9 Insights for Australia – regions in foreign trade

Advances in international trade literature have shown that, overall, trade is good; however, gains from foreign trade are not the same for everyone. Foreign trade may generate adverse welfare and labour impacts in local markets, increasing economic inequality. Therefore, a better understanding of foreign trade patterns and trends in territories at a higher disaggregation level than the traditional country-unit is desirable. This chapter focuses on Australian regions.¹¹

Australia is an interesting case study due to its geographical and economic conditions: it is the world's sixth-largest country in geographical terms and one of the least densely populated, where the population is concentrated in a few cities. In addition, Australia is highly dependent on a few large “neighbouring” countries, especially China, and it is highly specialised in a few sectors, particularly primary industries and services. In other words, the diversification of Australian exports in terms of both markets and products, or as commonly known in the international trade literature, the extensive margin of trade, is low.¹² Consequently, Australia is vulnerable to external shocks.

Australia's vulnerability to external shocks is of considerable policy relevance. For example, policymakers in Australia fear that the ongoing trade war between China and the US has significant negative consequences for the Australian economy.¹³ Motivated by the high dependency of Australia on a few sectors and trading partners, we focus on the relationship between foreign trade and regional inequality. Although Australia is an interesting and relevant case to study in a globalised world, foreign

11 In this chapter, Australian regions refer to eight Australian states. This is different to the concept of “regional Australia”, which refers to the non-metropolitan parts of the country and includes towns, small cities, and areas that lie beyond the major capital cities (Sydney, Melbourne, Brisbane, Perth, Adelaide, and Canberra).

12 At country level, the international trade literature has explored the evolution of the extensive margin of trade in different economic areas. For example, using two different methodologies to compute the margins of trade (for products), Bensassi, Márquez-Ramos, and Martínez-Zarzoso (2012) focus on exports from North Africa, while Márquez-Ramos, Florensa, and Recalde (2015) focus on Latin America. To the best of our knowledge, there is not previous research focusing on the evolution of trade margins in Australian regions.

13 See, e.g., the article *‘Wrong place at the wrong time’: how the US-China trade war is putting the squeeze on Australia* (The Guardian, 21 September 2019, available at <https://www.theguardian.com/business/2019/sep/21/wrong-place-at-the-wrong-time-how-the-us-china-trade-war-is-putting-the-squeeze-on-australia>). Other example is the Chinese economic slowdown. However, consequences of “China trade shocks” for Australia are unclear (see, e.g., the article in The Conversation, 2 August 2019, *‘Australia depends less on Chinese trade than some might think’*, available at <http://theconversation.com/australia-depends-less-on-chinese-trade-than-some-might-think-120423>).

trade in Australian regions, as well as its relationship to trade policy and economic inequality, is understudied.

Our contribution to the literature is threefold. First, we identify “hot issues” in the Australian context regarding foreign trade in regions. To do so, we review the existent related literature for Australia at both country and regional level. Second, we provide a comprehensive collection of stylised facts about foreign trade (exports) in Australian regions. Finally, we interact trade policy and economic inequality with trade patterns and trends in Australian regions. More specifically, we focus on the co-movements of Australian foreign trade (exports/openness) with trade liberalisation and unemployment. Crucially, in our analysis, we focus on both trade in goods and trade in services.

A brand of the literature closely related to our research is that of smart specialisation. Conceived within the reformed Cohesion Policy of the European Commission, smart specialisation is a policy approach that aims to boost jobs and growth by enabling the identification and development of competitive advantages. A key characteristic of smart specialisation is the place-based dimension, which relates to a strong anchorage in territories (Gómez Prieto, Demblans, and Palazuelos Martínez, 2019). Smart specialisation in Australia has been locally driven; that is, existent initiatives have not been driven by policy interventions. The Australian experience shows that, although the interest in the smart specialisation can increase and take shape, a wider policy framework support from other levels of government is needed to take it forward. In addition, more emphasis on coherence and collaboration, against a history of fragmentation and competition, is required (Gómez Prieto et al., 2019; Wilson, 2018). Place-based innovation becomes shaped by emerging global opportunities, such as those related to foreign trade because regions can analyse their core assets and seek new market opportunities.

The rest of the chapter is structured as follows. Sections 9.1 and 9.2 review the literature on Australian foreign trade. Then, we present our main analysis: firstly, we describe the characteristics of Australian exports at country-level; secondly, we describe Australian foreign trade (exports) by region and, thirdly, we analyse how regional exports interact with trade liberalisation. In section 9.6, we analyse the relationship between regional unemployment and foreign trade (openness). The final section concludes and provides a number of relevant insights on the relationship between trade policy, foreign trade, and economic inequality in Australian regions.

9.1 Review of country-level studies

Australian foreign trade (and foreign trade by Australian regions in particular) has been scarcely studied. To better understand the context of Australia’s foreign trade, we survey, as a first step, related studies at country-level (subsection 9.1). In a second

step, we survey the most related literature that relies on Australian subnational units (regions) (subsection 9.2).

For Australia, country-level studies have focused on geographical disadvantages and its “remoteness” in the world economy, the DD, trade policy (trade liberalisation and trade protectionism), the bilateral trade relationship of Australia with its trade partners, as well as its participation in value chains. Regional-level studies identify “hot issues” such as DD consequences associated with the mining boom. In addition, employment inequality and asymmetric regional urban development policies have been analysed. These factors contribute to shape regional economic patterns in Australia and validate the importance of considering the heterogeneity of Australian states (that is, regional heterogeneity). Tables 9.1 and 9.2 summarise the studies reviewed in this section.

Australian foreign trade with neighbouring countries has been studied using the gravity model. This brand of the literature finds that Australia’s trade openness is relatively low compared to the rest of the world. This is partially due to the large geographic size of Australia and its remoteness with the rest of the world (Guttman and Richards, 2006).

Australia shares similar trade patterns with other economic regions in the world, such as Latin America (Cortes, 2007). In addition to geographical factors and trade openness, political influence is a relevant factor shaping Australian trade patterns. Previous literature finds that Australian foreign trade is positively associated with trading partners’ economic size, GDP per capita, openness, and common language, and negatively associated with distance (Rahman, 2009). There are several countries that have the potential to increase trade with Australia. It is particularly relevant for a low diversified economy (in terms of both destination markets and products exported), as Australia is.

Geographical distance is a clear disadvantage for Australian participation in foreign trade. However, relative distance also matters (Baldwin, 2006). For example, New Zealand and Australia are quite far in terms of absolute distance, but their relative distance is low when compared to their distance with the rest of the world. In the international trade literature, the concept “multilateral resistance” has emerged and should be controlled in gravity models to obtain unbiased estimators (Anderson and Wincoop, 2003; Head and Mayer, 2014).

Besides New Zealand, Australia is the most remote country in a number of reviewed studies (Battersby and Ewing, 2005). However, the importance of remoteness may have fallen over time, together with decreasing trade cost. Indeed, even with the disadvantage of its remote location, Australia has achieved higher trade levels than those expected from gravity estimations. It may be due to its unique geostrategic context, as Australia is relatively close to large countries such as China and India. Therefore, the geographical isolation of Australia interacts with the importance of its (neighbouring) trading partners. In this regard, trade between Australia and China has increased dramatically in recent years. One of the reasons behind this increasing

Table 9.1: Literature review: country-level studies about the Australian context (ordered by year of publication and authors' surname)

Author/s	Research question /Hypothesis analysed	Data source	Data sample	Methodology	Main results
(Battersby and Ewing, 2005)	How do distance and economic size influence trade?	IMF Data from (Maddison, 1995) and (Maddison, 2001)	Annual data 1980-2001 1950-1998 73-222 countries	Gravity model	Location and economic size are associated with Australia's aggregate trade.
(Baldwin, 2006)	How does the Euro affect trade?	Multiple data source such as from (Rose, 2000)	Annual data 1980, 2000, 1980-2002	Gravity model	The research question is not answerable at the aggregate level.
(Guttmann and Richards, 2006)	What are the determinants of trade openness?	IMF DOTS data World Economic Forum's Global Competitiveness Report Department of Foreign Affairs and Trade	Euro countries Annual data 1971–2000 120 countries	Gravity model	Australia's low trade openness is due to its large geographic size and the remoteness of its geographic location.
(Cortes, 2007)	How do economic distance, openness, population, and political influence shape trade between Australia and Latin America?	Australian Bureau of Statistics (ABS) (Heston, Summers, and Aten, 2006); (Central Intelligence Agency, 2007)	Annual data 1998 to 2004, 9 Latin American countries	Gravity model	A similar trade pattern than Australia was found in Latin American countries. Political influence, Australia's trade openness, and economic distance play an important role in trade.
(Sheng and Song, 2008)	Comparative advantage and Australia-China bilateral trade	ABS China Bureau of Statistics United Nations UNCTAD	Annual data 1997-2006 Australia China	Gravity model	Demand factors, comparative advantages, and reduced trade barriers foster bilateral trade. Australian exports to China are associated with Chinese exports to the world.

Table 9.1: Literature review: country-level studies about the Australian context (ordered by year of publication and authors' surname)

Author/s	Research question /Hypothesis analysed	Data source	Data sample	Methodology	Main results
(Rahman, 2009)	Who has the potential to be an Australian trading partner?	World Bank International Monetary Fund (IMF)	Annual data 2001, 2005 50 countries	Gravity model	Australian trade is positively associated with trading partners' economic size, GDP per capita, openness, and common language; but negatively associated with distance. Singapore, Argentina, and other countries are identified as potential trading partners for Australia.
(Koitsiwe and Adachi, 2015)	DD hypothesis	ABS	Annual data 1975-2013 Australia	Vector autoregressive approach	The mining boom stimulates the service sector but harms the manufacturing sector.
(Turnbull, Sun, and Anwar, 2016)	How does trade liberalisation and FDI influence Australian productivity?	ABS Productivity Commission OECD	Annual data 1988-2012 Australia	Simultaneous equations model	Trade liberalisation, and not inward FDI, has a positive impact on Australian manufacturing productivity.
(Productivity Commission, 2017)	What is the effect of increasing protectionism for Australia?	World Bank United Nations WTO	Annual data 1982-2016 US, Mexico, China	Computable general equilibrium models	US trade protection policy is likely to reduce Australia's main export (iron ore and steel) but increase the exports of other sectors.
(Dungey, Fry-McKibbin, and Volkov, 2020)	DD hypothesis	Reserve Bank of Australia	Quarterly data 1988-2016	Structural vector autoregression	The DD affects non-tradable sectors through macroeconomic tunnels such as the appreciation of the exchange rate, investment in the mining sector, and the reallocation of resources to the mining sector.

Source: own elaboration.

(Australia-China) bilateral trade is that Australia presents comparative advantages in products that complement China's comparative advantages (Sheng and Song, 2008).

A shortcoming of the strong complementarity between Australia and China trade is that Australian exports depend on Chinese exports. Consequently, restrictions from the rest of the world on Chinese exports may have important consequences for Australian exports. For instance, the increase in US trade barriers to Chinese imports affects Chinese exports of final goods. Because China has a comparative advantage in labour-intensive assembly, which positions China at the end of global production chains (David, Dorn and Hanson, 2013) it is expected that Australia will be negatively affected, as Australia is located in an early stage of value chains with China. In an *ex-ante* quantification for Australia about the effects of increasing protectionism in the US, tariff increases in products from China lead to a restructuration of global trade patterns, including markets in Australian main export products (Productivity Commission, 2017).

Regarding particular sectors, a key pillar of the Australian economy is mining. Therefore, researchers in Australia have focused on testing the DD hypothesis. This literature has provided evidence on how the mining sector boom affected other sectors (i.e., manufacturing and services). The mining boom stimulated the sector of services but harmed the sector of manufactures (Koitsiwe and Adachi, 2015). In addition, the DD affects non-tradable sectors through macroeconomic factors such as the appreciation of the exchange rate, investment in mining, and reallocation of resources (Dungey, Fry-McKibbin, and Volkov, 2020). Crucially, the manufacturing sector in Australia has experienced a decline in recent years due to factors such as rising production costs, increased consumer demand for services, and the strength of the Australian dollar. However, trade liberalisation presents a positive impact on Australian manufacturing productivity (Turnbull, Sun, and Anwar, 2016).

9.2 Review of trade-related studies for Australian regions/cities

Results on the impact of the DD vary from country level to the regional level (Shafiullah, Selvanathan, Naranpanawa, and Chai, 2019). While the DD from the mining boom at national level negatively affects the manufacturing sector, only some Australian states are affected. Regional-level evidence also shows that the mineral-rich states (i.e., Western Australia, Queensland, and the Northern Territory) suffer from the DD in the tourism (Dwyer, Pham, Jago, Bailey, and Marshall, 2014).

Because in our empirical analysis, we will analyse the relationship between trade policy, foreign trade, and regional inequality (see Figure 9.1), we pay attention to these magnitudes in this regional-level review. In this regard, Australia has experienced increasing regional inequality in the past 30 years due to the rise of knowledge-intensive services, differentials in government policy and investment, the resources

boom, and the declining competitiveness of the manufacturing sector (SGS Economics and Planning, 2018).

Figure 9.1: Analysis of foreign trade in Australian regions and relationships of interest

Source: Own elaboration.

Australia’s biggest city (i.e., Sydney) has experienced labour market declines in the last decade due to the ineffective application of urban policy such as poor housing, and transport capacity. In addition, the structural change in Sydney’s labour market is associated with the mining boom from the mining regions (Mitchell and Bill, 2006). The housing boom in Sydney, the increase of inflation and interest rate, and the fiscal drag, also contribute to the trends of the so-called two-speed Australian economy, which refers to sectoral and regional imbalances. Otherwise, Melbourne’s economy has been restructured from the manufacturing sector to the professional, and financial & insurance sector in the last two decades, due to successful investment and road projects (SGS Economics and Planning, 2018). With the end of mining in Perth, the government is seeking alternative sources of economic growth. For example, the Government of Western Australia provides a regional development plan for population growth, infrastructure priorities, and land use planning over the next 20 years (Western Australian Planning Commission, 2015). For Queensland, researchers are also “keen to help” to avoid the DD impact on other sectors from the coal boom (Wade, 2007).

9.3 Characteristics of Australian exports and interaction with trade liberalisation

Australia specialises and trades goods and services of a few sectors, mainly primary industries and services (see Table 9.3). The top 10 goods and services exports in 2017 are from the industry “Mining & quarrying” (45.6%), followed by “Education & training” (7.8%), “Administrative & support services” (5.5%), and “Agriculture, forestry & fishing” (3.5%).

We list Australia’s top 20 trading partners (both imports and exports) in Table 9.4. The order is based on the percentage share of trade in goods and services in 2018. For example, 24.4% of Australia’s foreign trade activities is with China, followed by 9.7% with Japan, and 8.8% with the US.

Australia has been at the forefront of multilateral trade liberalisation since it became a founding member of the World Trade Organisation (WTO, 2018). Currently,

Table 9.2: Literature review: trade-related studies about the Australian context at regional level (ordered by year of publication and authors' surname)

Author/s	Research question /Hypothesis analysed	Data source	Data sample	Methodology	Main results
(Mitchell and Bill, 2006)	What changes the employment pattern of Sydney?	ABS	Quarterly data 1989-1990 2000-2006 National and Sydney	Descriptive statistical method	Changes in employment patterns are associated with the mining boom, the housing boom, an increase of inflation, and interest rate.
(Wade, 2007)	DD prevention	Australian Mining news	Queensland	2007 News	Researchers keen to avoid the DD in Queensland.
(Dwyer, Pham, Jago, Bailey, and Marshall, 2014).	DD hypothesis	Tourism Research Australia ABS	Quarterly data 2005-2012 National and States level	The computable general equilibrium model	DD effects were found in the tourism sector at the national level and in the mineral-rich states. Business tourism benefits, but leisure tourism loses out.
(Western Australian Planning Commission, 2015)	Regional policy	State agencies, utilities and departments such as Department of Premier and Cabinet, Department of Health, Western Power	Plans for the next 20 years Western Australia	2015 Government report	Identification of Western Australia's Great Southern regional development plans on economic development, physical and social infrastructure, environment and security.
(SGS Economics and Planning, 2018).	Urban policy	ABS	Annual data 1998-2018 National and Major cities	SGS method focuses on the Production measure of GDP	Information on Australian regional urban planning on infrastructure, investment, and economic development challenges.

Table 9.2: Literature review: trade-related studies about the Australian context at regional level (ordered by year of publication and authors' continued surname)

Author/s	Research question /Hypothesis analysed	Data source	Data sample	Methodology	Main results
(Shafiullah, Selvanathan, Naranpanawa, and Chai, 2019).	DD hypothesis	ABS, IMF, DFAT, Reserve Bank of Australia	Quarterly data 1974-2013 National and States level	Augmented Dickey–Fuller test Arai–Kurozumi test	DD effects were found in the manufacturing sector at the national level. The DD effect was found only in Victoria, Queensland, South Australia, and Tasmania.

Source: own elaboration.

Australia is at a relatively high level of trade liberalisation by positively implementing the reforms and reducing trade barriers. These reforms include the floating of the dollar, the deregulation of financial markets, the decentralisation of the industrial relations system, the introduction of competition policy, broadening the tax base, and corporatisation of government businesses (The Centre for International Economics, 2017). The reforms of economic deregulation and trade liberalisation started around the mid-1970s in Australia.

Because regional trade integration and regional trade liberalisation are the focus of this section, Table 9.4 lists existing, and those that are being negotiated, FTAs with the major Australian trading partners. There are 14 FTAs with Australia in force. Importantly, a trade agreement with the European Union is currently in the process of being negotiated.

Figure 9.2 shows the historical export flows in millions of Australian dollars (AUDm) with Australia's top 20 trading partners. The solid blue line shows average exports with FTA trading partners; the orange dotted line shows average exports with non-FTA trading partners.

There are two key intersections (in 2009 and in 2015) of these two lines. Regarding the first intersection, during the 2009-2010 global financial crisis, Australian exports declined, particularly with FTA partners. In 2010, however, exports with non-FTAs (a group that included the largest Australian trading partner, i.e., China) increased significantly.

Interestingly, from 2009 to 2014, average trade with FTA partners is lower than that with non-FTA partners. Although many trade agreements (i.e., AANZFTA, MAFTA, and KAFTA) came into force during this period, this situation did not reverse until 2015 (i.e., the year in which we observe the second intersection of the blue and orange lines). In that year (2015), the two FTAs with the largest Australian trading partners (i.e., China and Japan) entered into force. In 2018, Australian exports to FTA partners are significantly higher than exports to non-FTA partners.¹⁴

From this analysis at country-level, we learn that trade liberalisation (i.e., more FTAs with Australia entered into force) and Australian exports are positively correlated. It is worth mentioning, however, that a substantial number of FTAs partners are also the top exporting countries for Australia. This points towards the existence of endogeneity concerns, which prevent us from any causal interpretation.¹⁵

¹⁴ As there was an export decline to Japan in 2016, this change mostly depends on exports to China.

¹⁵ See, for example, Márquez-Ramos, Martínez-Zarzoso, & Suárez-Burguet (2011).

9.4 Regional analysis

We start with the identification of export variation across Australian regions (Figure 9.3). Specifically, we illustrate the geographic variation both in exports in goods and export in services for the eight Australian states.¹⁶

Figure 9.4 displays exports in goods, while Figure 9.5 displays exports in services in two years: 2011 and 2017. The dark blue colour in the figures denotes higher export flows in regions. This analysis provides a visual illustration of the regional heterogeneity of exports within Australia. With the comparison of exports in 2011 and 2017, we observe that, although overall exports have largely increased from 2011 to 2017, the origins of the exports remain the same, both in exports of goods and of services.

Figure 9.4 shows that exports of goods are concentrated in WA and QLD, followed by NSW. In 2017, top goods exported in WA were iron ores and concentrates, gold, natural gas, and crude petroleum (DFAT, 2018). QLD top goods exported are coal, natural gas, beef, copper, and vegetables. NSW top goods exported include coal, copper ores and concentrates, aluminium, beef, and refined petroleum. In short, most of the top goods exported in Australian regions are mining products and agricultural products, as found in the aggregate analysis (Table 9.3).

Table 9.3: Australia's top 10 goods and services exports in 2017

Rank	Goods and Services	AUD mln	% Share	Industry (ANZIC)
1	Iron ores & concentrates	36,092	16.3%	Mining & quarrying
2	Coal	57,129	14.8 %	Mining & quarrying
3	Education-related travel services	30,263	7.8%	Education & training
4	Natural gas	25,620	6.6 %	Mining & quarrying
5	Personal travel (excl. education) services	21,281	5.5 %	Administrative & support services
6	Gold	17,632	4.6 %	Mining & quarrying
7	Aluminium ores & conc (incl. alumina)	8,426	2.2%	Mining & quarrying
8	Beef	7,451	1.9%	Agriculture, forestry & fishing
9	Wheat	6,062	1.6%	Agriculture, forestry & fishing
10	Crude petroleum	5,246	1.4%	Mining & quarrying

Source: Own elaboration with data from (DFAT, 2019b) and (ABS, 2018a).

¹⁶ The sources of the regional data used in this study are the Australia Bureau of Statistics (ABS), and Australian Government, Department of Foreign Affairs and Trade (DFAT).

Table 9.4: Top 20 goods and services trading partners in 2018

Rank	Goods and Services	% Share	FTA	Year in Force
1	China	24.4	ChAFTA	2015
2	Japan	9.7	JAPEA, CPTPP	2015, 2018
3	US	8.8	AUSFTA	2005
4	Republic of Korea	6.6	KAFTA	2014
5	India	3.6		Under Negotiation
6	New Zealand	3.5	AANZFTA, CPTPP	1983, 2018
7	UK	3.5		Prospective FTA Negotiation
8	Singapore	3.5	SAFTA, CPTPP	2003, 2018
9	Thailand	3.1	TAFTA	2005
10	Germany	2.8		Under Negotiation-EU
11	Malaysia	2.7	MAFTA, CPTPP	2013, 2018
12	Hong Kong (SAR of China)	2.4	A-HKFTA	2020
13	Indonesia	2.1	IA-CEPA	2020
14	Taiwan	2.0		
15	Vietnam	1.6	AANZFTA, CPTPP	2010, 2018
16	Italy	1.3		Under Negotiation-EU
17	France	1.2		Under Negotiation-EU
18	United Arab Emirates	1.2		
19	Netherlands	1.0		Under Negotiation-EU
20	Canada	0.9	CPTPP	2018

Source: Own elaboration with data from (DFAT, 2019a; DFAT 2019b).

Figure 9.5 shows regional exports in services in 2011 and 2017. Exports of services are concentrated in NSW and VIC, followed by QLD. NSW and VIC top exporting services include education-related travel, personal travel, and professional and management consulting services in 2017 (DFAT, 2018). QLD top exports in services include personal travel (excluding education), education-related travel, and financial services. As in trade in goods, exports in services are concentrated in a few sectors.

Table 9.5 shows the major exports for the eight Australian regions. The top 5 major exports for each state are listed at product and industry level. Although there are important variations across Australian regions on the export volumes and export types, the major exports in goods in Australia are concentrated in two industries: “Mining & Quarrying” and “Manufacturing”. Most of the Australian states rely on exporting mining commodities, except VIC and ACT. Manufacturing appeared as a relevant (top exported) industry in almost all states (excluding NSW and NT), and it

Figure 9.2: Australia's exports with top 20 trading partners 1987-2018

Source: Own elaboration with data from (DFAT, 2019b).

Figure 9.3: Australian State/Territory

Notes: Australia has eight states that are: New South Wales (NSW), Victoria (VIC), Queensland (QLD), South Australia (SA), Western Australia (WA), Tasmania (TAS), Northern Territory (NT), and Australian Capital Territory (ACT).

is strongly related to agriculture and farming. The major services exports are concentrated in three industries: “Education & Training”; “Transport, Postal & Warehousing”; and “Professional, Scientific & Technical Services”. NSW, VIC, QLD, SA and ACT export “Education & Training” services. NSW, VIC, QLD, SA, NT and ACT export

“Transport, Postal & Warehousing” services. NSW and VIC export “Professional, Scientific & Technical Services”.

Regarding specialisation, WA and QLD specialise in goods exports. NSW and VIC specialise in services exports. These findings are consistent with patterns observed in Figures 9.4 and 9.5.

For a better understanding of trade patterns in Australian regions, we focus on the analysis of the main exporting destinations for the eight Australian regions (see Table 9.6). Interestingly, main export destinations for Australian regions are FTA partners (marked with “*”). It suggests that lower trade barriers under trade agreements are associated with higher Australian regional exports. The geographical isolation of Australia limits its foreign trade to only a few (large) trading partners. In line with the analysis at country-level, the regional analysis finds that large trading partners (China, Japan, and the US) frequently appear as top destinations of Australian exports in regions. Overall, the Asia-Pacific economic area and the US appear as key destinations for Australian regions foreign trade, excluding the case of ACT (the region that includes the capital of the country).

9.5 Regional exports and trade liberalisation

To extend the analysis to Australian regions, we rely on a regional openness to trade index, which is calculated as the sum of imports and exports relative to the gross state product for each region. In line with previous literature (Márquez-Ramos, 2016b), we analyse the evolution of the regional openness index and its association with exports and trade liberalisation (FTAs).

In Figure 9.6, the solid blue line (“—”) represents average regional exports with FTA countries. The red dotted line (“.....”) represents average regional exports with non-FTA countries. The black dashed line (“- - -”) represents the regional openness to trade index.¹⁷

In most Australian regions trade openness increases and co-moves positively with average exports with FTA countries, excluding the regions of WA and NT. From 2013 to 2015, four FTAs entered into force. Because average exports with FTA countries increased over this period, trade liberalisation seems to have increased Australian regions’ openness to trade. Otherwise, for the regions of WA and NT, trade openness is decreasing and co-moves with average exports with non-FTA countries, which have also decreased over time. Overall, our results provide evidence that trade liberalisation is positively correlated with regional openness to trade.

¹⁷ In order to facilitate the interpretation of potential correlations, we use the openness index value ten times for illustration.

Export in Goods 2011 (AUD Million)

Export in Goods 2017 (AUD Million)

Figure 9.4: Australian state/territory exports in goods 2011 & 2017

Source: Own elaboration with data from (ABS, 2019c).

Figure 9.5: Australian state/territory export in services 2011 & 2017

Source: Own elaboration with data from (ABS, 2019c).

Table 9.5: Australian state/territory top 5 exports in 2017

Rank	NSW's major exports in 2017	AUDm	Industry (ANZSIC 2006)	Types
1	Coal	15,232	Mining & Quarrying	Goods
2	Education-related travel	10,284	Education & Training	Services
3	Personal travel (excl education)	7,246	Transport, Postal & Warehousing	Services
4	Professional & management consulting	3,234	Professional, Scientific & Technical Services	Services
5	Copper ores & concentrates	2,121	Mining & Quarrying	Goods
Rank	VIC's major exports in 2017	AUDm	Industry	Note
1	Education-related travel	9,089	Education & Training	Services
2	Personal travel (excl education)	5,172	Transport, Postal & Warehousing	Services
3	Wool & other animal hair (incl tops)	1,792	Manufacturing	Goods
4	Professional & management consulting	1,324	Professional, Scientific & Technical Services	Services
5	Meat (excl beef)	1,355	Manufacturing	Goods
Rank	QLD's major exports in 2017	AUDm	Industry	Note
1	Coal	29,187	Mining & Quarrying	Goods
2	Natural gas	Np	Mining & Quarrying	Goods
3	Personal travel (excl education)	5,046	Transport, Postal & Warehousing	Services
4	Beef	4,152	Manufacturing	Goods
5	Education-related travel	4,135	Education & Training	Services
Rank	SA's major exports in 2017	AUDm	Industry	Note
1	Alcoholic beverages	1,502	Manufacturing	Goods
2	Education-related travel	1,468	Education & Training	Services
3	Wheat	1,250	Manufacturing	Goods
4	Copper	1,157	Mining & Quarrying	Goods
5	Personal travel (excl education)	802	Transport, Postal & Warehousing	Services
Rank	WA's major exports in 2017	AUDm	Industry	Note
1	Iron ores & concentrates	62,093	Mining & Quarrying	Goods
2	Gold	17,741	Mining & Quarrying	Goods
3	Natural gas	Np	Mining & Quarrying	Goods
4	Crude petroleum	4,470	Mining & Quarrying	Goods

continued **Table 9.5:** Australian state/territory top 5 exports in 2017

Rank	NSW's major exports in 2017	AUDm	Industry (ANZSIC 2006)	Types
5	Wheat	2,532	Manufacturing	Goods
Rank	TAS's major exports in 2017	AUDm	Industry	Note
1	Zinc	639	Mining & Quarrying	Goods
2	Aluminium	450	Mining & Quarrying	Goods
3	Iron ores & concentrates	218	Mining & Quarrying	Goods
4	Other ores & concentrates	157	Mining & Quarrying	Goods
5	Beef	152	Manufacturing	Goods
Rank	NT's major exports in 2017	AUDm	Industry	Note
1	Natural gas	np	Mining & Quarrying	Goods
2	Live animals (excl seafood)	420	Agriculture, Forestry & Fishing	Goods
3	Other ores & concentrates	417	Mining & Quarrying	Goods
4	Personal travel (excl education)	386	Transport, Postal & Warehousing	Services
5	Aluminium ores & conc (incl alumina)	345	Mining & Quarrying	Goods
Rank	ACT's major exports in 2017	AUDm	Industry	Note
1	Gold coin & legal tender coin	20,361	Manufacturing	Goods
2	Education-related travel	786	Education & Training	Services
3	Government goods & services	452	Public Administration & Safety	Services
4	Personal travel (excl education)	246	Transport, Postal & Warehousing	Services
5	Plastic articles	6	Manufacturing	Goods

Source: Own elaboration with data from (DFAT, 2018). "np" denotes not published.

9.6 Regional openness to trade and unemployment

The relationship between foreign trade and regional inequality has been studied previously: foreign trade may increase regional inequality (Bakker, 2018). Import competition increased unemployment and reduced wages in the US trade-exposed labour market (David, Dorn and Hanson, 2013). In Austria, trade openness has a mixed impact on employment and wages across heterogeneous regions (Brühlhart, Carrère, and Robert-Nicoud, 2018). However, to the best of our knowledge, the relationship between foreign trade and regional inequality has not been explored in Australian regions. We provide insights on how employment and foreign trade interact in

Figure 9.6: Regional openness to trade, national exports, and trade agreements

Source: Own elaboration with data from (DFAT, 2019b, DFAT, 2018).

Table 9.6: Australian state/territory export destinations and share of total exports in 2017

Rank	NSW (22.2%)	VIC (12.8%)	QLD (22.4%)	SA (3.9%)	WA (34.7%)	TAS (1.3%)	NT (1.7%)	ACT (0.6%)
1	Japan*	China*	China*	China*	China*	China*	China*	Switzerland
2	China*	US*	Japan*	US*	Japan*	Malaysia*	Japan*	Hong Kong (SAR of China) *
3	Republic of Korea*	New Zealand*	India	Malaysia*	Hong Kong (SAR of China)*	Taiwan	Indonesia	Belgium
4	Taiwan	Japan*	Republic of Korea*	India	Republic of Korea*	Japan*	Thailand*	
5	US*	Singapore*	Taiwan	Japan*	UK	Indonesia	Republic of Korea*	

Source: Own elaboration with data from (DFAT, 2018). Australia's FTA partners are marked with “*”. The percentages are the states' export of Australia's total export.

Australia by using regional unemployment rates and the regional openness to trade index.

Figure 9.7 shows that, from 2011 to 2017, the unemployment rate has increased in five regions: VIC (from 5.2 to 6.1), QLD (from 5.6 to 6.1), SA (from 5.0 to 6.1), WA (from 3.9 to 5.5), and TAS (from 5.2 to 6.1). Two regions, NSW (from 5.2 to 4.9) and ACT (from 4.1 to 4.0), have experienced a decrease in the unemployment rate. In NT, the unemployment rate remained the same (at 3.6).

For the most part, the changes in the regional unemployment rate over the six-year period analysed (2011-2017) are modest – WA being an exception here. The same can be observed from the trade openness data – again WA being an exception, and also NT exhibiting more pronounced variation slightly over the sample period. We note that there seems to be a positive association between trade openness and unemployment for most regions (yet again WA is the exception here), indicating a possible impact on unemployment through import competition, though this association is not emphatic. Such gentle movements in each series make deciphering any meaning relationship between the two variables based on possible regional resource re-allocation difficult.

That said, we can observe interesting patterns by looking individually at WA and NT. For WA, there has been a reduction in trade openness and a corresponding rise in the unemployment rate between 2011 and 2017 – to the point where the two series intersected in 2016. As trade openness diminishes, fewer resources are likely to be

devoted to domestic production in the export sector. But since the export sector is relatively large in WA, there appears to be less of substitution in terms of employment to the non-export sector, which might thereby offset the effect on unemployment. Equally, there does not appear to be any corresponding reallocation of labour from WA to other states in a way that might correspond to the reduction in trade openness in WA.

The story is different for NT. NT has experienced a reduction in trade openness as well as in the unemployment rate (especially from a peak in 2013). Here, a reduction in trade openness may be associated with by a reduction of resources in the export sector, but such a decrease in resource allocation in this sector can be accommodated in the non-export sector. The result may well be a reduction in unemployment.

9.7 Conclusions

We contribute to the literature by analysing foreign trade patterns and trends in Australian regions, as well as their co-movement with other factors that are relevant for Australia (i.e., trade policy and economic inequality). To do so, considering regional heterogeneity in Australian foreign trade is important: Australia is the sixth-largest country in the world in geographic terms, but the population is much smaller than in other industrialised countries analysed in this book. Interestingly, the population in Australia is highly concentrated in a few Eastern and South-Eastern cities. In addition, the geostrategic position of Australia is different from any other developed country in the world. “Neighbouring” countries include large international partners such as China, Japan, and India.

In a review of the existing country-level literature, we find that Australia’s foreign trade issues analysed include trade policy, openness to trade, geographic factors and remoteness, comparative advantages, and industrial structure changes such as a declining manufacturing sector. At the regional level, we observed evidence of the production matrix diversification in Australian regions (due to the rise of services), as well as the analysis of issues such as government policy, investment, and the mining boom.

Australia’s exports are highly concentrated in terms of both trading partners and sectors. Australian exports are mainly centred around mining and agriculture with exports also relatively high in the education and tourism areas. The largest export sector, mining, is not concentrated in the same manner as to how Australia’s population is concentrated, with most mining taking place in the western and northern parts of the country. Education and tourism exports are concentrated in closer alignment with population concentrations.

Australia’s trading partners are drawn predominantly from Asia – with seven of the country’s top ten trading partners from the Asia-Pacific economic area. It is due to some extent to natural complementarities through comparative advantages, and in

Figure 9.7: Regional openness to trade and unemployment

Source: Own elaboration with data from (Australian Government, 2019; DFAT, 2018).

the involvement in global value chains made possible by Australia's exports of raw materials.

Given this, Australia has a strong incentive to engage in free trade, and, as such, is active in the negotiation of policies of trade liberalisation. Australia has engaged in early trade negotiations with ASEAN nations such as Singapore and Thailand and has recently enacted trade agreements with 3 of the top 4 trading partners – China, Japan, and Korea. The analysis above suggests that trade activity and trade liberalisation appear to be positively correlated at both a national and regional level, suggesting that investment in trade liberalisation policies in Australia are in many respects justified.

A possible consequence of trade openness is the emergence of DD that might result in increased trade in mining and other export sectors. Our analysis above examines this from a regional perspective; are there shifts in employment that might occur as a result of an expansion of trade in Australia's export industries? The evidence for this is not persuasive, possibly due to the way in which export industries are concentrated in this country. We do however, find that regional trade openness is associated with unemployment rates, though not in a way that might suggest a reallocation of resources across regions.

Our results relate to recent research for Australia's regions recognising that diversification (resilience to economic shocks) and specialisation (efficiency of production) can co-exist (Murphy, Hicks, Morrison, Basu, Ranshaw, 2019). It is worth noting that existing innovative policy approaches, such as smart specialisation, can enhance regional employment. For implementing such an approach effectively in Australia, not only is an increasing emphasis on coherence and collaboration needed, and the support of an Australian policy framework that considers the different levels of government in the country (federal, state, and local), as highlighted in Wilson (2018) and Gómez Prieto et al. (2019); but also a better understanding of the interaction of smart specialisation initiatives with unemployment and foreign trade.