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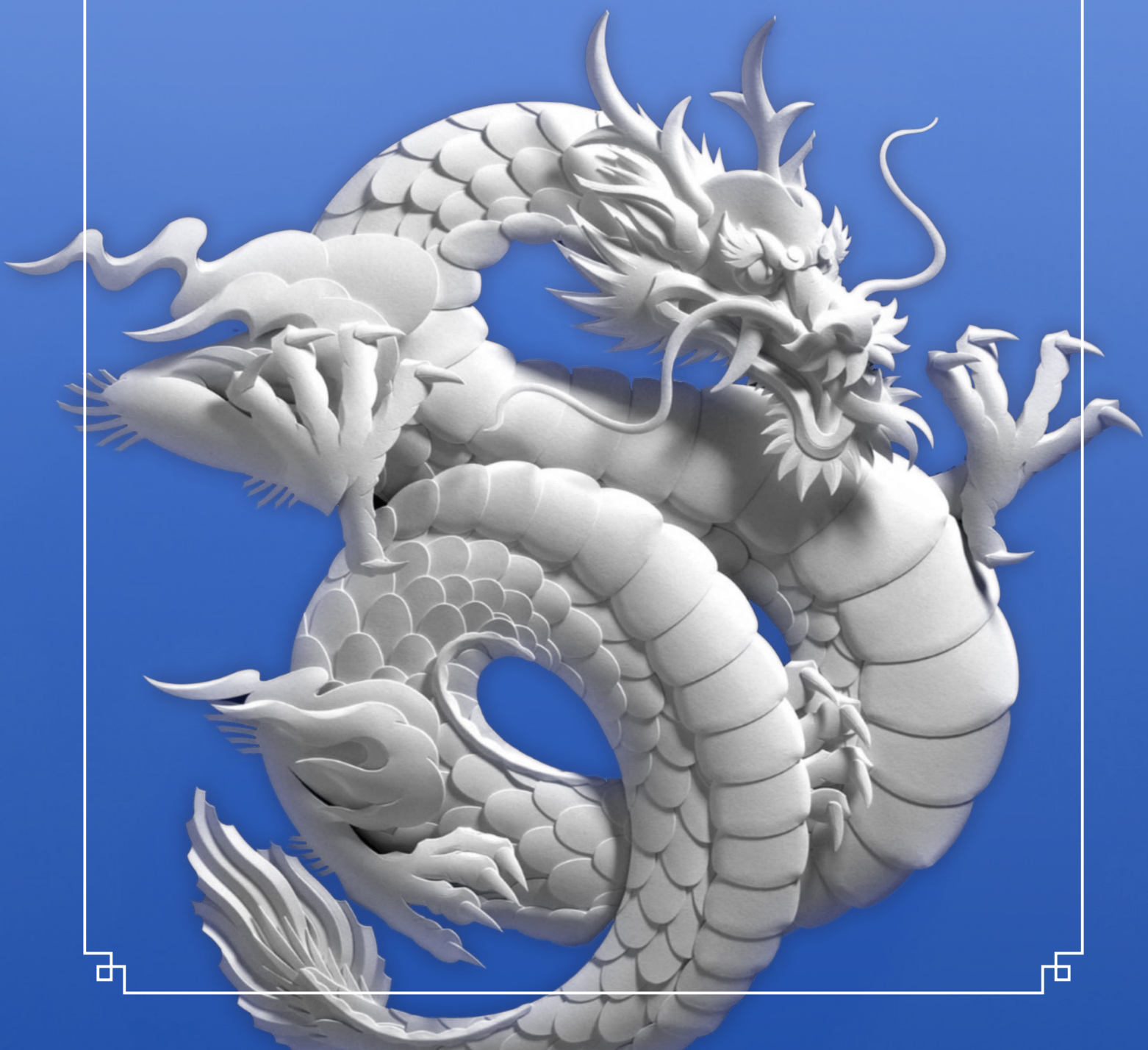
Australia's Export Exposure to China's Coronavirus Epidemic

Salvatore Babones



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Contents

Executive Summary

China's 2020 coronavirus epidemic is first and foremost a human tragedy, but it also has economic ramifications, both for China and for its trading partners. Few countries depend on the China market to such an extent as Australia.[1] In 2019, Australia exported $157 billion in goods and an estimated $18 billion in services to China (including Hong Kong and Macau).[2] Australia's $175 billion total exports to China constituted 37.5% of all exports and 9.3% of Australia's GDP. If the coronavirus epidemic results in major reductions in Chinese purchases of Australian goods and services, the impact on the overall Australian economy could be substantial. The effects could be especially pronounced in particular industries that are highly vulnerable to a disruption in the Chinese market.

This paper estimates the direct and immediate effects of the coronavirus epidemic on the revenues of Australia's major export industries. It breaks down Australia's exports to China by major industry group, estimates the China concentration of each industry's exports, and evaluates the risk of market disruption for each industry. Of 18 major export industries (9 in goods and 9 in services), the epidemic poses a high risk of disruption for four industries and a medium risk of disruption for four industries.

Industries at high risk of disruption from coronavirus are:

- Passenger transport
- Business travel
- Tourism
- Education services

Industries at medium risk of disruption from coronavirus are:

- Gold
- Freight transport
- Financial services
- Management consulting

Assuming that the coronavirus epidemic is over by June, 2020, the total cost to Australia in lost export revenues is likely to fall between $8 billion and $12 billion, or roughly 0.4% to 0.6% of GDP. *This is not an estimate of the loss to GDP, which may be larger.* The total effect of an event like the coronavirus on GDP is contingent on many factors and would require much more detailed modeling than is undertaken in this paper.

In the lower-impact scenario of the effects of the coronavirus on Australia's export industries, lost revenues will be concentrated in service industries like education and tourism, which are almost certain to be severely affected by the epidemic. In the higher-impact scenario, minerals export losses could become substantial as well. Due to the enormous scale of Australia's minerals exports to China, even small percentage disruptions would cause large absolute reductions in export revenues.

However, Australia's miners are accustomed to managing risk and have well-developed tools for minimising its effects; such as forward contracts, commodities futures, and credit insurance. They also tend to hold substantial financial reserves. Although they may suffer losses due to the coronavirus epidemic, they are well-prepared for such a contingency. Moreover, any losses they suffer are almost certain to be borne by private investors, and are unlikely to result in calls for a taxpayer-funded bailout.

In contrast, Australia's highly-exposed service industries have few tools for managing risk, little experience in using those tools, and close links to the government. Their financial reserves are relatively small. These factors combine to generate serious moral hazards in some (though not all) service export industries. Among all Australian export industries, the only one for which the coronavirus epidemic poses a systemic risk is the university sector. Chinese enrolments at Australia's higher education institutions have risen six-fold since 2002, without a corresponding increase in risk preparedness. Some Australian universities may suffer serious uninsured revenue reductions as a result of the coronavirus epidemic.

The coronavirus epidemic has also highlighted the need for all services exporters to keep greater reserves and/or purchase business disruption insurance to insure against low-probability, high-impact events like this year's coronavirus epidemic.

1. Introduction: Australia's exports to China

China is Australia's number one export destination, accounting for more than 40% of Australia's exports of physical goods, or more than the next seven largest export destinations combined.[3] Minerals (primarily iron ore), gold, and fossil fuels are Australia's three largest goods exports to China, with agricultural products also accounting for substantial sums.[4] Services exports are more difficult to estimate from publicly available data, but are in general much smaller than goods exports.[5] Australia's largest category of services export to China is education services, which rivals agriculture. The second largest services category is tourism, which accounts for less than half the export levels of education services. Australia's top 10 exports to China are summarised in Figure 1.

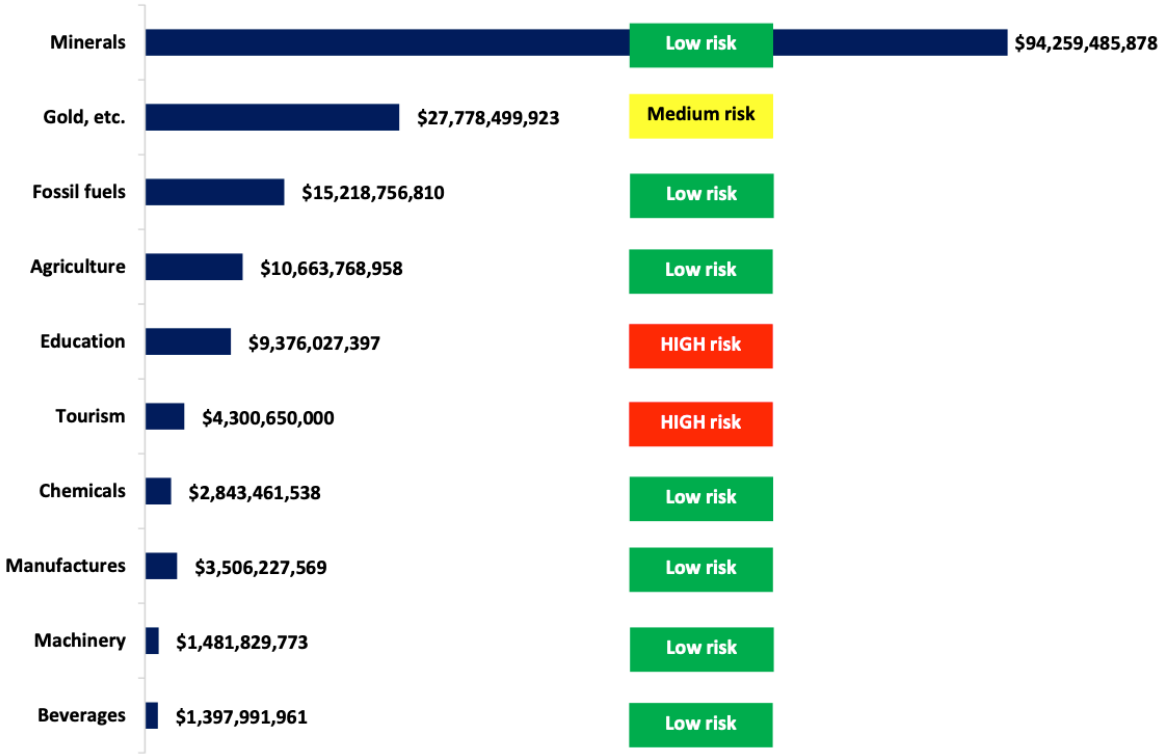
Areas under the direct control of the People's Republic of China include the 31 provincial-level units of mainland China and the special administrative regions of Hong Kong, and Macau. These are collectively referred to as 'China' in this paper, except where otherwise noted. Hong Kong trade figures have been included under China despite the fact that the region is not subject to the same travel restrictions — both because the majority of goods exports unloaded in Hong Kong are actually bound for mainland China, and because many airlines have suspended services to Hong Kong due to coronavirus.[6]

This paper focuses on the potential of the coronavirus epidemic in China to disrupt Australian exports to China. It does not consider the potential for the coronavirus to spread beyond China, whether to Australia or other countries. Different categories of exports from Australia to China exhibit different levels of risk of disruption due to the coronavirus epidemic. The coronavirus epidemic has the potential to disrupt exports through at least three different routes:

1. Reduction in demand due to the general reduction of economic activity in China
2. Reduction in demand due to the disruption of China-centered production networks
3. Disruption due to government actions taken to protect public health

Route (1) is the primary mechanism through which the coronavirus epidemic is likely to affect most of Australia's goods exports to China (with the exception of gold). A general reduction in China's GDP will lead to a commensurate reduction in China's demand for Australian commodities like iron, coal, gas, and beef. Estimates of the extent to which the coronavirus epidemic will affect China's GDP vary wildly, with respectable predictions ranging from a low of 0.5% to a high of 2.0%.[7] These have been taken as benchmarks for the likely effects of route (1) on

Figure 1. Australia's Top 10 Exports to China (2019)



the volume of Australian goods and services exports that are vulnerable to a general reduction in Chinese demand. Additional price effects are detailed below.

Route (2) is of serious concern for countries closely tied into China-centered production networks, such as those for home electronics and mobile phones. Some Australian manufacturers operate production networks through which intermediate goods from Australia are sent to China for final assembly into finished products and then exported from China to the rest of the world, but such networks are rare and do not constitute a substantial portion of Australia's exports to China.[8] Thus although route (2) is of serious concern for some Australian companies, it is not a substantial source of disruption for Australian exports as a whole.

Route (3) is the primary mechanism through which the coronavirus epidemic is likely to affect most of Australia's services exports to China. The Australian government has announced a blanket immigration ban of indeterminate duration on arrivals from China, excepting only "Australian citizens, Australian residents, dependents, legal guardians or spouses".[9] The government has also recommended against all travel by Australians to China, and many employers have implemented travel bans of their own. Even after government restrictions are ultimately lifted, commercial considerations may lead airlines to continue to restrict capacity on China routes. These travel restrictions severely curtail the ability of Chinese students to attend Australian universities, and completely eliminate access to Australia for Chinese tourists and business travelers. They also reduce the capacity for air freight shipments between Australia and China.

These three routes generate differing levels of risk of disruption across Australia's major export industries, as depicted in Table 1. Goods exports generally have a low risk level, since they are subject only to route (1) risks associated with a general economic slowdown. Some services exports are also low-risk: telecommunications services exports (which consist mainly of online services delivered electronically) and perhaps the residual category of 'other' services. However, most services exports have a higher risk of disruption, since face-to-face contact is often required for the delivery of services. Services in the high risk category include passenger transport, education services, tourism, and business travel. Services that often involve — but do not necessarily require — face-to-face meetings, like financial services and management consulting, are at medium risk of disruption, along with freight transport services.

Gold exports are unique, in that they are driven mainly by central bank purchases of gold for monetary reserves. Specific, isolatable figures for gold exports are not reported in the trade statistics that form the basis for this paper.[10] Moreover, it is impossible to predict how the coronavirus epidemic might affect monetary gold purchases by the People's Bank of China (PBOC), which increased its gold reserves substantially in 2019. The coronavirus epidemic might have no affect on the PBOC's gold purchase program, or it could result in reduced purchases as the PBOC redirects its resources to supporting China's struggling economy. In light of this profound uncertainty, the risk for gold exports has been arbitrarily set at a medium level. The Australian gold export industry's exposure to the China market has not been calculated, and projections of minimum and maximum losses have not been offered. Gold exports are included in Australia's export totals, but not in this paper's estimates of potential losses due to the coronavirus epidemic.

Table 1. Exports to China by Industry and Risk Level

Export industry	Total exports to the world	Exports to mainland China only	Exports to mainland China + HKG / Macau	Total China concentration	Risk level
ALL GOODS	**$391,812,064,260**	**$149,607,947,326**	**$157,211,818,978**	**40.1%**	
Agriculture	$37,667,632,348	$9,614,134,277	$10,663,768,958	28.3%	Low
Beverages	$3,588,184,627	$1,251,638,300	$1,397,991,961	39.0%	Low
Minerals	$137,107,754,584	$93,912,688,775	$94,259,485,878	68.7%	Low
Fossil fuels	$127,202,360,330	$15,136,490,698	$15,218,756,810	12.0%	Low
Animal/vegetable oils	$649,184,373	$60,807,052	$61,796,568	9.5%	Low
Chemicals	$11,987,716,077	$2,515,454,600	$2,843,461,538	23.7%	Low
Manufactures	$25,871,126,815	$2,738,784,780	$3,506,227,569	13.6%	Low
Machinery	$16,991,933,345	$799,723,716	$1,481,829,773	8.7%	Low
Gold, etc.	$30,746,171,761	$23,578,225,128	$27,778,499,923	N/A	Medium
ALL SERVICES	**$99,005,000,000**	**$14,975,000,000**	**$17,840,657,534**	**18.0%**	
Passenger transport	$3,126,000,000	$265,710,000	$475,152,000	15.2%	HIGH
Freight transport	$3,240,000,000	$398,520,000	$725,760,000	22.4%	Medium
Business travel	$2,830,000,000	$461,290,000	$554,680,000	19.6%	HIGH
Education	$28,983,750,000	$8,775,000,000	$9,376,027,397	32.3%	HIGH
Tourism	$22,635,000,000	$3,780,045,000	$4,300,650,000	19.0%	HIGH
Financial services	$5,013,000,000	$681,768,000	$987,561,000	19.7%	Medium
Telecommunications services	$5,246,000,000	$83,936,000	$178,364,000	3.4%	Low
Management consulting	$11,476,000,000	$160,664,000	$596,752,000	5.2%	Medium
All other services	$16,455,250,000	$368,067,000	$645,711,137	3.9%	Low
ALL EXPORTS	**$490,817,064,260**	**$164,582,947,326**	**$175,052,476,512**	**35.7%**	

In addition to varying levels of risk, different industries also have varying levels of exposure to the Chinese market, as depicted in Figure 2. The minerals category, which consists overwhelmingly of iron ore, is also extraordinarily exposed to the Chinese market, with more than two-thirds of Australia's minerals exports going to China in 2019. Gold exports may be similarly exposed, but data limitations make it inappropriate to calculate export concentrations on the basis of the export figures reported in Table 2.[11] But gold and other minerals industries, although highly exposed to the Chinese market, are unlikely to spark calls for government intervention should they suffer serious export declines. Seen from that perspective, the most alarming categories in Figure 2 are the high-risk, high-exposure service industries: education, business travel, and tourism all rely on China for substantial portions of their export

Figure 2. Top 10 Export Exposure to China (2019)

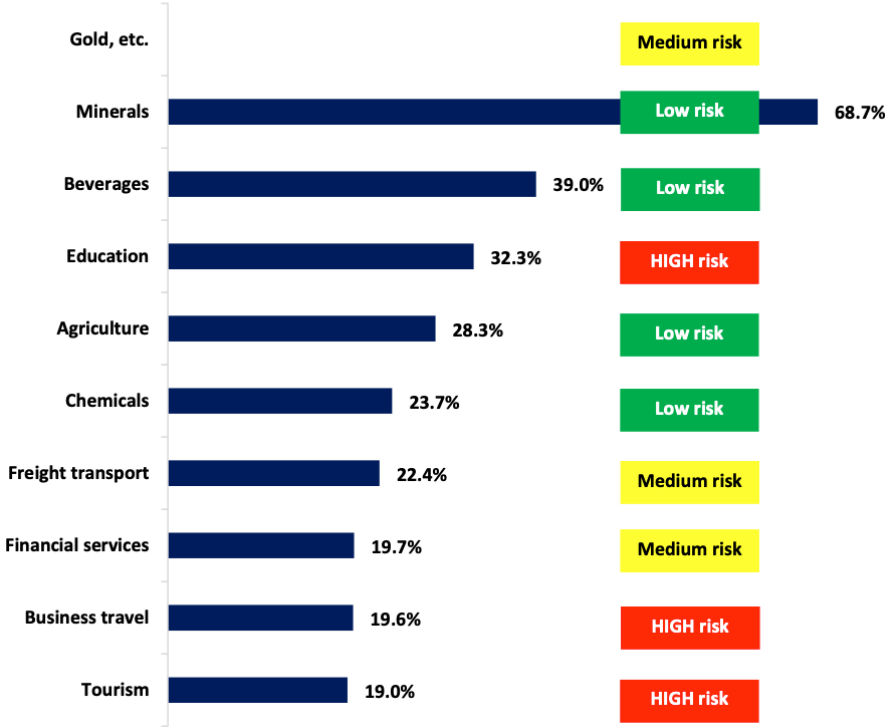


Table 2. Potential Coronavirus Revenue Losses by Industry

Export industry	Exports to mainland China + HKG / Macau	Minimum likely export revenue loss during epidemic	Maximum likely export revenue loss during epidemic	Mimimum likely 2020 export revenue loss (assuming a 6 month epidemic)	Maximum likely 2020 export revenue loss (assuming a 6 month epidemic)
ALL GOODS	**$157,211,818,978**			**$3,152,959,086**	**$5,247,498,962**
Agriculture	$10,663,768,958	2.490%	5.920%	$132,763,924	$315,647,561
Beverages	$1,397,991,961	0.500%	2.000%	$3,494,980	$13,979,920
Minerals	$94,259,485,878	5.475%	8.840%	$2,580,353,426	$4,166,269,276
Fossil fuels	$15,218,756,810	5.475%	8.840%	$416,613,468	$672,669,051
Animal/vegetable oils	$61,796,568	0.500%	2.000%	$154,491	$617,966
Chemicals	$2,843,461,538	0.500%	2.000%	$7,108,654	$28,434,615
Manufactures	$3,506,227,569	0.500%	2.000%	$8,765,569	$35,062,276
Machinery	$1,481,829,773	0.500%	2.000%	$3,704,574	$14,818,298
Gold, etc.	$27,778,499,923	INSUFFICIENT DATA		--	--
ALL SERVICES	**$17,840,657,534**			**$4,757,069,607**	**$6,640,467,610**
Passenger transport	$475,152,000	40.0%	80.0%	$95,030,400	$190,060,800
Freight transport	$725,760,000	20.0%	60.0%	$72,576,000	$217,728,000
Business travel	$554,680,000	40.0%	80.0%	$110,936,000	$221,872,000
Education	$9,376,027,397	60.0%	80.0%	$2,812,808,219	$3,750,410,959
Tourism	$4,300,650,000	70.0%	90.0%	$1,505,227,500	$1,935,292,500
Financial services	$987,561,000	20.0%	40.0%	$98,756,100	$197,512,200
Telecommunications services	$178,364,000	0.5%	2.0%	$445,910	$1,783,640
Management consulting	$596,752,000	20.0%	40.0%	$59,675,200	$119,350,400
All other services	$645,711,137	0.5%	2.0%	$1,614,278	$6,457,111
ALL EXPORTS	**$175,052,476,512**			**$7,910,028,693**	**$11,887,966,572**

revenues. Passenger transport is also high-risk, but it is relatively low-exposure, due to the fact that the industry generates only 15.2% of its export revenues from China.

Export volumes, price effects, and disruption risk combine to produce potential levels of export revenue losses, as estimated in Table 2. The loss estimates reported in Table 2 represent the expected shortfall in 2020 exports compared to 2019 levels, under the assumption that the disruption due to the coronavirus epidemic will be concentrated in the first six months of 2020, with exports resuming historical levels in the second half of the year. Three industries in particular are almost certain to sustain 2020 export revenue losses in excess of $1 billion: minerals, education, and tourism.

For low-risk industries that are mainly subject to route (1) risks, export volume reductions for half a year in the range of 0.5% (minimum estimate) to 2.0% (maximum estimate) have been applied. These include all goods exports (other than gold), telecommunications services, and 'other' services. These volume effects have been compounded by price effects for industries where prices are highly sensitive to demand, to arrive at full value revenue reduction estimates. For minerals and fossil fuels, export price reductions for half a year in the range of 5.0% (minimum estimate) to 8.0% (maximum estimate) have been applied, based on price movements in commodities futures markets.[12] Corresponding export price reductions in the range of 2.0% (minimum estimate) to 4.0% (maximum estimate) have been applied for agricultural exports.[13] The remaining route (1) industries have stickier price levels that are unlikely to fluctuate in direct response to the crisis.

The estimation of disruption risks for the remaining medium- and high-risk service export industries poses difficult challenges, so a range has been used that takes into account the factors detailed below.

After a more or less normal January, passenger flights have been almost totally suspended for February, a suspension that may (or may not) last for several months. Even when flights resume, travel will not immediately return to full pre-crisis levels. Qantas joined many international airlines in suspending service to China even before the announcement of the government's travel ban, and although flights to and from Hong Kong continue, several airlines have already scaled back these services as well.[14] For example, Virgin Australia has announced plans to permanently discontinue its Hong Kong services as of March 2, partly in response to the crisis.[15] It is unknown how long the Australian government's China travel ban may last, and even when it is lifted, travel between Australia and China is likely to remain depressed for quite some time.[16] Airlines would have had one month of normal revenues in January, followed by near-total revenue losses for February (and perhaps extending into March), followed by depressed revenues at least through June. Thus it has been assumed that passenger transport will suffer export revenue losses in the range of 40% to 80% during the first six months of 2020. Business travel (consisting of spending in Australia by Chinese business travelers) has been evaluated on the same basis as passenger transport, but it is assumed that tourism revenues will suffer a steeper decline, as spending per tourist falls along with tourist numbers. Freight transport, however, is assumed to be slightly more impervious to disruption risks than passenger travel (20% to 60% reduction). It is assumed that financial services and management consulting will suffer a moderate loss of China business ranging from 20% to 40% throughout the first half of 2020, with losses mitigated by the potential for teleconferencing to substitute for in-person client meetings.

That leaves education. As of November, 2019, Australia hosted 276,985 Chinese students, with roughly 63% in the higher education sector and a further 37% in other education sectors such as English-language education, vocational education, and schools.[17] Students can start English-language classes at any time during the year, but the academic year for Australian universities starts around the last week of February. The coronavirus epidemic thus hit at the worst possible time from the standpoint of university enrolments: most continuing students who are unable to travel to Australia in February (or early March at the very latest) may miss an entire semester of study if they are unable to study online, while many new students who do not commence their degree programs in February may never commence them at all. The Australian government estimates that 62% of all Chinese student visa holders were offshore as of February 1.[18] The proportion is slightly higher for university students (63%) and the numbers suggest that many anticipated university enrollees did not yet have visas as of that date.[19] Accordingly, the potential export revenue decline for the education sector has been estimated in the range of 60% to 80%, or slightly less than the decline for tourism.

Overall, Australia is likely to lose between $8 billion and $12 billion in export earnings as a result of the coronavirus epidemic. In the low-impact scenario, the service sector will bear the brunt of the losses, since substantial service sector losses are almost certain to occur (due to travel bans that are already in effect). In the high-impact scenario, goods exports will account for most of the increased losses, since the base level of Australia's goods exports to China is much higher than the base for services. Any effects of the coronavirus epidemic on goods exports, however, are likely to be within the ordinary trading ranges that goods exporters are accustomed to managing. The potential revenue losses in service industries are, by contrast, almost unprecedented, and will account for larger proportions of individual exporters' revenues. Australia's export services industries are ground zero for the economic impact of the coronavirus epidemic.

2. High risk service industries and moral hazard

Australia's services exports industries have been riding the China wave for most of the last two decades, but the growth since 2014 has been extraordinary. Australian services exports to China (including Hong Kong and Macau) more than doubled between 2014 and 2019.[20] To put this in context, Australia's services exports to other countries have risen by approximately one-third over the same five-year period. Education, transportation, and tourism exports have led the way, each more than doubling over the last five years. Services exports to China have become a great success story for the Australian economy.

Yet rapid compound revenue growth over a sustained period is often a sign of risky behaviour: as economic theory teaches, there is no such thing as a free lunch. Australia's services exporters are not necessarily wrong to have pursued such rapid growth, but they should have been better prepared for an end to that growth, and for an eventual decline — whether gradual or sudden. Even if they did not foresee the specific form that a crisis would take, the possibility of a crisis of some kind should have been apparent to all.

Within the services export sector, passenger transport is the sector that has been most directly affected by the coronavirus epidemic, with all flights between Australia and China having been indefinitely cancelled. Qantas carried roughly 1 million passengers on routes to and from China (including Hong Kong and Macau) in 2019, but these accounted for only one-eighth of Qantas' total international passenger movements for the year.[21] This is substantial, but should not pose a serious risk to the airline's solvency. The airline's CEO, Alan Joyce, claims that Qantas is better placed "than any other airline" to deal with the financial fallout of the coronavirus epidemic, though it should be noted that the airline has asked (unsuccessfully) for federal loan guarantees as recently as 2014.[22]

Business travel operators (like hotels and catering services) also generate substantial revenues from China-related business, and China is the largest single source of business travelers to Australia.[23] But with Chinese business travelers making up just 16.2% of all business travelers to Australia, the concentration risks run by these businesses should not prove existential.

Tourism services are slightly more exposed than business services, with mainland China (16.5%) and Hong Kong (3.4%) ranking among Australia's top sources of tourist arrivals.[24] Here the threat to individual operators is more serious, since (in contrast to the situation with business travel) international tourism is a somewhat distinct market from domestic tourism, and particular companies may even focus specifically on the Chinese market. Still, the risks to the tourism sector overall do not seem so large as to post a systemic problem.

When it comes to education exports, the situation is very different. Like firms in the other three categories of high-risk services exporters, education services exporters took advantage of the China boom. The number of students enrolled from China (including Hong Kong and Macau) in Australian educational institutions has risen by a factor of four since 2002, doubling once between 2002 and 2008 and doubling again between 2008 and 2019.[25] In higher education (which includes the university sector), Chinese enrolments have risen six-fold since 2002. Chinese students account for 29.2% of all international student enrolments in Australia, but 39.4% of international higher education enrolments. And within the higher education sector, they are disproportionately concentrated in high-revenue coursework master's programs.[26] As a result, the one Australian export sector most at risk of a systemic economic crisis arising out of the coronavirus epidemic is the university sector.

It is inherently risky to build a business around education exports to the citizens of a totalitarian police state with which Australia has contentious international relations. When those services are to be delivered in Australia in local currency, the fact that China's currency is not freely convertible on international markets compounds the risk even further. A sudden drop in the value of the Chinese yuan, or worse, a suspension in its convertibility, could throw services exporters' business models into sudden disarray. The possibility of a political or economic event — or even a regional war — cutting off the flow of Chinese tourists and students could be even more catastrophic, and has been repeatedly mooted in Australian debates over the country's relationship with China, but ignored.

These risks associated with China were not, even before the coronavirus, merely hypothetical. China very publicly 'weaponised' its tourists during a political dispute with South Korea in 2017, prohibiting its tour operators from organising group excursions to the country.[27] Overseas student flows to Australia fell 20% between 2009 and 2011 due to a spike in the value of the Australian dollar; the only decline in Chinese student numbers in the last 25 years.[28] The Centre for Independent Studies explicitly warned of the risk of "a sudden and severe fall in Chinese enrolments" in its August, 2019 paper *The China Student Boom and the Risks It Poses to Australian Universities*.[29] And of course the 2003 SARS and 2012 MERS epidemics should have reminded us all that even in the twenty-first century, relatively wealthy countries with reasonably well-developed public health systems can still fall prey to epidemic disease.

The rapid, sustained revenue growth of the last five years gave education services exporters ample opportunities to build reserves in preparation for a sudden downturn, even if they could not predict the precise form or timing of a possible future crisis. It now appears that they have squandered these opportunities. The UNSW vice chancellor Ian Jacobs pointed out last August the risk of a crisis during which "students from China ... might not be able to, or wish to, come to Australia". He maintained that "universities have been aware of, and have carefully considered, these risks" and that "University leaders, just like our peers in banking, mining and other business sectors, take these risks incredibly seriously". Yet he admitted that many universities "have limited financial reserves to deal with [a] decline" in Chinese student numbers.[30] This prompts an obvious question: if university leaders took these risks as seriously as do banking and mining executives, why did they not hold reserves on the scale of banks and mining companies?

In fact, the China risks run by Australian education exporters were even more serious than those run by miners, on account of the 'stickiness' of services exports. If China were to suddenly stop buying Australian coal, the coal formerly bound for China could ultimately be redirected to India (or other markets). Exporters might experience a major decline in the price as global coal demand softened, but coal exports, once afloat, can in principle be sent anywhere in the world. In an industry where export prices routinely double or decline by half over a period of just a few years, such gyrations are built into the business model.

By contrast, if tens of thousands of Chinese students suddenly cancel their enrolments at Australian universities and other education service providers, they can't simply sell their places to Indian students instead, since the international student recruitment, application, approval, and visa process takes place over several months, often up to a year. Nor can they easily adjust prices to new market conditions. Fungible commodities like coal are sold into global markets, but bespoke services like student places are not interchangeable. Universities (and other education services exporters) must be aware of this, yet they still chose to maintain minimal financial reserves against the possibility of a crisis.

An obvious reason for the inconsistency between education providers' (and especially universities') awareness of the risks they were running and lack of provision for those risks is moral hazard: the expectation that organisations (and their leaders) will reap the rewards of success but others will bear the burdens of failure. In the case of universities in particular, moral hazards are generated by the expectation that government will inevitably have to bail them out in case of an emergency that might compromise their ability to educate domestic students.

Bailouts exacerbate moral hazard and encourage organisations (and their leaders) to continue ignoring existential risks in the future. Yet the education sector is already raising expectations for a government bailout in response to the coronavirus epidemic. The epidemic has been added to the remit of the Global Reputation Taskforce initially set up to address the long-term impacts of the 2019-2020 bushfire crisis. The chair of the taskforce is Phil Honeywood, CEO of International Education Association of Australia (IEAA), which represents "almost 280 institutions ... including higher education, TAFE, vocational education, schools and English language colleges".[31] In response to the coronavirus crisis, he has pointed out that Australia's education exports are "worth $39 billion a year and if we take Chinese students out of that equation for first semester, you would be looking at a minimum $8 billion budget hit for the international education sector and the wider economy".

Yet at the time of his statement, the government had already reported that more than one-third of Chinese students were physically in Australia before the travel ban went into effect. Moreover, it is well-known that more than half of Australia's education 'exports' consist of expenditures for living expenses, not tuition.[32] Honeywood has, in effect — and concerningly — portrayed a maximum all-economy revenue loss as a 'minimum budget hit' for the industry.

Instead of seeking government bailouts in the wake of a crisis, universities and other service industry exporters should have sought business disruption insurance during their period of double-digit revenue growth. Business disruption insurance can be expensive, but it forces organisations to confront the true scale of the risks they run. For example, in 2017, the University of Illinois obtained insurance against a sudden fall of 18.5% or more in Chinese student revenue at its schools of engineering and business.[33] The US$60 million policy cost the university US$424,000 per annum, or just over 0.7% of the insured value. This suggests that a similar policy for an Australian university like the University of Sydney, which likely takes in more than $550 million a year in Chinese tuition revenue, might have cost around $4 million per annum (before the coronavirus epidemic hit). Other leading Australian universities might have insured their China exposures for even less.

The maintenance of robust financial reserves and the timely purchase of business disruption insurance are the appropriate responses to foreseeable market risks of the kinds that now threaten Australia's services export industries. The risks were foreseeable, and indeed, foreseen. Yet as recently as July, 2019, a TEQSA audit found that only one (unnamed) Australian university and 11 out of 150 higher education providers overall exhibited 'high' financial risk.[34] This suggests a massive failure of regulatory oversight. Private-sector airlines and

tourism operators also did not insure against a clearly identified risk, despite the 2017 South Korea precedent and much public discussion about China's potential 'weaponisation' of its tourist flows.[35]

A government bailout of Australia's services export industries would only exacerbate the moral hazards reflected in their past behaviour, but it seems almost inevitable that calls for such a bailout are forthcoming.

Among public sector exporters, a bailout is most likely for universities, while among private sector exporters, airlines may be first in line. If the government does decide to assist public and/or private industries, it is especially important to make sure that any rescue package is done properly, so that services exporters improve their risk management practices in time for the next crisis.

3. Conclusions and recommendations for immediate action

The Australian government has suspended travel to and from China in order to protect our country from the spread of a deadly epidemic. Notwithstanding the reckless past behavior of Australian education services exporters and the threat of moral hazard arising from a potential government bailout, it is likely that universities and other educational institutions will lobby the government to make good their losses on the argument that the government gratuitously imposed a ban on travel from China. Yet most other countries have imposed similar bans, and in any case many airlines have suspended China flights for commercial reasons. Even in mainland China itself, as well as in Hong Kong, schools and universities have been closed in response to the coronavirus epidemic.

In order to avoid rewarding irresponsible behaviour, it is important that any government assistance offered in response to the coronavirus epidemic not include unconditional grants to make up for revenue shortfalls. Costly government bailouts are rarely economically justified, and are often economically damaging. If the Australian government does provide financial assistance to industries that are adversely affected by the coronavirus epidemic, it is important to ensure that:

- The Australian government does not lose money on its intervention; and
- Organisations receiving government funds bear appropriate costs.

The private sector services exporters most affected by the coronavirus epidemic likely include Qantas (the only Australian commercial airline with direct routes to China), some smaller air services companies, English language schools, and Australian hotels and tourism operators that rely heavily on Chinese clients. ***The public has no moral obligation to bail out these private firms, which should have made appropriate provisions for such a crisis.*** Moreover, any government bailout of weaker firms would distort competition by effectively disadvantaging competitors who did exercise fiscal responsibility before the crisis.

If the government does decide to offer assistance to private firms, it should offer only short-term credit, and only at punitive rates. Only such companies as are likely to emerge from the crisis with viable businesses should be assisted. Since the government is poorly equipped to judge business viability, any government financing that is offered should only be made available in cooperation with banks that share the credit risk on an equitable basis. Thus if the government does decide to help private firms in light of the coronavirus epidemic, any government aid should be strictly limited to **a program of short-term business continuity loans to be made in conjunction with banks that share a portion of the credit risk**.

A distinctive feature of the crisis caused by the coronavirus epidemic is that public-sector organisations are also caught up in it. At least eight Australian universities are probably dependent on Chinese students for more than 10% of their total revenues, according to best estimates based on the limited amount of publicly available data: Sydney (23%), UNSW (22%), UTS (19%), Melbourne (16%), Queensland (14%), ANU (14%), Adelaide (14%), and Monash (no estimate available).[36] Even state primary and secondary schools have in recent years marketed educational services to Chinese families overseas, offering to educate international students onshore (for a fee).

State governments can presumably bear the revenue losses that may be incurred by their schools, but public universities are another matter. Universities should, in the first instance, be expected to meet coronavirus-induced revenue shortfalls out of their contingency reserves. In cases where these prove insufficient, universities should be expected to turn

to financial markets to make up the shortfall. Credit ratings agencies are reportedly confident of their ability to do so.[37] If the government does decide to provide financial assistance to universities affected by the coronavirus epidemic, it should do so **by offering short-term loans to augment universities' reserves at penalty rates of interest**.

Australia's goods-exporting industries are well-placed to weather the coronavirus epidemic, even if they suffer substantial losses — and even if their losses turn out to be greater, in both absolute and relative terms, than the losses of services-exporting industries. They are unlikely to request direct government assistance, although they might benefit from any broad economic support the government and the Reserve Bank provide to the economy as a whole. The robustness of goods-exporting industries should serve as a model to the services exporters.

Like goods-exporting organisations, services-exporting organisations should hold appropriate capital reserves against foreseeable (even if unanticipated) losses. They should also be pressured (via market and regulatory channels) to insure extreme risks through business disruption insurance. For example, listed companies might be required to insure (or show evidence of official reserves) as a condition of access to public capital markets; and auditors of all public companies might be required to report on arrangements to ensure that operations are able to continue in a crisis. And of course the federal and state auditors of public sector organisations like universities can and should withhold low risk ratings from organisations that lack business disruption insurance. When organisations — even public sector organisations like universities — run large risks in pursuit of revenue growth, they should pay the full price of those risks in the insurance market.

The coronavirus epidemic has exposed the fragility of Australia's China-focused services export industries. The warning signs were clearly visible for all to see. With regard to universities, the Centre for Independent Studies explicitly highlighted them just six months ago. In *The China Student Boom and the Risks It Poses to Australian Universities*, we concluded with the warning:

> When it comes to paying the costs of education in Australia, relying on international students may someday mean relying on Australia's taxpayers. The figures presented in this report suggest that the day of reckoning may not be far off. Australia's taxpayers would be well-advised to take note now, and force a change of course before it is too late.[38]

That day of reckoning has now arrived. Australia's taxpayers are likely to be called on to rescue their universities from the most dire financial consequences of the coronavirus epidemic, and perhaps to rescue many private companies as well. The taxpayers should not allow these organisations to continue the reckless behavior that resulted in the crisis in the first place. The coronavirus epidemic, although a public health crisis of momentous proportions, would not have turned into an economic crisis for Australia's universities if the universities had not irresponsibly pursued Chinese student enrolments beyond prudent levels. Instead of seeking to restore their outsized dependence on China as quickly as possible, universities (and other services exporters) should use the crisis as an opportunity to transition toward less risky export strategies.

Appendix. Estimating Australia's services exports to China

The Australian Bureau of Statistics (ABS) does not break down services exports by destination country in its routine quarterly reports. On the contrary: services are not even included in its export statistics. Australia's export statistics are organised around the United Nations (UN) Standard International Trade Classification (SITC) system, which focuses exclusively on goods. The UN System of National Accounts places services exports instead under balance of payments statistics, not trade statistics. Thus what are commonly referred to as 'services exports' are actually recorded as 'services credits' in Australia's balance of payments. Unlike goods exports, which are reported monthly, services credits are reported quarterly. The most recent quarter for which data are available is 3Q2019. Thus the 2019 services export estimates in this paper are based on balance of payments exports credits for the period 4Q2018 to 3Q2019. Fourth quarter 2019 services credits will be reported by the ABS on March 3, 2020.

The ABS does not report services credits by country in its online 'ABS.Stat' database (http://stat.data.abs.gov.au/), but it does provide limited country breakdowns in its annual 'Trade in Services Australia' reports. The most recent report, covering the calendar year 2018, was released in September, 2019.[39] Where accessible, published data on Chinese (and, more rarely, Hong Kong/Macau) proportions of Australia's 2018 services credits in any particular category were applied to the available services credits (4Q2018-3Q2019) in that category to arrive at a 2019 China services exports estimate. China-specific data are not, however, available for all services categories.

There is an additional complication with the ABS statistics on education services credits: they incorporate estimates of the amounts spent by foreign students in Australia, even when those students spend money that they have, in fact, earned in Australia (student visas ordinarily allow up to 20 hours per week of paid work). Student living expenses while in Australia account for slightly more than half of the total value of education service credits.[40] The ABS does not specify what proportion of those purchases represent true export earnings (i.e., are funded out of money brought to Australia for that purpose). As an arbitrary rule-of-thumb, it has been assumed in this paper that true education exports are 75% of the level reported by the ABS, on the assumption that roughly half of student spending on living expenses is supported from money earned in Australia.

Briefly, in addition to the ABS sources outlined above, the assumptions underlying the services export figures reported in Table 1 are:

- **Services credits, Passenger transport:** Estimated based on China/Hong Kong/Macau proportions of passenger traffic to and from Australia[41]
- **Services credits, Freight and Other transport:** Estimated based on China/Hong Kong/Macau proportions of traffic to and from Australia[42]
- **Services credits, Business travel:** Estimated based on China/Hong Kong/Macau proportions of business visas granted[43]
- **Services credits, Education-related personal travel:** Equal to 75% of the amount reported by the ABS for China, pro-rated for Hong Kong and Macau based on their numbers of students in Australia relative to China
- **Services credits, Other personal travel (primarily tourism):** Estimated based on China/Hong Kong/Macau proportions of tourist visas granted[44]
- **Services credits, Financial services:** Based directly on Trade in Services Australia 2018 proportions, pro rated to 2019.
- **Services credits, Telecommunications, computer and information services:** Based directly on Trade in Services Australia 2018 proportions, pro rated to 2019.
- **Services credits, Other business services (primarily management consulting):** Based directly on Trade in Services Australia 2018 proportions, pro rated to 2019.
- **All other services:** Based directly on Trade in Services Australia 2018 proportions, pro rated to 2019.

Where Macau figures have not been reported separately, they have been assumed to be negligible. Macau has less than a tenth of the population of Hong Kong and a tiny fraction of the population of China. It has no major commercial port and no commercial flight connections to Australia.

Endnotes

1 Only North Korea, Mongolia, and Laos rely on the Chinese market for higher proportions of their exports than does Australia.

2 Goods exports are actual 2019 exports as reported by the ABS. Services exports are for the four quarters running from October, 2018 to September 2019, and are estimated as described in the Appendix. Hong Kong and Macau are included in the China figures because (1) they are legally and practically part of China, (2) they are likely to be affected by coronavirus in ways that are similar to China, and (3) most goods exported from Australia to Hong Kong are, in any case, ultimately bound for mainland China.

3 All goods export figures are calendar year 2019 data from the Australian Bureau of Statistics' ABS.Stat database (http://stat.data.abs.gov.au/). China figures include Hong Kong and Macau, unless otherwise stated.

4 Note that gold exports are difficult to substantiate, due to the fact that exports of monetary gold (to be used for central bank reserves) are not publicly reported in detail. The category labeled in this report as 'Gold, etc.' is SITC Section 9 - Commodities and transactions not classified elsewhere. Various forms of gold exports make up the bulk of this category, but the true level of Australia's gold exports cannot be ascertained from the publicly available data used in this paper. Moreover, unlike other export categories, Section 9 data can be negative or exceed 100%, due to special attributes of this category. As a result, it is impossible to properly calculate proportions and some other statistics for gold exports.

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