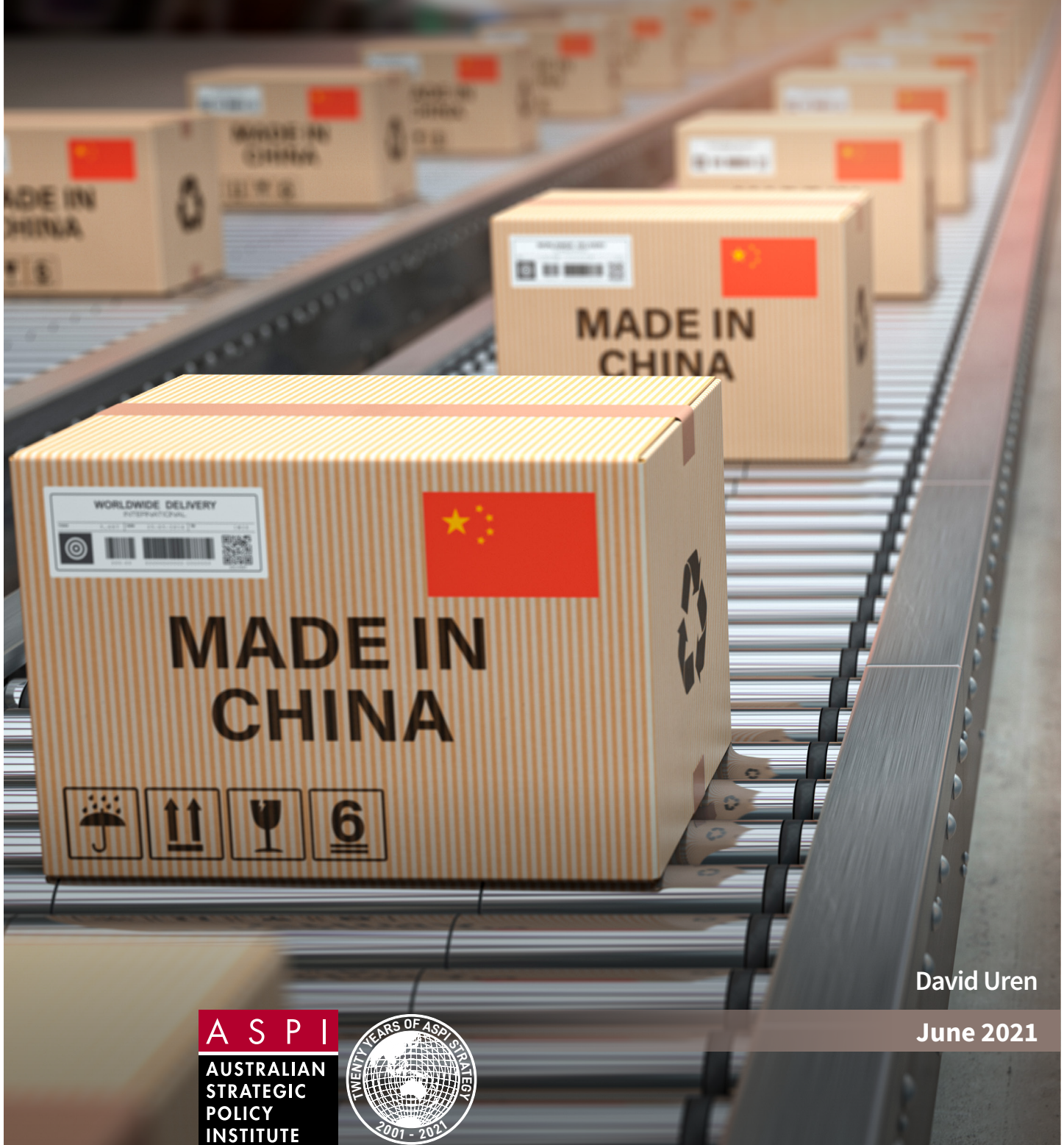


STRATEGY

A S P I

What if ...?

Economic consequences for Australia
of a US–China conflict over Taiwan



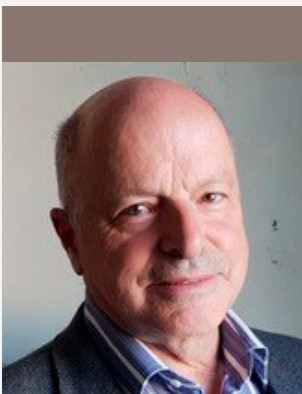
David Uren

June 2021

A S P I

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He has also written research reports on rare earths and on Australia's investment relationship with the United States for the US Studies Centre.

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About ASPI

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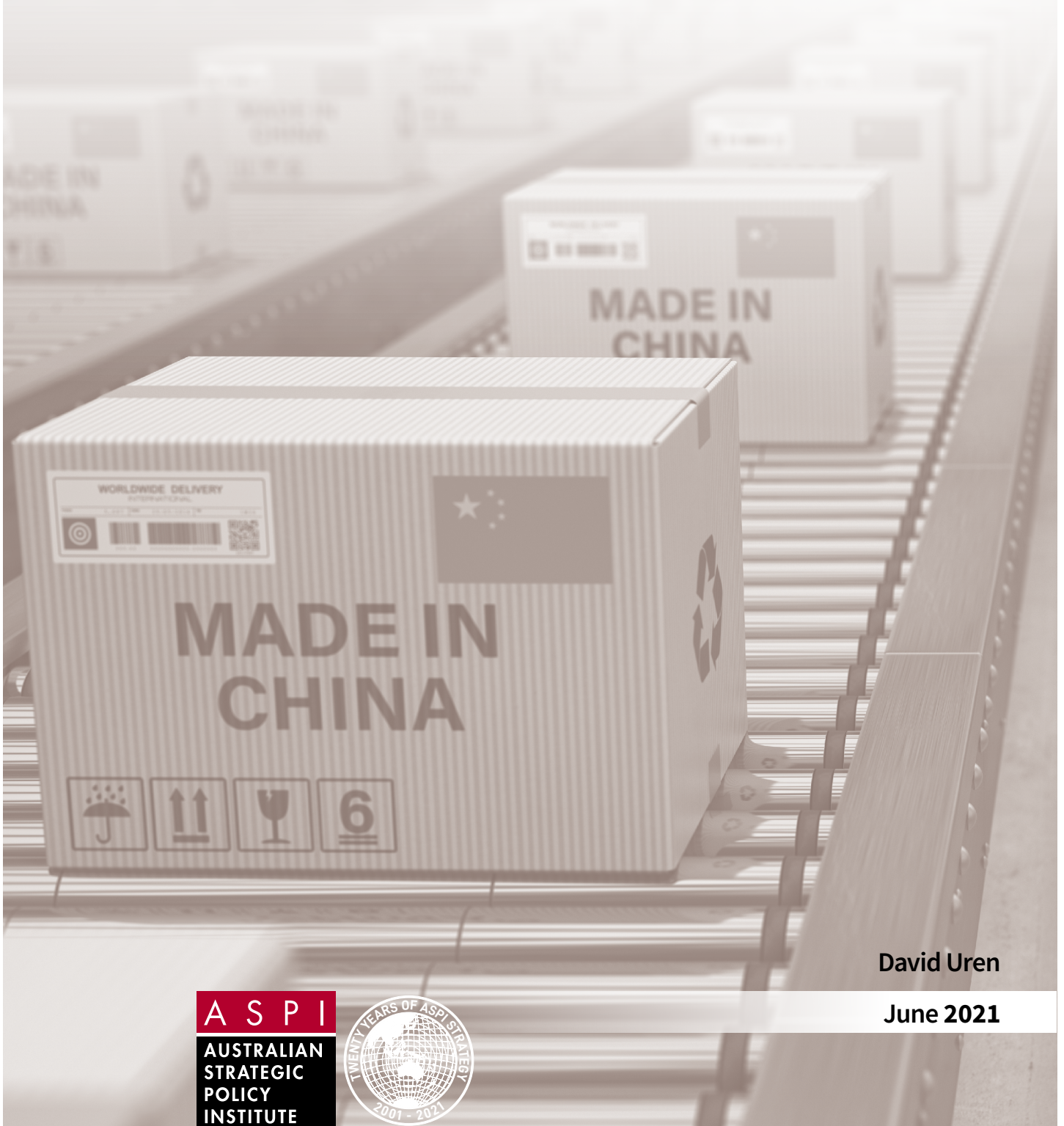
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of a US–China conflict over Taiwan



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June 2021

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EXECUTIVE SUMMARY

What if China were to attempt to seize Taiwan by force and the US and allies responded militarily? One consequence would be the disruption of China's trade with many countries, including Australia. While strategic analysts have been working over such scenarios for years, there's been little study of the likely economic consequences.

The conclusion of this report is that the disruption to the Australian economy would be significant. There would be widespread loss of employment, along with consumer and business goods shortages that would be likely to necessitate rationing.

Australia may have already lost most of the gains it made in the wake of the 2015 China–Australia Free Trade Agreement (ChAFTA) to Chinese trade embargoes, but the loss of the remaining export markets would cause massive loss of employment in the resources and rural industries while putting government budgets and our international trade balance deeply into deficit.

Even more damaging would be the sudden loss of Chinese imports that find their way into most corners of the Australian economy, but particularly into the retail, construction and manufacturing sectors.

These conclusions reflect an analysis of just the disruption to Australia's trade with China and take no account of the broader economic turmoil that a conflict between the two superpowers would cause globally and, particularly, in the Asian region.

The findings are at odds with the reassuring conclusions of the Productivity Commission's interim report on Australia's supply chain vulnerabilities, which found that:

The supply of essential goods and services in Australia is not highly susceptible to a short-term disruption to the supply of imported goods. Vulnerable imports represent a small fraction of the essential goods and services consumed by Australians. (PC 2021)

The findings also go further than the only attempt to model the consequences of a cessation of trade between Australia and China, which found that the loss of Chinese demand for Australia's exports would result in a long-term 6% fall in GDP and a 14% fall in per capita income as international capital shifted funds to more profitable markets (Tyers & Zhou 2020).

The Productivity Commission's assignment was to assess Australia's vulnerability to global supply-chain disruptions. Its focus was on disruptive events such as pandemics, earthquakes, financial crashes and trade wars, rather than an across-the-board blockage to almost one-third of our imports and 40% of our goods exports. The essential goods and services tracked by the Productivity Commission don't include sectors such as clothing and household goods retailing or construction and manufacturing, which all have significant dependence on imports from China.

The modelling exercise by the University of Western Australia's Rod Tyers and the Australian National University's Yixiao Zhou focused on the implications of the loss of national income from Australia's exports to China and a resulting long-term loss of foreign investment.

This study is focused on the short-term shock to Australia's economy. The objective is to contribute to an understanding of the nature of Australia's economic relationship with China and the likely paths of adjustment should that trade be severed. It also explores the options available to the Australian Government to ameliorate the worst of the effects of what would be a severe economic shock.

It takes a narrow focus, examining only the impact of the cessation of Australia's bilateral trade with China. It doesn't consider the broader economic effects of an embargo on Chinese trade on Australia's other trading partners, on the global economy or on financial markets.

Although Australia has encountered and managed two major shocks in the past 14 years—the worst financial crisis since the 1930s and the worst pandemic since the Spanish flu 100 years ago—the economic damage flowing from a military conflict between the US and China would be much greater.

The central recommendation of this study is that the federal government should make the diversification of Australia's trade a priority. It has accumulated an impressive array of bilateral and regional trade agreements over the past eight years, but, with the exception of the agreement with China, there's been little follow-up. Trade with nearly all other trading partners has languished.

The federal government should appoint an assistant trade minister charged with trade promotion and actively pursue trade missions with free trade agreement partners. It should back that drive with real resources. In a radical break with past practice, the government's trade promotion should include imports as well as exports. Australia's trade policy has been exclusively concerned with exports and investment flows but has entirely ignored the importance of imports to the economy.

The government should work with business to improve understanding of the need for diverse supply lines and markets. Government can learn from the effectiveness of the quiet work undertaken by the Critical Infrastructure Centre with the operators of infrastructure assets to improve their resilience to disruption.

All businesses that depend on China either as a source of supply or as a market should invest in at least identifying alternative sources and markets and developing contingency plans. That work should start now.

Although businesses will respond to their own assessments of risks, the government's responsibility for national security imposes a duty to ensure that business is informed of its assessment of the risks. It's suggested that government should seek to raise awareness by working through the business lobby groups, some of which are already focused on the vulnerability generated by concentrated supply lines and markets.

The government should consider whether the legislation that has long been in place to manage interruptions to Australia's supply of liquid fuels is a workable model that could be applied to Australia's imports more generally. While the defence power (section 51(iv) of the Constitution) gives the parliament broad economic powers in the interests of national security, there could be benefit in having economic contingency legislation in place.

In general, neither stockpiling nor investing in import-replacement manufacturing is a viable strategy, given the very broad range of affected goods. However, there may be some scope for a government subsidy of strategic reserves of 'intermediate' goods—essential industry inputs such as chemicals and certain grades of steel and aluminium.

Treasury's new International Economics and Security Division should build on the analysis conducted by the Productivity Commission to identify the scope of any such intervention.

Australian exporters have displayed adaptability in dealing with the embargoes imposed by China over the past year, and new markets have been tapped by exporters of barley and coal, among others. However, that would be more difficult during an international conflict. Only a small fraction of Australia's largest export to China—iron ore—could be placed elsewhere.

The government would be able to deploy the tools that have been effectively used during the coronavirus pandemic to support the incomes of those whose employment has been temporarily halted. It would be likely that, in the event of a conflict in which Australia were actively engaged, a broader mobilisation of labour resources would be required.

BACKGROUND: THE PRODUCTIVITY COMMISSION'S RECOMMENDATIONS

The Productivity Commission took an essentially conservative approach to its policy recommendations from its study into Australia's supply-chain vulnerabilities (PC 2021).

It was concerned to push back against what it termed 'nativist' policies of rebuilding domestic manufacturing capacity and subsidising the repatriation of supply lines, saying they undercut competitiveness, raise consumer prices and make business more vulnerable to smaller and more frequent shocks.

In its interim report (the final version is to be published in July), it was cautious about the role of government in mitigating the risks of disruption to supply lines, arguing that businesses that carry the risks of supply disruptions are best placed to manage them. Government was directly responsible for supply-chain risks only where they affect its delivery of services to the community, such as health or national security.

Government may also have a role where firms systematically underinvest in risk management. This could be where there are 'contagion' effects, in which problems in one business spread across the sector. This is the logic behind government bank deposit guarantees. The commission cited the example of face masks: the benefits of wearing them accrue mainly to others. Monopolies and regulation can also lead to underinvestment.

In these instances, the steps government could take range from mandating or subsidising risk mitigation to maintaining emergency stocks and undertaking public education. The requirement for liquid-fuel companies to maintain a level of emergency supplies is an example of a mandated risk-management strategy. There are aspects of the government's critical infrastructure and telecommunications legislation that also mandate risk management. The National Medical Stockpile is an example of government itself taking on responsibility for emergency reserves.

The Productivity Commission was cautious about government subsidising risk mitigation, which could result in the government acting as an insurer without charging a premium and reduce the incentive for firms to manage their own risk (the commission has frequently criticised drought-assistance programs on those grounds).

It argued that government was on safer ground intervening after a crisis. It gave the example of the Australian Competition and Consumer Commission granting exemptions from competition rules to both supermarkets and oil refiners so they could coordinate their approach to supplies in the early days of the pandemic.

The commission's policy approach was supported by its empirical finding that Australia's essential services weren't particularly vulnerable to supply-chain disruption. As noted above, the disruption examined in this paper would be much more extreme than the disruptions contemplated by the Productivity Commission, and the focus here is on disruption to the economy at large, rather than the functioning of essential services.

TAIWAN: A PROXIMATE THREAT

The possibility of China using force in an attempt to incorporate Taiwan under the control of the Chinese Communist Party is being taken seriously by strategic planners around the world. The new head of the US Indo-Pacific Command, Admiral John Aquilino, told his US Senate confirmation hearing this year that the annexation of Taiwan was the Chinese Government's 'Number One priority' and indicated that an attempt could come considerably sooner than people expect (Lendon 2021).

While not referring directly to China, Taiwan or the US, the latest Australian defence update warned that 'the prospect of high-intensity conflict in the Indo-Pacific, while still unlikely, is less remote than in the past,' and added: 'Australia can no longer rely on a timely warning ahead of conflict occurring' (Defence Department 2020). Defence Minister Peter Dutton has said that the possibility of a conflict over Taiwan 'cannot be discounted' (Dutton 2021).

The US policy of 'strategic ambiguity' with regard to Taiwan, maintained ever since it severed formal relations with the renegade province under the 'one China' policy in 1979, means that it expresses a strong interest in Taiwan's security while avoiding an outright commitment to defend it in war. However, the US policy expressly leaves open the potential for the US to respond militarily to any attempt by China to reclaim Taiwan by force.

Any US military involvement would be likely to include a call on allies, including Australia, Japan, the Republic of Korea and, potentially, NATO members. It wouldn't simply be China versus the US.

There are many different scenarios for how a Chinese attempt to incorporate Taiwan might develop, all the way from cyberattacks to outright invasion, and there are similarly many options for a US response. It isn't the purpose of this paper to assess them; however, it's likely that any military conflict involving the US and China would involve at least a temporary disruption to commercial shipping and hence to trade.

Beyond the physical disruption, military action would probably be accompanied by blockades and embargoes. As a recent analysis by Stanford University's Oriana Skylar Mastro noted, eight of China's top 10 trading partners are democracies, and nearly 60% of China's exports go to the US and its allies. If those countries were to respond to a Chinese assault on Taiwan by severing trade ties, the cost to China would be very significant (Skylar Mastro 2021).

Regardless of the success or otherwise of a People's Republic of China move to incorporate Taiwan by force, there are likely to be longer term consequences for commercial relations with China. It's unlikely to simply return to the *status quo ante*.

The focus of this paper on the direct consequences for Australia of a cessation of its trade with China is not intended to discount the impact, both short and long-term, on China's trading partners around the world, and particularly within the Asian region.

THE IMPACT OF CONFLICT ON TRADE

The Department of Foreign Affairs and Trade (DFAT) has expressly stated that it hasn't conducted any analysis of a 'worst case' scenario of an interruption of Australia's trade with China in the event of a conflict between the US and China.

Asked in a parliamentary inquiry whether the department had 'put its mind to what happens in the event of an international conflict involving China when Australia is not on the same side', DFAT chief economist Jenny Gordon commented:

In the situation where there is major conflict, I think we're in a whole new world, because there will be disruption to all kinds of shipping. The damage will be far greater. It really is moving the country onto a defence footing, and that is the planning that sits outside of DFAT. DFAT's role is to try and use diplomacy to stop those sorts of things from happening, as much as possible, and so our focus is very much on mitigating those risks rather than planning for their eventuality. (JSCTIG 2020)

Such an event would have profound global economic consequences—China accounts for around 15% of world trade and has much higher shares in many industries. All Australia's trading partners would be affected.

Besides the physical impediment to trade in a conflict with China, the US's network of allies in NATO, Japan, South Korea and Australia would be expected to impose trade embargoes.

The interlinkage of China's trade with that of many of the other Asian economies means that the flow of manufactured goods between Asia and Europe and the Americas would be choked. A large share of both China's exports to and imports from ASEAN nations involves components in goods ultimately destined for global markets, including the US and Europe.

China accounts for almost 20% of US goods imports, particularly electrical goods and general machinery, much of which is vital to the smooth running of the US economy. In general, China supplies the US with consumer goods and industrial inputs, while the US sells China food, energy and capital goods. Trade would be severed at great cost to both economies. Currency and commodity markets would be thrown into turmoil.

The economic disruption would extend beyond trade to financial markets. China is still the largest holder of US Treasury bonds, while Chinese companies and local governments owe more than US\$2 trillion to international lenders. There are also huge cross-investments of global corporations into China and Chinese companies into the rest of the world.

It could be assumed that governments would seek to expropriate, or at least freeze, investments by the other side. Chinese businesses have made direct investments worth \$44 billion in Australia. In the other direction, Australian direct investment in China stands at only \$6.7 billion.

Global trade depends critically on confidence, which fell by 17.5% in the space of a few months following the global financial crisis in 2007–08 and again following the Covid-19 pandemic. An armed conflict that involved the two largest trading nations would deliver a shock to trade orders of magnitude greater. The moment that merchant ships

are sunk, insurance and trade finance disappears and merchant shipping halts. Merchant shipping continued during World War II only when the British Government offered insurance, and then it was at a massively reduced pace.

A recent analysis of the impact on trade routes of a potential conflict between China and the US in the South China Sea assumed that all maritime trade would halt for Cambodia, Indonesia, Hong Kong, Malaysia, the Philippines, Singapore, Taiwan, Thailand and Vietnam (Cosar & Thomas 2020).

That analysis suggested that the closure of the South China Sea to shipping between the east and west of the Indonesian archipelago would result in shipping between the Pacific and Indian oceans being rerouted to the south of Australia.

Yet the extent of economic interconnection doesn't render conflict impossible. In 1913, eminent British economist Norman Angell argued that the use of military force had become futile, as international trade and finance had become so interconnected that harming the enemy's property would equate to harming your own. Yet World War I happened. Strategist John Mearsheimer argues that concerns of national security will always trump those of economics (Mearsheimer 2014).

For Australia, the experience of 2020 has provided a small foretaste of a disruption to our Chinese trade, as China closed its market to Australian exports of coal, copper, cotton, barley, wine and crustaceans and placed sharp restrictions on exports of meat. In addition to those barriers, the Covid-19 pandemic brought a complete halt to the flow of foreign students and tourists, which are Australia's two largest services exports, for which China was the largest single market.

The early days of the Covid pandemic highlighted the vulnerability of supply lines as many nations imposed trade barriers on personal protective equipment, while supplies of many items from China were halted. Australia's imports from China dropped from around \$7.5 billion a month to just \$4.2 billion in February last year, when China was hit by the pandemic. That generated widespread supply-chain disruptions.

In 2019, ahead of the trade barriers and the pandemic, sales to China of the goods and services that have since been blocked earned \$34 billion, or 22% of Australia's total sales to China and 8% of Australian overall exports (Table 1). It's expected that, in the event of a post-Covid resumption of global travel, Australia's education and travel industries would continue to suffer from China's ongoing campaign of economic coercion.

Table 1: Disrupted exports to China: 2019 sales

Commodity	\$ million
Coal	9,441
Copper	3,072
Meat	2,764
Wine	792
Cotton	770
Lobsters	586
Barley	410
Goods total	17,835
Education	12,095
Tourism	4,253
Services total	16,348
Total disrupted trade	34,183

Source: Derived from DFAT, Composition of trade: Australia, [online](#).

DFAT officials estimate that Australian exports to China, excluding iron ore, were about 40% lower in the second half of 2020 than in the same period in 2019. Although the pandemic brought reductions in trade everywhere, DFAT estimates that the decline in goods exports to everywhere else was 22% (FADTLC 2021).

China initially denied the existence of its informal trade embargoes, which aren't sanctioned under World Trade Organization rules. However, the central government has since been increasingly open about the political nature of the bans, asserting that trade won't improve until Australia changes its ways, culminating in the April decision to indefinitely suspend the formal China–Australia Strategic Economic Dialogue.

China's actions are consistent with its previous use of trade barriers as an exercise of coercion against South Korea, the Philippines and Norway, but its campaign against Australia is much more extensive. China has avoided targeting Australian exports on which it has a high level of dependence—notably iron ore and liquefied natural gas (LNG).

Although the campaign has had significant effects on specific industries, bringing a loss of income and employment, it hasn't yet been sufficient to measurably affect the economy nationwide, which returned to strong growth in the latter half of 2020 after the Covid-caused recession in the first half of the year.

The economic effects of blockages to exports and imports are distinct. The loss of export markets causes a reduction in demand across the economy, bringing lower prices, reduced activity and reduced national income. Loss of imports causes a reduction in supply, bringing higher prices and creating specific industry bottlenecks.

The most thorough public assessment of the consequences of a conflict between the US and China was a 2016 report by the RAND Corporation. It said that the economic cost of war was so great that any conflict between the US and China was unlikely to result from a premeditated attack by either side, but said that miscalculations could lead to hostilities: 'China could try to intimidate its neighbors below the threshold of US intervention, yet misjudge where that threshold is' (Gompert et al. 2016).¹

The RAND report modelled the economic consequences of a severe conflict lasting for a year, assuming that there was a 90% fall in bilateral trade between the two parties. That assumption mirrored the 96% fall in trade between adversaries in World War I and the 97% fall in World War II.

The authors estimated that just severing trade between the US and China would bring a 6% fall in GDP for the US and a 10% fall for China. However, it said that the impact on China would be greater, as the effect on trade would spread through the 'war zone', bringing an 80% loss in China's East Asian regional trade and a 50% loss in its global trade. That would raise China's GDP loss to 30%. The report contrasted that with Germany's 29% loss of GDP in World War I, when it was spared heavy damage, and its 64% decline and Japan's 52% fall in World War II.

There's an academic literature discussing the impact of conflict on trade. A much-cited paper by Katherine Barbieri and Jack Levy analysed a series of wars over the past century and found that trade continued between the belligerents, albeit at a reduced pace, and recovered its former level soon after (Barbieri & Levy 1999). However, a more recent and comprehensive study of 104 countries that were involved in wars between 1870 and 1997 found an average immediate fall in trade of 80% (Glick & Taylor 2008). The effects were long-lasting: trade was still 42% below the peacetime level five years after the cessation of war and 21% below even after eight years.

In almost any military conflict between the US and China, Australia could be asked to halt shipments of major commodities to China and could face a halt to Chinese shipments to Australia.

The point of this study is to understand the nature of the dependencies between Australia and China and the scope for managing them, rather than to predict the likely course of any conflict. The scenario examines only the disruption to Australia's trade with China. It could be assumed that trade would also halt with Hong Kong and with Taiwan, but those markets are orders of magnitude smaller and so don't affect the broad conclusions here. Much would depend upon how long a conflict lasted. Most conflicts start in the expectation that they'll end quickly, but many don't.

THE AUSTRALIA–CHINA TRADE PROFILE

There are deep asymmetries in Australia's trade with China. First, and most obviously, Australia is much more dependent on China than China is on us. China's share of Australia's goods exports reached a peak of 47% in May 2020, before the Chinese authorities began imposing trade embargoes. Not since before World War II had Australia been so dependent on a single market, and then it was Britain, to which Australian trade was bound by imperial preferences.

Australia's share of China's exports, by contrast, is just 2%. China's trade is highly diversified: apart from the US and Japan, no country takes more than 4% of its exports.

Australia is more important as a supplier to China, accounting for 7% of its imports of goods. This ranks Australia ahead of both the US and Germany in the importance of its goods trade to the Chinese economy and only slightly below the share of China's goods imports provided by South Korea (9%) and Japan (8%).²

Australia's exports of iron ore and LNG are crucial inputs to Chinese industry, but we're also an important supplier of goods across the spectrum of mineral resources and agricultural and food produce. However, the importance of China's supplies to Australia is far greater still. China accounts for just under a third of Australia's goods imports.

There's also a huge contrast in the nature of the trade on each side. Australia's goods exports to China are dominated by commodities, of which three-quarters are unprocessed primary goods, 16% are processed commodities and just 4% are manufactured goods. Only 2.5% of our goods exports to China are 'elaborately transformed', or complex manufactured goods.

Commodities barely feature in China's exports to Australia, in which raw primary goods account for 0.4%. Processed primary goods, dominated by refined petroleum, account for 6%. By contrast, 93% of China's goods exports to Australia are manufactured goods and 87% are complex goods.

Our exports to China are low value per unit but are shipped in vast volumes. They earn around \$100 million for every million tonnes shipped. China's exports to Australia are high value, earning it over \$3 billion for every million tonnes landed here.

In addition to goods, Australia has an important services trade with China, which has been the biggest market for education and tourism, earning a combined \$16 billion in 2018–19. It was also the second largest market for financial services, earning \$700 million. We're a very minor importer of services from China (mainly in the form of services to Australian travellers in China).

Australia isn't integrated into China-focused supply chains other than as a provider of raw commodities and a customer for finished goods, unlike ASEAN and, to a lesser extent, the European and US economies, which have complementary and integrated manufacturing operations with China. No goods are shipped from China to Australia for processing before export to third markets. Australia doesn't sell manufactured goods to China for processing before final shipment.

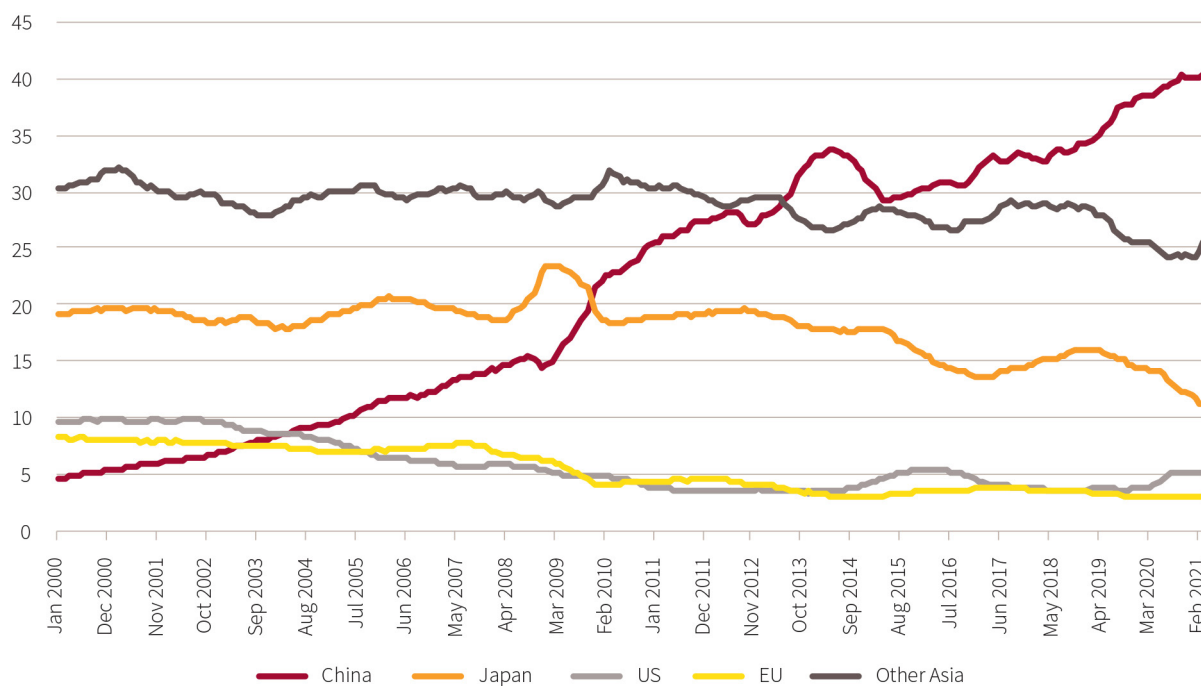
The intensity of Australia's trade relationship with China is recent and grew suddenly in the wake of the global financial crisis. In late 2008, China's share of Australia's goods exports was just 13%, far below that of Japan, which had just peaked at 29%.

By the middle of 2009, China had overtaken Japan as China's massive stimulus program boosted its demand for Australia's minerals while Japan was in recession. By 2015, China was taking 30% of our exports (Figure 1). Strong commodity prices lifted China's share of our exports above 40% by 2019. Australia's earnings from China in that year surpassed the combined income from our next eight largest markets: Japan, South Korea, the US, the UK, Singapore, India, New Zealand and Taiwan.

China's role as a supplier to the Australian economy also rose rapidly. It overtook the US as Australia's largest single source of goods imports in 2007, and its share of our imports rose from 15% in 2008 to 20% by 2016 and 30% by 2020 (Figure 2). Over the past year, imports from China were greater than purchases from Australia's next four largest suppliers (the US, Japan, Germany and Thailand) combined.

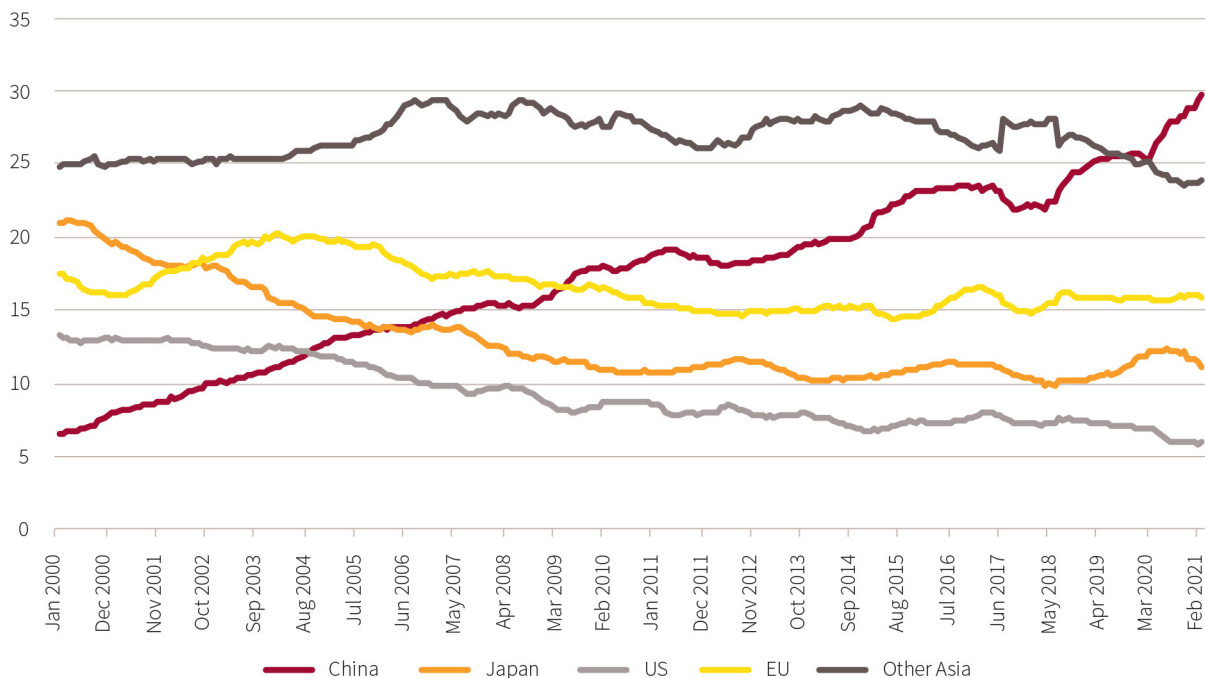
The goods Australia imports from China include a vast range of consumer goods, particularly clothing and household goods, capital goods for business, and inputs for industry, including chemicals, plastics and structural steel and aluminium.

Figure 1: Australia's export markets, January 2000 to February 2021 (%)



Source: ABS.

Figure 2: Australian import market shares, January 2000 to February 2021 (%)



Source: ABS.

The growth in in two-way trade reflects:

- Australian Government policy settings since 1972 fostering bilateral trade growth
- the resource intensity of China's growth since the early 2000s
- the rising global dominance of China's manufacturing sector
- the advantages each side conferred on the other under the 2015 ChAFTA, before the relationship soured.

Australia has pursued the development of trade with China as a foreign policy objective ever since the Whitlam government recognised the Beijing regime in 1972. The Hawke and Keating governments fostered the building of trade links through the 1980s and 1990s, while the Howard government maintained that Australia's security alliance with the US could be separated from our commercial ties with China. The central message of the Gillard government's 2012 *Australia in the Asian century* White Paper was the pursuit of mutual advantage through deeper economic engagement, while keeping strategic and security interests in the background.

Those foreign policy priorities have been changed in fundamental ways by the Chinese state's use of its growing power: strategic and security differences are now in the foreground of the relationship.

China's economy had been growing rapidly, averaging 10% annual growth since the reforms in the late 1970s. However, from around 2003–04 onwards, its massive rollout of infrastructure, including nationwide highway and rail networks, and high-rise urban development boosted its demand for natural resources beyond the considerable capacity of its domestic suppliers, forcing a rapid rise in imports.

China's entry into the World Trade Organization in 2001 facilitated the growth of its manufacturing industry, which rose from 5% of global manufactured exports in 2000 to 10% by 2005 and 15% by 2010. Growth in its share of manufactured trade has since slowed, partly reflecting the shift of some low-value clothing manufacturing to lower income nations in Asia, and stands at 18%.

In some sectors, the growth has been much greater than that: in telecommunications and office equipment, for example, China's share of global trade has risen from 4.5% to 32% over the past 20 years. Its share of textiles exports has risen from 10% to 39% in the same period (WTO 2020).

The intensity of Australia's bilateral relationship accelerated after President Xi Jinping's visit to Australia in late 2014 and the signing of the ChAFTA the following year. The agreement gave many Australian exporters a significant competitive advantage, bringing rapid growth in sales to China of wine, lobsters, vitamins, dairy products and meat, among other products (Table 2).

Table 2: ChAFTA winners (\$ million)

	2013–14	2019–20	% increase
Beef	787	2,838	260.5
Processed food	128	1,528	1091.8
Medicines	338	1,373	306.5
Meat (excl beef)	562	1,317	134.3
Wine & other alcoholic beverages	203	1,121	451.0
Fruit & nuts	64.9	998	1436.8
Woodchips	0	703	-
Lobster	35	611	1651.0
Pharmaceuticals (excl medicine)	48	581	1230
Wood (rough)	251	560	122.7

Source: DFAT.

Chinese suppliers gained less competitive advantage through the ChAFTA, as Australia's tariffs were already low and we had few non-tariff barriers to entry, but the agreement led to greater focus by Chinese exporters on the Australian market.

China's gains came at the cost of other trade partners. Since the Abbott government sealed its free trade agreements with Japan and South Korea in 2014, our imports from Japan have risen by only 25%, while our purchases from South Korea have fallen by 2.3%. Imports from Singapore, with which Australia has had a free trade agreement since 2003, fell by 17% between 2014 and 2019 (pre-Covid), while imports from New Zealand were down by 1%. Our imports from China rose by 52% in that period, highlighting its success in winning market share. Our exports to other free trade partners have also shown little growth, while sales to China have soared.

The detailed trade analysis below draws on the data collected by the UN statistics agency, Comtrade, which is the authoritative source for global trade figures. It divides the world's trade in goods into 99 broad industries, each with 99 sectors. Each sector has 99 products. So a smartphone (China's share of imports: 76%) is a product within the category of 'apparatus for transmitting radio or television signals' (China's share: 64%), which is within the broad industry of 'electrical machinery' (China's share: 53%). Similarly, a coach screw (of which China supplies 87% of our imports) comes under the sector of 'screws, nuts and bolts' (China's share: 41%), which is in the industry of 'iron and steel articles' (China's share: 51%)

Unless otherwise noted, the analysis in this paper looks at detailed products, as that gives the best picture of what happens to businesses.

EXPORT INDUSTRIES

So, what if Australia's exports to China were brought to a halt?

Australia's biggest export industries are highly sophisticated. The resources industry is supported by some magnificent ore bodies, but Australia owes its position as a dominant supplier of minerals and energy worldwide to the advanced technology, capital intensity and logistic management of the sector's operations. Australian farming is also highly efficient, delivering high-quality produce.

The defining feature of commodities is that they're fungible—they're the same wherever they come from and are sold at world-market prices. In general, to the extent that China stops buying from Australia, it can buy from other suppliers and Australia can sell to other markets.

So, for example, when China abruptly stopped its purchases of Australian metallurgical coal in the middle of 2020, it boosted its purchases from Indonesia, Russia, Colombia, South Africa and the US. However, that left the traditional customers of those suppliers short, and Australian exporters were able to fill the gap, lifting sales to India, Japan and South Korea, largely replacing sales to China.

DFAT officials estimate that coal exports to China were down by 83% in the December quarter of 2020 compared to a year earlier; however, total coal export volumes were down by only 8%.

The same has been true for barley and copper exporters, which are similarly subject to targeted Chinese embargoes, while the Australian cotton industry doesn't expect great difficulty in finding new markets to replace China, which traditionally took around 70% of the Australian crop. Barley, which was the first Australian commodity to be targeted, had its best shipments for two years in December.

This isn't a one-for-one replacement of new markets for old. There are some losses and there are obvious limits. In addition to a small dip in volumes, Australian coal exports suffered a fall in prices in the months following the imposition of Chinese import barriers, before growth resumed. While new markets for wine are being found, they don't offset the magnitude of the decline in China, where wine growers have made large investments in promoting their brands.

There would be little prospect of alternative markets for Australia's iron ore shipments to China were those shipments to halt. Australia sold 700 million tonnes of iron ore to China in 2020. The next four largest global iron ore importers—the EU, Japan, South Korea and India—had a combined global demand of just 260 million tonnes. If China were suddenly out of the market for iron ore, Australia couldn't expect to find new bulk buyers elsewhere.

Woolgrowers, similarly, have an overwhelming dependence on China, which takes about three-quarters of the Australian wool clip. None of the other 15 markets to which Australia sells wool could take on more than a small fraction of Australia's sales to China.

Manufactured goods can have commodity-like qualities—ballpoint pens or reams of copy paper can be relatively undifferentiated products sold by the crate, but they're rarely sold on open world markets. If their supply is cut, purchasing businesses have to locate and contract alternatives.

The UN data shows that there's just a handful of products for which Australia is an important supplier to China. Australia has only 25 goods exports to China with annual sales of more than US\$400 million. Of those, only seven account for more than 40% of China's supplies: iron ore, coal, wool, barley, lamb, vanadium/tantalum and 'confidential' minerals.

China's campaign of coercion against Australia hasn't targeted commodities for which it's highly dependent on Australian supply—notably iron ore, LNG, nickel, wool, gold and lamb (Table 3). Aluminium and woodchips (as distinct from timber logs) have also not yet been hit.

Table 3: China's commodity imports from Australia (2019)

Commodity	US\$ million	Australia % China imports	China % Australia exports
Iron ore	61,001	61.1	82.3
LNG	13,737	26.2	53.9
Coal	9,331	49.3	21.3
Gold	7,493	17.1	12.8
Wool	1,775	74.2	76.5
Copper ore	1,666	4.9	36.8
Aluminium ore	1,590	31.0	97.6
Beef	1,545	19.5	33.1
Zinc	915	36.3	55.0
Lamb	775	41.7	28.2

Source: UN Comtrade.

Of those, iron ore is Australia's only export that represents a strategic vulnerability for China. China has vast low-quality iron ore reserves of its own and as recently as 2014 was producing 1.5 billion tonnes of ore. That output has dropped by more than a third over the six subsequent years, as Chinese mills preferred higher quality Australian and Brazilian ores, enabling lower air pollution and greater operating efficiency.

In a conflict, China would revert to domestic low-quality ore. It would take time for it to bring mothballed domestic iron ore mines back into production. Total steel output would fall, as the newest coastal steel mills were built to handle imported Australian and Brazilian ores, and they couldn't process low-quality local ore without beneficiation. Brazil has had difficulty maintaining production levels for the past few years and wouldn't be able to fill the gap left by Australia's absence from the market, even if its bulk carriers were able to get to and from Chinese ports.

Some analysts believe that China's dependence on Australian iron ore is so great that, in a conflict, it would seek to seize iron ore assets; however, it would be very difficult for it to secure the sea route.

China is keen to develop an alternative to Australian iron ore through the Simondou iron ore project in Guinea. Simondou is the world's richest undeveloped iron ore body, but the nation's politics are difficult and the deposit is 600 kilometres from the coast through rugged terrain. Its estimated initial output of around 100 million tonnes a year would remain small relative to Australian supplies.

China has similarly become Australia's largest customer for LNG because of the environmental benefits LNG offers as a power source, compared with China's own abundant reserves of coal. Again, in a conflict, China could revert to coal despite the cost in pollution. The loss of Australian LNG wouldn't carry a significant strategic cost to China.

China has shown with its ban on Australian coal that it's prepared to weather some social cost from its policy actions. Although not solely responsible, the block on Australian coal is reported to have contributed to some blackouts in major Chinese cities during the 2020–21 winter. Australia accounted for a quarter of China's thermal coal imports before sales were blocked. The *South China Morning Post* reported that the authorities had prohibited any public linkage of blackouts with Australian coal supplies, underlining their sensitivity about the policy (Zhao & Zixu 2020).

EXPORTS— THE MACRO PICTURE

In 2019–20, exports to China accounted for \$150 billion of Australia's total \$470 billion in sales of goods and services. In the event of a blockade on Australia's trade with China, the value of exports would fall by considerably more than \$150 billion, both because demand from other trading partners would be reduced and because the diversion of Australian trade into other markets would depress prices.

The latter point is clearly illustrated by iron ore, which has been fetching up to US\$200 a tonne from China despite costing only around US\$15 a tonne for BHP and Rio Tinto to mine and load onto a ship on the Pilbara coast. The price of any commodity is dictated by the highest cost producer in the market. To meet China's demand for iron ore today, Australian and Brazilian imports aren't enough, and it must cover the cost of the highest cost producers, which are China's own inefficient iron ore mines.

A barrier on trade with China would send the Chinese iron ore price rocketing (in the absence of likely government controls), and extremely marginal deposits would need to be brought back into production to supply steel mills. However, assuming that bulk carriers could still ply the seas, the price of iron ore everywhere else would plunge, probably to somewhere around the marginal cost of ore from the Pilbara mines.

Australia's exports to China make up around 8% of our GDP. The loss of the China market and the fall in commodity prices could mean that the value of exports in total would halve, which would represent a loss equivalent to 12% of GDP.

Export income flows through the economy in three ways:

- the income paid to the Australian employees and shareholders of export companies
- the taxes and royalties those companies pay to the state and federal governments
- the additional purchasing power Australian residents gain from appreciation of the exchange rate.

Some of Australia's export income is distributed overseas, as foreign investors are estimated to hold an average of around 80% of Australia's resource industries.

Our major export industries are relatively low employers. The iron ore industry has about 60,000 employees, while the oil and gas extraction sector has 17,000. At a broader level, the entire resources sector has direct employment of around 250,000 people, while agriculture has 340,000 employees. Both are both small parts of a national workforce of 13 million.

Australia's big services exports—tourism and education—are larger employers, but exports to China contribute a much smaller share of the total industry revenue, which is dominated by domestic demand. In higher education, for example, domestic students are 69% of the total enrolment, while Chinese students make up 37% of the foreign enrolment and 11% of the total student population. The loss of Chinese revenue hurts higher education budgets, but doesn't halt the sector.

The loss of employment in export industries in the event of war over Taiwan would have flow-on effects in other sectors that have supply relationships with China, but the total employment impact from the loss of export earnings would probably be considerably smaller than that brought on by the onset of the Covid pandemic, which resulted in a contraction in the workforce of 800,000 jobs in the space of little more than four weeks in April 2020. As is indicated in the next section, the disruption caused by the loss of imports from China could be considerably greater.

Savings through superannuation funds and direct ownership would be hit, as resources stocks account for about 15% of the ASX by value.

Governments would face a loss of tax revenue. Resource royalties account for 25% of the revenue of the Western Australian Government, while the resources sector provides about 18% of federal company taxes (agricultural enterprise accounts for about 1%). Governments would be able to borrow to cover deficits.

The Australian dollar exchange rate would fall, probably precipitously. The Australian dollar has always been seen by global financial markets as a proxy for Chinese demand—the stronger the Chinese economy, the higher the Australian dollar. The loss of the Chinese market would bring a flight from the Australian currency. The devaluation would mitigate some of the pain for exporters while pushing up the cost of imports, effectively lowering consumers' living standards.

The Reserve Bank estimates that the resources boom added 13% to per capita household disposable income between 2001–02 and 2012–13 (Tulip 2014). The reversal of those gains would eventually cascade through the economy, bringing lower incomes, consumption and investment and higher unemployment.

Although the trade balance would plunge into deficit, Australia has run deficits on its external accounts through most of its history, sometimes rising as high as 40% of its earnings from goods and services, and has always been able to borrow to cover the gap. In the event that a military crisis caused financial markets to freeze as they did in the early days of the global financial crisis, Australia could count on the support of the US as, indeed, occurred then.

The analysis by economists Rod Tyers and Yixiao Zhou examines the long-term effect of the cessation of 95% of Australia's trade with China. Their research, of which only a partial account has so far been published and which is yet to be completed, shows that even a large depreciation of the Australian dollar would produce only a partial redirection of our exports to other markets.

The loss of Australia's status as a 'platform' for exports into China would result in reduced foreign investment and a rundown in Australia's capital stock. Their analysis, showing a long-term 6% decline in Australia's GDP and a 14% decline in income per person, doesn't take account of individual industry impacts.

The Tyers–Zhou study, like the analysis here, considers only the effects of the cessation of Australia's trade with China. As noted, any real-world conflict between China and the US and its allies would have far-reaching global economic consequences.

IMPORT INDUSTRIES

While Australia's exports to China are heavily concentrated in a few key sectors, the most striking features of China's exports to Australia are their broad spread across a wide range of industries and the dominant share they hold.

Australia imports 100 different goods from China with sales of at least \$100 million and 1,603 different goods with annual shipments worth at least \$2 million. By contrast, we export 42 goods to China with annual sales of at least \$100 million and 291 goods with sales of more than \$2 million.

For many of those imports, China holds a large share of world trade. A shutdown of Australia's trade with China would cut essential supplies for businesses, which they would have difficulty replacing in the midst of a crisis.

The UN data shows that China holds at least half of Australia's import market for more than 40% of the huge range of products for which it has annual sales in Australia of more than \$2 million.

The loss of a supplier with a market share of 50% or more would leave most businesses struggling to find adequate replacements. In markets in which China accounts for half of Australia's imports and also holds at least 40% of world trade, Australia's supplies would clearly be vulnerable.

China holds a dominant share for 68 of the top 100 goods it ships to Australia, while it controls at least 40% of the world market for 27 of those goods.

Where these thresholds are drawn is arbitrary—the Productivity Commission's recent analysis of Australia's supply-line risks set a much higher bar, defining market dominance as a share of 80% or more held by a single supplier, while it said supplies would be vulnerable if the dominant supplier held a world market share of more than 50%.

The commission's choice of those thresholds enabled it to generate an essentially reassuring conclusion: 'The supply of essential goods and services in Australia is not highly susceptible to a short-term disruption to the supply of imported goods. Vulnerable imports represent a small fraction of the essential goods and services consumed by Australians.'

The commission found that only 5% of Australia's imports were vulnerable to disruption and that only half of those would affect essential industries. However, in some industries and for some goods, the loss of a supplier that contributes just 20% or 30% of Australia's imports could cause shutdowns. Once a shortage becomes apparent, there's a scramble for supplies, which compounds the shortage.

The Productivity Commission was trying to identify essential industries vulnerable to the interruption of individual supply chains, which is a different task from assessing how Australia would cope with the loss of all supplies from China.

The growing awareness of Australia's vulnerabilities has led to a focus on 'essential' industries. There are various definitions of those—the Critical Infrastructure Centre's list includes communications; energy; water services; banking and finance; transport; food and groceries; the federal government; and health. Imports account for a very small share of the inputs for all those industries. The Productivity Commission's supply-chain review used a definition of 'supplies necessary to Australians' basic needs'.

While that approach is helpful when trying to narrow down sectoral vulnerabilities in supply chains, it doesn't explain the economy-wide effects of a breakdown in trade. For example, the construction, manufacturing and retail industries don't appear in most lists of essential industries, but between them employ 3.3 million people, or about a quarter of the workforce. Each would be disrupted, at least for some months, by a halt to Chinese supplies, as the following sectoral analyses explain.

The dependence of many Australian businesses on Chinese supplies has grown over the past decade as China's share of our total imports has risen from 17% to 30%. China's share of Australia's imports is double its 15% share of world trade, reflecting the competitiveness of Chinese supplies over the relatively short sea route, the weakness of Australian manufacturing in areas of China's strength and the positive focus that the commercial relationship received from both the Australian and Chinese governments up until the past five years.

Chinese market penetration has been particularly marked in higher technology goods, such as computing and telecommunications equipment, but also business inputs such as aluminium products, fertilisers and herbicides (Table 4). China is also expanding in new export markets, such as wind and solar power, while it has started to compete strongly with Singapore as a source of refined petroleum over the past decade.

Table 4: Australia's top 100 imports from China (2019)

	Australian imports / China (\$US m)	China % Australian imports	China % Australian imports 2009	China % world trade
Laptop computers	3,345.6	94.4	80.0	70.3
Cell phones	3,013.9	75.3	68.2	50.8
Petroleum—not light oils	2,350.1	16.0	0.6	6.0
Communication apparatus (excluding phones / base stations)	1,832.9	53.1	32.0	28.3
Solar cells and panels	1,319.3	87.9	56.1	35.0
Tricycles, scooters, dolls, puzzles, other toys	892.9	84.6	75.3	55.1
Computer processing drives, including storage	600.3	39.4	35.8	26.6
Commodities not specified according to kind	502.3	8.6	0.1	0.5
Iron or steel—structures and parts	491.7	66.5	69.7	24.8
Headphones and earphones	441.2	80.1	62.1	26.4
Seats—with wooden frames, upholstered	420.3	79.0	70.0	46.8
Electrical static converters	419.8	44.5	27.3	30.7
Plastics—other articles	384.5	48.4	31.4	19.0
Wind-powered generators	379.6	95.2	n.a.	9.5
Other iron or steel articles	362.0	58.6	38.7	15.2
Computer monitors	356.5	84.7	n.a.	33.1
Furniture—metal, other than for office use	343.1	77.7	70.8	48.5
Televisions	337.5	36.6	37.4	30.0
Video and TV cameras	326.0	46.7	34.8	29.3
Insulated electric conductors, no connectors, sub-1,000 volts	324.7	75.7	51.8	15.4
Ceiling or wall light fittings	322.0	77.7	46.7	46.6
Furniture—wooden, other than office, kitchen, bedroom use	320.1	61.0	47.5	27.4

	Australian imports / China (\$US m)	China % Australian imports	China % Australian imports 2009	China % world trade
Other cases and containers	307.3	75.7	80.5	45.3
Other telephones	296.7	58.6	23.0	39.7
Video game consoles and machines	295.1	93.9	n.a.	49.2
Hydraulic engines, parts	275.3	75.7	31.6	19.6
Taps, valves for pipes, boilers, tanks, vats	273.6	30.7	14.4	21.1
Car tyres	269.1	38.0	23.2	12.8
Other lamps and light fittings	267.4	71.5	52.9	59.8
Computer parts (other than covers)	266.7	64.2	43.9	32.5
Footwear—outer soles of rubber, plastics, uppers of leather	244.4	50.3	70.3	21.7
Truck and bus tyres	231.9	42.4	29.3	32.1
Electric hand tools other than saws/drills	231.2	78.4	58.2	44.9
Electric AC generators, output exceeding 750 kVA	230.6	79.5	n.a.	17.9
Aluminium doors, windows	229.2	83.7	68.8	22.3
Bedding, pillows, quilts	228.8	85.0	84.3	62.3
Jumpers—man-made fibres	227.9	74.5	85.2	48.0
Fertilisers—mineral or chemical	226.4	57.3	38.1	22.7
Computer input or output units	218.7	75.6	55.8	37.2
T-shirts, singlets—cotton	209.7	40.3	78.5	15.7
Earthmoving machinery/parts	199.1	23.2	11.9	17.8
Other computers	196.5	44.1	42.6	24.2
Aluminium structures and parts	196.2	73.0	49.5	28.2
Plastics—household articles and hygienic or toilet articles	196.1	70.5	59.1	46.7
Textiles—made up articles (including dress patterns)	195.4	66.2	54.9	43.5
Footwear with outer soles and uppers of rubber or plastics	193.3	79.5	90.7	64.0
Trousers, shorts—men's or boys'	191.8	52.4	75.6	25.0
Aluminium—plates, sheets exceeding 0.2 mm thick	185.9	41.5	28.9	16.5
Plastics—tableware and kitchenware	181.5	75.3	59.7	49.4
Electro-thermic domestic appliances	172.1	81.8	84.6	59.8
Other aluminium articles	171.4	73.3	36.9	17.4
Insulated electric conductors/connectors, sub-1,000 volts	168.9	53.1	36.2	33.6
Jumpers (cotton)	168.7	62.1	86.5	31.7
Other printing machinery/parts	168.4	40.6	30.6	13.8
Lithium batteries	167.7	42.3	n.a.	36.5
Furniture—wooden, for bedroom use	167.5	56.5	58.8	29.1
Trousers, shorts—women's or girls', cotton	167.1	57.2	85.9	39.3
Printing, copying and facsimile machines	162.6	59.7	66.3	33.9
Herbicides	158.9	54.6	19.2	23.6
Loudspeakers	157.8	75.6	67.8	50.0
Machines—sorting, screening, washing, crushing minerals	157.5	42.5	10.4	15.7
Dresses—women's or girls', synthetic fibres	157.2	80.9	87.6	31.7
Footwear—soles rubber/plastics and uppers textile	155.5	61.8	82.6	51.1
Ethylene polymers—sacks and bags	151.7	46.3	41.7	24.4
Refrigerators and freezers	149.4	33.8	11.5	23.6

	Australian imports / China (\$US m)	China % Australian imports	China % Australian imports 2009	China % world trade
Athletics and gymnastics equipment	148.9	60.6	63.0	48.8
T-shirts, singlets and other vests (non cotton)	146.9	70.0	81.7	27.5
Seats—with metal frames, upholstered	141.2	65.1	69.6	64.2
Spectacles (other than sunglasses)	141.1	66.3	31.7	40.2
Electric railway or tramway coaches	133.7	42.6	22.7	19.3
Furniture—parts	130.4	55.1	36.2	23.8
Computer storage units	128.3	22.6	21.5	23.5
Other lifting, handling machinery	124.4	24.7	15.6	8.2
Other electric apparatus	123.1	28.5	14.2	40.8
Other mechanical appliances	122.3	16.9	4.5	7.6
Ceramic tiles	122.1	53.5	n.a.	62.0
Air conditioners	121.2	42.5	41.2	56.9
Seats—with metal frames, not upholstered	120.9	79.7	74.9	62.0
TV signal receivers, not including video display screens	119.8	92.6	58.8	31.0
Shirts—men's or boys', of cotton	117.3	53.3	73.5	21.4
Petroleum—light oils	116.9	3.5	n.a.	3.0
Trailers/semitrailers	116.4	47.6	42.3	18.2
Mattresses	116.0	93.9	75.5	17.9
Iron or steel—threaded screws and bolts	114.9	45.6	31.9	15.1
Suitcases, briefcases, school satchels—plastic/textile	113.0	77.2	85.8	76.9
Electric control panels	112.2	21.5	9.9	12.7
Forklift trucks	110.6	28.2	3.1	15.6
Brassieres	110.5	63.3	79.5	38.9
Base metal building fittings	109.9	72.3	61.6	31.9
Tracksuits—women's or girls', man-made fibres	109.4	81.7	86.1	42.1
Tissues, towels, for household or sanitary use	106.9	64.0	55.6	6.6
Boats	106.0	76.1	52.7	30.9
Bed linen, cotton	104.5	64.3	73.9	36.6
Blouses, shirts—women's or girls', man-made fibres	103.3	73.8	86.7	13.5
Aluminium—alloys, bars, rods and profiles	102.9	59.2	81.8	12.5
Coal or rock cutters and tunnelling machinery	102.0	74.3	10.9	33.7
Trucks not exceeding 5 tonnes	101.9	2.2	n.a.	1.0
Bicycles	101.3	50.0	52.2	36.2
Insulated electric conductors exceeding 1,000 volts	101.3	55.7	15.8	13.0
Vehicles—cylinder capacity over 1,500 cc but not over 3,000 cc	100.0	1.3	0.1	1.4

Red: China's share of Australian imports greater than 50%; share of world trade greater than 40%.

Orange: China's share of Australian imports greater than 50%.

n.a = not available

Note: For full trade data files, go to: <https://www.aspi.org.au/report/what-if>

Source: Comtrade.

Retail

Australians know the Chinese manufacturing sector principally for its consumer goods.

The retail sector is Australia's second largest employing industry, with a payroll of 1.2 million people or 9.5% of the workforce, while wholesaling business employs a further 340,000. China is the dominant supplier of household goods and clothing, which between them account for \$100 billion in annual retail sales. Food is the largest retail sector, with \$135 billion in sales, and is largely self-sufficient.

The major retailers don't disclose what share of their supplies come from China. Wesfarmers chief executive Robert Scott has commented that the firm's businesses rely on China for between 20% and 70% of their supplies, depending on the category. He said that the Bunnings hardware chain obtained between 35% and 40% of its supplies domestically (Hastie 2020).

Furniture and electronic goods retailer Harvey Norman would have a heavy dependency upon China, as would electronic consumer goods firm JB Hi-Fi, while the retail clothing industry at large has China as its biggest supplier.

China supplies 60% of imported clothing and textiles (sales of \$16.2 billion). Of the 245 different items of clothing, footwear and textiles that China sells to Australia, it has a dominant share in 192 items. For half of those, China has a commanding share of 40% or more of global trade. So, for example, China has 94.9% of the Australian import market for men's pyjamas and accounts for 79.5% of the global trade. It supplies 66% of the Australian market and 63% of the world market for anoraks, windcheaters and ski jackets.

China is the supplier of 54% of Australia's imported household goods, sales of which were \$7.9 billion in 2019–20. It has dominant shares of both Australian imports and world trade in many household goods, such as toasters (98% Australian market; 83% world), video recorders (two-thirds of both Australian and world markets) and alarm clocks (90% Australian market; 69% world market).

While none of those is an essential good, the consequence of a halt to trade with China would be empty shelves across the major retail chains. They couldn't readily replace the loss of 60% of their clothing supplies and 54% of their household goods, because shortages would be likely across so many of China's foreign markets.

General supermarket housewares, including toilet paper, for which China supplies 53% of Australia's imports, would be affected. China is the source of more than 70% of plastic housewares, 64% of paper towels, 64% of face tissues and 66% of plastic bags. It isn't a significant supplier of cleaning products.

As was seen during the early days of the coronavirus pandemic, fear of shortages can readily create real shortages as panic buying takes hold. If shortages are seen as being for an indefinite duration, prices of remaining stock will rise, potentially by a lot, giving an inflationary impulse to an economy that's otherwise suffering from contraction as a result of the loss of export income.

One segment of retail with spillovers into the broader business world is office supplies. China is the major supplier of all the basics, from ballpoint pens to exercise books and paper clips. Including laptops, notebooks and smartphones, it's a \$15 billion industry.

Australian consumers and businesses purchase about 4 million laptops and 4.5 million smartphones annually, and China is the dominant supplier. China sold US\$3 billion worth of smartphones to Australia in 2019, accounting for 75% of all phone imports, while it has about half the world market. Its Australian sales of laptop computers and notebooks reached US\$3.3 billion, accounting for 94% of all imports, while it's the dominant world supplier with 70% of the market.

China is also the dominant supplier of printers and photocopiers, selling 60% of Australia's imports.

Replacement suppliers would be very difficult to locate in a crisis. Although the absence of new computers and phones (or ballpoints and paperclips) would have little immediate effect on the economy, the productivity of office workers would soon suffer.

In addition to its supply of phones, China also provides US\$2.2 billion worth of telecommunications equipment to the phone networks. While the Australian Government has limited the participation of China's Huawei in our telecommunications industry, Huawei's rivals Nokia and Ericsson both conduct much of their manufacturing in China.

Construction

The construction sector is the third biggest contributor to Australia's economic growth after the health and finance sectors and occupies a pivotal place in the economy, delivering housing, commercial buildings and infrastructure. It's a major importer: inputs from offshore suppliers cost around \$15 billion a year (ABS 2021a).

Construction has been a key driver China's exponential growth over the past two decades as it rolled out rail and road networks and built hundreds of high-rise cities. Its construction materials industry has achieved a scale and efficiency unmatched elsewhere. Its steel industry output touched 1 billion tonnes last year, which was 10 times that of Japan and the US, and accounted for 55% of world production.

China has become the major source of a large range of construction materials, ranging from plastic piping to structural steel, safety glass, plywood, electric fittings and simple screws and nails.

Australia retains manufacturing capacity in building materials through globally competitive companies such as Boral and James Hardie, but we remain exclusively dependent on imports for many basic products, such as stainless steel, rolled aluminium sheet and natural rubber seals.

In the residential construction sector, China is the source of many of the finishing products. It provides 75% of Australia's imports of ceramic basins and toilets and also has a 73% share of the global trade, limiting alternative supplies. There's negligible domestic production in Australia. China has a similarly dominant share of both Australian and global trade in ceramic tiles.

China supplies 91% of Australia's imports of LED lighting, as well as most aluminium, steel and plastic window and door fittings.

The Master Builders Association estimates that 60% of the residential building industry's imports come from China, including 69% of furniture, 56% of glass, 51% of clay and 41% of screws, nuts and bolts.

In commercial building, China supplies 86% of Australia's imports of escalators and accounts for two-thirds of the global trade.

For some of those product groups, Australia has domestic manufacturing capacity. For example, Australian glassmakers have sales of \$3.9 billion, while our glass imports are \$900 million; however, many of the imported goods have specifications not matched locally.

Australia has lost domestic capacity in a number of key industries supplying the construction sector. Many nations retain aluminium production capacity as a matter of national security. Australia is the world's largest exporter of bauxite and alumina and we retain several aluminium smelters, but our last two rolling mills (in Sydney and Geelong) were closed in late 2014, along with the largest aluminium recycling centre in the Southern Hemisphere. That means Australia must import all aluminium flat products, including sheet metal and foil, and China is the major supplier. As well as construction, the loss of domestic sheet aluminium manufacturing capability has also affected shipbuilding.

China is also the dominant supplier of tools to the construction industry, supplying about 80% of drills, saws and other hand-held electric tools and 90% of hand-held spades and shovels. Almost 60% of nails come from China, along with 88% of paint brushes.

Although Australia is self-sufficient in basic materials, the Covid-19 crisis highlighted unexpected vulnerabilities. The hardened grinding and cutting tools and bits used by quarries come from China, and, in their absence, there was a threat to the supplies of gravel essential for making concrete. There were alternative, if higher priced, suppliers in Germany, but organising new supply lines in the middle of a crisis was difficult.

The loss of Chinese supplies would bring many construction projects to a halt. It would be difficult to complete either residential or commercial construction projects.

Most of the products used in construction wouldn't be deemed to be of strategic importance, although there are some exceptions, such as aluminium sheet. The array of products sourced from China is so broad that it isn't feasible to contemplate an import replacement strategy.

Manufacturing

Australia's manufacturing sector has been contracting as a share of the national economy ever since the wall of tariff protection started coming down in the 1970s, but, at 6% of the economy, it still employs about 900,000 people and provides many essential goods. The sector is low tech and small scale by international comparison. There are only 425 manufacturers with 200 or more employees (ABS 2021b). However, that total includes a number of highly successful global businesses.

Food manufacturing is the largest sector, with about 200,000 employees. About 100,000 people work in machinery and equipment manufacturing, while there are 60,000 to 70,000 employees in each of the basic metals, fabricated metal products, transport equipment, basic chemicals and furniture industries.

Perhaps surprisingly, China is only a minor supplier for many of the basic inputs for manufacturing operations. For example, it provides less than a quarter of Australia's imports of most machine tools, electric motors, pumps, or other machinery for handling liquids or gases. It similarly accounts for less than a quarter of most classes of stainless steel, for which Australia is entirely dependent on imports.

There are isolated goods that may be mission-critical for an individual business but don't have sector-wide significance. For example, China delivers 82% of the arc welding machines that Australia imports and it has more than half the global market. China similarly dominates both the Australian and global markets for seamless steel pipes for the oil and gas industry, gantry and bridge cranes and hydraulic jacks.

The trade sector of greatest relevance to manufacturing in which China does have a commanding position is chemicals. Of those chemicals for which Australia's imports are worth more than \$2 million a year, China has a dominant share of at least 50% for 54 of the 90 chemicals it sells to Australia. It has a major global market share of 40% or more for 22 of those chemicals. There are many more chemicals for which Australia's total imports are less than \$2 million a year but that may nevertheless be of critical importance to individual businesses. Examples include cyanoguanidine (used in fertilisers), and tributyltin compounds (used for pest control). China supplies all Australia's imports of manganese, which is used by Bluescope Steel for making hardened steel plate.

DFAT trade data shows that there are 32 chemical groups for which Australia is dependent on China for 80% or more of its supplies (Table 5).

Table 5: China's dominant chemical sales to Australia

	FOB value (A\$ million)	China import share (%)
Silicon containing by weight less than 99.99% of silicon	9.83	88.5
Arsenic	0.04	97.0
Calcium (excl. calcium amalgams)	0.79	85.7
Diphosphorus pentaoxide	0.11	97.3
Artificial corundum, chemically defined	2.44	89.8
Artificial corundum (excl. chemically defined)	0.98	95.8
Antimony oxides	4.02	94.7
Ammonium chloride	0.64	86.5
Calcium chloride	5.56	80.4
Sodium sulphides (excl. mercury compounds of HS2852)	1.05	96.8
Disodium sulphate	1.06	98.1
Magnesium sulphate	3.44	84.5
Potassium phosphate	4.78	83.1
Complex cyanides (excl. of mercury)	0.05	87.6
Silicon carbide	2.41	88.5
Chlorodifluoromethane	1.25	84.3
Halogenated derivatives of methane, ethane or propane	0.00	100.0
Sulphonated, nitrated or nitrosated derivatives of hydrocarbons	14.19	91.4
Cyclanic, cyclenic or cycloterpenic ethers & derivatives	0.04	100.0
Ketone-phenols & ketones with other oxygen function	2.79	92.9
Oxalic acid, its salts & esters	0.29	86.1
Citric acid	15.21	86.6
Gluconic acid, its salts & esters	3.86	90.1
Diphenylamine & its derivatives; salts thereof	0.03	91.0
Amino-aldehydes, amino-ketones, amino-quinones & salts	0.34	83.6
Organo-phosphorous derivatives of glycine	1.87	100.0
Glycine derivatives containing phosphono groups	107.09	85.4
Furfuryl alcohol & tetrahydrofurfuryl alcohol	1.97	98.6
Heterocyclic compounds with nitrogen hetero-atoms	30.45	83.1
N-Methylperfluorooctane sulphonamide	0.02	86.3
Rutoside (rutin) & its derivatives	0.26	96.4
Chloramphenicol & derivatives	0.05	100.0

Source: DFAT.

There are a number of pharmaceutical and medical products for which Australia is directly dependent on China. For example, China supplies 84% of our imports of salicylic acid (used in skin ointments) and 62% of glycosides (which have a range of medical applications). The Productivity Commission notes that, although Australia imports most of its pharmaceutical products from producers in the US and Europe, those producers depend heavily on China for their raw materials (40% of global output) and India (20%).

The Productivity Commission refers to 'diamond-shaped' supply chains, in which there's a manufacturer at the end of the chain and multiple firms supplying the manufacturer, but the entire chain depends on a single firm upstream. A firm may think that it's diversifying its suppliers, but is really vulnerable to a single source that could sever supply. The commission notes that many pharmaceutical products have this character (PC 2021:28).

Rare earths and other critical minerals in which China has a dominant global market share, and that have been a focus of global supply-chain concern, are less sensitive for Australia, which has little of the advanced technology manufacturing that depends upon them. The UN trade data does show that China accounts for more than 70% of Australia's imports of permanent magnets, which includes those using rare earths.

Manufacturing isn't like construction, where a large portion of the industry has a direct dependence on imports from China. Specific companies and sectors would have individual supplies that would be affected in a crisis. In many instances, they may be able to achieve a workaround.

However, manufacturing also illustrates the contingent nature of shortages. For example, Australia spends US\$1.9 billion a year importing industrial taps, cocks and valves for boilers, tanks and vats, of which 31% come from China. It's a vast world market trading US\$53 billion, of which China accounts for US\$10 billion. If China were taken out of the world market for those products, it would be likely that other larger global manufacturers would have an earlier claim on remaining supplies than those in Australia. Not only would Australian customers lose the 31% of supplies they currently get from China, but the 69% of supplies that come to Australia from the rest of the world would also be threatened. A large number of industrial processes involve a liquid passing through a tap or a valve.

There are many products for which China has a major share of the Australian market but a modest share of the global market. For example, it provides 91% of the moulds imported by glass manufacturers and 61% of the moulds used for plastics. It has less than 30% of the global market in each of those products, so, as with industrial taps and valves, a manufacturer would have alternative sources of supply but would probably be unable to obtain them in a crisis.

For many manufacturers, China is the cheapest supplier. Their vulnerability to a lasting disruption means that companies should keep inventories and consider diversifying suppliers.

One particular sector of manufacturing with economy-wide significance is packaging. While packaging may be seen by some as superfluous, its availability is crucial for many food producers and manufacturers. Although Australia has its own manufacturing capability in corrugated cardboard and paper, the market share of Chinese imports has been growing. China accounts for more than 70% of Australia's imports of cardboard and 90% of imports of kraft paper. Many imported plastic packaging products are also dominated by China, including 63% of plastic bottles, 53% of polyvinyl chloride film. Australia obtains 90% of its aluminium foil from China. Although we have our own capacity to make aluminium cans, China is an important supplier of both the sheet metal from which they're produced and the openers.

Fuel security

The sharpest point of concern for the Australian Government has been fuel security. Over the past two years, what had long been seen as no more than a matter of formal compliance with an international obligation has been transformed into a national security preoccupation about Australia's vulnerability in the event of a military conflict in the South China Sea. Policy is still displaying less urgency than may be required.

The legal framework that's been developed for fuel security is a useful model for planning for the contingency of a broader critical interruption to supplies.

For many years, Australian governments from both sides of politics took a relaxed approach to meeting our national commitment under the requirement of the International Energy Agency (IEA) to maintain emergency oil reserves equivalent to at least 90 days of imports.

The IEA was formed to represent oil-consuming nations in the wake of the 1973 OPEC oil crisis, and the obligation to maintain reserves was a foundational principle. Australia was a net oil exporter when it joined the IEA in 1979 and wasn't bound by the emergency storage rule. But, by 2012, our domestic production had declined and we had become noncompliant. Reserves got down to just 50 days of imports in 2016.

Governments believed that Australia's fuel supply was resilient because of the wide variety of sources it drew upon. Australian officials also argued that fuel security was stronger than indicated by the IEA, which doesn't allow fuel in transit to be counted towards emergency reserves. A 2013 government report commented that, because of the time it takes a ship to travel around Australia, there were always many tankers close to or within Australia's exclusive economic zone or territorial waters at any time (Hale & Twomey 2013). The report's authors stated:

While a scenario can be contemplated which redirects () cargoes committed to Australian supply chain, the practical, commercial, legal and reputational issues associated with such an act would present a significant challenge to a company taking action of that kind.

In reality it is difficult to envisage a scenario in which shipping is not available and historically we cannot point to an event which saw the collapse of the petroleum tanker market.

Unlike other IEA members, the Australian Government maintained no emergency fuel reserves of its own but relied on private oil companies to keep supplies.

From 2018, there started to be greater focus on meeting the IEA requirements. That partly reflected direct criticism of Australia in an IEA review, which commented that it was 'less clear how the country would respond in the event of a serious oil supply disruption leading to market failure' (IEA 2018). The renewed focus may also have reflected the threat to oil supply routes through the Strait of Hormuz after the Trump administration withdrew from the Iran nuclear agreement.

The Australian Government's approach was to purchase rights to oil reserves held in other IEA member countries, including the US, the UK, Germany, Denmark, Spain, the Netherlands and Hungary. The government has also directly purchased oil stored in the US.

However, the availability of those offshore-held reserves to Australia amid a naval conflict involving China and the US is open to doubt. The threat to Australian fuel supplies in such a conflict has become a matter of greater government concern over the past 12 months as Australia became the target of Chinese economic coercion and the US-China relationship deteriorated.

The Defence organisation is now taking seriously the possibility of major-power conflict in the Indo-Pacific with little advance warning, and national security concerns have focused on the potential for Australia's supplies of refined petroleum products to be cut. Over the past decade, the share of refined products in our liquid-fuel imports has risen from 42% to 69% as Australian refineries have closed. We're dependent on imports for over 90% of our transport fuels.

Australia obtains 85% of its refined petroleum imports from Singapore, South Korea, Japan, China, Malaysia and Taiwan. China's share of those imports has risen from zero to 16% over the past decade. The Australian Government has been concerned that all those supplies could be jeopardised in a South China Sea conflict.

The government's response to this perceived threat has been to provide \$200 million in grants for the construction of 780 megalitres of storage for diesel fuel, subject to industry providing matching funding. The storage would hold about 10 days of diesel fuel sales. The government is also imposing an obligation on industry to increase its diesel fuel storage by 40% by 2024. It's arguable that the storage obligations are still too small to provide adequate insurance against a lasting disruption to supply.

The government has guaranteed the survival of Australia's two remaining refineries, at least until 2027, with a \$2 billion subsidy to their operations. It has also agreed to contribute \$300 million to the cost of upgrading plant to meet stricter environmental standards and another \$50 million to support storage.

Australia has, since 1984, had the explicit National Liquid Fuel Emergency Response Plan. Legislation provides for rationing that would prioritise supplies to defence, ambulance, corrective, fire and rescue, police, public transport, state emergency and taxi services. Rationing would grant motorists a maximum daily allowance. The legislation is to be updated to incorporate fuel storage obligations on private business.

IMPORTS— THE MACRO PICTURE

The loss of imports from China would, under current policy settings and business practices, generate shortages across a range of consumer goods and business sectors. The most directly affected business sectors would be retail, wholesale and construction, but also sections of manufacturing.

The perception of shortages creates a surge in demand, as consumers (or business customers) seek to obtain available stocks while they can. The onset of the Covid pandemic was accompanied by panic buying of toilet paper around the world. The same behaviour was shown by governments over vaccines, when the six major Western nations along with the EU ordered 4.3 billion doses, or more than three times their population needs.

Absent government intervention, the most likely result of the loss of imports from China would be empty shelves, profiteering by some retailers able to retain stock and a surge in inflation. Clothing and footwear account for about 3.3% of consumer spending, and household goods and furniture account for about 8.6%. Big increases in prices even in small sectors of the consumer basket can have a significant effect on prices overall.

The impact of shortages in the construction sector is also likely to translate into large price increases for new housing and commercial buildings and, potentially, engineering construction.

During the early panic days of the coronavirus, the major retailers managed shortages with ‘seniors only’ sessions and by limiting purchases of items. However, that was in a situation in which there was no underlying shortage and they were able to offer assurances that there was enough stock to go round. It would be more difficult for them to manage serious shortages.

Housing is the largest item in consumer spending, accounting for around a quarter. It would be expected that the inability of building firms to complete residential construction would generate shortages and inflation of prices for new houses. Offsetting that would be a decrease in demand resulting from lack of consumer confidence.

Employment effects are likely to be significant. Non-food retailing employs 750,000 people. The most directly affected section of the construction industry (building) employs 330,000 people, while heavy engineering employs 113,000 and construction services a further 710,000. Those sectors would all face a serious contraction in employment.

The fallout in manufacturing is harder to predict. While China dominates many core supplies to construction, its importance to manufacturing is more peripheral but would still be sufficient to disrupt production for many individual firms. There could also be disruption to other industries not canvassed here, including transport and communications.

Although much more severe, the effect would be analogous to that of Covid, which forced the suspension of trade in a number of economic sectors, including accommodation and hospitality, travel and, during periods of intensive lockdowns, most non-food retailing. Like Covid, the loss of access to Chinese imports would be a shock to supply.

Combined with employment losses in export industries, the total workforce displacement could exceed 10%, or 1.3 million workers.

POLICY RESPONSE

Important work is already being done to manage vulnerabilities in Australia's trade. The Australian Government's domestic Supply Chain Resilience Initiative, announced in October 2020, is designed to support businesses in identifying weaknesses in their own supply chains and to provide some funding for them to strengthen or diversify (DISER 2020). An amount of \$107 million has been committed, although eligibility criteria have not been published at time of writing. On the export side, Austrade is focused on helping exporters to diversify their markets.

Joint work is also being done with Japan and India on supply-chain vulnerabilities through the trilateral Supply Chain Resilience Initiative agreed to in April 2021, which China's Ministry of Foreign Affairs criticised as not 'favourable to the stability of the global industrial supply chain' (Tan & Wong 2021). This work has carried into the 'Quad' strategic alignment of India, Japan and Australia with the US.

Although much of this work follows the exposure of vulnerabilities during the pandemic, there's also an undercurrent of concern that China could use its dominance in some products, particularly those related to critical minerals, for coercive purposes. This follows China's suspension of rare-earth exports to Japan in 2010 and its threat to halt supplies to the US in 2019 after the Trump administration imposed controls on technology exports to China. The government has separately demonstrated its concern for the security of Australia's liquid-fuel supplies in the event of a conflict with China.

The central findings of this report are that Australia's dependence on China both as a market for its exports and as a supplier of its imports has grown rapidly over the past decade and that this has generated an economic vulnerability should Australia ever confront a blockage to its trade. The plausible scenario of a forcible attempt by the People's Republic of China to incorporate Taiwan that's resisted by the US and its allies could result in such a blockage.

Both the trade data and the experience of disruption during the early days of the pandemic show that the disruption to imports will have a more immediate and economically damaging impact than the blockage to exports, although both would result in large losses of employment.

Industries particularly dependent on imports from China include retail, wholesale, construction and, to a lesser extent, manufacturing.

The huge range of imports for which Australia has a large dependence on China shows that any attempt to rebuild the domestic manufacturing capacity lost over the past 30 years as tariffs came down would fail to mitigate Australia's economic vulnerability. The UN trade data shows that Australia imports just over 1,600 goods from China worth more than \$2 million annually and that China accounts for at least half Australia's imports for 640 of them.

Government can play an important role in helping to diversify Australia's trade profile. The Abbott government invested great political energy in sealing free trade agreements not only with China but also with Japan and South Korea. Those built on an existing suite of agreements, including with the US, Singapore, New Zealand and Thailand. To those have been added a new deal with Indonesia, while negotiations are underway with the UK, the EU and India.

A major India trade strategy was published by DFAT in 2018, setting out a goal to raise India to our third most important trading partner (Varghese 2018). In addition, major new regional deals have been concluded in the form of the Trans-Pacific Partnership and the Regional Comprehensive Economic Partnership.

However, our trade with nearly all of those partners has languished over the past eight years, while our trade with China soared.

Trade agreements and strategies need continuing investment if they're to prosper. The series of barriers to Australia's exports raised by China over the past year should make this an urgent priority. The Australian Government should appoint an assistant minister for trade, charged with the task of trade promotion. The government should have an active program of business trade missions to free-trade-agreement partners and should, through both Austrade and the Department of Industry, develop campaigns to ensure that all businesses are aware of their opportunities under those agreements.

A profound shift in the focus of our trade promotion is required. There's been an almost exclusive concern about creating opportunities for exporters but no attention to the needs of importers. Importers don't rate a single mention in Austrade's strategy document. That reflects what economists term a 'mercantilist' approach to trade, which, with some simplification, sees exports as good and imports as bad. For example, the Trump administration's approach to trade was mercantilist, seeking to boost exports and cut imports. However, the point of an economy is to raise the quality of life for citizens, and the provision of imports is vital to that task. The very origins of European trade with Asia in the 15th century and the Americas in the 16th century was the search for spices to import, not a hunt for export markets. The point of exporting is to raise the funds needed to pay for imports that will improve the quality of life.

Therefore, trade missions should include importers as well as exporters, Austrade should be charged with helping companies find new sources of imports as well as supporting exports, and, arguably, even the the mandate and name of Export Finance Australia should be changed to embrace importers as well. This requires a major shift in the mentality of all who work in trade promotion. It will be resisted with Austrade, for example, seeing itself as the marketing agency for Australia Inc, and really only skilled at selling Australian business. But if, as this report argues, there is a national security interest in the diversification of our imports, then trade promotion agencies are the logical bodies to deliver it. The government needs to put its shoulder to the wheel with serious resources and a clear focus to achieve this.

The Australian Government should also work to raise business awareness of the need for diversification of supplies and insurance against supply disruption.

The government has created the Critical Infrastructure Centre (CIC) to undertake that task within the infrastructure sector. The CIC was established in 2018 to safeguard physical facilities, supply chains, information technologies and communication networks, damage to which would harm Australia's social, economic or national security and wellbeing. It compiled a register of assets that meet those criteria and works with their business owners to build resilience and manage risks to the integrity and continuity of their operations.

It's practical to operate with this level of supervision and intervention for the relatively small number of affected businesses in the infrastructure sector. The CIC is backed by legislation giving it extensive rights to intervene in a crisis.

It wouldn't be practical to extend the reach of the CIC across an entire economy, but the quiet and effective way it has gone about getting a national security message home to one business sector and transforming that sector's risk-management practice is worth learning from.

The government should seek to address businesses directly about the need for the diversification and security of supplies. The most practical way to do that is through the business lobby groups, many of which are already keenly aware of the risks from the excessive concentration of both supplies and export markets. The Master Builders Association, for example, has undertaken its own study of the dependence of its members on Chinese supplies.

Government procurement is an opportunity to set requirements that successful tenderers must be able to demonstrate that they have addressed the diversity of their supplies. In 2019–20, the federal government posted 81,174 contracts worth a total \$54 billion on AusTender. This is of particular relevance to suppliers in defence and in some areas of health, social housing and engineering construction.

The Treasury should build on the work done by the Productivity Commission to identify sectors that are particularly vulnerable. It should go beyond the ‘essential’ industries that were the focus for the Productivity Commission and should also take a broader look at vulnerability than for just those industries obtaining 80% or more of their imports from a single source. This study has used 50% as an analytical threshold but, in the real world of business, the loss of a supplier supplying a quarter or a third of the market would lead to a scramble and hoarding that would leave many businesses deprived of essential supplies.

One task for such an analysis would be to identify sectors in which emergency stockpiles are warranted. Emergency stocks are difficult to manage centrally. The US keeps a strategic stockpile of minerals and metals, but a review by the Government Accountability Office found that it was hoarding raw materials that the US lacked the capacity to process, and that there was little overall rationale for determining what materials were critical for what purposes (GAO 2016). Similarly, when the Covid-19 pandemic struck, Australia’s National Medical Stockpile found that it had only a fraction of the personal protective equipment that was needed.

Given the broad nature of Australia’s purchases from China, any government support for emergency inventory should be focused on intermediate goods (or business inputs), such as chemicals and fuels. The range of specialty steel and other metal products for which Australia is largely dependent on China is too broad for any sensible stockpiling. However, defence suppliers should be required to keep adequate inventories of key inputs. This has been highlighted recently by the delays in the delivery of the \$350 million Cape-class patrol boats, being built by Austal, which have been caused by substandard aluminium from China (Greene 2021).

The Treasury has recently renamed its International Engagement and Policy Division to the International Economics and Security Division and has brought in national security expertise from other agencies. It’s ideally placed to undertake the proposed analysis. It should also undertake the research that DFAT is loathe to initiate and develop some contingency planning for a worst case scenario in the Taiwan Strait or elsewhere.

This report highlights the inevitability of widespread shortages of consumer goods if there’s any blockage of trade with China. This would particularly affect clothing, household supplies, household whitegoods and office supplies (including computers and mobile phones). Construction materials would also be subject to acute shortages. Australia’s domestic food supply chains are strong but, as shown during the Covid-19 pandemic, still vulnerable to panic buying and hoarding.

Although exemptions from competition law enabled supermarkets and oil refiners to coordinate the management of supplies during the early days of the Covid-19 pandemic, that wouldn’t suffice to control the distribution of goods during a sustained shortage. Rationing powers used during World War II extended to both food and clothing, both to ensure a fair distribution and to limit inflation.

The *Liquid Fuel Emergency Act 1984* provides for the rationing of petrol and diesel fuel, and the relevant guidance was updated in 2016 (DEE 2016). It enables the minister to direct that fuel can’t be sold without the demonstration of an entitlement, to place daily limits on the amount that can be purchased and to exempt clearly identified users. As the guidance explains, it’s essential that any rationing scheme is practical to implement and administer using existing business infrastructure and practices, and also that it’s easy to understand and communicate, reflecting normal consumer behaviour where possible. The guidance says that any rationing system should be flexible in order to respond to diverse emergencies and that there should be a clearly defined, and appropriately limited, decision-making framework: ‘Maintaining the integrity, clarity and efficiency of the operational framework is paramount.’

There would be merit in the Treasury designing a more generalised rationing scheme that would meet those requirements, working in collaboration with the Australian Competition and Consumer Commission, so that there would be a plan in place should an emergency arise.

The experience of managing the economic impact of the Covid-19 pandemic has highlighted the capacity of government to moderate the sudden loss of employment flowing from an external shock. The government's JobKeeper and other stimulus programs kept employees engaged with employers even when there was little business income, while central bank support to bank lending and emergency rules restricting foreclosures, evictions and bankruptcies forestalled the destruction of businesses and economic hardship. The shock described in this paper would be significantly larger than that from the Covid pandemic, but similar tools of government support could be applied.

The Treasury's International Economics and Security Division could also give some broader thinking to what a wartime economy would look like. In World War II, more than two years elapsed between Australia's declaration of war on Germany and the declaration of war on Japan. In that time, a large reorganisation of the Australian economy had taken place and supplies were on a war footing. In any conflict between the US and China, the economic effects would be almost immediate, which strengthens the case for early planning.

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Notes

- 1 Gompert et al. (2016) argue that neither power would use nuclear weapons: 'Even in an intensely violent conventional conflict, neither side would regard its losses as so serious, its prospects so dire, or the stakes so vital that it would run the risk of devastating nuclear retaliation by using nuclear weapons first.'
- 2 'China', *Observatory of Economic Complexity*, [online](#).

ACRONYMS AND ABBREVIATIONS

ChAFTA	China–Australian Free Trade Agreement
CIC	Critical Infrastructure Centre
DFAT	Department of Foreign Affairs and Trade
EU	European Union
GDP	gross domestic product
IEA	International Energy Agency
LED	light-emitting diode
LNG	liquefied natural gas
NATO	North Atlantic Treaty Organization
OPEC	Organization of the Petroleum Exporting Countries
UK	United Kingdom
UN	United Nations

What if ...?

Economic consequences for Australia of a
US–China conflict over Taiwan