

# Sydney's housing markets during the Global Financial Crisis: how was globalisation mediated?

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**Abstract:** In the five years since the GFC began, Australia has experienced very different housing market impacts than most other Anglo economies. Housing prices did not crash, and homeowners remain relatively stable. Nevertheless, there were significant consequences. The effects of temporary stimulus measures, of changing patterns (and regulation) of foreign investment, and changes in the availability of credit, have different implications for the affordability of homeownership and rental, and have affected different types of owners and renters in distinctive ways. The spatial outcomes of these changes are particularly interesting, and help explain some of the development barriers that Sydney has faced over the period. The paper defines different segments of Sydney's housing markets, and investigates how home prices and rents varied across those markets. The conclusion reflects on the housing market outcomes of Sydney's changing global integration.

## Introduction

Sydney's global position is determined not only by its effective lifestyle marketing strategies (Acuto 2012) or its role as a Pacific-Rim centre of financial and producer services (Taylor 2010; Searle and De Valence 2005), but also by its complex stratified property markets. Investment capital and labour flows are mediated by the particular opportunities and barriers encountered in specific local housing markets. The city's attractiveness as a destination for both international investors and for an internationalised workforce was enhanced by its relative stability over the financial crisis of 2008-2010. In the six years since the collapse of Lehman Brothers triggered a near-disaster for the finance sectors and housing markets of many economies, Australia experienced little more than a short-lived flattening of home prices. While the mining boom and China's rapid growth over this period were significant insulators for Australia, even in those states where growth was sluggish (such as NSW), neither employment nor housing prices reacted as many feared (Yates and Berry 2011; Murphy 2011). In Sydney overall, real home prices increased steadily after a mild downturn between late 2008 and 2009 (partly in response to stimulus measures including lower interest rates), while rents increased substantially. Sydney represents an interesting case study of how the effects of the GFC were mediated by the nature of its integration into a particular segment of the global economy, and by the way that these economic links transformed the city's socio-economic geography.

The sharpening divisions between those benefitting from growing concentrations of housing wealth, and those marginalised from that wealth, have been a key theme in both global (inter-city and -national) and local (intra-city) redistributions of advantage (Forrest 2008). How those divisions have driven the further socio-spatial restructuring of particular cities is an interesting empirical question that may help tease out the contingent and often singular urban economic consequences of globalisation (Bryan et al 2005). How did the nature of Sydney's integration into a global economy mediate the sorts of housing market outcomes it experienced over the GFC? How did these effects play out in different housing markets across the metropolitan area? Given Sydney's increasing socio-spatial segmentation, driven in part by its evolving role as a global city on the Pacific Rim, the spatial outcomes of increases in prices and rents have important distributional consequences. Clearly they affected existing home owners differently from prospective buyers, and from renters. In this paper, I argue that they also have different consequences for mobile affluent global workers compared to others.

This paper investigates the spatial outcomes of housing market trends associated with the period before, during, and after the GFC (2006 to 2012) across the Sydney metropolitan area. The paper begins by reviewing recent research on Sydney's evolving global role and the role of housing markets in globalisation. The following section reviews methodological issues related to the analysis of housing sub-markets, and presents the methodological framework for the empirical analysis. In Section 4 I develop a spatial model of housing markets, based on a cluster analysis of demographic and economic characteristics drawn from the 2011 Census of Population and Housing, at the

postcode level. The cluster analysis is intended to approximate the geography of global integration across the metro area. Next, trends in real prices and rents are examined across these housing market types. The conclusion reflects on what the spatial analysis suggests about how Sydney's changing global role mediated the housing market impacts felt by different types of households.

## **Sydney's global rise**

Sydney's consistent top-ten ranking in international liveability indices (heavily dominated by the priorities of transnational corporate workers), and its recent elevation to "alpha +" status in producer-services based rankings of world cities (Taylor 2010) offer convincing evidence of the success of an entrepreneurial state strategy framed around entertainment, events and "lifestyle branding" (Acuto 2012) rather than traditional corporate incentives (which the state has limited ability to deliver). Migration has been an important growth engine, but it has been bifurcated: high-skilled transnational workers recruited to the financial and professional services sectors, and younger migrant skilled workers recruited through a points-based system of preferences for specific occupations (for instance, nurses, or construction managers) (Forrest, Poulsen and Johnston 2003; Hawthorne 2005).

Sydney also represents an attractive and rapidly appreciating property market, with Asian-based investors funding new luxury high density developments capitalising on the waterfront and CBD fringe amenity, which offer effective risk diversification for investors based in more volatile Chinese, South-East Asian and Middle Eastern property markets (Colliers International 2012; Schlesinger 2012). But the increasing disconnect between earnings and housing prices has resulted in a median income to price ratio of 1:9.2, third in the Anglo world only to Vancouver and Hong Kong (and well above New York's ratio of 1:6.2, or London's 1:6.7) (Demographia 2012).

Many writers have pointed to the sharpening social stratification associated with Sydney's global ascendancy (Raskall 2002; Baum 2008). Reflecting on the 1990s era record economic growth, Raskall finds a widening gap between absolute incomes and income growth for suburbs in the lowest and highest deciles, and points to a reconfiguration of the spatial distribution of income across the metropolitan area. He argues these findings demonstrate the concentration of the benefits of globalisation in Sydney in contrast to its hinterland, and also the dramatic (and retrogressive) redistribution of those benefits among the city's residents (Raskall 2002, 298).

Baum too finds convincing evidence that Sydney "is a tale of two cities, that starts in the deprived Western suburbs and ends on the storied north shore" (Baum 2008, 16). His analysis of a wide range of indicators finds substantial numbers of Sydney's suburbs in both the most- and the least-disadvantaged categories. Dodson and Sipes (2008) similarly identified Sydney's western suburbs as some of the most vulnerable to the combined (globally generated) pressures of rising fuel prices and increasing mortgage interest rates.

The narratives of worsening housing affordability and increasing social inequality are part of the standard litany of "the negative consequences of globalization" (Sassen 2001; Lo and Marcotullio 2000). Perhaps a more interesting question is how and why these negative and positive outcomes are distributed, and whether this is always the same across cities. Bryan et al (2005) argue for more "grounded understandings of what drives contemporary accumulation and distribution processes..." (Bryan et al 2005, 1) that will address questions such as "who and where are the territorial winners and losers" (Bryan et al 2005, 8).

The role of property investment and financial flows in distributing benefits and imposing costs more broadly also needs to be understood in terms of the consequences these flows have for actual places and the people who rent, borrow, and own within those places (Smith 2002; Leyshon 1996; Boyer 2000). Ray Forrest argued (presciently) that "housing systems are now more intimately embedded in a global economy and in an institutional structure in which global institutions exert greater influence (Forrest 2008, 168). Pointing to the increasing concentration of housing assets in "pockets of hyperappreciation" (Forrest 2008, 175), he traces the consequences of easier international flows (of some people, and of finance) in creating "a cumulative and interconnected set of advantages for those with the necessary employment and social credentials to be residents of those privileged enclaves" (Forrest 2008, 173). How have those forces played out in Sydney specifically, and where are those "privileged enclaves" (if they exist)? How did different housing markets – the advantaged and the marginalised – experience the most recent GFC? I address these questions through a

multivariate analysis of housing sub-markets. The following section provides the context for the methodological approach used in this paper.

### **Understanding housing sub-markets**

Housing is a unique type of “commodity” because it is a bundle of goods rather than an individual good (Galster 1996). Because it is multifaceted, simple indicators such as price are too limited a basis for identifying the sub-markets within which prospective buyers or renters search. Housing choice is likely to be determined by a much wider range of considerations: access to schools, jobs, transport modes, and particular combinations of amenity. In turn, housing sub-markets may be seen as a crucial mediator of social and economic opportunity. The concept of housing submarkets ties together a variety of elements related to the dynamics of supply and demand.

There are a diversity of approaches to defining housing submarkets. One of the key differences is between definitions that focus on the characteristics of individual dwellings, and those that focus on location (Galster 1996). Grigsby (1963) argued that markets are defined by “close substitutability” of dwellings, which segments markets into groups of housing units of similar quality, within which consumers will purchase similar levels of utility. Housing submarkets represent a set of economic relationships within a social space defined by non-economic attributes such as racial segregation, information flows, crime rates, and school quality (Kain and Quigley 1975; Burrows and Gane 2006; Bates 2006). Thus, housing markets (like labour markets) have become increasingly fragmented and mosaic-like as cities have expanded, global migration flows have become more complex, and socio-economic inequalities have intensified (Poulsen, Johnston and Forrest 2002).

One approach to defining submarkets uses an hedonic method, modeling the attributes of individual dwellings to identify those that consumers would see as substitutes (in other words, homes of similar quality) (Galster 1996; Bourassa Hoesli and Peng 2003). Most of those analyses, however, have concluded that location plays a major defining role. A second approach has been to rely on identifying functional regions, based on migration-sheds, home-work linkages, or real estate agent interviews about information flows (Brown and Hincks 2008). A third approach focuses on statistical techniques to identify commonalities among small spatial units (such as postcodes or collection districts), usually through some combination of factor analysis and cluster analysis (Goetzman, Spiegel and Wachter 1998; Burrows and Gane 2006; Bates 2006). This method is closely related to the construction of indices to model socio/spatial structures (such as indices of dissimilarity, residential concentration, and similar) (Poulsen Johnston and Forrest 2002). An advantage of this last approach is the relative ease of access to data for small spatial units, compared to the volume of detailed information needed for individual units in hedonic analyses. If we accept that broader social and economic conditions are important attributes of “location,” and may serve as a suitable proxy for physical amenities, this approach has some merit.

### ***A methodology for local housing market analysis***

Cluster analysis is a useful tool for identifying similarities among cases on multiple dimensions. Essentially, the clustering process is iterative, comparing cases on several dimensions simultaneously and using hierarchical algorithms to form clusters made up of cases that are closer (more similar) to one another than they are to cases in other clusters (Aldenderfer and Blashfield 1984). The cluster centroid is defined by the mean value of all cases in the cluster on each dimension. Each case is identified by both its cluster membership and its distance from the cluster centroid (Aldenderfer and Blashfield 1984). Clusters can be validated or tested in several ways. Using cluster membership to test for relationships with variables that were not used in the analysis is a useful way to evaluate the outcomes, because it shows whether the clusters are meaningful.

But what variables should be used to analyse multivariate similarities and differences? Given our focus here is on how Sydney’s global rise has been reflected in housing market outcomes, a few indicators are clearly relevant. Median household incomes capture the relative economic benefits households enjoy. The proportion of people migrating from overseas over the previous five years, and the proportion who were foreign born, capture Sydney’s role as a labour market magnet. Changes in the proportion of people employed in the finance and producer services sectors, the sectors most closely associated with Sydney’s global Pacific Rim role, capture the domestic employment outcomes of globalisation. Other variables merit inclusion because they reflect demographic differences that distinguish housing markets. Median age of household head,

proportion of renters and owners, and household structure, all capture important elements of the demographics driving housing market preferences. The data were obtained from the 2011 ABS Census of Population and housing database. The analysis is done at the postcode level because that is the most detailed spatial scale at which median rent and housing price data are reported (see discussion below). While postcodes do not provide as much spatial specificity as mesh blocks would, converting postcode-based price and rent data to finer spatial scales would introduce substantial inaccuracies.

One of the main challenges is dealing with the statistical problems raised by the relationships among variables. We might expect, for instance, that median age would be correlated with household income, as would proportion of people employed in financial and producer services. Principle Components analysis offers us a way to avoid this problem, by transforming a set of correlated “real” variables (income, age of household head) into a statistically independent set of “artificial” variables, or factors. While principle components analysis is merely a statistical technique that does not necessarily identify meaningful factors, and thus should not be used as the sole method of investigating how multiple attributes are distributed across cases, it does work effectively as a method of limiting correlation amongst the variables used to cluster cases (Afifi, Clark and May 2004). The principle components shown below are meaningful, with higher loadings (in this case we used a component score of at least 0.5, positive or negative, as the basis for interpreting which variables loaded highest on which factor) on variables that we might expect would be associated, but they avoid the correlation problems that would distort the cluster results by overemphasizing (by double counting) some attributes (Afifi, Clark, and May 2004). Factors are also useful because they summarise a larger number of variables into a more concise form. The principle components calculated as the basis for this analysis (with an eigenvalue over 1) are shown in Table 1.

**Table 1: Principle Components extracted**

Variable	Component		
	1	2	3
percent renters	.532	-.802	-.001
median age	-.096	.586	-.602
median monthly mortgage	.710	.544	.143
median weekly rent	.786	.390	.199
median weekly household income	.642	.664	.186
percent born in Australia	-.408	.646	-.453
percent persons at same address in 2006	-.774	.513	.110
percent persons moved from overseas since 2006	.752	-.541	.225
percent couples with children	-.389	.497	.700
percent single parent with children	-.721	-.489	-.040
percent couples with no children	.734	-.202	-.619
percent single person households	-.504	-.570	.121
percent employed in finance and producer services industries	.924	.143	.060
Eigenvalues	5.475	3.722	1.618
percent of variance explained (cumulative)	42.113	28.631 (70.745)	12.445 (83.189)

Source: Calculated from 2011 ABS Census of Population and Housing data by the author

In this case, thirteen “real” variables have been transformed into three factors. Together, the three factors explain 83% of variation in the cases analysed. The average variable values associated with each factor are summarized in standardized scores (shown in Table 1), which we can use to understand the combination of characteristics each factor “stands for.” Thus, the first factor shown in Table 1 is associated with places with high housing costs and incomes, and higher proportions of renters and overseas migrants. This factor also loads strongly on proportion of residents working in the financial and producer services sectors. The second factor is associated with places with older household heads and higher proportions of owners, with higher incomes and more people born in Australia. The third factor is associated with younger household heads and more families with children. The point of this step in the analysis is to create a small set of uncorrelated but meaningful indicators we can use as the basis for our cluster analysis.

### Defining clusters of housing sub-markets

The next step in the analysis is to test out alternative methods of clustering cases, to get a sense of which solution would be most useful. K-means clustering has several advantages when dealing with a large number of cases, but it is important to test several alternative numbers of groups. Too few or too many groups can result in clusters that are too large and undifferentiated or too small and unique. The analyses were tested with from two to seven clusters, and the degree of association with key variables (both those used to construct the factors and those excluded) was examined to determine the usefulness of each solution. In each case, iterations were continued until clusters converged. The same analysis was run on a randomly selected sub-set of cases (postcodes) to determine whether the results were affected by the postcodes included. The final solution chosen identified five clusters, ranging in size from 21 to 81 postcodes. Table 2 summarises the association between cluster membership and scores on the underlying variables summarised in the factors that were used to cluster the cases.

**Table 2: Housing sub-market clusters**

Variable	Cluster					Mean
	1	2	3	4	5	
percent renters	23.90%	53.30%	20.19%	22.35%	34.73%	29.70%
percent home owners	73.43%	44.81%	77.60%	76.02%	63.45%	68.34%
median weekly household income	\$1,102.71	\$1,889.73	\$1,548.87	\$2,164.18	\$1,268.44	\$1,597.00
median weekly rent	\$270.00	\$478.77	\$352.26	\$490.60	\$329.79	\$383.81
median monthly mortgage	\$1,865.81	\$2,692.80	\$2,339.94	\$2,820.22	\$2,078.80	\$2,363.60
median age	42.95	34.67	39.03	38.07	34.44	37.13
percent born in Australia	78.23	51.31	73.14	64.76	50.87	61.84
percent at same address in 2006	57.91	35.61	63.69	57.90	57.43	56.50
percent moved from overseas since 2006	1.72	15.98	2.86	6.81	8.59	7.08
percent employed in finance /	13.57	38.17	18.04	30.30	18.89	23.07
producer services						
percent families with children	26.82	22.04	32.26	36.84	32.71	31.73
percent single parents	9.40	4.63	6.25	4.72	8.30	6.65
percent couples with no children	41.32	55.63	34.40	33.16	29.77	35.76

percent single person households	8.20	6.57	7.53	6.38	9.73	7.93
N	21	30	62	55	81	249

Source: Calculated from 2011 ABS Census of Population and Housing data by the author

Cluster 1 might be labelled “lower income older owners.” Postcodes in this cluster were associated with higher proportions of home owners, few international migrants, and high proportions of people born in Australia. Cluster residents had low incomes and low housing costs, and more of them were couples with no children or single parents with children compared to the average. Low proportions were employed in the finance and producer services industries.

Postcodes in Cluster 2 had high proportions of residents working in finance or producer services industries, lower than average proportions of residents born in Australia, and more than twice the average proportion of overseas migrants. Residents of this cluster were younger and more likely to be renters, but they also had higher than average incomes and housing costs. This cluster might be labelled “affluent young and global.”

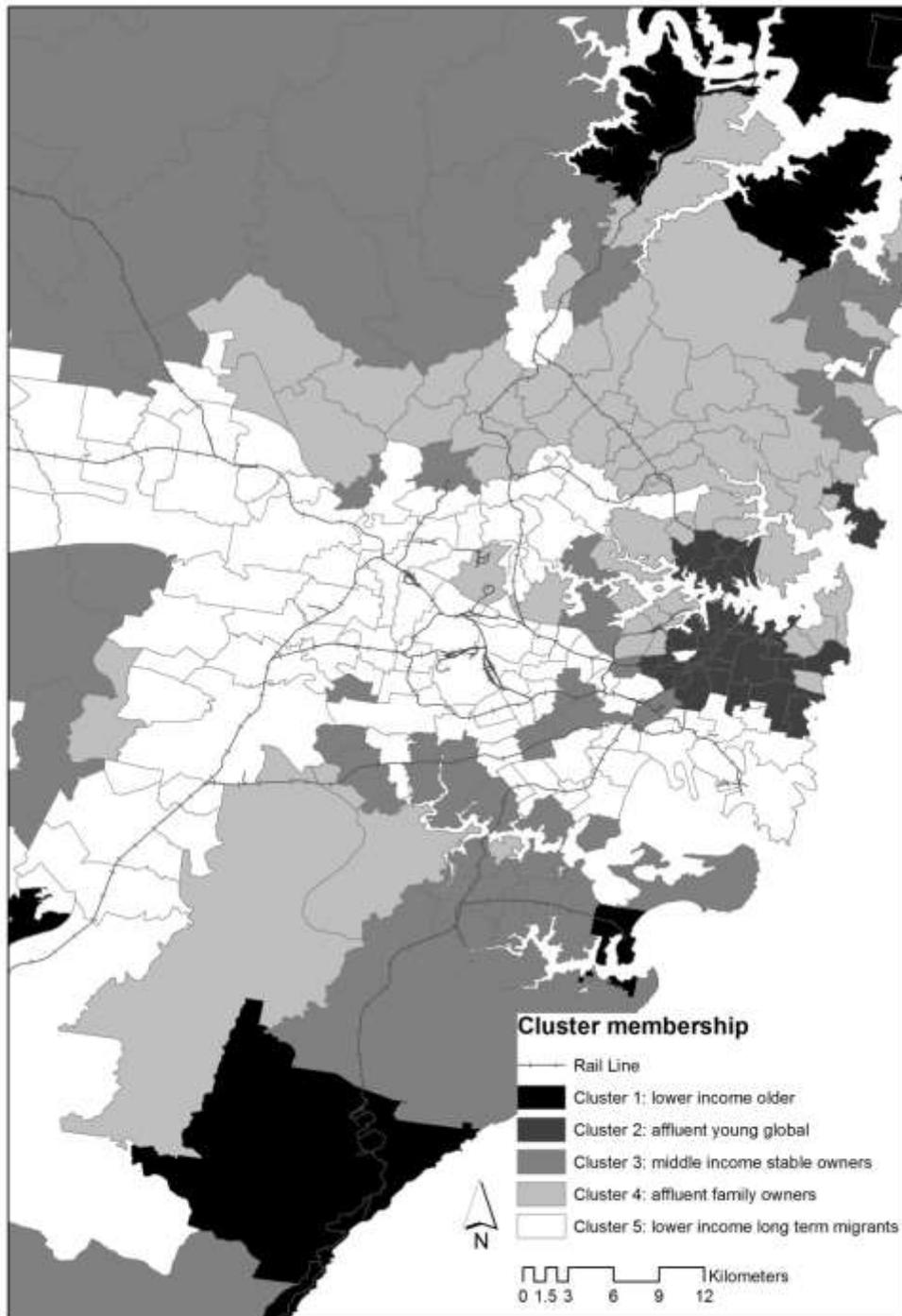
Cluster 3 was made up of postcodes associated with average housing costs and incomes, higher proportions of owners with family structures typical of the metro area, higher proportions of residents born in Australia and few overseas migrants. Lower than average proportions of residents worked in finance and producer services industries. This cluster might be labelled “middle income stable Australian home owners.”

Like Cluster 2, residents of Cluster 4 were more likely to be employed in finance and producer services, and to have high incomes and housing costs. However they were less likely to be foreign born, and more likely to be home owner families with children. This cluster could be described as “affluent family owners.”

Finally, residents of Cluster 5 were more likely to have been born outside of Australia, but lower proportions had moved from overseas in the past five years compared to Cluster 2. Residents had lower incomes and housing costs, were slightly younger than average and slightly more likely to be renters. Lower than average proportions were employed in finance and producer services. These postcodes might be described as “lower income long term migrants.”

Figure 1 shows the distribution of these clusters across the metropolitan area. Cluster 1 is distributed around the fringe of the greater metropolitan area, while Cluster 2 is concentrated around the CBD and the eastern suburbs. The band of Cluster 5 postcodes follows the western and southern rail lines quite closely. There is less widespread rail access through the middle income stable owner cluster.

**Figure 1: Housing sub-markets in the Sydney metropolitan area**



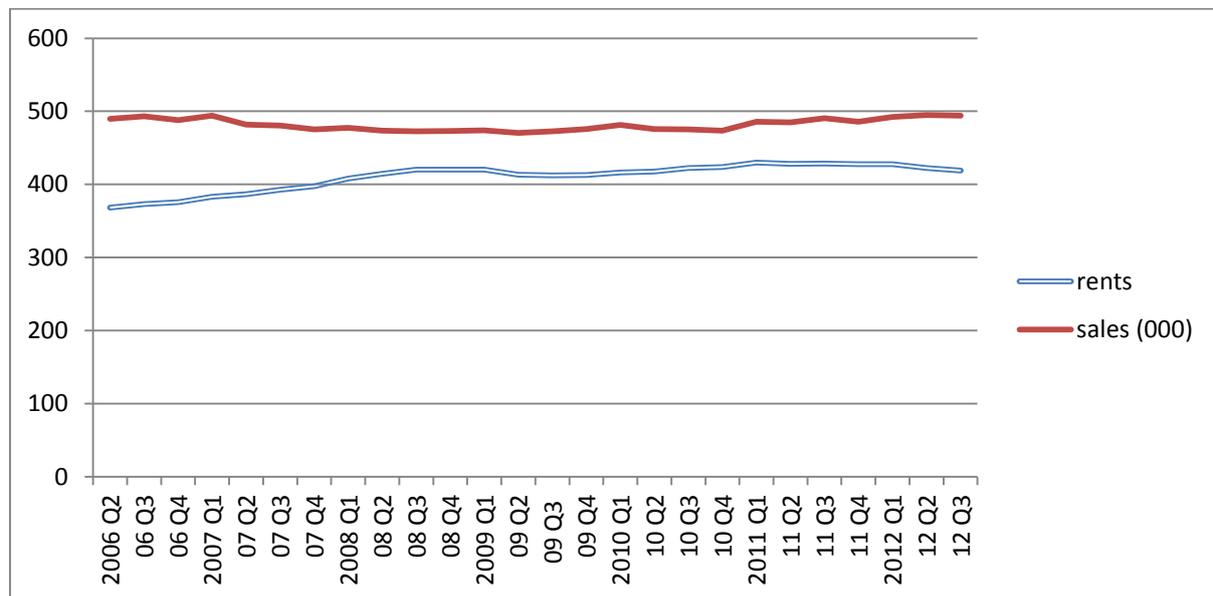
Source: Calculated from 2011 ABS Census of Population and Housing data by the author

The following section explains how housing prices and rents were analysed.

## Trends in housing prices and rents

Data on median house prices and median weekly rents were obtained from the was obtained from the Rent Reports and Sales Reports released quarterly by NSW Housing, which are based on data gathered by NSW Lands and Property Management Authority (LPMA) from property title records and Rental Bond Lodgement forms filed with the Office of Fair Trading (NSW Housing 2013). Median prices have some limitations; they do not differentiate changes in prices resulting from changing composition in the housing stock. However, they offer a straightforward way of capturing trends in the cost of both owner- and renter-occupied housing. Prices were standardised using the ABS Existing House Price index (March 2013 = 100), and the housing component of the CPI was used to standardise rents. The prices and rents shown in Figure 2 are thus expressed in real terms. The time series also smoothed curves by averaging each quarter based on the quarters immediately before and after. Figure 2 shows smoothed trends in real home prices (\$000) and weekly rents over our study period, 2006 to 2012.

**Figure 2: Trends in real rents and sales prices, 2006-2012**



Source: Calculated by the author from data obtained from NSW Housing Rent and Sales Reports, 2006-2012

Home prices demonstrate a different trajectory over this period than rents. Prices dipped with the onset of the GFC in the third quarter of 2008, but soon recovered and by the end of the period were once again at 2006 levels in real terms, reflecting the effects of stimulus measures and interest rate cuts introduced in the wake of the GFC. Lagging home ownership was reflected in increasing competition for rental housing, which increased steadily in real terms over the period.

How did these trends play out over the metropolitan area, and were they associated with the clusters of housing sub-markets identified above? To answer this question, we used a one-way Analysis of Variance to investigate whether price and rent trends differed significantly across the five clusters outlined in the previous section. Table 3 summarises the results of these analyses.

**Table 3: Trends in rents and sales by cluster, 2006-2012**

	percent change in rents	percent change in sales prices
1	8.290	-11.783
2	10.716	7.262
3	11.959	0.704
4	12.032	-1.558
5	15.134	4.469
Total	12.761	1.642
F (sig)	2.665 (.034)	11.928 (.000)

Source: Calculated by the author from data obtained from NSW Housing Rent and Sales Reports, 2006-2012

The “lower income older owners” cluster experienced the most substantial decline in housing prices, and the lowest overall increase in rents. Residents of these postcodes saw real erosion in housing wealth over this period, but lower than average rent increases meant housing costs remained affordable. The other cluster with real home price declines were “affluent family owners,” although these effects were far less sharp than Cluster 1. In contrast, rents rose in these postcodes at a faster than average rate. These postcodes experienced both decreasing rental affordability and lower housing wealth accumulation. Cluster 3, “middle income stable home owners,” experienced very similar trends, with real home price rises close to zero, and similar increases in rents.

The two clusters representing Sydney’s bifurcated global enclaves experienced quite different trends. The affluent mobile residents of Cluster 2 saw below average rent increases over the period, but the highest rate of home price appreciation. These postcodes benefitted from housing cost trends over the study period, with improving rental affordability but also improving housing wealth. Cluster 5 also saw increases in real home prices, which would benefit existing owners, but this was combined with the steepest increases in rents. As households in these postcodes tended to have higher than average proportions of renters, a substantial proportion of residents would have experienced deteriorating housing affordability.

## **Discussion**

The geography of Sydney’s integration into the global economy reveals the differentiated nature of that integration. Most interesting for our purposes here are the quite sharp lines of differentiation between global and local enclaves, and within the two types of globally integrated localities. The mobile and affluent finance and producer services sector employees concentrated within easy reach of Sydney’s Global Arc saw significant improvements in their housing circumstances through the turmoil of the GFC. Housing asset wealth likely became further concentrated for homeowners in these locations, while housing affordability appeared to improve for mobile renters. These are most likely to be the renters with the greatest range of choice, given their relatively higher incomes.

While housing asset wealth also improved (but less sharply) for lower income longer term migrants in the transit-accessible neighbourhoods to the City’s west and south, housing affordability became more problematic for the substantial proportions of households who rent rather than own. Others have found that Australia’s immigrants take approximately twenty years to make up the home ownership gap with native-born Australians (Chua and Miller 2005). For the global labour force outside of the finance and producer services sectors, that gap is likely to have widened, with high rents slowing the accumulation of the down payment needed to progress to home ownership, and housing prices in those locations increasing faster than average.

These results may also point to a significant role that migration may play in bolstering house prices. In locations with fewer international residents and less overseas migration, house prices declined or at best remained stagnant in real terms. The metropolitan fringe locations of older lower income

households saw substantial and significant erosion in value. Values stagnated in the lower north shore locations of affluent owner occupiers, despite the fact that these households too were more likely to be employed in the finance and producer services industries. Similar trends were found in the middle income owner occupied suburbs further from the centre. In contrast however, both of these owner-dominated clusters saw quite sharp increases in rents. Access to these stable family neighbourhoods became more difficult for moderate to lower income renters.

## **Conclusions**

Housing price appreciation plays a substantial role in both attracting international investment, and in rewarding the mobile professional employees of Sydney's finance and producer services industries. The concentration of the upswing in metropolitan housing prices (combined with moderate rent increases) in the enclaves dominated by an affluent globalised workforce demonstrates how Sydney's global integration has aided the housing-based wealth of this cohort. In contrast, the moderate increases in value in the metropolitan sub-markets that house longer term lower income migrants is over shadowed by the substantial increases in rents in these locations, benefiting property investors to a greater degree than owners. Sydney's metropolitan fringe, however, is distinguished by the increasing marginalisation of older, lower income owners from the benefits of metropolitan housing gains. Few of the benefits of asset growth accrued to the city's traditional housing elites, or to the middle income suburban home owners less tied to the global employment sectors of the centre.

The political ramifications of this restructuring are intriguing. Opposition to growth has been concentrated in many of the North Shore and Eastern suburbs locations which have seen historic patterns of housing wealth accumulation reversed, in favour of once undesirable inner city locations such as Pyrmont, Alexandria, and Paddington. Further research is needed on the contribution of housing stock changes, and in particular the effects of metropolitan densification strategies, to this redistribution of housing asset wealth. The results also raise interesting questions about the social transformations underway in the enclaves of globalised affluence; many of the locations where home price appreciation has been sharpest are locations with historic concentrations of social housing. How will these new patterns of property-based wealth affect the city's socio-economic fabric?

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