

What can house prices tell us about the effects of the globalisation of trade on Australian cities?

Abstract: It has been recognised for centuries that cities exist for trade and are in turn formed by that trade but it has been difficult to use this knowledge to better understand how cities work. One of the key reasons for this is that measuring the geography of trade flows is very difficult. Consequently, the effect on cities of the biggest economic change of our time, the globalisation of trade, has perhaps received less attention than it warrants. This paper proposes a new approach to the problem of measuring the geography of trade flows. The paper's initial premise is that cities are nodes in the global trading network and their relative value as nodes change as the geography of the network continually shifts. The proposition is that the value of a node's location in the trading network is capitalised into land values which can be measured by *relative* house price movements. It is important to stress that the interest of this paper is not in house prices *per se* but house prices as the measure of location. The paper will present evidence, using both international and Australian examples, showing that relative house price movements are highly sensitive to changing trade patterns. If house price movements are a window into trade flows within and between cities, they can be used to inform our understanding of how cities respond to trade flow changes. The paper will demonstrate how this insight can be used to show how the internationalisation of trade is changing the relationship between Australia's cities and leading to a profound restructuring within the metropolises of Sydney and Melbourne.

Introduction

The conventional narrative of current city restructuring is based mainly around amenity and a move to services with the resulting agglomeration economies. The first aim of the paper is to show, within the limits of geographic inference, that it is the changes in global trading patterns that are the main force behind city restructuring. The second is to examine the potential of relative house price movements as an indicator of urban geography. To best knowledge this has not been done systematically before.

The paper is in three parts. The first looks at the increasing volume and changing geography of the world trade network in the broad before focusing on how this has played out in Australia. The second section begins with a survey of how relative house price movements¹ have responded to changes in the geography of international trade in English speaking countries before focussing on Australia. The third and final section discusses some of the implications of changes in the geography of trade for urban policy in Australia. The paper is a synopsis of *Information Sheet 65, International trade and cities: what house prices say* (BITRE 2015a) and *Information Sheet 67, International trade and Australian cities what house prices say* (BITRE 2015b). Together, these publications deal with issues raised here in greater depth and readers are referred to them for the detailed analysis and the data sources underlying this paper.

Globalisation Mark II and Australia

The quantum of international trade: Australia in the global context

The decades since the 1970s have been called Globalisation Mark II. This refers to the recovery of world trade as a proportion of global GDP to levels not seen since the First World War (Kenwood, 2014).

Figure 1 shows that in 1961, international trade made up less than a quarter of global GDP. By 2014, it was 45 per cent. On the author's projections, international trade will make up more than half of the world's GDP within a decade

¹ There are many factors influencing house prices such as taxation arrangements, prudential rules, interest rates, income etc. These factors generally apply to all houses in a country. The focus in this paper is on relative house price movements within countries. In particular, the question of what causes the changes in house prices between areas?

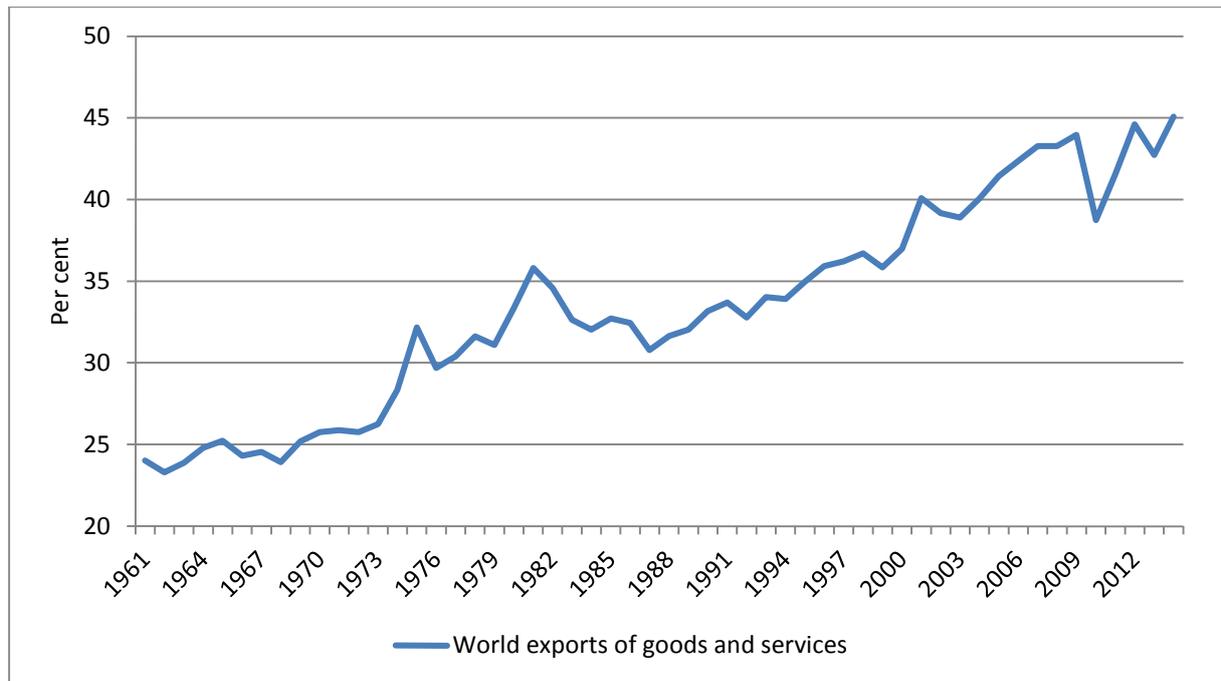


Figure 1: Exports of goods and services as a percentage of global GDP 1961-2013 Source: The World Bank 2014 in BITRE 2015a.

Figure 2 shows how globalisation has played out in Australia measured by merchandise goods only. It is notable that when Figure 1 and Figure 2 are compared they show Australia was a comparative latecomer to globalisation Mark II.

Trade in services generally and international trade in services in particular is difficult to measure (Lipsey, 2006) and consequently has a shorter time series than that of merchandise goods which is measured by customs data. Australia's trade in services has risen tenfold since 1980 (UNCTAD, 2014) and if this is taken into account then international trade as a proportion of Australia's GDP is probably about as high now as it was at the start of the twentieth century.

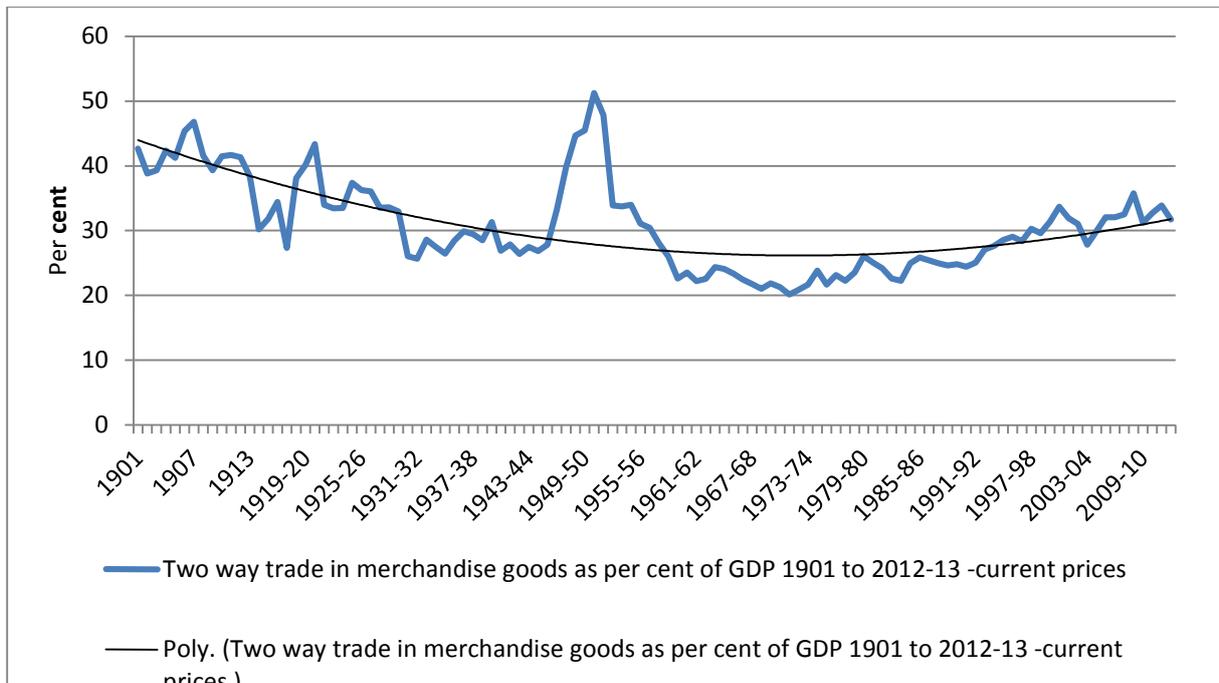


Figure 2: Two way trade in merchandise goods as a percentage of Australia's GDP 1901 to 2012-13. Source: DFAT 2014a in BITRE 2015a

The two way flow of goods and services is a partial measure of international trade; money also flows. Figure 3 shows the sharp increase in Australia's financial engagement with the global economy since the 1980s. The dashed green line shows the ratio of inward flows of capital to that flowing outwards. This indicates that Australia's ability to fund its own capital requirements is also improving perhaps aided by the large pool of savings accumulated since compulsory superannuation was introduced in 1992 and the maturing financial sector.

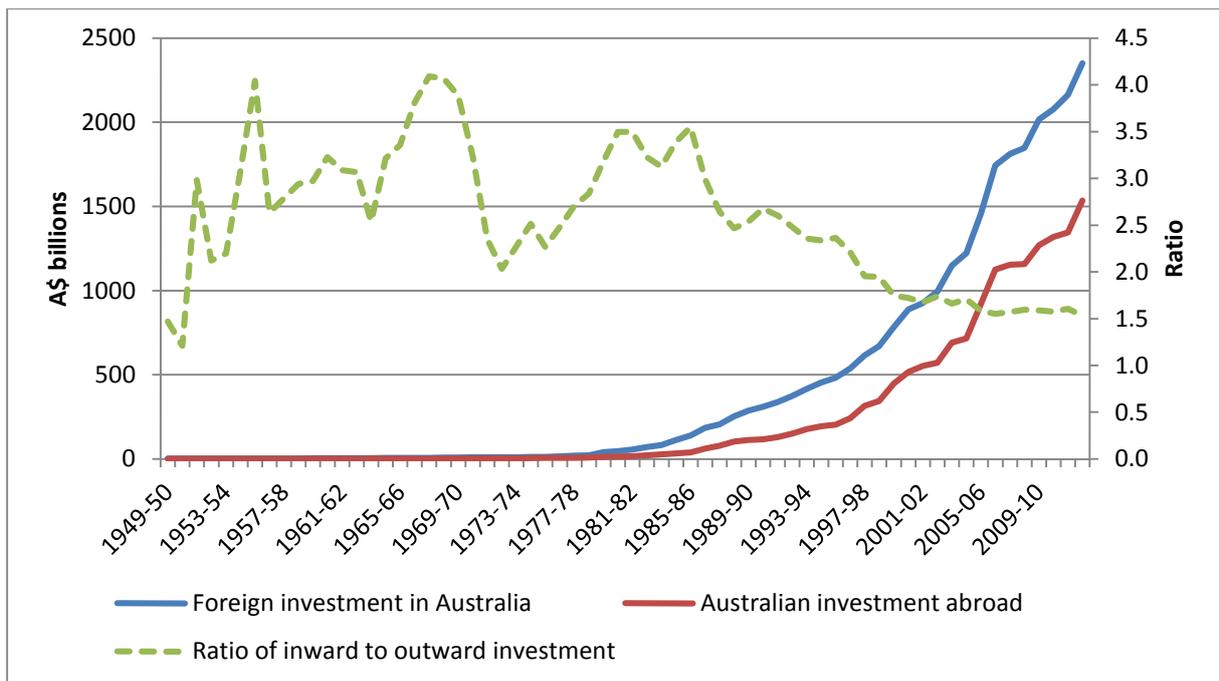


Figure 3: Two way foreign investment flow, nominal and ratio 1949-50 to 2012-13. Source: DFAT 2014b in BITRE 2015a

Why international trade is important to understanding cities

Cities are, at their heart, sophisticated trading machines (Barube and Parilla 2012). Consequently, a knowledge of a city's function in the trading network is the key to understanding its geographic form (Derudder et al., 2013).

To illustrate this, imagine a country as a circle. If three quarters of the trade is within the circle (e.g. Australia in 1972) then the value of trade is more likely to be distributed more evenly through space than if half the value of trade flows in and out of the circle through a small number of portals (Australia 2022 on current trends).

While this principle is easy to visualise in the abstract, operationalising it in a way that is meaningful for our understanding of city structure and the relationship between cities has been thwarted by a lack of data on the geography of trade value flows. There is one place where it is measured. The value of international trade flowing through Australia's sea and airports is collected by Customs and has been aggregated by the ABS since 1994-95 in the unpublished International Cargo Statistics Series.

The following subsection looks at what this data set says about the major changes in Australia's economic geography over the last two decades.

The geography of international trade in Australia

There are several noteworthy features of Figure 4. The first is the dominance of Sydney and Melbourne as the international gateways to Australia. Over the last ten years, Sydney has gradually been pulling away from Melbourne despite freight flow in Melbourne's ports growing strongly. The data underlying this graph (BITRE, 2015b) shows that the difference is almost entirely due to the increase in the value of cargo passing through Sydney's Kingsford-Smith Airport. Currently, about the same value of international cargo is moving through Kingsford-Smith as Port Botany even though in terms of *volume*, Kingsford-Smith is a minor part of Sydney's freight flows. The situation is similar in Perth. The value flow through Perth airport (mainly gold) in recent years has at times been higher than the Port of Fremantle (BITRE, 2015b). On the other hand, the value flow through Melbourne's Tullamarine Airport is only a third of Kingsford-Smith's and the airport now makes up less than a quarter of Melbourne's international trade flow.

Second, Perth overtook Brisbane as Australia third largest international trade node at the turn of the century (before the mining boom) and has cemented that position in the subsequent years.

Third, the contrasting experiences of the mining boom by Western Australia and Queensland are evident. It was much shorter and shallower in the coal based regional Queensland ports compared to the iron ore based Western Australian regional ports which as shown in Figure 4, have seen a near sixfold growth in their value flows.

Where the value of internationally traded merchandise goods is flowing can be known with some precision. Mapping the international trade of services, on the other hand, is much more difficult. It is thought that the trade in services is currently about 23 per cent of the value of Australia's total two way international trade (UNCTAD, 2014) so it is important to get some measure of where that trade is flowing through. The approach taken in this paper is that because face to face contact is critical for the services trade, the flow of international business travellers through Australian airports can be used as a proxy. This data was obtained from a customised set supplied by Tourism Research Australia. This suggests that Sydney is the dominant node for Australia's international trade in services with nearly half of international business travellers passing through the customs gates of Kingsford-Smith. Another quarter moves through Tullamarine (BITRE, 2015b).

This would indicate that when the trade in services is added to the trade in merchandise goods, Sydney and Melbourne are the major gateways for international trade in Australia. Going on past experience, this dominance is likely to increase, especially for Sydney.

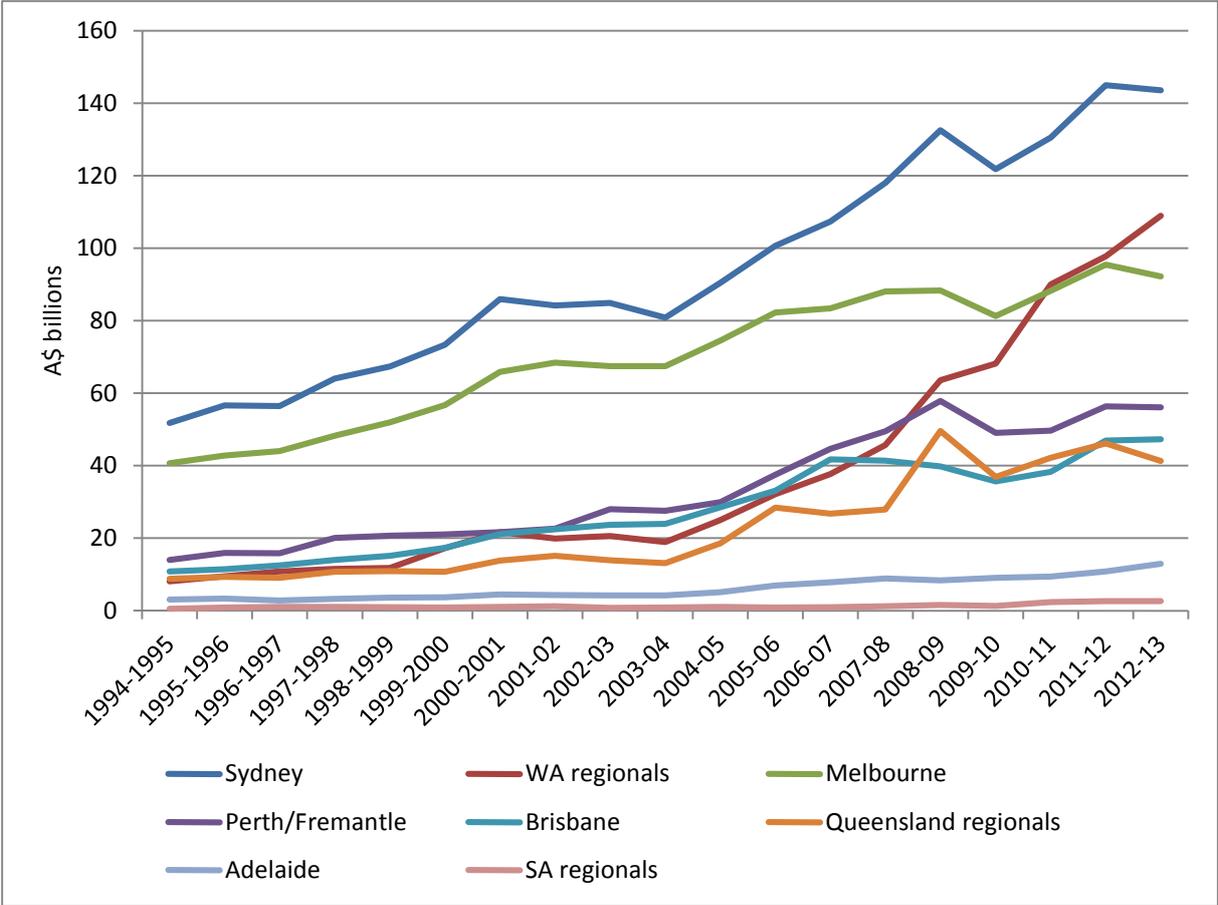


Figure 4: Value of international trade flowing through Australian sea and airports 1994-95 to 2012-13 measured by value. Source: ABS unpublished data in BITRE 2015b

House prices and the geography of trade

The international context

The interest in house prices in this paper is that they may offer a way to measure *where* the value is flowing in the trade network. The proposition rests on the assumption that a person buying a house is like a person buying shares in a company. A person buys shares based first on the expected dividend flow and second on what they assess the future value of the company to be. Likewise, a person purchasing a house is buying a share in the economic, social and amenity value of a location whether or not this is a conscious decision. If, as this paper contends, cities are essentially trading machines, the economic value of a location will be largely a function of the value of its place in the trading system. Consequently, relative house price movements can be used to measure the changes in the value of nodes in the trading network. The following section discusses the relationship between house prices and the changing geography of international trade first at the national scale in English speaking countries. It then looks at what is happening within Australia. The section is a summary of BITRE, 2015a and readers wishing to access more detail including the graphs and data sources are directed to this publication.

The year 1997 marked a step change in Australian house prices compared to the previous hundred years. From 1997 until the Global Financial Crisis in 2008, prices increased much faster and for much longer than at any time in the preceding hundred years (Stapledon, 2012). After a severe downward correction following the Global Financial Crisis, they quickly resumed their former trajectory. This has prompted an extensive popular and academic literature seeking explanation in tax regimes (Yates,

2012), finance structures (Jordà et al., 2014), supply shortages (NHSC, 2012) and migration policies (Tumbarello and Wang, 2010).

The Bank of International Settlements has charted national house prices for developed economies since 1970 (Bank of International Settlement 2015). This data shows that English speaking countries (Australia, Ireland (the Republic), New Zealand, Canada, the United Kingdom and the United States) experienced similar house price movements to Australia. Indeed, with some differences in amplitude and timing, house prices in all these countries have generally risen and fallen together (BITRE, 2015a). While the importance of domestic situations is acknowledged, the similarity in house price movements in English speaking countries indicates that international factors are a significant influence on price movements.

There is a second shared aspect about the price movements in English speaking countries. Relative house prices between regions began to diverge in 1997; diverged further around 2005 and have diverged still further after the Global Financial Crisis.

It is suggested here that the reasons behind this divergence are also common. The geography of the international trade network continually changes and the value of the nodes in the network responds as more or less economic value flows through them. Evidence to support this proposition occurs in all the countries surveyed.

There is a critical factor besides geography of trade. It is not enough for a city to be in the right location. Cities also need three elements to harvest value from international trade; a CBD with a critical mass of multinationals (McCann and Arcs, 2009, Rugman 2005), an airport and a sea port in a close functional relationship. It is like a three legged stool. All three elements have to be present for a city to become a major node in the international trade network. The proposition advanced here is that the value of cities that have these three elements and are geographically orientated towards trade flows will increase faster than those that do not have these attributes. This proposition is tested below using data from BITRE 2015a and b.

Ireland's trade is increasing with the European Union while trade with Britain and North America has declined. Dublin is orientated towards Europe, has a critical mass of multinational offices and also has a major international airport. House prices in County Dublin have risen 25 per cent in a year (2014-2015) while they have been stable or fallen in all other counties.

The story is similar in Britain. Its international trade with Europe and Asia is increasing while the proportion of its Atlantic trade in merchandise goods is falling. Consequently, trade values are increasingly flowing through the nodes orientated towards Europe and Asia; the south-east. It is further concentrated in the area that has all the three legs of the stool; London. It is a global centre for finance and has the world's largest passenger airport (Heathrow). It is also served by the largest sea ports in Britain, Felixstowe/Harwich and Southampton. As the trade value has increasingly flowed through London, house prices have responded. In 1997, there was little difference between the rate of house price growth in the United Kingdom and Greater London. Now, London house prices exhibit 40 per cent higher growth than the United Kingdom average and more than twice that of Scotland.

The direction of Canada's international trade flows is complicated by its 5,000 km land border with its major trading partner, the United States. This border is crisscrossed with roads, railway lines and pipelines. Ships also ply the Great Lakes and the St Lawrence Seaway carrying freight between the two countries. Nevertheless, provincial trade data shows that the centre of gravity of Canada's trade is moving west as trade increases with the Pacific Rim counties and the west coast of the United States. House prices have responded. Values in the provincial capitals of Canada's west; Winnipeg, Vancouver, Edmonton and Calgary have grown significantly faster than those to the east; Toronto, Montreal, Ottawa and Halifax.

The centre of gravity of United States international trade is also changing. Trade with the growing Asian markets is booming whilst that with economically subdued Europe is growing slowly. Port cities

located on the west coast and south west near the Panama canal have shown growth in values well above those in the central and eastern parts of the country.

New Zealand is also undergoing a major value increase and reorientation of its international trade. By some measures China overtook Australia as New Zealand’s most important trading partner in merchandise goods in 2013. This has advantaged the northern part of the country which for New Zealand means Auckland. Since 2008, values in Auckland have been pulling away from the rest of the country with prices in central Auckland being particularly strong.

The Australian experience

Some indication of the growing importance of international trade flows to locational value can be seen in Figure 5. In 1992, house prices in a city with a sea port were six per cent more expensive than one without. By 2014, there was a 21 per cent premium for a city with a port. The same plot for the 100 largest cities in the United States shows an almost identical trend (BITRE 2015a) suggesting that this may be an international phenomenon.

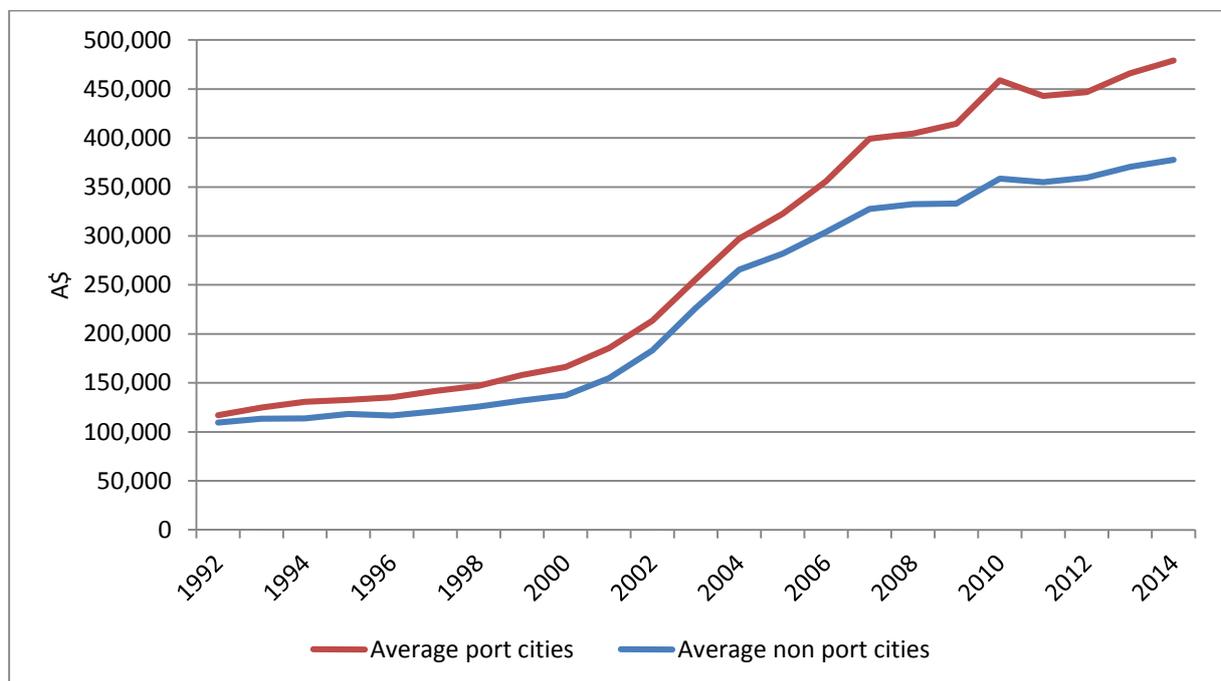


Figure 5: Average nominal house prices in Australian port and non-port cities 1992-2014². Source: Unpublished RP Data tables in BITRE 2015a

Visual inspection of graphs showing capital city house prices and the flow of international trade flowing through them suggested that house prices take about 18 months to respond to changes in trade values. Accordingly, a lagged regression was used to mathematically assess the relationship between house prices predicted using trade data and actual values. In other words, to test the proposition that as international trade values changes, house prices will follow 18 months later. This was done for Sydney Melbourne for both the internationally exposed areas of these cities (called the

² There are 41 cities in Australia with a population over 30,000 at the 2011 Census which was the cut off used in this study Of these cities, the following have ports with a throughput of over one billion dollars annually, regarded as the minimum to be a significant port; Sydney, Melbourne, Gladstone, Perth, Darwin, Newcastle, Townsville, Cairns, Geraldton, Mackay, Brisbane, Wollongong, Adelaide and Geelong. The remaining cities do not have ports at all or have small, often intermittently functioning ports; Canberra, Kalgoorlie-Boulder, Bathurst, Orange, Port Macquarie, Coffs Harbour, Bunbury, Hervey Bay, Sunshine Coast, Gold Coast-Tweed, Nowra Bomaderry, Warrnambool, Hobart, Lismore, Toowoomba, Launceston, Albury Wodonga, Ballarat, Bendigo, Burnie-Devonport, La Trobe Valley, Rockhampton, Wagga Wagga, Shepparton, Mildura, Tamworth, and Dubbo.

Global Arc in Sydney³) and the less internationally exposed area. Regressions were also done for Perth, Brisbane and Townsville (as an example of a regional city).

Figure 6 shows the model for Sydney which shows a close relationship between the modelled values and actual values. The plot for Melbourne is strikingly similar. The relationship weakened for smaller cities but was still significant. It seems likely that what is being indicated by the weakening of the model with declining city size is the unseen influence of the CBD. Unfortunately, while we can measure the value of merchandise goods flowing through sea and airports, we cannot measure the trade in intangibles through the CBD. In metropolises like Melbourne and Sydney, it is probable that the trade in services is moving up and down with that of merchandise goods. With smaller cities, their ability to host the trade services sector is less and the model starts to break down. It is also possible that the very concept of a CBD may be becoming less useful as an aggregate term as the central areas of cities fulfil increasingly varied functions such as knowledge centres, health infrastructure nodes, cultural services etc. in addition to their trade facilitation function.

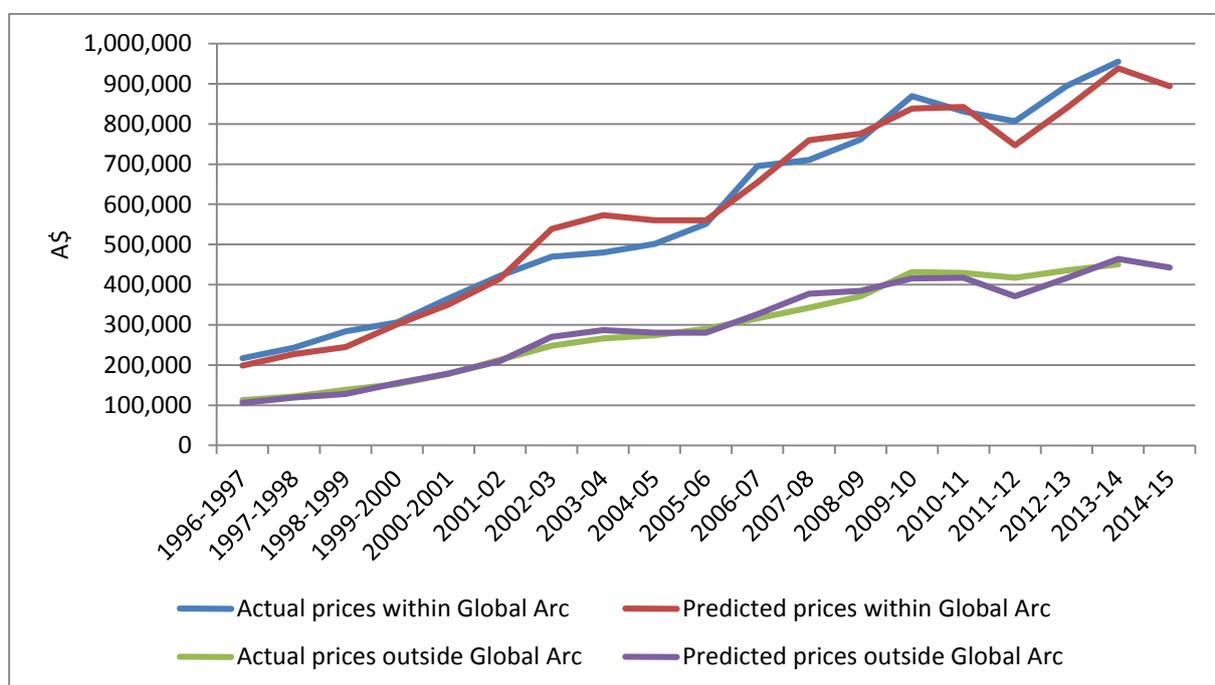


Figure 6: Relationship between modelled and actual house values inside and outside Sydney’s international exposed areas. Source: BITRE 2015b (Outputs in Appendix 1)

Implications

If, as has been shown above, house prices are very sensitive to trade flows then they can be used as a measure for the geography of trade. If that is the case, then relative house price movements tell us three things about how modern Australian cities work.

First, Figure 6 shows a widening gap between houses exposed to international trade in Sydney (the Global Arc) and those outside. Indeed, BITRE, 2015b shows that this gap widens with distance from the Global Arc. This process is apparent when comparing cities. It is like a three legged stool. Cities have to have all three elements (airport, sea port and large CBD) to be a large node in the

³ It is difficult to know just when the term Global Arc became popular. Hu 2013 examined the extent trade exposed areas of Sydney empirically. This work suggested that the Global Arc was an area stretching from Kingsford Smith Airport/Port Botany through the CBD and into the North Sydney. BITRE 2015a showed that house prices became less sensitive to changes in trade values with distance from the Global Arc.

international trading network. Figure 7 shows the widening gap between those cities with two or fewer and those that possess all three.

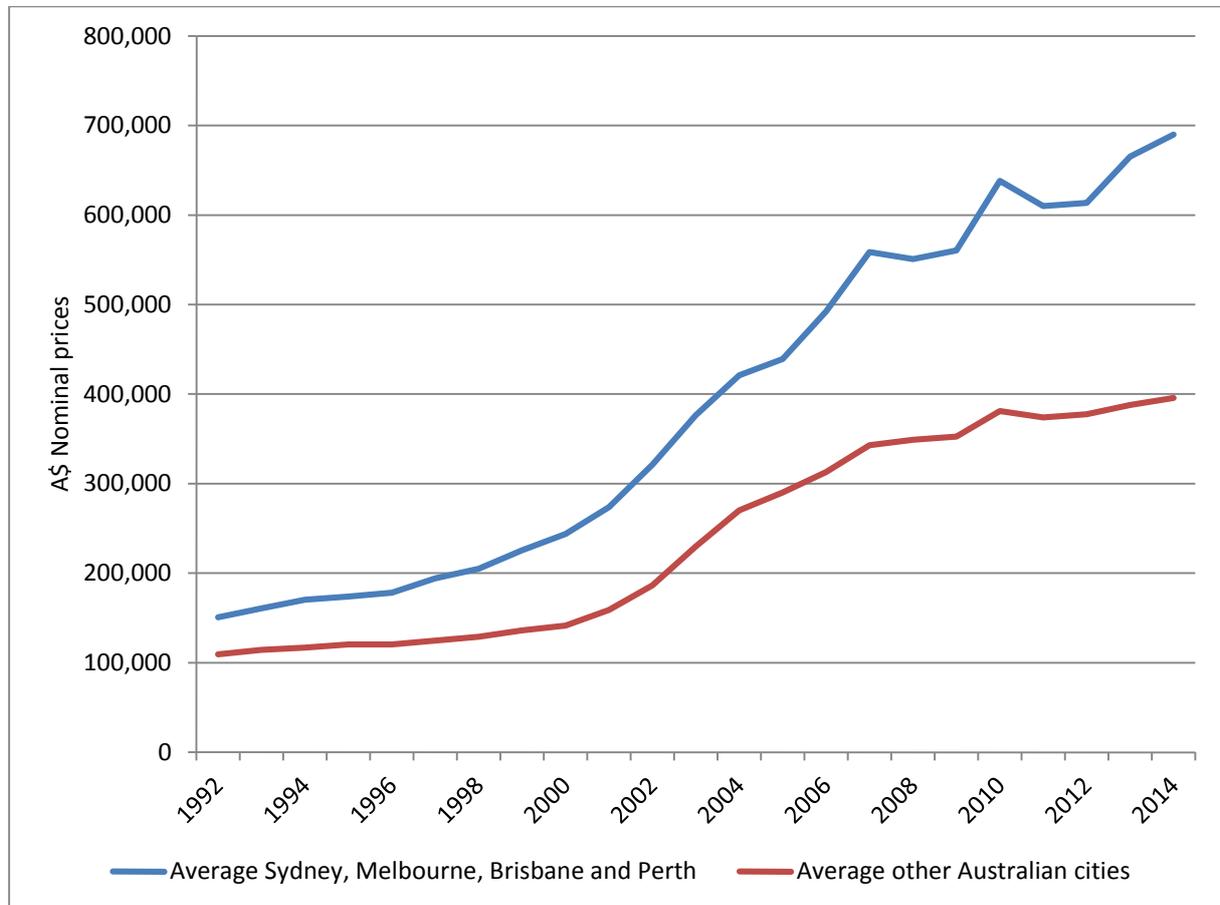


Figure 7: Difference in house nominal house prices between cities that have ports, airports and large, globally connected Central Business Districts (CBDs)⁴ and cities with a population over 30,000 without all three. Source: Unpublished RP Data tables in BITRE 2015a

There are a number of implications that flow from this observation. One is that if a city has only one or only two elements, its potential to grow in value as a trade node is much reduced. One example of this is Canberra. It has a highly skilled workforce that is internationally exposed but has no port or international airport. Townsville, on the other hand, has a sea port and international airport but not a critical mass of international trade related services industries like finance, law and accounting. Values in these two cities are growing more slowly than those with all three elements (BITRE, 2015b). This suggests that proposals to grow a city around an isolated sea port or others attempting major urban development around an airport unconnected to a seaport or a CBD or attempts to grow a second CBD without an international trade relationship may not be successful.

Another implication of the three legged stool observation is that the value of the transport link between the triangular area between the CBD, airport and seaport in the major nodes in the international trade network is very high. Unfortunately for transport infrastructure providers, the triangle's interior is exactly where one of the major inputs to transport infrastructure, land, is likely to be at its most expensive. Nevertheless, transport inefficiencies in the triangle degrade the national network

⁴ There are a number of other cities with international airports and sea ports such as Adelaide, Darwin, Cairns and Townsville. These cities do not have a CBD of sufficient size to host a significant number of the multinational companies that are critical to international trade. To be a significant node in the international trade network, cities need a seaport, airport and a CBD with a critical mass of advanced producer services.

disproportionately because they create friction at the points of highest value flow and where there are few alternative pathways.

Second, it seems likely based on both recent experience and international trends that Sydney and Melbourne will increasingly dominate as the major international gateways to Australia. However, geography is against Melbourne because it is orientated away from the direction of Australia's trade which is increasingly to the north and west. It may be that the relationship between the two cities becomes increasingly synergistic with Sydney taking more of a role in international trade while large national distribution companies are headquartered in Melbourne to take advantage of its cheaper land, rich transport connections and advanced logistics capability.

Brisbane and Perth are more favourably orientated towards the direction of Australia's trade but their smaller CBDs mean they may still lack the critical mass to be large, mixed value nodes in the international trade network in the short/medium term. However, the geography of the network is continually moving and reshaping itself in new and sometimes unexpected ways meaning some circumspection in forecasting its future shape is warranted.

Third, many have observed the phenomenon of Australia's major cities 'shrinking back in on themselves' over recent decades from Forster (1995) onwards. Explanations have been sought mainly in agglomeration economies (DIRD, 2012; DIRD, 2013; Graham, 2006; Trubka 2009) and changing amenity and cultural preferences (Florida, 2002; Glaeser and Gottlieb, 2006; Glaeser, 2011). This paper contends that these may be, in the main, the secondary effects of the changing geography of trade flows both between cities and within them.

Before the First World War, during Globalisation Mark I, the flow of international trade focused cities around their ports and the CBD's coordinating trade. As the century progressed and world trade fell as a proportion of GDP, the flow of trade value became more dispersed and cities spread outwards as per the circle analogy earlier in the paper. Since the 1970's, that trend has been reversed. Under Globalisation Mark II, trade value flows began to move back to city centres, slowly at first but then with increasing speed. Unfortunately, while this was going on, Australian cities, like most cities in the developed world, kept building outwards. This has left an increasing distance between high value jobs and where most people live. The consequences of this have been discussed comprehensively and eloquently elsewhere (e.g. Cheshire et al 2014). The contribution of this paper is to help better understand the mechanisms that are driving the re-centring of cities.

How will international trade shape Australian cities in the future? It is a truism that bears repeating, 'Geography does not argue, it simply is' (Gray, 2013:136). Australia is only two per cent of world trade and there is little it can do as a country to affect the geography of the global network. While this suggests that much of the future of our cities may be beyond the ability of national policy to shape them, there are a number of examples of cities making their own luck. But many of these, like Singapore, did so by taking a hardnosed look at how best they could become a node through which the value of world trade flowed.

Appendix 1: Regression outputs for Figure 6

<i>Sydney inside Global Arc</i>	
Multiple R	0.971092961
R Square	0.943021538
Adjusted R Square	0.939222974
Standard Error	66670.06204
Observations	17

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	1.10348E+12	1.10348E+12	248.2573711	9.67608E-11
Residual	15	66673457584	4444897172		
Total	16	1.17015E+12			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	-50336.72639	58703.47347	-0.857474412	0.404675285	-175460.2182	74786.76546
International trade	10.03257142	0.636738609	15.75618517	9.67608E-11	8.675395203	11.38974764

<i>Sydney outside Global Arc</i>	
Multiple R	0.949038362
R Square	0.900673812
Adjusted R Square	0.894465926
Standard Error	46413.59971
Observations	18

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	3.12546E+11	3.12546E+11	145.0854134	1.94849E-09
Residual	16	34467555811	2154222238		
Total	17	3.47014E+11			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	28564.45503	37672.06302	0.758239734	0.459331289	-51296.75099	108425.661
International trade	4.732286434	0.3928793	12.04514066	1.94849E-09	3.899419523	5.565153344

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