barriers are correlated with higher per capita incomes. A review of the academic literature is presented, which supports the notion that trade between nations generally increases aggregate economic welfare. This is followed by evidence of a strong professional consensus that international trade generally increases welfare.

However, the literature also suggests that an increase in trade liberalisation has different effects in high and low income countries. High income countries often see positive effects over both the short and long term, but low income countries often experience a negative impact initially before, on average, transitioning to faster rates of growth. This may be driven by political and economic shocks occurring during the time of reform.

The literature also suggests that international trade can have a significant impact on the distribution of income within a country. This is discussed in **Chapter Two**.

Theoretical benefits of trade

Trade offers individuals the opportunity to increase economic welfare through improving productivity and reducing risk. An individual's productive potential can be enhanced through trade as it affords them the opportunity to specialise, often in areas of pre-existing expertise or endowment, and it allows access to productive networks of other specialists. Trade reduces risk, as goods and services can often be accessed from a range of sources, which means that the impact of a local shock to production can be offset from production elsewhere.

It is easy to appreciate the benefits of trade at the individual level as it is hard to imagine being able to provide yourself with most of the goods and services which you would typically consume. Without trade, you would be forced to devote most of your life to your own subsistence and would be highly vulnerable to shocks which impact either your health or the local environment from which you are subsisting.

The benefits of trade between nations is a little harder to appreciate at an intuitive level. This is because it is much easier to imagine how most of your consumption could be met from production within your nation. However, trade between nations offers essentially the same potential advantages that trade between people/enterprises within a nation does. Specifically,

a group of countries can offer a greater range of products, more specialised production and a greater productive network of individuals or enterprises than can an individual country. Further, each country will typically have a unique set of endowments in natural resources and human capital, which will favour the production of some goods and services over others.

An important principle in trade is that benefits usually occur regardless of whether an individual or country is better at producing a good or service, in an absolute sense, than its competitors. Rather, trade offers the opportunity to specialise in an area(s) of strength relative to all of the other available productive possibilities. This is the theory of comparative advantage outlined by David Ricardo (1817). The following example (adapted from Ricardo's original) is a scenario containing two countries, Australia and New Zealand, producing two goods, bats and balls (see following table).

	Hours of work necessary to produce one unit	
	Bat	Ball
Australia	100	120
New Zealand	90	80

In this example, New Zealand can produce either product with less effort, meaning it has an absolute advantage in the production of both products over Australia, however:

- for New Zealand, the cost (trade-off) of producing an additional bat is giving up 1.13 (90/80) balls; and
- for Australia, the cost of producing an additional bat equals 0.83 (100/120) balls.

This means that Australia has a comparative advantage in producing bats, despite being less efficient than New Zealand.

In the absence of trade, Australia could invest 2,200 hours to produce ten bats and ten balls, while New Zealand would only need 1,700 hours to produce the same quantities.

However, if these countries decided to trade they could increase the total quantity of bats and balls produced by specialising in the production of the good for which it has a comparative advantage. In this case, the most efficient option would be for Australia to spend its 2,200 hours producing 22 bats, and for New Zealand to spend its 1,700 hours producing 21.25 balls.

After trading, each country would still keep its respective 10 bats and balls from the original example but would have an additional 2 bats and 1.25 balls to share.

This is a simple example and there are a number of complexities involved in upscaling this to the real world, where there are nearly 200 countries, millions of goods and services, and capital and labour (though to a much lesser extent) moving throughout large parts of the globe. Moreover, the gains from trade are dynamic and can reverse in certain situations, as argued by Paul Samuelson (2004) in an influential theoretical paper. Some of these complexities will be assessed in Chapter Two; however the general framework, as outlined above, is broadly accepted by the vast majority of economists.

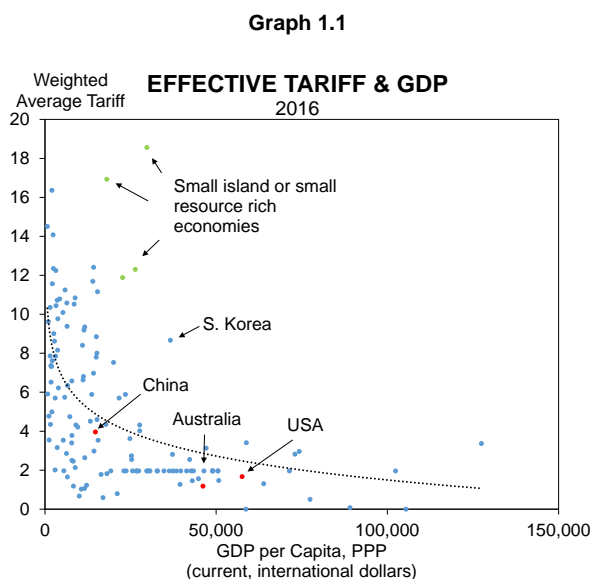
Evidence for benefits of trade

Given the potential advantages to trade (outlined in the previous section) it is no surprise that countries with higher per capita incomes tend to have lower barriers to trade.

Graph 1.1 compares Gross Domestic Product (GDP) per capita with the average trade weighted tariff of each country where data are available. Those with per capita GDP above 25,000 international dollars (\$Intl)³ had an average effective tariff of 2.7%, while those with per capita GDP below this level had an average tariff rate of 6.5%.

Higher income countries almost exclusively have relatively low tariff rates. With the exception of South Korea⁴ and some very small island economies, no country in 2016

with per capita GDP above \$Intl25,000 had a tariff rate above the global average (5.4%). Significant variability exists among the tariff rates of lower income countries, suggesting that low tariff rates alone are not sufficient to generate high incomes.



Source: World Bank

Review of research literature

The academic literature generally finds that openness to trade is positively correlated with economic growth over the longer term.⁵ However, as you would expect, the relationship is often difficult to disentangle from the large number of other factors which also impact economic growth. For advanced economies, the relationship between trade liberalisation and higher economic growth is relatively unambiguous, consistent with the data presented in Graph 1.1. However, trade liberalisation in countries with relatively low per capita incomes often results in an initial period of lower growth before, on average, higher rates of growth.

Wacziarg & Karen Welch (2008) published a paper examining episodes of trade liberalisation in a sample of 141 countries over the period 1950 to 1998 and found rates of economic growth increased 1.5 percentage points, on average, in the years post liberalisation, relative to the period within the sample prior to liberalisation. Notwithstanding the statistically robust increase in the average growth rate there was significant variance within the sample, with roughly half of the countries experiencing no material acceleration in growth. This is not unexpected given

³ An international dollar would buy in the cited country a comparable amount of goods and services a US dollar would buy in the United States.

⁴ Economic growth in South Korea is supported by a high proportion of the population which is working age and a high number of hours worked per worker. According to OECD (2018) data, Korea has unit labour productivity which is 50% of that in the USA and 62% of that in Australia.

⁵ For examples beyond those discussed below, see Sachs & Warner (1995).

the complexity of modern economies and the fact that a period of trade liberalisation often occurs during periods of political upheaval. The authors use case studies to explore periods of trade liberalisation in a number of countries. They find that these policy changes often occurred concurrently with an episode of political instability, a range of other policy changes and macroeconomic shocks. This makes the short run impact of trade liberalisation difficult to assess.

Gries & Redlin (2012) examined the impact of openness to trade on economic growth using an error correction model for 158 countries over the period 1970 – 2009. Their research suggests that for high income countries, an increase in openness to trade is statistically significant in predicting faster economic growth over both the long and the short term. However, for lower income countries, an increase in openness to trade is a significant predictor for higher growth over the long term but also a significant predictor of slower growth in the short term. The authors speculate that this could be driven by different trade structures between high and low income countries. However, the case studies presented by Wacziarg & Welch (2008), suggest that political instability and vulnerabilities to macroeconomic shocks may be more plausible explanations for the lower economic growth observed over the short term in low income economies.

Frankel & Romer (1999) attempted to explore the impact of trade on an economy by isolating the component of trade caused purely by geographical factors (the amount of trade which occurs as a result of proximity to markets)⁶. Examining the impact of geography on an economy can serve as a natural experiment to isolate the effects of trade on the economy, as geography is unlikely to impact aggregate economic activity through any means other than trade. The results of the paper suggest that increases in trade (both international and domestic) due to geographic factors increases economic growth substantially. This implies that policy which reduces barriers to trade would have a favourable impact on economic growth. However, difficulties in accurately specifying the geographic component of trade reduce the statistical significance of the study.

Professional consensus

Economists rarely form a consensus view on issues which impact the economy. This is common in the social sciences because human behaviour is dynamic and complex, making it difficult to observe the impact of one variable on another in isolation through experimentation. However, surveys have consistently shown that there is a relatively strong consensus among economists with diverse political views that in aggregate, greater openness to trade generally improves both economic productivity and choice available to consumers over the long term.

For example:

- Prominent Harvard economist Greg Mankiw (2009) outlined 14 propositions to which economists generally agree. Equal top of the list, generating a surveyed approval of 93%, is the proposition that “tariffs and import quotas usually reduce general economic welfare”.

⁶ Other factors which could impact trade include trade policy, macroeconomic policy and resource endowment.

- In 2012, the University of Chicago surveyed 37 prominent academic economists from a range of US universities, asking them to respond to the following proposition: “Freer trade improves productive efficiency and offers consumers better choices, and in the long run these gains are much larger than any effects on employment.” No responders disagreed with the proposition, 95% agreed and only 5% were uncertain. However, many of the responders included comments about the potential for trade to have significant adverse impact on some individuals, particularly over the short term.
- A paper in *Econ Journal Watch* surveyed 136 randomly-selected, PhD-bearing members of the American Economics Association (Whaples, 2009). The topic that received the highest level of support was unfettered trade, with 83% agreeing (10% disagreed) that the US should eliminate remaining tariffs and other barriers to trade.
- In 1993, 300 economists including prominent libertarians and progressives, signed a letter which was sent to the then US President, Bill Clinton, expressing support for the North America Free Trade Agreement (NAFTA) (Nasar, 1993).

Conclusion

The evidence presented here makes a strong case that in most situations international trade is beneficial to the countries involved, in aggregate. Economies are highly complex and dynamic and it can be difficult to prove that trade is beneficial with a single piece of research, as we cannot isolate the impact of trade. However:

- it is easy to establish a negative correlation between levels of income and average tariff rates;
- studies of the available data show that countries experience faster economic growth rates, on average, following episodes of trade liberalisation;
- countries which are located in areas favourable to trade tend to grow faster; and
- the consensus judgement of those who study the issue for a living suggests that trade is usually beneficial.

Notwithstanding this, the evidence points to significant divergence in outcomes for low income countries following episodes of trade liberalisation.

Chapter Two: Backlash against current trading arrangements

Introduction

This chapter provides some context to the recent shift in US policy away from trade liberalisation. The political forces which have underpinned the shift in policy are likely complex and related to a number of other issues, such as those related to national identity and migration. However, there have also been some underlying economic trends over recent decades which have had a significant impact on the distribution of income and wealth among most advanced economies, including the US. These developments have come at a time when many countries such as the US have developed large trade deficits. It is difficult to determine exactly what is driving these redistributive dynamics. However, it is likely that international trade is one channel through which global economic developments are impacting the distribution of income and wealth in nations such as the US, and this has been undermining the political sustainability of liberal trade arrangements.

Political context

In recent decades there has been a growing reaction to the orthodox view regarding the economic benefits of increased global integration. Opposition has gained particular traction since the global financial crisis (GFC) and ensuing economic downturn.⁷ This culminated in the 2016 US Presidential election campaign where both candidates, Donald Trump and Hillary Clinton, promised to significantly alter US trade policy and opposed the Trans Pacific Partnership (TPP). The electorate ultimately voted in Donald Trump, the candidate who promised the greatest shift in US trade policy.

Popular opposition to free trade is likely a complex phenomenon and interrelated with a number of other issues, such as those relating to national identity, migration and other domestic political issues. For example, many of the political leaders in the US and other advanced economies who are most against liberal trade arrangements tend to also have strong views on national identity and migration. It is therefore difficult to unpick the extent of popular opposition to international trade from these broader issues.

⁷ Public opinion regarding global integration is often positively correlated with economic performance, for example see The Economist (2016).

Moreover public opinion toward trade is highly complex and presents some apparent contradictions. For example:

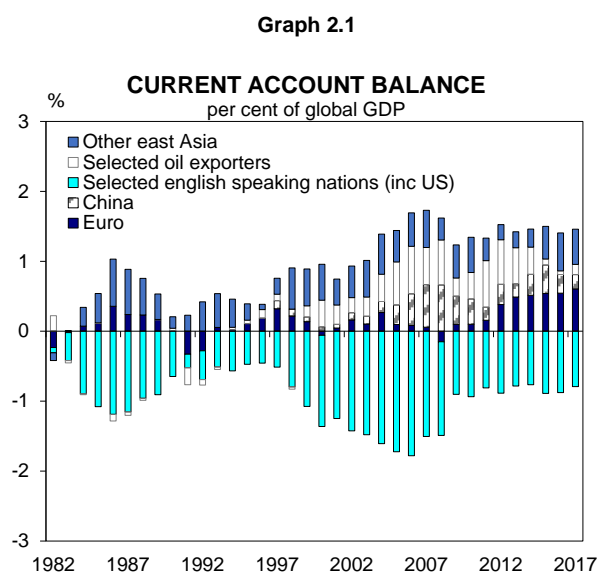
- survey data from the Pew Research Centre reveals that US citizens (along with those of many other countries) are broadly supportive of the concept of free trade but generally sceptical about its purported benefits (Stokes, 2018); and
- according to a Gallup poll, Americans view trade with Mexico and China as being unfair, yet view trade with the EU and Japan as being fair, despite the fact that the US has significant trade deficits with all of these countries (Newport, 2018).

Economic context

Notwithstanding the complexities associated with public opinion toward free trade outlined above, there are a number of underlying economic issues which may be contributing to increased public scepticism towards trade liberalisation.

Significant global trade imbalances have emerged in recent decades and this has generated imbalances in the international payments system, as illustrated by the current account balances in Chart 2.1.⁸ Large trade surpluses drove significant current account surpluses in the following regions:

- Japan from the mid 1980s onwards;
- much of the rest of East Asia following the Asian Financial Crisis in the late 1990s;⁹
- oil exporters from the early 2000s;
- China from the mid 2000s onwards; and
- the European Union from 2011-12.



Source: IMF

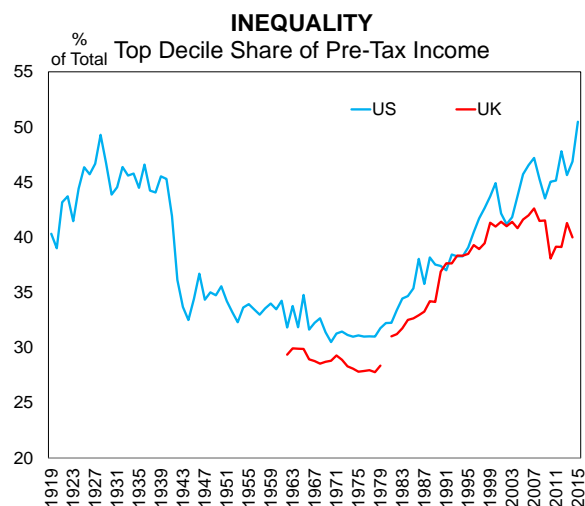
⁸ The current account is defined as the sum of the balance of trade (typically by far the largest component), net income from abroad (e.g. dividends and interest) and net current transfers (e.g. pensions to citizens residing in other countries). Selected English speaking countries include US, UK, Canada and Australia. Selected oil exporters include: Saudi Arabia, Kuwait, UAE, Norway, Iran and Russia.

⁹ Nations most impacted by the Asian financial crisis significantly increased their trade surplus as a result of lower domestic demand and policies to promote a current account surplus, so as to reduce vulnerability to capital outflows.

All of the above surpluses have been balanced (globally, trade must balance) by deficits in the most open countries with strong protections for private property rights, in particular the UK and its former colonies, including the US and Australia. These trade deficits coincided with a significant redistribution of income and wealth within some of the deficit countries. In particular:

- there was a substantial increase in income inequality (see Chart 2.2);¹⁰
- a decline in the labour share of national income, which was largely driven by low real wage growth relative to economic growth, particularly in the US and UK (OECD, 2015);
- a number of high profile traditional manufacturing industries, such as steel and car production, declined significantly. This generated a substantial loss of income in communities supporting these industries, for example in the Mid-West and Great Lakes areas of the US; and

Graph 2.2



Source: World Inequality Database

- a decline in interest rates along with financial liberalisation supported asset price inflation and likely contributed to volatility (Wolf, 2014, pp. 154-158).¹¹ In particular, real estate price inflation and volatility had significant redistributive impacts on household wealth between those who owned property and those who did not.

It is unclear to what extent the trade imbalances are linked to the redistributive dynamics outlined above. However, it is likely that international trade is an important channel through which global economic developments have had an impact on the distribution of wealth and income in nations such as the US. For example:

- economic theory suggests that although openness to trade generally increases a nation's income in aggregate, there can be large redistributive impacts within countries. Specifically, the Heckscher-Ohlin (1991) model suggests that the relatively abundant factors of production in an economy gain from trade while the relatively less abundant lose. Large increases in the pool of manufacturing workers in East Asia may have contributed to the decline of some manufacturing industries in the UK and US, but offered potential gains to high paying services jobs in these countries and mining jobs in Australia and Canada; and

¹⁰ A similar pattern occurred in Australia and Canada but it was much less pronounced. It is possible that it could be partly explained by the importance of mining in these countries which benefitted from increased manufacturing activity in East Asia as distinct to the US and UK where manufacturing, which suffered from increased competition from East Asia, was more important to the economy. Also, it's worth noting that government transfer payments (e.g. unemployment benefits) and progressive tax scales (not factored into Graph 2.2), may compress income dispersion.

¹¹ Martin Wolf argues that lower real interest rates placed upward pressure on real estate prices in the nations most impacted by the global financial crisis, including Spain, the UK and US.

- former Federal Reserve Chair, Ben Bernanke, argues that excess savings in many of the surplus countries were being exported to the rest of the world, in particular to countries such as the US (Bernanke, 2015). These recipient countries tend to have open financial markets, secure property rights and currencies which can be freely traded. Bernanke suggested that this dynamic suppressed activity in the tradable sectors of these economies as their currencies were inflated by the capital inflows. He argues that this also depressed interest rates, stimulating borrowing and inflated asset prices (RBA, 2007).

Conclusion

Opposition to free trade is a complex phenomenon linked to many social and political issues, such as national identity and migration. However, as outlined above, there are clearly some economic trends related to the distribution of income and wealth which may have contributed to public opposition towards free trade, despite the evidence which suggests that openness to trade nearly always increases a nation's economic welfare in aggregate. It is therefore likely that these economic trends have negatively impacted the political sustainability of liberal trading arrangements.

Chapter Three: Changing US Trade Policy

Introduction

The Trump administration has set about redrawing the rules under which the US trades, with the goal of reducing the US merchandise trade deficit, which was \$US796 billion in 2017 (US Census Bureau, 2018). The Trump administration aims to achieve this by:

- imposing import tariffs on China, with which the US has the largest bilateral merchandise trade deficit (\$US376 billion in 2017), with the aim of extracting concessions on what it argues are unfair barriers to market access and inadequate protections of US intellectual property (US Census Bureau, 2018; Office of the US Trade Representative, 2018);
- imposing tariffs on specific products where it believes US producers have been victims of unfair trade practices, or where the US deems that protecting the industry is required for national security reasons; and
- re-negotiating trade deals, such as the North American Free Trade Agreement (NAFTA).

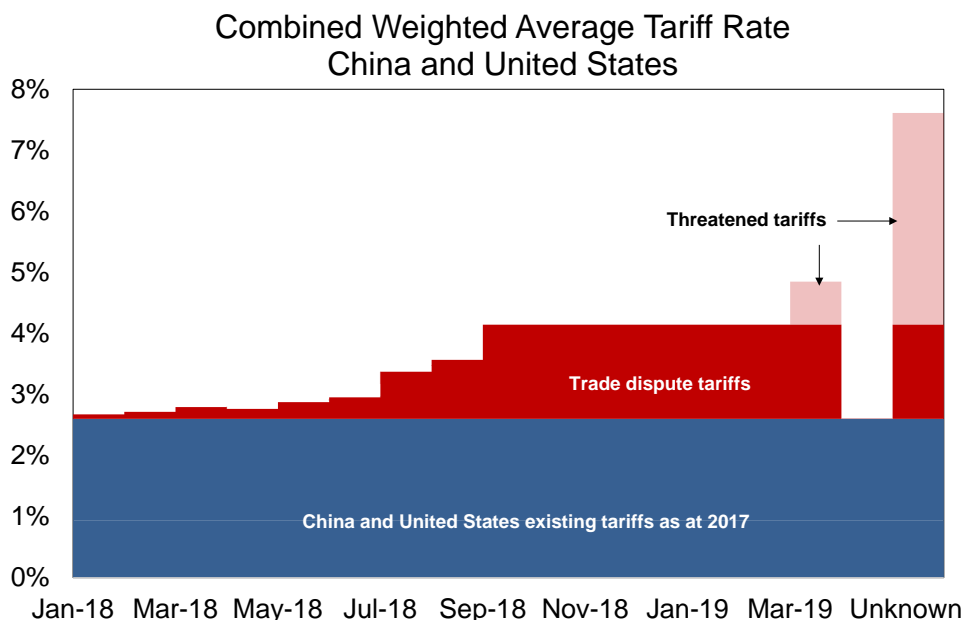
In 2017, the largest US merchandise trade deficits were with China (\$US376 billion), Mexico (\$US71 billion), Japan (\$US69 billion), Germany (\$US64 billion) and Vietnam (\$US38 billion). The US ran a trade surplus with Australia (\$US14 billion) (US Census Bureau, 2018).

This chapter outlines key changes to US trade policy from the 2016 US Presidential election and up to 20 December 2018, putting the scale of those changes in historical context.

Summary of US trade disputes

The developments outlined in the section below are summarised in Graph 3.1 and the infographic on page 18.

Graph 3.1



Source: Peterson Institute for International Economics (2018); World Trade Organization (2018).

US trade dispute with China

The official justification for the US imposing trade tariffs on China relates to accusations of unfair Chinese industrial policy supporting high technology industries; limited access to Chinese markets for US companies; and protections for intellectual property (Office of the US Trade Representative, 2018). However, the US President frequently cites the large bilateral trade deficit between the two countries as a justification for pursuing action against China (Trump, 2018; CNBC, 2018).

To date, the US has imposed a 25% tariff on Chinese goods worth around \$US50 billion¹² (note all values relating to tariffs are derived from 2017 trade data) and an additional 10% tariff on goods valued at nearly \$US200 billion, rising to 25% on 1 March 2019, unless a deal can be reached prior to this date. The tariffs were initially targeted at high technology industrial goods, such as those which receive support as part of China’s industry policy “Made in China 2025” (for further details see feature box below). This policy attempts to transform China’s manufacturing sector into a world leader in a range of advanced industries through regulation and financial assistance. For example, the electric car industry in China has expanded considerably in recent years, in part driven by Government assistance as a result of this policy (Lee, 2018).

¹² This first tranche of US tariffs (and the response from China) was implemented in two stages, the first \$34 billion on 6 July 2018 and the second on 8 August 2018.

Chinese authorities responded with retaliatory tariffs set at 25% on imports from the US worth around \$US50 billion in 2017. These comprise mostly agricultural goods, some manufactured goods such as alcoholic beverages (including wine), steel and aluminium scrap. When the US went ahead with its threatened \$US200 billion of tariffs on Chinese goods, China immediately placed a 5% to 10% tariff on an additional \$US60 billion of US products, including LNG (10%).

Table 3.1: Major implemented and threatened tariffs in US-China trade dispute (\$US) as at 20 December 2019		
Date effective	United States	China
6 July 2018	34 billion (@ 25%)	34 billion (@ 25%)
23 August 2018	16 billion (@ 25%)	16 billion (@ 25%)
24 September 2018	200 billion (@ 10%)	60 billion (@ 5 – 25%)
1 March 2019 (extended from 1 January)	Tariff rates rise to 25% for all items announced on 24 September.	-
Threatened action	Up to 255 billion* (10 – 25%)	20 billion* (@ 5 – 25%)
Total	505 billion (@ 10 – 25%)	130 billion (@ 5 – 25%)

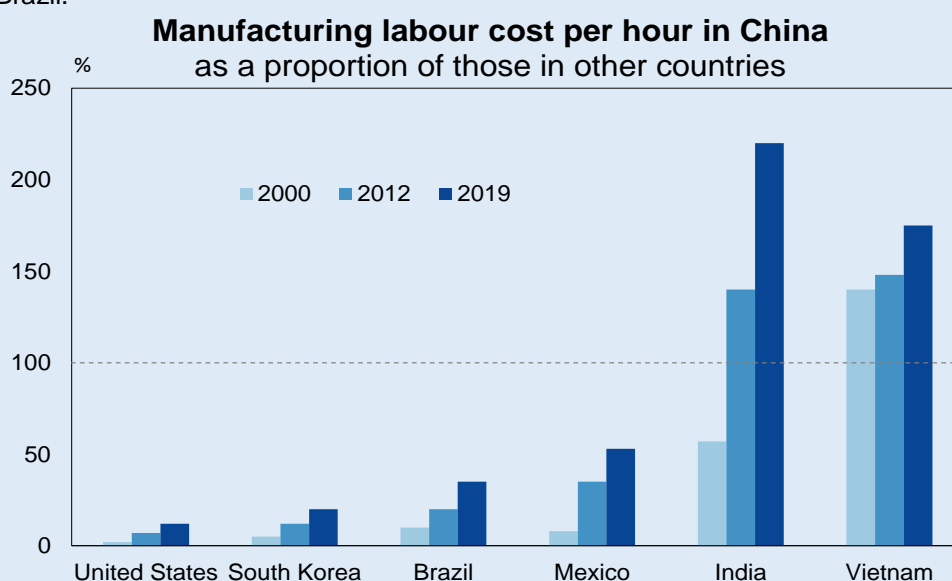
Note: An asterisk (*) means that at this stage the tariffs would cover virtually all imports.

At the time of writing, the trade dispute between the US and China remains unresolved. China now has tariffs on nearly all US goods it imports. However, the Trump administration has threatened to expand its China specific tariffs to include goods worth another \$US267 billion (note, this will exceed the total value of goods imported from China in 2017, which means it has likely been calculated differently to the value of previous announcements, so in Table 3.1 this figure has been adjusted to remain consistent with other announcements). This would effectively mean that all Chinese exports of goods to the US (about \$US505 billion in 2017) would be subject to a tariff. China would be unable to match such large tariff impositions as it only imported around \$US130 billion of US goods in 2017.

Made in China 2025

Introduced by China’s State Council in May 2015, the “Made in China 2025” (China 2025) strategy is a 10-year plan aimed at fostering development in 10 strategic sectors of the Chinese economy by updating China’s manufacturing base. It seeks to achieve 70% self-sufficiency in high-tech industries by 2025 and establish a dominant position in global high-tech markets by 2049.

- China’s labour cost advantage has faded in recent years. Wages have grown faster than productivity, eroding China’s position relative to other developing economies, especially in low value-add manufacturing. The chart below shows that China’s manufacturing cost per hour is already greater than other low-cost producers, such as India and Vietnam, but still below Mexico and Brazil.



Source: Economist Intelligence Unit (2014, p. 10).

- China 2025 is a recognition that there are limits to wage-sensitive, low value-added manufacturing driven growth. The strategy is a multi-step process that aims to spur development further up the value chain, beginning with the domestic market (i.e. by gradually replacing foreign technology with made at home Chinese technology) but with an eventual goal to capture significant market share worldwide.
- To date, the Chinese Government has established 5 national and 48 provincial manufacturing ‘innovation centres’ (with an aim of 40 national centres by 2025), and has spent about US\$3.1 billion on subsidies, loans and bonds (half federally, half via local governments). Additional China 2025 funding has been allocated by the China Development Bank, with China Daily (2017) estimating up to 300 billion yuan (US\$42 billion) of financing in place for the 2016–20 period.
- China 2025 has led to push back from some advanced economies, such as the US and Germany, who are concerned that government assistance to Chinese industry will adversely, and they argue unfairly, impact their industry (Lighthizer, 2018; Fernández, 2018).
- Western Australia is not likely to see significant negative impacts as the State does not generally export the products which are subject to the policy. It may actually benefit from lower prices of high technology imported goods due to greater competition. Moreover, Chinese government support for the electric car industry has underpinned significant expansion in the Western Australian lithium industry as lithium is a raw material used in the manufacture of the most commonly manufactured rechargeable battery.

China has warned that there will be a firm and comprehensive response to any additional tariffs imposed on Chinese exports. A “comprehensive response” may be signalling that Chinese authorities will move beyond simply implementing tariffs on goods. For example, China could impose additional restrictions on US companies operating in China or impose restrictions on bilateral services trade, of which the US has a significant surplus over China.¹³

US tariffs on specific products, which have impacts beyond China

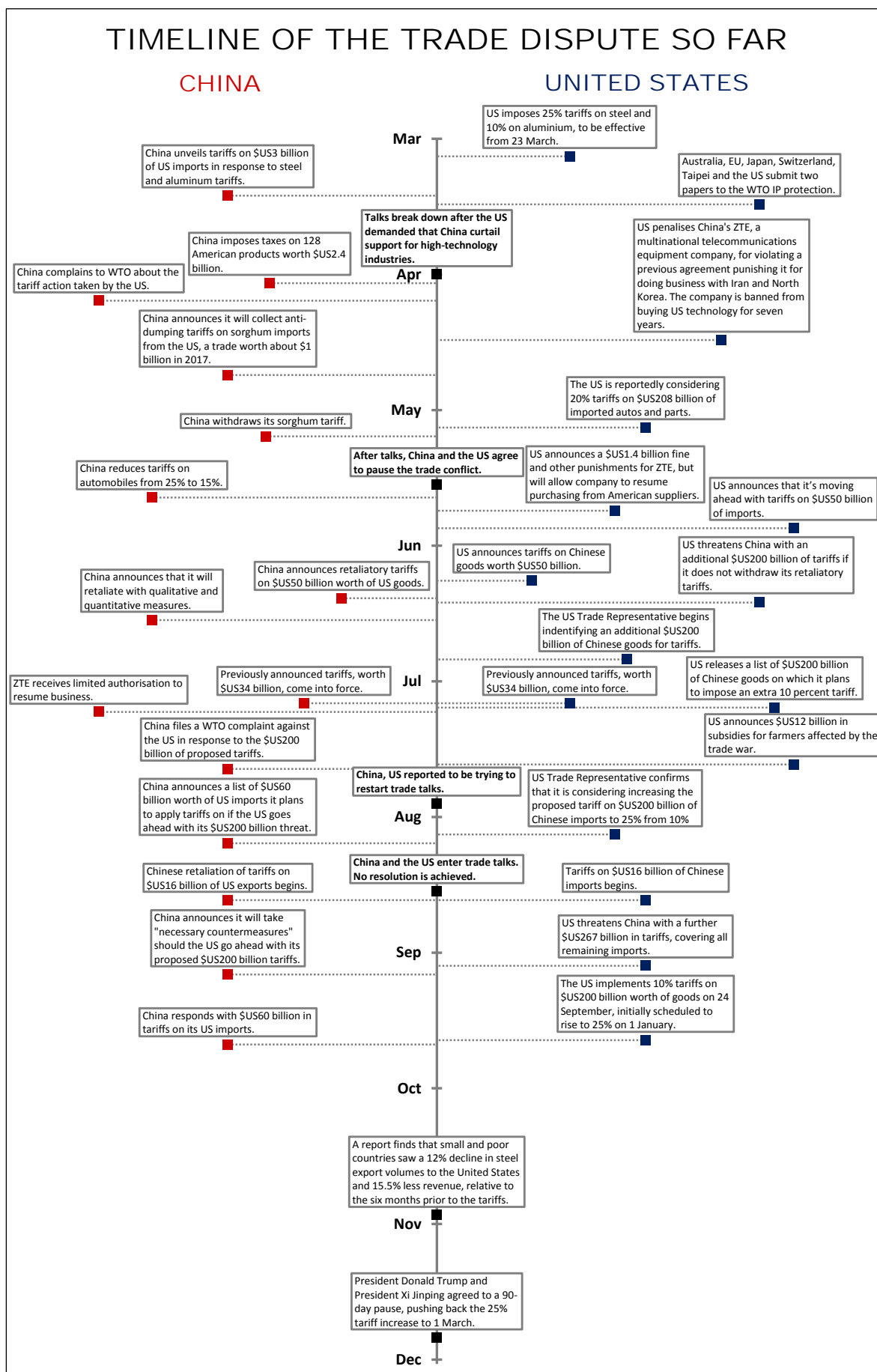
The Trump administration has imposed tariffs on a range of manufactured goods throughout 2018.

- In January 2018, the US President approved the imposition of tariffs on large washing machines (initially ranging from 20% to 40%, then declining to 16% to 40% in the third year) and solar panels (30% in the first year, declining 5% annually to 15% after four years) (Office of the US Trade Representative, 2018).
- In March 2018, a 10% tariff on aluminium and 25% tariff on steel imports was imposed. Exemptions were initially provided for many nations, however in June exemptions were removed for the European Union, Canada and Mexico. Argentina, Brazil and South Korea had quotas imposed in exchange for permanent tariff exemptions, with Australia the only trading partner for steel and aluminium without trade restrictions.¹⁴ A number of countries announced retaliatory tariffs:
 - Canada imposed tariffs ranging from 10% to 25% on around \$US12.6 billion of imports from the US (Wolfe, 2018);
 - the EU imposed a 25% tariff on around \$US3.1 billion worth of US imports (Brunsden, 2018);
 - Mexico imposed tariffs ranging from 15% to 25% on around \$US3 billion of imports from the US (Isidore, 2018);
 - India plans to impose tariffs on around \$US235 million of US imports on 31 January 2019 (Suneja, 2018); and
 - Turkey introduced duties totalling about \$US533 million on a range of US goods (Associated Press, 2018).
- The Trump administration has threatened to impose a 25% tariff on car imports from the EU.¹⁵ To date, the US has held off from implementing this tariff.

¹³ The US has a trade surplus with China in services (it exported \$US57.6 billion of services in 2017, importing just \$US17.4 billion). US companies also derived an estimated \$US158.4 billion of sales revenue in China during the most recently reported fiscal year, which could be at risk if authorities retaliate against US businesses operating in China (Van Doorn, 2018).

¹⁴ A number of exemptions were also provided for seven US companies importing specific products from Japan, Sweden, Belgium, Germany and even China (Japan Times, 2018).

¹⁵ In practice, it may be difficult for the US to levy tariffs on auto imports specifically from the EU under WTO rules.



Source: Peterson Institute for International Economics (2018).

NAFTA replacement

The US has negotiated the terms of a replacement agreement for the NAFTA trade agreement with Mexico and Canada. The new United States-Mexico-Canada Agreement (USMCA) provides the US with improved access to the Canadian dairy market, requires car imports to have 75% of their components manufactured in North America to qualify for a tariff exemption, increases intellectual property protections and retains a dispute mechanism, a clause that was a priority for Canada.

US tariffs in context

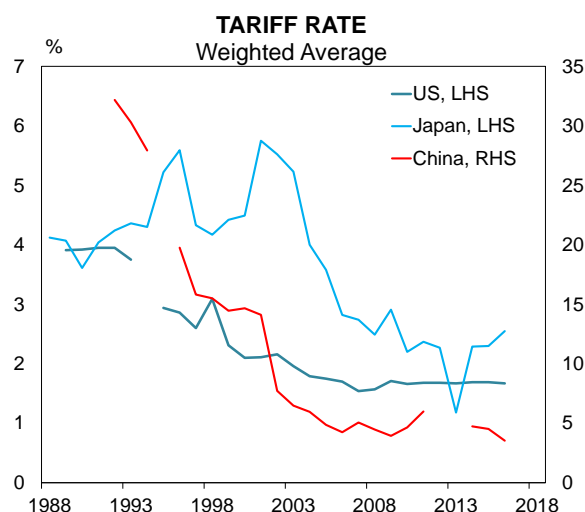
The tariffs outlined above mark a significant departure from the experience since the Second World War, where trade tariffs throughout much of the world generally trended down. Comparisons have been made on several occasions in the media between the current increase in trade barriers and that experienced during the 1930s, which many have exacerbated the impact of the great depression (Boot, 2018; Whaples, 1995).

However, to date the current tariff increases are impacting trade on a much smaller scale. For example, all tariffs enacted by the US Government would increase its weighted average tariff rate from around 1.7% to around 3.5%. If all tariffs proposed (including the highest proposed tariffs on Chinese goods and car imports from the EU) were enacted, the US average weighted tariff rate would increase to around 8.3%. This is much lower than the peaks reached in the 1930s by the US (24.4%), UK (47.7%), France (29.4%) and Australia (41.2%) (Bown & Irwin, 2015, p. 21). On a global scale, the impact is even smaller. For example, if all the tariffs proposed by the US and the retaliatory measures taken against the US (outlined above) are enacted,

the global average weighted tariff would increase by around 1 percentage point. Moreover, outside of the trade disputes outlined above, the general trend toward greater trade liberalisation continues. For example, two globally significant trade agreements have been progressed over the past year:

- in March 2018 eleven countries, including Australia and Japan, signed a trade agreement called Comprehensive and Progressive Agreement for Trans-Pacific Partnership (TPP-11). These countries account for over \$US10 trillion in GDP (13% of global), and the agreement will eventually see the removal of 98% of the tariffs applied to merchandise trade between signatory nations (DFAT, 2018); and

Graph 3.2



Source: World Bank

- in 2018 the European Union and Japan, accounting for around a quarter of global GDP, signed a trade agreement which will result in significantly greater access to Japanese markets for the European agriculture sector and reduced barriers for the Japanese automotive industry trading in Europe (European Commission, 2018).

Conclusion

US trade policy has changed considerably over the past 2 years as the US President has sought to address perceived inequities in global trading arrangements, which the Trump administration believes may be adversely impacting its economy. As a result, a range of tariffs have been applied to goods imported to the US and many affected nations have responded by increasing tariffs on goods which they import from the US. It is likely that trade disputes will continue to escalate for a period of time, as further tariffs have been threatened. Though significant, these tariffs still represent a small proportion of global trade in goods (6.5%) and an even smaller proportion of trade if services are included (5.1%). Moreover, outside of the bilateral trade disputes outlined in this chapter, the long term trend toward more liberal trading arrangements has continued.

Chapter Four: Impact of Change in US Trade Policy on Global Economy

Introduction

The economic impacts of the rise in trade protectionism, largely as a result of US Government policy to address significant bilateral trade deficits and retaliatory action from affected parties, are uncertain and will largely depend on how much the disputes escalate, how long the disputes last and how financial markets respond. This chapter summarises the findings of the published research on these issues.

The tariffs levied to date have been relatively modest in scale and the available economic data do not indicate any significant macroeconomic impact. However, it may take a significant period of time before we can assess the ultimate impact of the increased tariffs.

Most of the available analysis suggests that under plausible scenarios it will be difficult to discern the impact of increased tariffs on the national accounts from the usual statistical noise and other economic factors. Shocks to GDP are generally projected to be less than 1% in any given year for the US and China (IMF, 2018b). Of note however, IMF analysis suggests that economic growth in China might be around 1.6 percentage points (around \$US226 billion) lower than would otherwise be the case in 2019 if the US and China levy 25% bilateral tariffs on all goods and the US levies additional 25% tariffs on all car and car part imports and the rest of the world retaliates proportionately (IMF, 2018b, pp. 33-35).

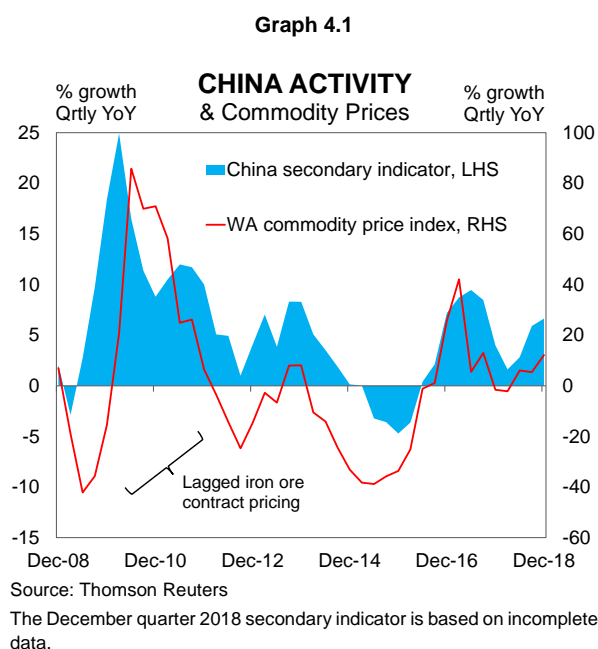
There is also considered to be a relatively low probability that the trade dispute could trigger a much larger shock to the global economy. This will depend largely on how trade tensions impact with other dynamics, such as rising US interest rates, and how financial markets respond. For example, in August 2018 a relatively small increase in tariffs appeared to be the catalyst for a significant economic shock in Turkey.

Opinion is divided on the spill over to economies not directly impacted by the tariffs. Some analysts emphasise the negative impact of slower growth in China and the US, while others suggest that this might be more than offset by an increase in third party market share in China and the US as they levy tariffs on imports from each other.

Impact of tariff increases to date

To date, the impacts on the global economy have been relatively muted and difficult to distil from the available data. This is in large part due to the fact that the data will only show the impact of the first round of US-China tariffs, along with a range of product specific tariffs which the US imposed on steel, aluminium, solar panels and washing machines. Moreover, even if the most recently announced tariffs are included, the total volume of the tariffs is still very small relative to the size of the economies in question. For example, the total value of goods subject to tariffs implemented by the US and by nations retaliating to the US currently stands at around \$US438 billion, with an average weighted tariff of around 15.1%, meaning the total size of the tariff expense is around \$66 billion. This compares to a US economy which was around \$US20 trillion and a Chinese economy which was around \$US12 trillion in 2017. Economies are dynamic and there will always be a number of factors influencing them, so identifying the impact of a \$66 billion shock (~0.2% of their combined GDP) on economies the size of the US and China is not easy.

The most significant tariffs implemented so far have been directed at China. These include a 25% tariff imposed on Chinese imports worth around \$US34 billion on 6 July 2018, subsequently expanded to \$US50 billion on 23 August 2018; and a 10% tariff applied on nearly \$US200 billion worth of goods on 24 September 2018. To date, the Chinese economy has not shown any signs of weakening in aggregate. The Department of Treasury Western Australia (henceforth WA Treasury) proxy for activity in China's commodity intensive secondary sector suggests activity has actually rebounded mid-year following weakness generated by stronger than usual environmental controls over the Chinese winter (see Graph 4.1 and feature box below). This may be partly explained by a relatively robust property construction sector and a shift in emphasis by the central government away from reducing risks associated with rapid private debt accumulation to a more accommodative monetary stance.



WA Treasury Secondary Indicator

The WA Treasury has developed a proxy for activity in the commodities intensive sectors of the Chinese economy. This proxy correlates well with the prices of commodities exported from Western Australia (as summarised by the State's commodity price index) as illustrated in Graph 4.1.

The secondary indicator uses four equally weighted inputs:

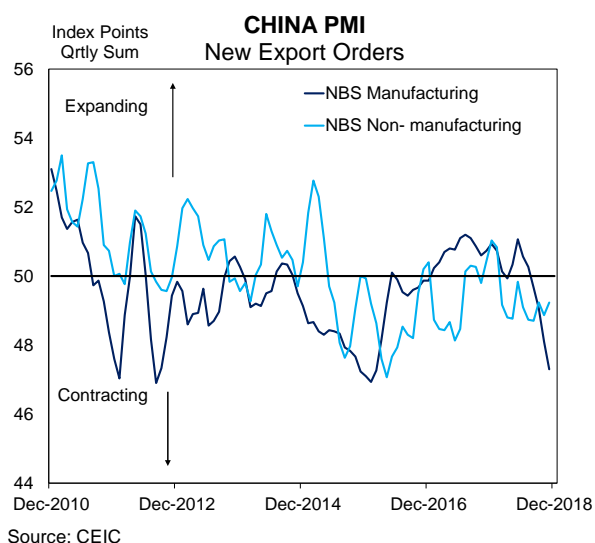
- electricity production. This is a widely used indicator of Chinese economic activity;
- domestic freight volumes. This indicator is a widely trusted indicator. As a fee is collected for rail activity, the statistics are regarded as reliable;
- seaport cargo volumes. This has been included to account for the external sector. Export volumes contribute to economic growth and import volumes are generally positively correlated with growth; and
- a construction materials index. This index comprises: production of finished steel, cement and plate glass. A range of materials were used so as to dilute any data quality issues inherent in individual series.

This indicator is used by Treasury because it appears to track the business cycle in China relatively well. It currently suggests activity is reasonably favourable for commodities demand.

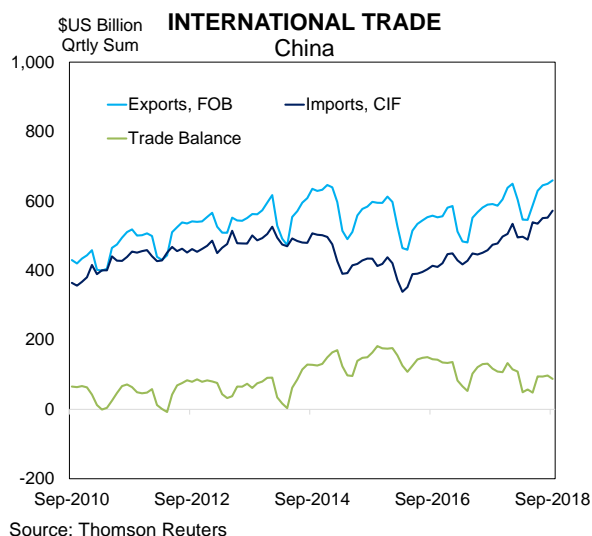
China's export sector lost a bit of momentum late in 2018 (see Graph 4.2), but remains in expansionary territory (see Graph 4.3). In November, merchandise exports were up around 4.6% compared to a year earlier. The new export orders components of Purchasing Managers Indexes (PMI) point to a very modest softening from earlier months. However, PMI readings in China should generally be treated with caution. They have been improbably low for most of the period since the GFC, likely driven in part by chronic oversupply in China's industrial sectors.¹⁶

¹⁶ Chinese PMI readings have been lower than in many advanced economies since the GFC, despite aggregate output growing much faster in China. It is likely that this was driven by supply in China expanding even faster than demand. The Chinese Government has been seeking to address this issue by forcing less efficient operations to close as part of its "Supply Side Reforms". This has been an important factor contributing to higher prices for some manufacturing and mining products, such as aluminium and coal. It is also likely to have supported the iron ore price at the margin.

Graph 4.2

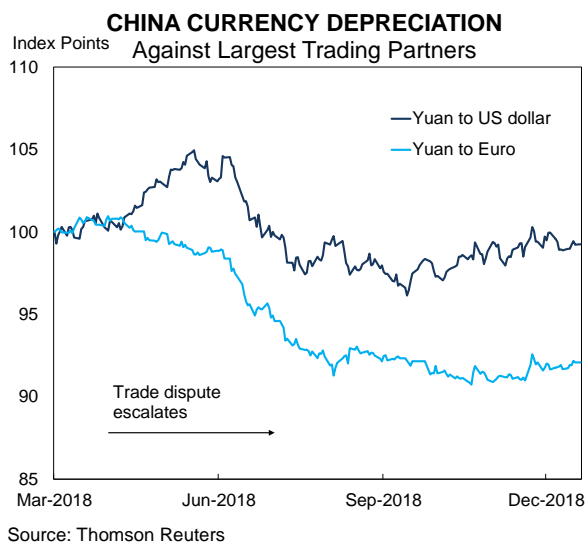


Graph 4.3

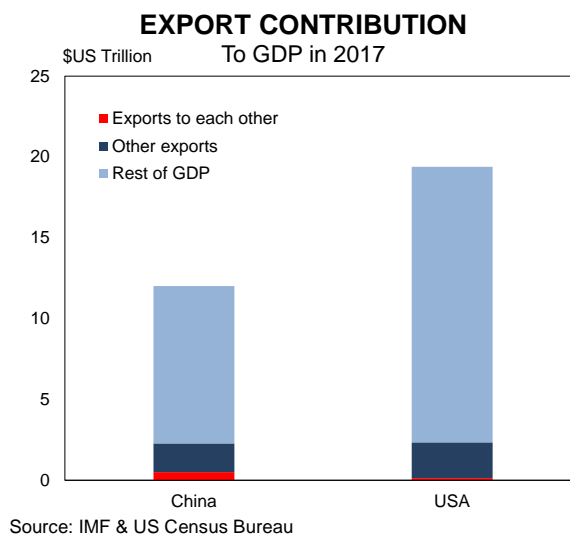


The negative impact of tariffs on Chinese exports has likely been overwhelmed by relatively strong economic growth in its major trading partners and a depreciation in the value of the Chinese currency against the currencies of its major trading partners (Graph 4.4). Moreover, the Chinese economy is very large and primarily relies on domestic demand to fuel economic activity. In 2017, Chinese goods exports to the US contributed only 4.2% to GDP (Graph 4.5).

Graph 4.4



Graph 4.5

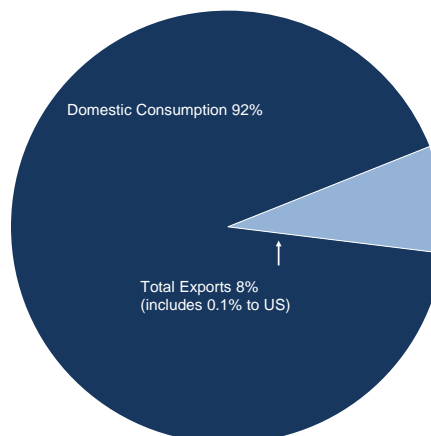


The 25% tariff applied to steel imported to the US is of particular interest to Western Australia as the State's most significant export commodity is iron ore, a key raw material used in the manufacture of steel. The US is largely self-sufficient in iron ore so any import substitution of steel from countries such as China, Japan and Korea (which consume the vast majority of the State's iron ore exports) would adversely impact Western Australia's exports.

However, the US does not import significant volumes of steel from these nations. Total steel imports from these countries was 5.9 million tonnes in 2017 (US International Trade Administration, 2018), which equates to around 9 million tonnes of iron ore consumption (assuming steel processes which use low proportions of scrap steel are used) and compares to annual exports from Western Australia of over 800 million tonnes.

Of note, China exports very little steel to the US (around 0.1% of total production in 2017). Total Chinese exports in 2017 were 62 million tonnes, or around 8% of total finished steel production (Graph 4.6). Most of China's exports of finished steel go to other Asian countries such as Korea, Vietnam and the Philippines.

Graph 4.6
CHINESE STEEL PRODUCTION 2017



Source: Treasury & CEIC

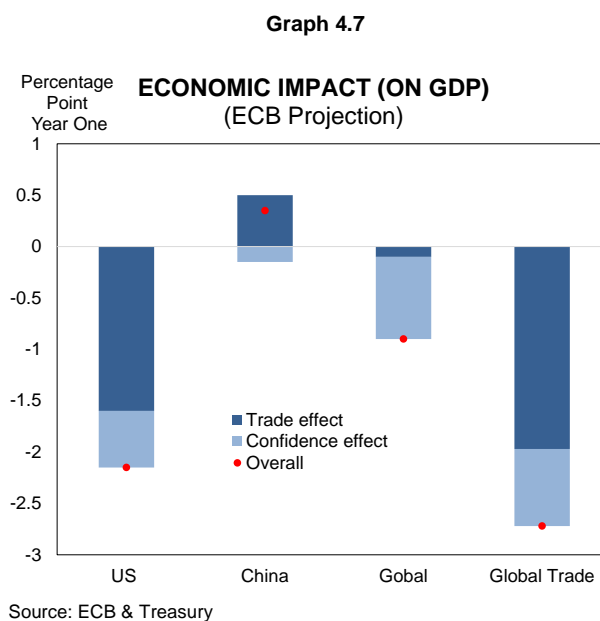
Estimates of total potential impact

The potential impact of the most recent tariff increases and potential future increases are uncertain. At the time of publishing, most forecasters were viewing the tariff increases as a potential risk that may have a significant impact on economic activity but were not significantly adjusting their base case forecasts. In part this was because there is considerable uncertainty regarding the duration of the trade dispute and because the nations impacted were likely to respond to the shock with policy stimulus. For example:

- The IMF World Economic Outlook, October 2018 edition, contained modest revisions to economic growth from China (-0.2%) and the US (-0.2%) in 2019, relative to the April 2018 edition. These downward revisions were largely attributed to tariff measures announced to date. These were not significant revisions when compared to the advanced economy average (-0.1%) and emerging market and developing economy average (-0.4%). The IMF notes however, that although sentiment has remained strong some high frequency trade sensitive data (such as PMIs) have weakened. The IMF also modelled the impact of an escalation in trade disputes to a point where the US has levied a 25% tariff on all imports from China and on all car and car part imports (worth around \$US350 billion) and affected nations retaliated. In this scenario, relative to a baseline of no trade wars, GDP is projected to be lower over the long term by 1% in the US, 0.5% in China, and 0.4% globally. The short term impacts are generally higher, with GDP lower than the baseline in 2019 by 1% in the US, 1.6% in China, and 0.8% globally.

- On 26 September 2018 the Asian Development Bank (ADB) published a set of forecasts for developing Asia which were largely unchanged from the previous year. Forecast economic growth in China was revised down only 0.1 percentage point from 6.4% to 6.3% in 2019. The ADB (2018) argued that the Chinese Government’s supply-side reforms and expected monetary and fiscal support would help offset the impact of the trade dispute. Excluding the impact of Government policy response, the ADB projects that tariffs “implemented or proposed by 24 September” would lower GDP in China by 0.5 percentage points and in the US by 0.1 percentage point in 2019, relative to what would be achieved without any tariffs (ADB, 2018, p. xii). The ADB projects that the cost to GDP would double for both countries if the dispute escalated to the point where 25% tariffs were placed on all merchandise trade between the nations.
- The European Central Bank (ECB, 2018) published some modelling of the trade dispute on 26 September 2018. The ECB argues that measures enacted to date (excluding the 10% tariff on around \$US200 billion of Chinese imports effective from 24 September and China’s retaliation) are so small relative to world trade that the impacts are marginal. However the ECB research suggests that the impacts would be material if the trade dispute escalated significantly.

To illustrate, the ECB outline a scenario where the US imposed a 10% tariff on all merchandise imports and the rest of the world retaliated with a 10% tariff on US imports. In this scenario, the ECB projects that global growth would be nearly 1 percentage point lower than otherwise in the first year, largely driven by lower confidence adversely impacting financial markets. US GDP would be just over 2 percentage points lower than the baseline, as the US economy would be primarily impacted by lower exports and investment in trade exposed industries (a trade effect). Conversely, in this scenario China would experience a mild boost to



GDP in the first year, of around 0.3 percentage points, as its exporters would benefit from lower competition from US exporters. However, the ECB notes that this advantage would diminish over time (Graph 4.7).

- KPMG (2018) published an analysis of three hypothetical US-China trade dispute scenarios. The first scenario involved 15% bilateral tariffs on imports from each other, the second scenario had these tariffs increasing to 25% and the third scenario involved a contagion where all countries impose a 15% tariff on each other. The cumulative impact on GDP after five years is summarised in Table 4.1 below.

Description	Scenario 1	Scenario 2	Scenario 3
	US and China impose 15% tariffs on each other	US and China impose 25% tariffs on each other	All Countries impose 15% tariffs on all trade
Australia	-0.3	-0.5	-2.4
US	-0.4	-0.7	-4.6
China	-0.6	-1	-5.3
Europe	-0.2	-0.3	-2.1
Global	-0.3	-0.5	-3.5

Source: KPMG & Treasury

The modelling suggests that the impact of the tariff increases are manageable under the most plausible scenarios (scenarios one and two). The impact of scenario three is severe but it is highly improbable that this scenario would eventuate as it assumes bilateral trade disputes between the US and some of its trading partners expands to all countries levying blanket tariffs against all products from all other nations. As outlined in **Chapter Three** and **Chapter Six**, trading arrangements among nations not impacted by disputes with the US have generally continued to trend toward greater liberalisation. KPMG’s analysis suggests that those who are not directly involved in the trade dispute are better off than those who are. However, unlike the work from the ECB where third parties can potentially benefit from bilateral trade disputes, all parties lose.

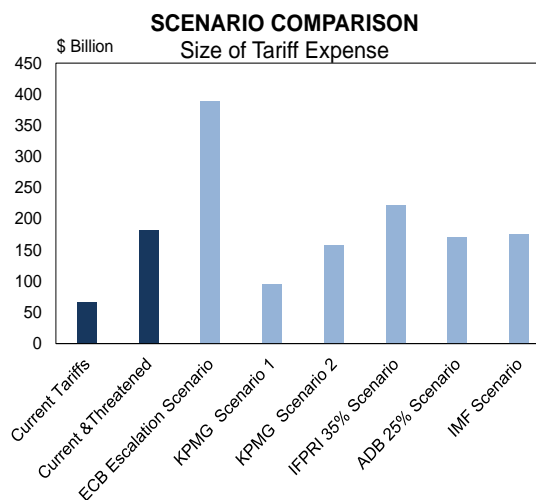
In August 2017, prior to the implementation of most of the US tariff increases, but after the election of Donald Trump as President, the International Food Policy Research Institute (IFPRI) released a paper addressing the potential impact of three different trade wars: US and China; US and Mexico; and US against both China and Mexico (Bouët & Debucquet, 2017). It argued that if the US were to impose a 35% tariff on all Chinese merchandise imports, the Chinese economy would suffer a 0.7 percentage point decline relative to the baseline, while the US would experience a 0.1 to 0.2 percentage point reduction in economic activity.¹⁷ If China retaliates with a 35% tariff on imports from the US, the loss in activity increases to 0.3 percentage points for the US and between 0.8 and 0.9 percentage points for China.

Of note, the authors argue that those not directly involved in the trade dispute enjoy a welfare gain. These countries/regions, referred to by the authors as free riders, generally enjoy increases in economic activity of around 0.1 to 0.2 percentage points. Exporters in the free riding economies are able to increase market share in China and the US, more than offsetting the overall loss of demand in these countries.

¹⁷ The authors actually refer to a loss of welfare which they define as income. For the purpose of this paper economic output and income are assumed to equal.

Graph 4.8

Graph 4.8 compares the total tariff expense of the scenarios above with what has been either enacted or threatened.¹⁸ All of the scenarios represent an escalation from the current trade disputes. However they are generally regarded as plausible scenarios based on what has been threatened to date.



Source: ADB, ECB, KPMG, IFPRI, IMF & Treasury

Intangible impacts with low probability and high impact

Most of the research and modelling of the more plausible trade war scenarios suggests that the impacts, though clearly negative for China and the US, are relatively manageable and will likely be small enough so as to be difficult to discern in national accounts data. However, it is also possible that the trade dispute could trigger a much larger shock to the global economy. For example, uncertainty created by the trade dispute could cause investors to panic if the global economy looks fragile. This could cause financial market volatility, for example money may flood out of riskier currencies and into US dollar assets. These sorts of financial market disturbances have been linked to financial crises, particularly in emerging markets; for example, the Asian Financial Crisis of 1997-98 (Wincoop & Yi, 2000).

More recently, this sort of unpredictability was illustrated when the US President announced on 10 August 2018 a doubling of tariffs on US imports of steel and aluminium from Turkey. Turkey only exported around \$US1 billion of steel and aluminium to the US, and with GDP of approximately \$US850 billion in 2017, the tariffs alone would have had a negligible impact. However, combined with a range of other underlying economic issues and risks, the announcement acted as a catalyst for significant capital outflows, causing the currency to rapidly drop in value by around a third relative to the US dollar. The central bank reacted by increasing interest rates by 625 basis points in the following month so as to fight inflation and shore up the currency.

¹⁸ KPMG's Scenario 3 has not been included as it is very large (and improbable) and will require an increase in scale so large that it will be difficult to compare the more probable scenarios.

Conclusion

There is significant uncertainty about what the eventual economic impact of the current trade dispute will be. At the time of writing, the available data suggest that there is little sign of a significant macroeconomic impact globally or in Western Australia's major trading partners. Most of the published research suggests that the dispute will need to escalate significantly to have a major adverse impact. However, there is a small possibility that further escalation could trigger a more significant disruption. This will likely depend on how the trade dispute interacts with other dynamics, such as rising US interest rates, and how financial markets respond.

Chapter Five: Potential impact on Western Australia

Introduction

The range of potential outcomes for Western Australia as a result of escalating trade disputes is considerable and reflects two key uncertainties:

- how the global economy and financial markets will respond; and
- by how much the trade disputes will escalate.

The greatest uncertainty relates to how the global economy and financial markets respond. This largely depends on how the impact of the trade dispute interacts with other financial and economic dynamics. For example, to date, Chinese economic activity has remained relatively healthy despite being the primary target of US tariffs, yet the Turkish economy suffered a large shock in 2018 following a very small increase in tariffs imposed by the US.

The three types of scenarios outlined in this chapter (two mixed and one negative) largely reflect different responses to the trade dispute rather than changes to the scale of the initial shock. These scenarios, which were developed by Treasury are:

- a scenario where global growth remains resilient but enhanced perceptions of global risk reduce the value of the Australian dollar. This increases government mining revenue but the impact on the broader economy is mixed, though relatively modest in magnitude. The positive impact on Australian dollar export income is offset by a decrease in investment due to enhanced perceptions of risk;
- a China stimulus scenario, where the State experiences an initial boost from policy stimulus in China which pulls forward demand. However, the pull forward of demand causes a subsequent reduction in export income; and
- a third scenario involving a broad based downturn in Asia caused by a financial disruption where the trade dispute triggers capital flight in emerging Asia and this significantly impacts our export income.

All impacts in the paper are measured relative to a baseline assumption where:

- all economic and revenue forecasts are as per the 2018-19 Mid-year Financial Projections Statement assumptions and projections; and
- the scenarios exclude any flow-on effects to GST grants.

The scenarios, as described in this chapter, were developed by Treasury and the general government mining revenue impacts were also estimated by Treasury.

The economic impacts of each scenario in this chapter on the broader economy were jointly derived with the Centre of Policy Studies at Victoria University, using its VURMTAX model, which is a 76 industry multi regional dynamic computable general equilibrium (CGE) model of the Australian economy.

Scenario 1 involves an exogenous shock to the exchange rate and Scenarios 2 and 3 involve exogenous shocks to commodity prices and investment in the mining industry. Mining industry shocks were applied to the following mineral sectors: oil and gas (including LNG), ferrous (iron ore) and non-ferrous. Investment in each sector was divided into the following categories: uncommitted, commenced and sustaining, using the Treasury major projects investment database. It was assumed that most of the shock would be absorbed by changes in the uncommitted category as investments that have commenced and investments that are required to keep an operation going are less likely to be sensitive to short term movements in price.

The scenarios are discussed in more detail below. However several key themes emerge from the exercise:

- The impact on the real economy, as measured by Gross State Product (GSP), is often cushioned by natural stabilisers. That is, changes in activity in the resources sector tend to be offset to some degree by changes in other sectors. For example:
 - an increase in activity in the resources sector will tend to crowd out activity in other sectors due to competition for factors of production (such as labour and materials) and the reverse tends to occur when activity decreases; and
 - a movement in international commodity prices often correlates with movements in the value of the Australian dollar, which has the effect of decreasing the competitiveness of other trade exposed sectors when prices rise and increasing the competitiveness of those sectors when prices fall. Movements in the exchange rate also create an offsetting change in the purchasing power of importers (including households).
- Although the impact on GSP is reasonably modest in most scenarios there are often significant redistributions of activity between sectors. For example, there is a significant negative impact on households in Scenario 3 despite exports holding up reasonably well.

Scenario 1: Resilient global growth

Description

The global economy adjusts well and remains largely unscathed. China is able to manage the impact through modest policy stimulus, a small depreciation in the yuan and a generally favourable external environment, with growth continuing in the EU and tax cuts supporting demand in the US. Finally, US interest rates do not rise at a rate that causes major financial difficulties in key emerging markets.

Western Australia's economy benefits through higher \$A commodity prices as heightened perceptions of risk drive down the value of the \$A, but policy stimulus in China and robust demand in advanced economies maintains demand for commodities. The increase in export income flows through to higher government mining revenue. However, the impact on the broader economy is more mixed as heightened perceptions of risk reduce the flow of new investment.

Assumptions and key mining revenue impacts

- Recent declines in the **exchange rate** continue for the whole of 2019-20 as this is the period of maximum global uncertainty.
- The exchange rate then gradually returns to the baseline assumptions, reflecting greater certainty regarding trade. By this stage it is likely the global economy has either adjusted to higher tariff rates (if they remain), or the trade dispute has been resolved.
- Under this scenario the lower exchange rate increases mining revenue by \$876.5 million over the forward estimates.

Exchange rate US cents (Scenario 1)						
	2017-18	2018-19	2019-20	2020-21	2021-22	
Baseline	77.5	72.7	73.2	73.6	73.9	
Scenario 1	77.5	69.9	68.1	71.0	73.9	
Variance	0.0	-2.8	-5.1	-2.7	0.0	
Sensitivity per 1 cent movement (\$m)	n/a	88.8	82.2	78.4	77.7	
Revenue impact (\$m)	n/a	245.3	422.7	208.5	0.0	876.5

- **US dollar commodity price** assumptions are unchanged from the baseline assumption.

Economic impact

The impact of this scenario on the Western Australian economy is mixed. Deviations in GSP and employment from the baseline assumptions are relatively small. The level of domestic demand is moderately lower than it would otherwise be, but this is at least partly offset by export volumes being above the baseline levels until 2021-22 and import volumes being lower than the baseline throughout the period.

In this scenario, investment declines over the forecast period as businesses are assumed to be more cautious, seeking a higher rate of return on new investments than under the base-case. This has the dual effect of:

- depreciating the exchange rate, as the reduction in investment reduces capital inflows and demand for Australian dollars; and
- increasing international exports over the short term, as local businesses seek to expand output by increasing utilisation rates to take advantage of an increase in competitiveness (due to a lower \$A exchange rate) relative to businesses from overseas. This will be facilitated by increased availability of labour from adversely impacted sectors in Western Australia and the rest of nation. By 2021-22 exports are marginally lower than the baseline as a result of lower rates of investment in prior years.

The above impacts are felt across the nation. However, as Western Australia is more trade intensive, the positive impact of expanding exports has a relatively larger effect on its economy and therefore offsets to a greater extent the negative impact of lower investment.

The strength of the Western Australian economy compared to the rest of the nation (due to its larger trade exposure) supports a relatively stronger domestic labour market and relatively higher real wages. As a result, workers migrate to Western Australia from interstate, lifting population relative to the baseline, which acts to limit the negative impact on total consumption and employment.

Although there is an improvement in real wages relative to the rest of the nation there is a decline relative to the baseline. This is largely because the decline in the value of the Australian dollar increases the cost of imports which negatively impacts purchasing power.

Scenario 1 - 'Global resilience'

Impact on select summary economic aggregates

	2018-19	2019-20	2020-21	2021-22
	<i>Deviation from baseline levels %</i>			
Household consumption	-0.1	-0.2	-0.1	-0.1
Investment*	-1.0	-2.5	-2.2	-1.0
State Final Demand	-0.4	-1.0	-0.8	-0.4
International exports	0.5	0.9	0.4	-0.2
International imports	-0.8	-1.9	-1.5	-0.6
Gross State Product	0.0	0.0	-0.2	-0.2
Employment (persons)	500	200	-1,300	-1,400
Employment (%)	0.0	0.0	-0.1	-0.1

* Includes business, dwelling and public investment

Source: Victoria University, Western Australian Treasury

Western Australia may also be able to benefit from an increase in export volumes as a result of tariffs being levied against competitors in other countries. The magnitude of this dynamic is highly uncertain and therefore has not been incorporated in the economic and revenue impacts for this scenario.

There have been a number of attempts to quantify this dynamic, though not specifically for Western Australia. For example, the United Nations Conference on Trade and Development (UNCTAD, 2019) estimated that Australia could see an increase in trade volumes of around 4.6% as a result of the US-China trade dispute, assuming that threatened increases in tariffs on March 1 proceed. However, Bouet & Debucquet (2017) projected most regions in the world (not directly impacted with tariff increases) would only experience gains in economic welfare in the order of 0.1 to 0.2 percentage points as a result of a trade war between the US and China, where the US levies a 35% tariff on Chinese imports and China retaliates (Bouet & Debucquet did not specifically model the impact on Australia).

The opportunities presented to Western Australian exporters as a result of this dynamic will likely be much smaller than indicated by the UNCTAD estimates for Australia. This is because many of the industries which may benefit are relatively small in Western Australia. However, the impact on the economic aggregates could be significant if trade barriers in other countries result in an LNG project expansion because if an LNG producer(s) is able to lock in a long term offtake agreement with a customer nervous about sourcing supply from a nation involved in trade disputes. This is broadly consistent with Dixon (2017) who argues that Australia might benefit from a modest increase in the terms of trade and that the exporters most likely to benefit are the manufacturing and services industries (assuming the US implements a 45% tariff on all goods and services imported from China). The gains would be offset to some extent by reductions in mineral exports if the Chinese economy slows as a result of the trade dispute.

Scenario 2: China stimulus

Description

The Chinese economy looks like it might be weakening so the Chinese Government enacts policy stimulus in early 2019. This is similar to the policy stimulus over the period 2012 and into 2013, which involved easing monetary policy and increased spending on infrastructure.

The stimulus is broadly successful in boosting short term growth in 2018-19 and 2019-20. However, as with the stimulus in 2012-13, there is a subsequent period of weakness (2020-21 and beyond). This is because much of the stimulus-induced construction activity was simply pulled forward from future years.

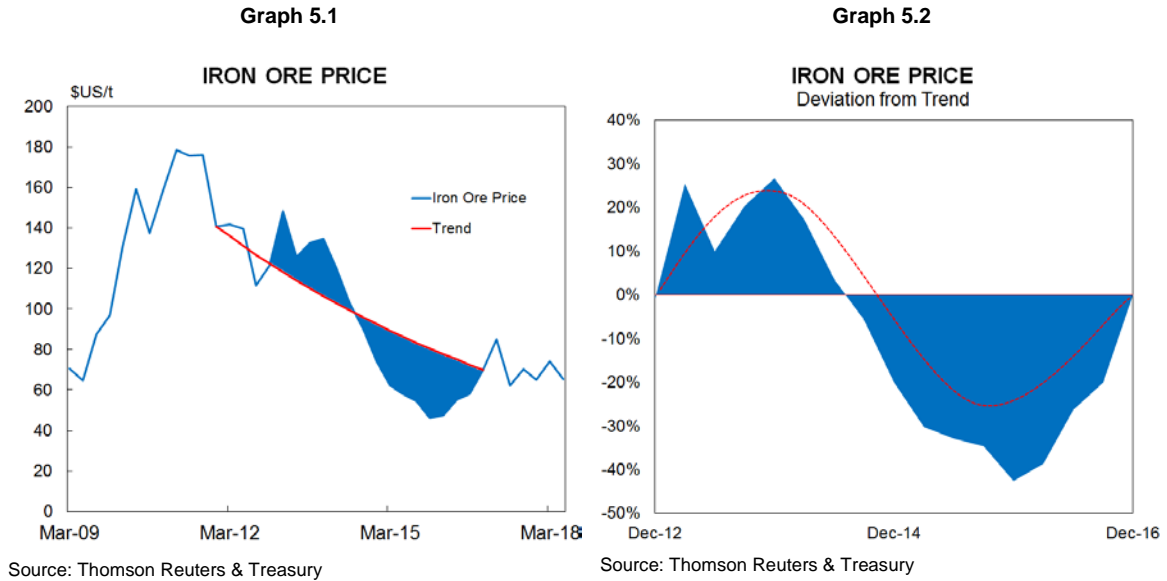
Any loss in demand for commodities from lower underlying/long term growth in China as a result of increased trade barriers would likely be offset to some degree by the less efficient use of resources which inevitably occurs following policy stimulus. Therefore it is assumed that total consumption of commodities across the cycle is broadly unchanged. However, the distribution of that consumption over time is more heavily weighted to the short term.

It is assumed that any stimulus will result in the composition of growth being more heavily weighted toward construction activity and therefore demand for construction raw materials, such as iron ore, copper and nickel. This has been the experience in the past. However, there is a risk that future stimulus is more heavily weighted toward households, a sector from where growth tends to be less commodity intensive.

This scenario is based on replicating the impact on commodities of the Chinese business cycle over the period 2012 to 2016. This is viewed as the best corollary rather than the exceptionally large stimulus policies of 1998 and 2009. These are unlikely to be replicated due to the diminishing returns on new capital stock, increased risks in the financial system and the Chinese Government's long term goals of reducing leverage and rebalancing growth toward a greater reliance on the household sector.

Assumptions and key mining revenue impacts

- The **iron ore price** is assumed to deviate from the baseline forecast in a similar manner to which it deviated from the trend price over the period 2012 to 2016 (Graphs 5.1 and 5.2). The trend is assumed to reflect the structural decline in industry costs back toward long term averages while the deviation from trend picks up the business cycle which was influenced by the Chinese policy stimulus. The exact price path followed in this scenario more closely resembles the red dotted line in Graph 5.2 as it is assumed the cyclical impact will be largely symmetrical as supply growth is expected to be more stable than in the sample.



- Reflecting the above, the iron ore price averages are relatively high in 2018-19 and 2019-20. However, prices then weaken significantly in 2020-21 and 2021-22.

Iron Ore Price (Scenario 2)						
	2017-18	2018-19	2019-20	2020-21	2021-22	Total
Baseline	68.8	66.1	62.1	60.9	62.2	
Scenario 2	68.8	71.4	75.0	52.5	49.0	
Variance	0.0	5.3	12.9	-8.4	-13.2	
Sensitivity per \$1 movement (\$m)	n/a	79.7	80.9	81.0	81.3	
Revenue impact (\$m)	n/a	419.9	1,046.5	-677.8	-1,070.4	-281.8

- Policy stimulus from China causes the **exchange rate** to increase modestly, peaking at around 75 US cents in 2019-20. The exchange rate does not increase rapidly as a result of the stimulus induced commodity price rises. This is because they are viewed by market participants as largely reflecting cyclical rather than structural changes. This is consistent with the experience in 2013.
- Similarly, in 2020-21 and 2021-22, the exchange rate declines are moderated slightly by the following dynamics:
 - in those later years more will be known about the likely outcome of trade disputes which will reduce global perceptions of risk;

- the Australian economy maintains some momentum from the significant positive income shock over the period 2018-19 to 2019-20; and
- the exchange rate did not increase much when commodity prices rose over 2019 and 2020, so it is starting from a lower base than would otherwise be the case if those commodity price rises were viewed as sustainable.

Exchange Rate US cents (Scenario 2)						
	2017-18	2018-19	2019-20	2020-21	2021-22	Total
Baseline	77.5	72.7	73.2	73.6	73.9	
Scenario 2	77.5	73.7	75.1	71.9	69.8	
Variance	0.0	1.0	1.9	-1.7	-4.1	
Sensitivity per 1 cent movement (\$m)	n/a	88.8	82.2	78.4	77.7	
Revenue impact (\$m)	n/a	-88.6	-154.9	134.0	318.6	209.1

The net impact of the exchange rate and iron ore price impacts are summarised below:¹⁹

Net impact of variables defined above						
	2017-18	2018-19	2019-20	2020-21	2021-22	Total
Exchange rate	n/a	-88.6	-154.9	134.0	318.6	
Iron ore	n/a	419.9	1,046.5	-677.8	-1,070.4	
Total revenue impact (\$m)	n/a	331.4	891.6	-543.9	-751.8	-72.7

Other commodities

- Commodities that are mostly consumed in Asia, such as nickel, copper and lithium, are assumed to follow a similar price path to iron ore.
- Gold and oil are assumed to follow the baseline scenario. There is some risk that the oil price path may be higher and then lower than assumed in the scenario. However, China's oil consumption growth remained relatively strong over the period 2012 to 2016, so it is assumed that most of the volatility in China's output will be experienced in the construction sector (mostly impacting the iron ore price).

Economic impact

This scenario has a relatively moderate impact on Western Australia, with deviations in GSP and employment from the baseline less than one percentage point in any year.

Over the period 2018-19 to 2019-20, increases in commodity prices (caused by policy stimulus in China) incentivises additional investment in both the iron ore sector and in other mineral sectors which are exposed to the construction sector in China – for example, copper and nickel. However, the change in investment is relatively modest in the ferrous sector as most of the potential investment over the near term is either required to sustain existing operations or has already been committed to by companies. The change in investment in the non-ferrous sector is proportionately larger, simply because there is a much greater proportion of potential investment over the coming years which is uncommitted. Investments in the non-ferrous sector tend to be smaller and therefore have shorter construction periods, which means that a smaller proportion of investment is locked-in over the coming years. Moreover, many operations in the

¹⁹ Note, we have not separately assumed a volume response in these revenue projections. Previous experience suggests any volume adjustments in Western Australia will be relatively minor in terms of aggregate output and royalty revenue.

non-ferrous sectors have higher operating costs (when compared to iron ore and oil and gas) which means that backfill projects are more sensitive to price fluctuations.

Additional investment increases demand for labour which drives up wages and household incomes. Higher household incomes flow through to greater household consumption and investment in dwellings. The expansion of the mining sector in Western Australia lifts the demand for labour in the State relative to other States, resulting in wages in Western Australia increasing faster than they do for the rest of Australia. This reduces the relative competitiveness of businesses exposed to interstate competition. Therefore interstate export volumes decline and interstate import volumes increase.

Household consumption and investment, already both major users of imports, simultaneously expand and redirect more of their expenditure to imports. As a result, the Western Australian economy undergoes a reduction in international competitiveness.

From 2020-21 onwards the decline in commodity prices essentially reverses the shocks to the economy outlined above.

Export volumes increase modestly throughout the forecast period. This is initially driven by higher export prices, which only have a modest impact as most resources operations in Western Australia are capital intensive and therefore run at capacity (to dilute the cost of maintaining the capital). Subsequent increases in export volumes occur due to the lagged impact of additional investment in earlier years which has entered production, and because a decline in the value of the exchange rate increases the competitiveness of exporters and allows those not directly impacted by lower commodity prices to increase output – for example tourism and education. Import volumes rise and fall largely in line with changes in household consumption, investment and the real exchange rate. The impact on economic activity and the labour market are summarised below:

Scenario 2 - 'China stimulus'

Impact on select summary economic aggregates

	2018-19	2019-20	2020-21	2021-22
	<i>Deviation from baseline levels %</i>			
Household consumption	1.1	1.8	-1.0	-1.7
Investment*	2.0	4.4	-2.5	-4.8
State Final Demand	1.3	2.6	-1.6	-2.7
International exports	0.2	0.3	0.9	0.6
International imports	2.2	4.1	-2.1	-3.8
Gross State Product	0.3	0.6	0.0	-0.4
Employment (persons)	6,500	12,100	-8,400	-13,400
Employment (%)	0.5	0.9	-0.6	-0.9

* Includes business, dwelling and public investment

Source: Victoria University, Western Australian Treasury

Scenario 3: Broad based downturn in Asia caused by a financial disruption

Recent trends continue through the first half of 2019 as modest stimulus in China offsets any weakness caused by the trade dispute with the US. However, by mid 2019 problems begin to appear in China's economy, culminating in the disruption of the East Asian manufacturing value chain. This occurs at a time of significant global uncertainty with US interest rates rising faster than anticipated. These factors combined cause capital to flee East Asian developing countries, forcing currencies down and interest rates up. Ultimately growth slows significantly throughout the region, including in China, negatively impacting commodity prices.

The trade dispute on its own is unlikely to be of sufficient scale to cause a major disruption to the global economy of the scale outlined in this scenario. However, if a number of other unfavourable dynamics evolve, then it could contribute to an economic and financial climate that may be susceptible to a large financial market shock with large spill-overs to the real economy. This scenario assumes that there is a confluence of factors as outlined above.

Assumptions and key mining revenue impacts

The **iron ore price** remains buoyant and in line with the baseline forecasts until mid 2019. At this time a sudden drop in demand causes prices to fall significantly. As with previous downturns, the iron ore cost curve flattens as a result of:

- a reduction in price discounts for lower quality ore as steel mills prioritise survival over productivity;
- a fall in shipping costs, as both the fee for hiring vessels and fuel costs decline;
- lower exchange rates in major iron ore exporting countries; and
- some miners being able to find ways to cut costs or delay sustaining investments.

Prices average \$US46/t over 2019-20, which is similar to the average price in 2015-16 (\$US50.9) at the bottom of the last cycle.²⁰ To realise this average, there will be periods of time when the price is lower than \$US46/t and this will provide a powerful incentive for production to adjust. For example, in 2015-16, the price averaged \$US50.9/t over the year but reached just \$US39.6/t in December 2015. Prices gradually recover from 2020-21 onwards but do not fully recover until beyond the forecast period.

Iron Ore Price (Scenario 3)						
	2017-18	2018-19	2019-20	2020-21	2021-22	Total
Baseline	68.8	66.1	62.1	60.9	62.2	
Scenario 3	68.8	66.1	46.0	50.0	55.4	
Variance	0.0	0.0	-16.1	-10.9	-6.7	
Sensitivity per \$1 movement (\$m)	n/a	79.7	80.9	81.0	81.3	
Revenue impact (\$m)	n/a	0.0	-1300.1	-880.4	-546.4	-2,727.0

²⁰ The small difference in US dollar prices can be partly accounted for by the assumption that the US dollar will be strong relative to other currencies (as it usually is during periods of emerging market capital flight). This means fewer US dollars will be needed to purchase a tonne of iron ore.

The **exchange rate** is assumed to remain relatively stable over the remainder of 2018-19. In 2019-20, the exchange rate is assumed to drop by around 10% relative to baseline, which is broadly consistent with the decline in 2015-16. After this the exchange rate is assumed to gradually return towards the post float average as commodity prices recover but does not fully recover until beyond the forecast period.

Exchange rate US cents (Scenario 3)						
	2017-18	2018-19	2019-20	2020-21	2021-22	Total
Baseline	77.5	72.7	73.2	73.6	73.9	
Scenario 3	77.5	72.7	67.0	68.5	71.1	
Variance	0.0	0.0	-6.2	-5.2	-2.8	
Sensitivity per 1 cent movement (\$m)	n/a	88.8	82.2	78.4	77.7	
Revenue impact (\$m)	n/a	0.0	510.7	406.7	215.8	1,133.3

The **oil price** drops sharply in 2019-20 as the economic slow-down in Asia is broad based. The demand shock from the region is broadly similar in percentage terms to that experienced in the 1997-98 Asian Financial Crisis and the price response to the demand shock is similar in sensitivity to previous demand shocks since the early 1990s. The oil price shock flows through to LNG prices as most LNG sold from Western Australia is linked to the oil price.

The percentage decline in price is larger than the experience in 1998 because Asian countries now account for a greater share of global oil consumption. However, the price remains well above the level of 1998 (\$US19.1) due to the higher starting base.

Oil Price (Scenario 3)						
	2017-18	2018-19	2019-20	2020-21	2021-22	Total
Baseline	63.7	67.0	61.6	61.4	61.4	
Scenario 3	63.7	67.0	31.2	47.0	54.9	
Variance	0.0	0.0	-30.4	-14.4	-6.5	
Sensitivity per \$1 movement (\$m) inc LNG	n/a	15.1	14.2	12.8	11.7	
Revenue impact (\$m)	n/a	0.0	-430.9	-183.7	-76.1	-690.7

Note: for simplicity the impact of lags between the oil price and the LNG price have been removed so the oil price sensitivity for any given year is larger than published in the 2018-19 Mid-year Review.

The **net impact** on mining revenue over the forward estimates of changes in the exchange rate, iron ore price and oil price is summarised below.

Net impact of variables defined above						
	2017-18	2018-19	2019-20	2020-21	2021-22	Total
Exchange rate	n/a	0.0	510.7	406.7	215.8	
Iron ore	n/a	0.0	-1,300.1	-880.4	-546.4	
Oil	n/a	0.0	-430.9	-183.7	-76.1	
Total revenue impact (\$m)	n/a	0.0	-1,220.2	-657.4	-406.8	-2,284.3

Other commodities

- Commodities that are mostly consumed in Asia, such as nickel, copper and lithium, are assumed to follow a similar price path to iron ore. Gold is assumed to follow the baseline assumption.

Economic impact

The economic impact of Scenario 3 is more substantial than the other scenarios. In particular:

- GSP is 1.6% (\$4.5 billion) lower than it would otherwise be in 2019-20. Similarly, GSP is 0.9% (\$2.7 billion) lower in 2020-21 and 0.9% (\$2.5 billion) lower in 2021-22 than under the base case; and
- employment is around 39,100 persons (or 2.9%) lower than it would otherwise be in 2019-20. Employment is 20,300 persons (or 1.5%) lower in 2020-21 and 13,700 persons lower (1.0%) in 2021-22 than the base case.

The level of activity in the domestic economy, as measured by State Final Demand, is significantly lower than would otherwise be the case across all years under this scenario. This reflects lower levels of household consumption and investment than in the base case in all years.

In this scenario, the significant decline in commodity prices flows through to a negative shock to investment in the mining industry. This shock is most significant in the petroleum and iron ore sectors. However, the impact on the non-ferrous sector is broadly balanced, as weakness in raw materials used in the industrial and construction sectors is broadly offset by strength in the gold sector, which does not experience falls in \$US prices, but benefits from a depreciation in the \$A and from less competition for factors of production from other mineral sectors.

The shock to investment in the ferrous and petroleum sectors is moderated by the fact that a significant proportion of investment flows from projects that are already underway and from investment needed to sustain production at existing facilities. These types of investment are less responsive to changes in commodity prices. Nevertheless, some prospective investments that are included in the baseline assumptions are assumed not to proceed. Lower investment expenditures reduce demand for labour, which hits household income through lower employment and wages. This negatively impacts consumption from households, which leads to additional weakness in the labour market and household income.

Natural stabilisers in the economy act to moderate the impact of the above shock. For example:

- a depreciation in the exchange rate:
 - increases the competitiveness of exporters, including those which are not negatively impacted by commodity prices. This acts to support export volumes; and
 - decreases the competitiveness of imports, which results in domestic production displacing a portion of imported production. However, this also represents a welfare loss as higher import prices reduce the purchasing power for importers.
- the trade balance also improves as a result of lower consumption and investment as a significant portion of household expenditure goes on imported goods and services and a significant portion of investment is spent on imported capital goods and business services. Moreover much of the State's key exports (in industries such as iron ore and LNG) have

very low cash operating costs, so are likely to be able to maintain exports in an environment of lower commodity price;²¹ and

- the decline in business investment from the minerals sectors decreases competition for factors of production, such as materials and labour, and this increases the competitiveness of domestic producers who are able to export to other states or internationally or are competing with imports from other states or nations.

The impact of this scenario on aggregate economic activity progressively moderates after 2019-20 as the export income shock fades and real lower wages (relatively to baseline) facilitates an improvement in employment towards baseline levels.

Scenario 3 - 'Broad based downturn in Asia'

Impact on select summary economic aggregates

	2018-19	2019-20	2020-21	2021-22
	<i>Deviation from baseline levels %</i>			
Household consumption	-	-3.9	-2.9	-2.2
Investment*	-	-11.5	-8.2	-6.9
State Final Demand	-	-6.3	-4.4	-3.6
International exports	-	0.3	0.5	0.5
International imports	-	-8.8	-6.3	-4.9
Gross State Product	-	-1.6	-0.9	-0.9
Employment (persons)	-	-39,100	-20,300	-13,700
Employment (%)	-	-2.9	-1.5	-1.0

* Includes business, dwelling and public investment

Source: Victoria University, Western Australian Treasury

The shock outlined in this scenario is substantial and the impact on the economy is significant. The spill over to households is larger than implied by the deviation in GSP from the baseline assumptions. For example, household consumption is around 4% lower and employment is around 40,000 persons lower in 2019-20 than would otherwise be the case, despite GSP only deviating 1.6%.

Notwithstanding a substantial negative impact on households, the economy adjusts to what is a large external shock without a major disruption to the volume of aggregate economic output. This is consistent with recent experience where the Western Australian economy absorbed the impact of significant global shocks in recent decades, such as the Global Financial Crisis and Asian Financial Crisis, with relatively less economic pain than in many other parts of the world.

²¹ This is consistent with what was observed during the GFC and during the commodity price declines in 2014 and 2015.

Conclusion

This chapter outlined the potential effects on Western Australia of two mixed and one negative scenario relating to different global responses to ongoing trade disputes. These scenarios should not be viewed as forecasts and are instead only illustrative of some of the ways in which the events could impact Western Australia. However, some important themes emerge from this analysis.

- Scenario 1 demonstrates that escalating trade disputes between some of the State's major trading partners may not necessarily lead to a significantly negative outcome for the Western Australian economy. This could occur in a situation where economic growth in the global economy is resilient but heightened global economic uncertainty leads to a decline in the value of the Australian dollar, which increases export income and government revenue. However, in this scenario the impact on the broader economy is more mixed as investment is negatively impacted by heightened perceptions of risk.
- Scenario 2 illustrates how countries impacted by the trade dispute may enact policy measures to stimulate economic growth in the short term, so as to offset some of the negative impacts of the trade dispute. However, these policies sometimes boost activity in the short term at the expense of growth over the long term. The example used in this chapter involved policy stimulus in China, which initially increased construction activity in China and therefore commodity prices but because this brings activity forward it results in lower rates of construction activity and commodity prices in subsequent years. The underlying long term demand for dwellings and infrastructure had not materially changed as a result of the stimulus. The construction activity was just pulled forward.
- Scenario 3 outlines how the economic impact of the trade dispute may escalate significantly if trade tensions interact adversely with other dynamics, such as rising US interest rates, and there is a significant financial market response. Together this leads to a significant drop in demand for (and therefore prices of) key Western Australian exports. This scenario would clearly be a negative for the Western Australian economy.

To sum up, ongoing trade disputes have added a layer of uncertainty regarding the economic and revenue outlook. Notwithstanding this uncertainty, recent historical experience suggests that the State has significant capacity to adjust to external shocks.

Chapter Six: Underlying improvement in Western Australia's Trade Environment

Introduction

Notwithstanding the risks outlined in the previous chapters, Western Australia's trade environment is expected to improve considerably over coming decades. This chapter outlines how two dynamics are likely to contribute to this:

- Western Australia's exporters will face lower trade barriers over time as a result of progressive reductions in tariffs from historical trade agreements and the completion of new trade agreements over time; and
- the location of global economic growth looks to be very favourable for Western Australia over coming decades as China continues to grow faster than the global average (at least until the 2030s) and the populous emerging economies in our region (including India, Indonesia, Bangladesh, Vietnam, Philippines) continue to grow significantly faster for several decades.

Western Australia's exporters facing lower barriers to trade

Although some countries have recently increased barriers to trade, Western Australian producers should progressively face fewer barriers to trade over coming decades. This is because:

- Australia has not been the target of significant trade restrictions from other countries;
- commitments to progressively reduce trade barriers over the next decade have been made in historical agreements;
- Australia has signed three new agreements, which are yet to come into force; and
- Australia is currently negotiating a number of other new agreements and is likely to commence negotiations with the UK in the near future.

Western Australian exporters will continue to benefit from progressive tariff reductions as a result of historical trade agreements. Some recent examples include:

- a trade agreement that came into force with Japan in 2015. Many Western Australian industries will benefit from a range of progressive tariff reductions, particularly in the agricultural sector. For example, a 15% tariff on bottled wine will be eliminated by 2021 and frozen beef tariffs will be progressively reduced from 32.5% in 2015 to 23.5% in 2030.

Upon full implementation in 2034, around 98% of Australia's merchandise exports to Japan will receive preferential access or be duty free and all resources, energy and manufactured goods will be duty free (DFAT, 2018; DFAT, 2018);

- a trade agreement with China that came into force in 2015, allowing for a progressive reduction in tariffs out to 2029. The agriculture sector will benefit from a range of tariff reductions including the elimination of wine tariffs (ranging from 14% to 20%) by 2019 and beef tariffs (ranging from 12% to 25%) by 2024. The resources sector benefitted from the immediate elimination of tariffs on refined unwrought copper (1% to 2%) and unwrought nickel (3%), and a range of benefits were provided to Australian companies selling services to Chinese residents, such as official promotion of Australian education services and increased market access for tourism and aged care facilities (DFAT, 2018); and
- a trade agreement with South Korea that came into force in 2014. Many agricultural products will see progressive tariff reductions. For example, a 40% tariff on beef will be eliminated by 2028. The agreement also included the immediate removal of tariffs on LNG, unwrought aluminium and sea salt (DFAT, 2018).

Australia has signed three trade agreements which are yet to come into force:

- in March 2018, eleven countries with a combined GDP of around \$US10 trillion signed the Comprehensive and Progressive Agreement for the Trans-Pacific Partnership (TPP-11). This agreement will see the elimination of all tariffs on manufactured goods, significant reductions in agricultural tariffs (including beef, seafood and wine) and improved access for services providers (including mining services) (DFAT, 2018);
- in April 2017, Australia finalised negotiations on the Pacific Agreement on Closer Economic Relations with ten Pacific Island nations and nine countries (including Australia) have signed the Agreement; and
- in February 2018 Australia signed a trade agreement with Peru.

According to the Department of Foreign Affairs and Trade (DFAT, 2018), Australia is currently negotiating a number of additional trade agreements:

- In August 2018, negotiations for a trade agreement with Indonesia were concluded. If implemented, over 99% of Australia's goods exports will enter duty free or have significantly improved preferential treatment by 2020. This compares to 85% in 2020 as a result of the existing agreement with the Association of South East Asian Nations and New Zealand (DFAT, 2018).
- Australia is also negotiating a number of other trade agreements. These include bilateral agreements with India and Hong Kong and multi-lateral agreements, such as:
 - the Trade in Services Agreement (with member nations accounting for around 70% of global services trade in 2015);
 - the Pacific Alliance Free Trade Agreement (Chile, Colombia, Mexico and Peru);
 - the Regional Comprehensive Economic Partnership, comprising ASEAN and nations with trade agreements with ASEAN (total GDP of member countries was \$US25.4 trillion in 2017) (DFAT, 2018);

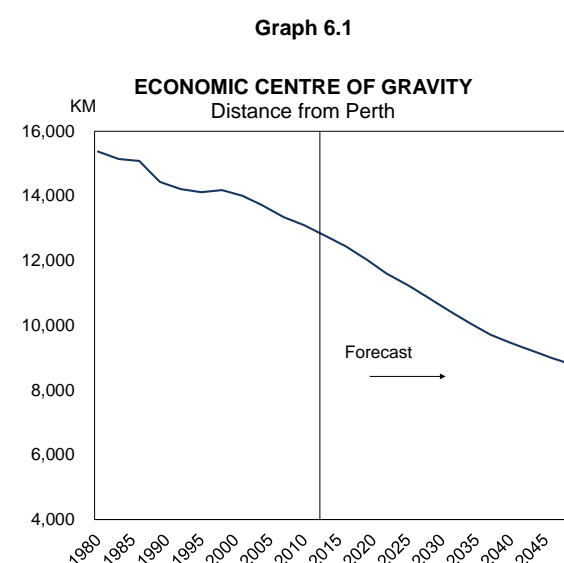
- the Environmental Goods agreement to eliminate tariffs on a number of environment related products;
 - the Australia-Gulf Cooperation Council FTA (DFAT, 2018); and
 - a potential agreement with the European Union, for which discussions commenced in June 2018.
- It is expected that Australia and the UK will begin negotiating an agreement shortly after the UK leaves the EU, likely by 2020.

Growing trade potential in Asia Pacific region

Over coming decades the location of global economic growth should prove favourable for trade in Western Australia. This is because a significant proportion of global economic growth is likely to come from the populous nations in our region as their per capita incomes converge with those in advanced economies. The World Bank estimates that China and Malaysia could reach high-income status within a decade, followed by Thailand (19 years), Indonesia (24 years), the Philippines (26 years), Vietnam (28 years) and Cambodia (32 years) (World Bank, 2018, p. 86).

There is significant empirical evidence which suggests that bilateral trade flows can be related to the size of two respective economies and the distance between them (Chaney, 2018). The similarity with the Newtonian law of gravity has meant that this theory of international trade has been referred to as a gravity model. According to this model, proximity to significant economies is a major factor in determining the potential benefits from trade. In 2005, the Commonwealth Treasury claimed that Australia's remoteness from the world's largest economies was a significant factor explaining the nation's low trade intensity. It estimated that had Australia been located as close to major markets as the UK, on average, trade would have been about 50% greater than it was (Battersby & Ewing, 2005).

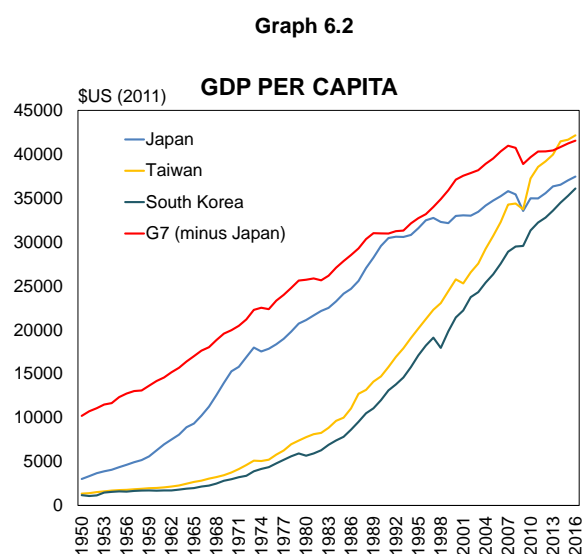
Quah (2011) attempted to calculate how the world's economic centre of gravity has moved over time as a means of quantifying and visualising the impact of the increasing relative importance of emerging markets. The chart on the right illustrates how the economic centre of gravity has moved toward Perth as a result of faster relative economic growth in parts of east and south Asia. The author predicts that this trend will continue for many decades as per capita incomes in the most populous nations in the region, such as China and India, converge with those in advanced economies. If global economic growth follows this path, the opportunities for Western Australia over coming decades will be significant.



Source: Quah & Treasury

Economies with low per capita incomes have the potential to grow faster than countries with very high per capita incomes. This is because low per capita income countries can adopt the technology and organisational expertise of the richer economies, whereas the richer economies are usually closer to the frontier of technology and organisation and therefore are limited by the speed with which this frontier expands. However, low per capita incomes do not guarantee faster rates of growth as there may be other factors such as political instability or poor economic policy, which may stymie economic growth. Since World War Two several countries have successfully embarked on a path of convergence, benefitting Western Australia through increased trade opportunities. It is highly likely that, as suggested by Quah (2011), this dynamic still has a long way to go.

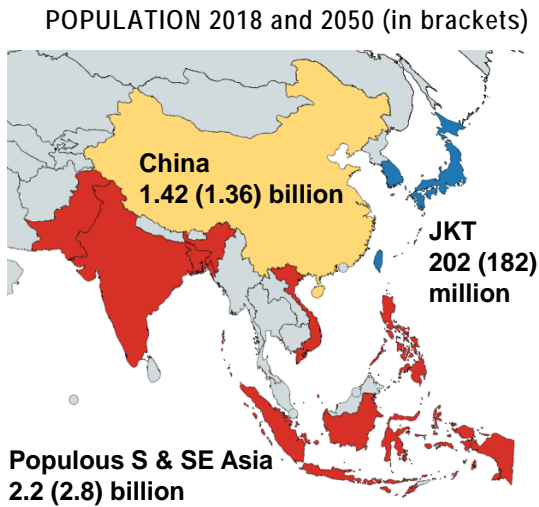
The convergence of per capita GDP in Japan, Korea and Taiwan with the levels of the major advanced economies (Graph 6.2) had a significant impact on the Western Australian economy. These jurisdictions were located much closer to Western Australia than the major advanced economies in Europe and America, meaning that the State was well placed to gain significant benefits from trading with these jurisdictions. The share of Western Australia's exports to these nations peaked at around 44% in the mid 1990s and now stands at about 23%. These countries underpinned the development of the two largest industries in Western Australia, iron ore and LNG, through offtake agreements and direct investments.



Source: Maddison Project Database

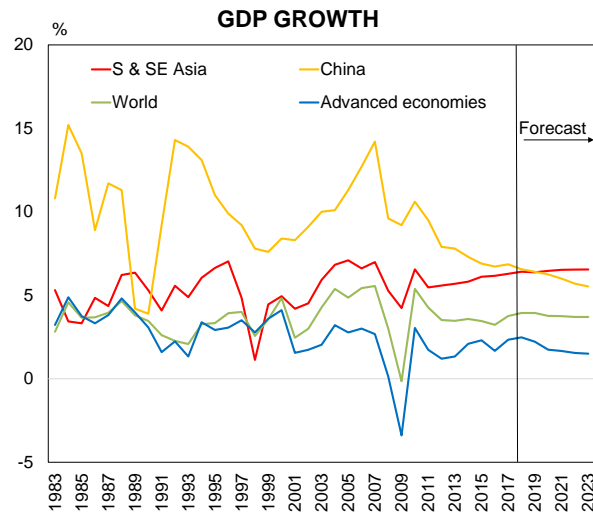
The combined population of Japan, Korea and Taiwan currently stands at around 202 million people. Though significant, this is small compared to the population of China (1.4 billion), and the populous nations (with around 100 million or more) in south and south east Asia (2.2 billion), (Graph 6.3). These nations have generally been growing significantly faster than the global average over recent years (Graph 6.4). If per capita GDP in these nations converges with those in advanced economies, the global centre of economic gravity will shift significantly more towards Western Australia. Such a move would create an enormous range of economic opportunities for the State.

Graph 6.3



Source: UN Population Prospects
 Note: Populous S & SE Asia only includes countries with 2018 population of around 100 million or more

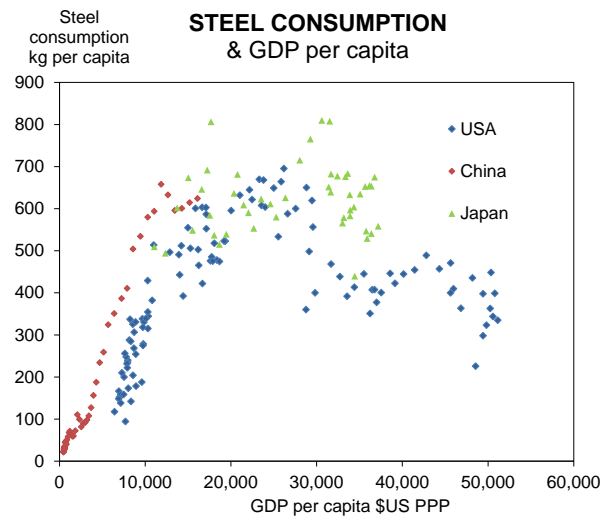
Graph 6.4



Source: IMF, World Economic Outlook, October 2018

China's economic growth since the early 1980s has been exceptionally high and this has had a profound impact on the Western Australian economy. In particular, since 2003-04, a surge in Chinese demand for steel has underpinned a quadrupling of iron ore exports from Western Australia. However, iron ore exports to China are not likely to increase significantly over coming decades. This is because Chinese demand for steel appears to have reached a broad plateau, as per capita steel consumption is close to levels achieved by other major economies such as Japan and the US, when their consumption peaked (Graph 6.5). Further, over time an aging capital stock will allow greater scope to recycle the existing stock of steel rather than manufacture new steel from iron ore, which is likely to see iron ore demand (for steel consumed domestically) slowly decline over coming decades. The impact this dynamic will have on Western Australia should be broadly offset by the fact that most of the production from the Pilbara is relatively low cost, along with an expected structural increase in steel consumption from the emerging populous nations in the region, such as Vietnam, the Philippines, Indonesia and Bangladesh.

Graph 6.5



Source: World Steel Association, IMF, Correlates of War & Treasury

However, Chinese economic growth will likely remain above the global average into the 2030s as the possibility for catch-up growth offsets unfavourable demographic trends.²² The IMF (2018a) projects that China will overtake the US as the world's largest economy by around 2030. This growth will provide significant opportunities for other industries, many of which are only just starting to experience the structural change in demand, similar to that experienced by the iron ore industry in recent decades. For example:

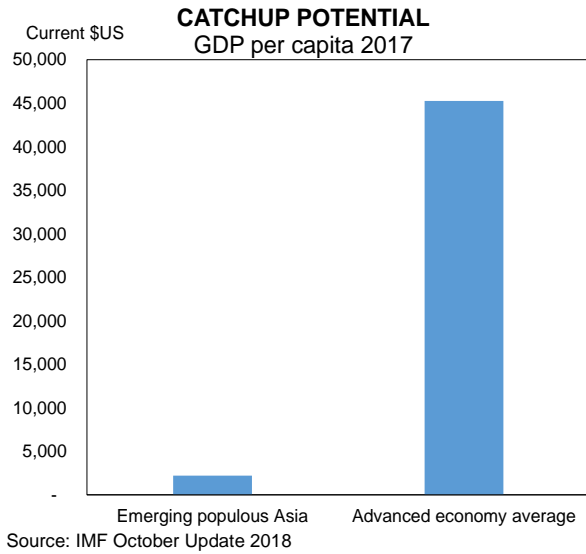
- Chinese demand for natural gas has increased significantly as the Government looks for relatively clean burning fuels to provide energy. In 2017, Chinese LNG imports increased 46% year on year and over the year to November 2018 LNG import volumes have increased another 43%;
- a surge in Chinese demand for electric vehicles has underpinned rapid growth in Western Australia's lithium mining sector and the emergence of the lithium refining sector. There are currently around 15 projects either under construction or in various stages of planning totalling around \$6.5 billion in potential investment. China is the largest new car sales market by volume and the Government plans to increase the share of electric/hybrid cars from 3% of total production to around 100% by 2040;
- tourist arrivals from China to Australia have increased approximately 230% over the past 8 years; and
- wine exports from Australia to China (including Hong Kong) increased from \$109 million in 2008 to \$1 billion in the year to March 2018.

The nations in south and south east Asia with populations of around 100 million or more have a very strong economic growth outlook.²³ The IMF (2018b) is currently forecasting that these nations will on average grow faster than China over the period to 2023 (Graph 6.4). Barring any major shock, it is likely that most of these nations will continue to grow rapidly for many decades. The two key factors which may support strong growth are: the potential for catch-up growth, as GDP per capita was only 4.9% of the advanced country average in 2017 (Graph 6.6); and favourable demographic trends, with the United Nations projecting a 40% increase in working age (20-64) population in these countries from 2015 to 2050 (Graph 6.7). PWC (2017) forecasts that India and Indonesia will be among the world's four largest economies (as measured by GDP at Purchasing Power Parity) by 2050.

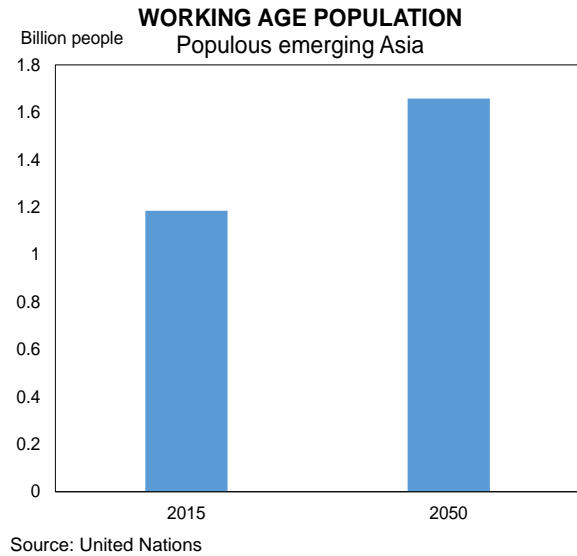
²² Ultimately, probably by the late 2030s, unfavourable demographic trends and declining opportunities for catch-up growth will cause China's economic growth to drop below the global average. However, by this stage the fast growing populous nations in south and south east Asia will have economies large enough to continue the trend of favourable global growth for Western Australia.

²³ India 1,354 million, Bangladesh 166 million, Pakistan 201 million, Indonesia 267 million, Vietnam 96 million and the Philippines 107 million.

Graph 6.6

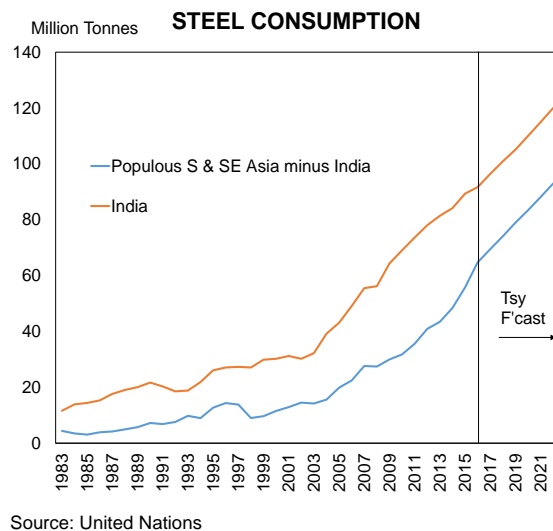


Graph 6.7



These nations are experiencing relatively commodity intensive phases of growth as they make significant upgrades to their capital stock. For example, steel consumption has expanded rapidly from around 2004 onwards (Graph 6.8). This trend is expected to continue over several decades. Although India has the potential to largely meet its iron ore needs domestically, most of the rest of the region does not. This means they are likely to contribute to seaborne iron ore demand either directly through their own steel production or indirectly through imports from major regional exporters such as China, South Korea and Japan. Moreover, the populous emerging nations in south and south east Asia are generally poorly endowed with natural gas and will likely make significant contributions to LNG demand over coming decades. Although the initial trade opportunities presented by these countries will likely be concentrated in the resources sector, significant opportunities may subsequently arise, particularly in services and agriculture. For example, there could be greater potential for increased tourism arrivals from these countries. This is due to a much larger (and growing) population and the much higher proportion of English speaking people in these countries.

Graph 6.8



Belt and Road

Many commentators have noted that China's Belt and Road Initiative (BRI) may lead to greater economic growth and commodities demand throughout the Indian Pacific region.

In 2013, China's President Xi Jinping unveiled a blueprint of what would eventually become the BRI. Involving over 70 countries (excluding Australia), the BRI aims to facilitate the creation of a set of transportation connections across the globe.

Broadly speaking, these take two forms: the Belt, which is a set of overland transport corridors between China and Europe; and the Road, a set of sea transport corridors stretching from China's Pacific coast through south and south east Asia, west Africa, the middle East and Europe (see Map).

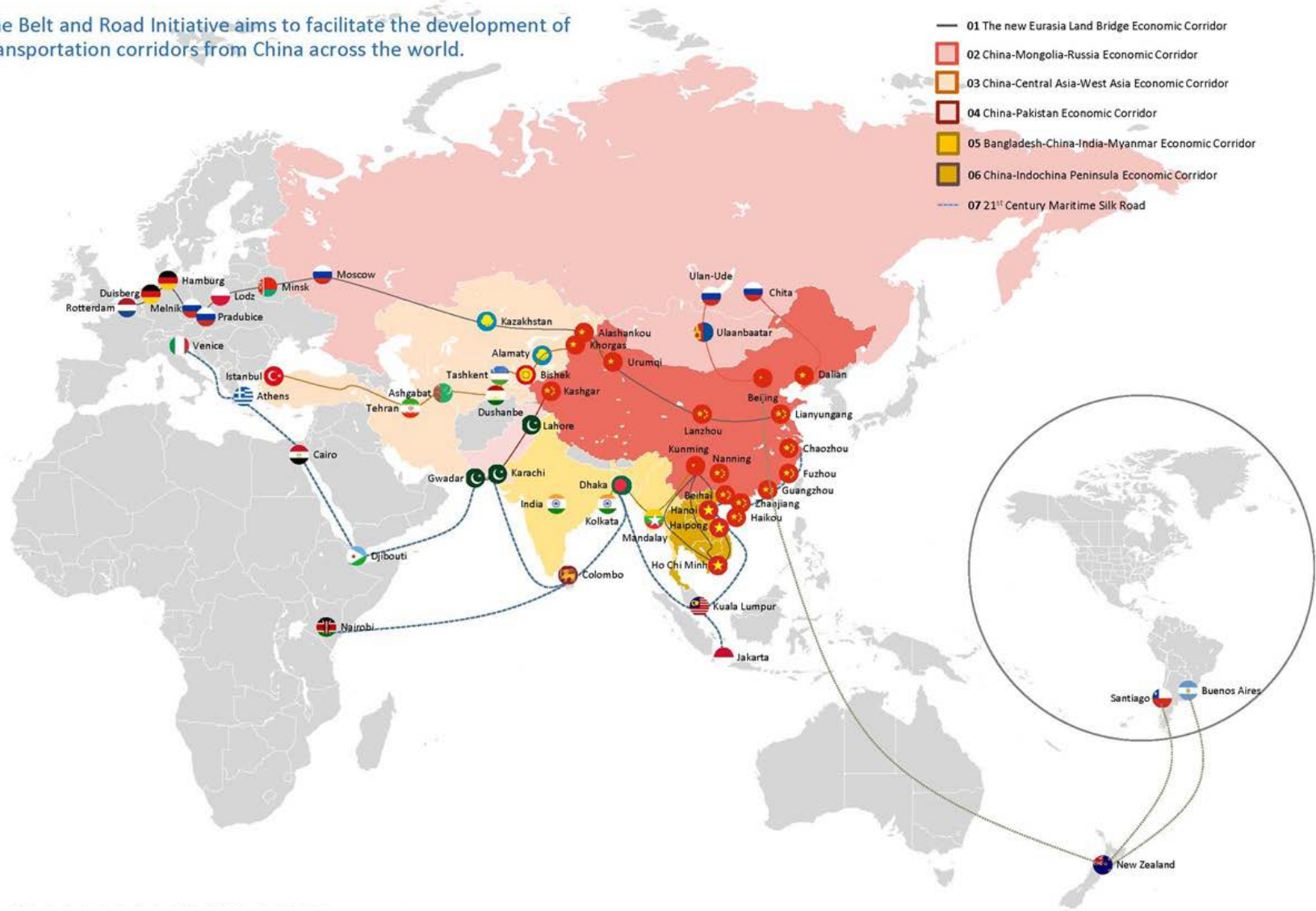
In reality the BRI is much broader than this, with infrastructure projects not limited to transport and no apparent constraint on the location of projects. For example, a key priority of the BRI has been the creation of an economic corridor between China and the strategic port of Gwadar in Pakistan, which incorporates significant investments in power generation. China has also invited countries as far afield as South America to join the initiative.

China's main involvement in the BRI is in the provision of funding, usually at concessional rates, and expertise in the form of skilled labour with experience building infrastructure in China. However, there is still some uncertainty regarding the exact scale of the initiative. A survey published by The Economist suggested total expenditure over coming decades could be anywhere between \$US1 trillion to \$US8 trillion, while PWC estimated total outbound financing to be in the order of \$US1 trillion from the Chinese Government over the next ten years (The Economist, 2018; PWC, 2016, p. 4).

Nonetheless, the project offers considerable opportunities. Many of the investments are being made in countries such as Bangladesh and Pakistan which have significant growth potential and severe infrastructure shortages. This means the potential return on these investments is large. Therefore, these investments may increase the speed of economic growth in these nations, with Western Australia ideally located to take advantage of the trade opportunities such a development would offer.

BELT AND ROAD GLOBAL MAP

The Belt and Road Initiative aims to facilitate the development of transportation corridors from China across the world.



Source: SCMP, Institute for the Analysis of Global Security, MFAT, PwC

Conclusion

Western Australia is expected to benefit over the long term from an improving trade environment. This reflects its proximity to many populous countries which are likely to grow much faster than the global average. Moreover, trade barriers are anticipated to progressively decline due to the implementation of existing trade agreements and the likely signing of new agreements.

Concluding remarks

Western Australia has a highly trade dependent economy. This is largely because the State has a significant endowment of natural resources and a small population. As a result, merchandise exports contribute more to the economic aggregates than any other component of the State's economy. For the most part, a high level of exposure to international trade has been very favourable for the material wellbeing of the State, with both wages and per capita economic output (GSP) significantly higher than the national equivalents. However, this also means that the State is relatively vulnerable to any disruption to global trade flows.

It is well established that international trade generally improves the material wellbeing of an economy in aggregate. As a result, the global trading system has become progressively more liberal since the Second World War. However, over recent decades there has been a backlash against liberal trading regimes emerging from within the US. Over this time, the US has experienced significant trade deficits and redistributions of income and wealth. It is difficult to disentangle growing opposition to liberal trade regimes from various other domestic political issues. However, it is likely that the redistributions of income and wealth, along with large trade deficits, contributed to the erosion of the political sustainability of liberal trade policy. In this context, the Trump administration has sought to significantly change US trading arrangements. Most significant of these has been an increase in tariffs against a range of trading partners, which in most cases has triggered retaliatory tariffs from the affected nations. At the time of writing, the primary target of increased US trade tariffs has been China. This is of particular interest to Western Australia as China receives around 50% of the State's exports.

The ultimate impact of the shift in US trade policy on Western Australia's major trading partners is unclear. Most of the available literature on the potential impact of the trade dispute suggests that the adverse impact will likely be manageable under most plausible scenarios. There is also a small possibility that a larger shock among the State's major trading partners could be triggered by trade tensions. This would only occur if other issues create an environment conducive to a major financial market disturbance. For example in August 2018, a relatively small increase in US tariffs appeared to be the catalyst for a significant economic shock in Turkey.

The presence of trade disputes among Western Australia's major economic partners adds to uncertainty regarding the outlook for the economy and budget revenue, because:

- the impact on the State might be relatively limited if global uncertainty causes the Australian dollar to decline while US dollar commodity prices remain elevated. This would increase royalty revenue but the impact on the broader economy may be more mixed if increased uncertainty also curtails new investments;

- governments in countries involved in trade disputes may seek to mask the negative impacts of higher trade barriers through policy stimulus, which may improve demand for the State's exports over the short term but result in lower demand in subsequent years; and
- there is the possibility that trade disputes trigger a larger economic and financial shock, which significantly impacts export income. However, the impact on the State economy and government revenue would be mitigated to an extent as a result of a lower exchange rate.

Much of the public attention on trade has recently been focused on rising trade barriers between some nations. However, Western Australia's trade environment is expected to become significantly more favourable over the coming decades. This reflects its proximity to many populous countries which are likely to grow much faster than the global average and because trade barriers facing the State's industry are anticipated to progressively decline due to the implementation of existing trade agreements and the likely signing of new agreements.

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