

Housing Affordability: Lessons from the United States

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Abstract

Over the last two decades, New Zealand experienced a threefold increase in housing prices. The largest surge in prices in recent years occurred between 1998 and 2007, a period of housing price growth in many developed economies. Since 2007, housing price growth remained flat until 2011, and then prices once again embarked on an upward trend. However, recent housing price growth has been concentrated in Auckland and Christchurch. The purpose of this report is to compare and contrast New Zealand housing trends and policies with those of United States. The report summarizes lessons learned from the United States and highlights data needs and research questions that may require further consideration in order to better understand housing markets in New Zealand.

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R31 Housing Supply and Markets
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Housing, Land Use Regulation, Economic Development

Executive Summary

Main Findings

Over the last two decades New Zealand experienced a threefold increase in housing prices. The largest surge in housing prices in recent years occurred between 1998 and 2007, a period of housing price growth in many developed economies. Since 2007, housing price growth remained flat until 2011, and then prices once again embarked on an upward trend. However, recent housing price growth has been concentrated in Auckland and Christchurch.

The purpose of this report is to compare and contrast New Zealand housing trends and policies with those of United States (US). The main findings of the report are summarized here:

- Global forces, which were heavily influenced by US monetary policies and lending regimes, led to significant housing price increases in the US, New Zealand and many other countries during the 1998-2007 period. Between 2008 and 2012, US housing prices tumbled in the housing market collapse, whereas New Zealand prices were flat during the same period.
- Housing markets now appear to be recovering in the US, and prices in New Zealand are also trending upward. However, the recent rise in prices in New Zealand is driven by the Auckland and Christchurch markets; housing prices elsewhere are stable.
- Auckland housing pressure is partially the result of international in-migration and limitations in the ability of housing supply to quickly respond to demand.
- Christchurch conditions are the result of housing supply problems resulting from the earthquakes in 2010 and 2011.
- In the US, differences in regional housing price pressures are driven by population growth coupled with supply constraints due to terrain, bodies of water and land use regulations.
- US cities that are more similar to Auckland (high amenities, growing populations and physical land constraints) experienced relatively high rates of housing price growth; even if Auckland's housing supply could quickly match demand, population growth coupled with income-driven demand for amenities within a constrained land environment can result in rising land values and thus housing prices.
- Appropriate responses to land value increases should be a combination of increased urban density and new development on the periphery. However, in an effort to preserve their quality of life, existing residents often impose restrictive land-use regulations through their local governments. This constrains housing supply and thus exacerbates the housing affordability challenge.

Potential Policy Solutions

The report offers a discussion of several policy options, including a brief evaluation of the formation of the Auckland Super City, which is a substantial change in governance structure that may have significant implications for development in the coming years. However, it is too early to fully assess these changes. Policy options centre on better aligning the incentives of local authorities to regional and national housing needs. Options discussed include:

- Introduce new incentives, subsidies and other policies at the local level to increase density and expand development from the urban center to the periphery.
- Local governments can reduce the substantial uncertainty/risk borne by developers by cutting the length and variability in time to obtain regulatory consent. In addition, both subnational and central governments could take on shares of the risks associated with the financing of infrastructure, particularly for larger development projects.
- Increase the costs of holding undeveloped property for speculative purposes by implementing a land value tax at the local and/or national levels.
- Use locally targeted capital requirements as determined by the Reserve Bank of New Zealand to temporarily take the heat off demand so as to enable supply to respond to long-run housing demand pressures.
- Promote development in Auckland region satellite communities (matched with coherent transportation infrastructure planning) in order to relieve pressures on the Auckland core.
- Strengthen other urban areas such as Christchurch so as to provide options to those who desire the benefits of living in highly urbanized areas.

Data Needs and Suggestions for Further Research

The report also identifies data needs and offers suggestions for further research that may help inform housing policy. Information needs highlighted include:

- While the regulatory environment can limit supply of new housing, little is known about the differences in regulations across New Zealand. The development of a New Zealand land use regulation index like that of Gyourko, *et al.* (2008) would improve our understanding of the policies that are in place and help to identify their impacts.
- New Zealand cities such as Auckland and Wellington face binding geographic land constraints. However, little is known about the degree to which physical land constraints have led to land/housing prices differences in these cities or elsewhere in New Zealand; a physical land constraint index similar to Saiz (2010) would be a valuable tool in this regard.

Potential research projects identified include:

- Estimate the impact of land use regulations and physical land constraints on housing price growth.
- Estimate the impact of development contributions on various aspects of the New Zealand housing market.
- Estimate the impact of moving from a land value tax to a general property tax in the Auckland region. When the Auckland Super City was formed, many communities were forced to switch from a land value tax to a property value tax. This change provides an excellent opportunity to explore how local (and perhaps national) tax policy can be used to achieve land use/housing objectives.
- Develop or modify a land use model to inform a development contribution subsidy framework. Such a model could help identify anticipated impacts of national infrastructure subsidies on housing demand/supply, affordable housing, and agglomeration economies.
- Develop a regional econometric model of housing prices to identify housing bubbles and inform locally targeted capital requirements that could potentially be implemented by the Federal Reserve Bank of New Zealand
- Study the impacts of the Christchurch earthquake in order to better understand the linkages (population and business flows, international student flows) between Christchurch and Auckland. Evaluate strategies to strengthen Christchurch's position in the New Zealand economy.
- Explore options for altering the regulatory environment and the infrastructure funding framework to reduce the risk/uncertainty for developers.

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Housing Affordability: Lessons from the United States

1 Introduction

Housing prices in New Zealand have increased threefold over the last two decades, significantly more than the rise in general consumer prices. Are housing price increases driven primarily by global trends that are outside the control of New Zealand policymakers? Or are rising housing prices a result of internal economic conditions and policies?

The purposes of this report are to summarize housing market conditions in New Zealand and draw comparisons and lessons from the United States (US) housing market experience. As a prelude to the evaluation presented in this report, it appears that rising housing prices of the early to mid-2000s was due to larger global influences. The most recent jump in housing prices, however, appears to be caused by internal factors. Further, the recent rise in housing prices is not truly nationwide; rather the regions of Auckland and Canterbury are the only areas experiencing significant housing price increases, and for different reasons. In Auckland, rising housing prices appear to be the result of demand pressures driven in part by international in-migration. The demand pressures coupled with restrictive land use regulations and emerging physical constraints on the availability of land is pushing prices up. In Canterbury, housing price increases are the result of supply constraints caused by the Christchurch earthquakes in 2010 and 2011.¹ According as recently published report by the New Zealand Ministry of Business, Innovation and Employment (2013), the total housing stock in Christchurch region decreased by 11,500 housing units, or 6.2% of the housing stock.

To provide some context for the housing market and policy comparisons, the next section offers a general description of the fiscal and regulatory environments of the two countries. Section 3 contains a more detailed summary of housing market conditions in New Zealand. However, given that there are now numerous reports on the New Zealand housing market, this section is relatively brief; its purpose is to enable the reader to more easily make comparisons with the US housing market, which is embedded within the discussion. Section 4 offers a policy discussion and lessons from the US experience that may inform New Zealand housing policy responses. Section 5 offers a discussion of nationwide considerations in relieving housing demand pressure in Auckland. Finally, Section 6 offers a summary, outlining data needs and needed research.

¹ It should be acknowledged that housing price increases in Auckland could potentially spread to the rest of the country as it did in the late 1990s through the mid-2000s. The Productivity Commission's Housing Affordability Inquiry (2012), pp. 30-31, illustrates housing price transmission from Auckland a few high growth tourism areas to the rest of the country that occurred during this period.

2 New Zealand/United States Fiscal and Regulatory Environments

In order to more fully understand the differences and similarities in the New Zealand and US housing markets, it is perhaps useful to briefly compare and contrast the national and sub-national fiscal and regulatory structures. A brief summary of the fiscal features for the two countries is presented in Table 1 below.

As shown in Table 1, while government expenditure as a percentage of GDP is substantially higher in New Zealand than the US, government is much more centralized in New Zealand. In New Zealand, just nine percent of government spending as a proportion of GDP occurs at the local level, whereas in the US that number is about 13 percent. Further, intergovernmental transfers from the national to local governments are low in New Zealand, whereas in the US about 25 percent of subnational spending is funded by central government.² Moreover, in the US both federal and state government transfers to local governments (townships, cities, counties and other local authorities) are significant: More than a third of local revenue is derived from federal and state sources.³ Importantly, often times grant formulas are designed in such a way as to incentivize local authorities to engage in activities deemed important by higher levels of government. Property taxes are a primary source of local government revenue in both the US and New Zealand; however, because the scope of local government responsibilities is greater in the US, the property tax burden is significantly higher in the US.

Table 1: New Zealand and United States Fiscal Characteristics, 2012

Fiscal Characteristic	New Zealand	United States
Total Government Expenditures/GDP	44.5%	31%
National	35.4%	18%
Subnational	9.1%	13%
Central government Debt/GDP	37%	148%
Unfunded Liabilities per H/H	\$24,700 NZD ⁴	\$1,445,000 NZD
Data Sources: http://www.treasury.govt.nz/budget/2012/execsumm/06.htm ; www.stats.govt.nz ; http://usadebtclock.com/ ; http://www.census.gov/govs/local/ ; and http://finance.yahoo.com/blogs/the-exchange/oh-way-government-totally-broke-222918359.html ; and author's calculations.		

In the US, local governments are charged with providing a broad range of public services such as education, police and fire, local roads, parks and recreation, water and sewerage, health and human services, and economic development activity, including land use regulation. In New Zealand, with exception of regional economic development, land use, sewer and water, local roads, and recreation, central government provides the other public services. In the US, a decentralized governmental system is valued highly because this structure allows states/regions with different priorities and needs to develop localized

² See http://www2.census.gov/govs/local/summary_report.pdf.

³ Grant formulae vary greatly depending on purpose, type of government and across the states.

⁴ This calculation is based on New Zealand government debt plus unfunded liabilities for Superannuation. This figure may not fully reflect total unfunded liabilities.

government policies to meet these challenges.⁵ The decentralized governmental system in the US also enables state and local governments to experiment with policy options. These experiments generate both “successes” and “failures”, and we learn much from these experiences. At the local government level, we have thousands of policy choices regarding land use regulations and development policies to examine, including the use of restrictive zoning, development contributions and other infrastructure funding methods, as well as urban growth boundaries. At the national level, we can evaluate how national policies targeted at making mortgages accessible and at low interest rates resulted in an enormous housing bubble (but differentially affecting regions) between 2000 and 2008. The goal of this report is to draw lessons from US experiences that may inform New Zealand’s current housing market challenges with regard to national housing policies and local land use regulations.

Table 1 also shows that while New Zealand currently spends more on government as a proportion of GDP, its fiscal situation is much stronger than the US. As can be seen from Table 1, government debt and unfunded liabilities in the US are substantial. On a per household basis, debt and unfunded liabilities are \$1,445,000 NZD and increasing.⁶ According to the work of Laurence Kotlikoff of Boston University, fully funding US liabilities would require an immediate increase in federal taxes of 57 percent to be continued indefinitely. Thus, government spending as a proportion to GDP would have to increase to more than 41 percent in order to fully fund our long-run spending obligations. While the long-term funding challenges for programs such as Social Security and Medicare (healthcare for the elderly) have been accumulating for many years, the meltdown of the housing and financial markets in the US exacerbated these challenges and has resulted in a substantial increase federal government deficit spending. There are important policy lessons to be learned from the US housing market, in terms of both what to and what not to do. As is apparent from the US experience, the potential implications of such policy choices can be substantial.

Turning our attention to issues more directly relevant to the housing market, in New Zealand there is a stronger relationship between national and local governments in determining land use regulations. Generally, local authorities in New Zealand have significant economic development autonomy, but central government can and does intervene. For example, in 2009 the central government via the Royal Commission on Governance assisted in the formation of the Auckland “Super City” wherein all local governments in the region were amalgamated into a single governing council. The rationale for combining the local units was three-fold: 1) reduce unhealthy fragmented inter-jurisdictional competition; 2) promote a more coherent regional development pattern; and 3) improve community engagement. While there are cases of region-wide local

⁵ In a large country such as the US, a decentralized governmental system allows autonomous state and local governments to develop policies that cater the specific needs, given economic and demographic conditions, and other factors. NZ is a much smaller and more homogenous country; it is not clear that greater local government autonomy would result in more effective governmental structure.

⁶ State and local governments throughout the US also have significant unfunded liabilities that take the form of retiree compensation. According to data on debt from the Census of Governments and information provided by Novy-Marx and Rauh (2010) and http://www.kellogg.northwestern.edu/news_articles/2010/municipal-pension-systems.aspx, state and local government debt and unfunded liabilities equal about \$56,000 per US household.

government cooperation in the US⁷, there is little direct central government intervention in regional development matters.⁸ State government authorities, however, have significant powers in organizing local governance; thus, there is significant variability across the states in regional governance and the structure of local institutions. In some ways, it is perhaps more appropriate to compare and contrast New Zealand government structure and responsibilities with individual US states as opposed to the country as a whole.

3 New Zealand/United States Housing Market and Housing Policies

With this general overview of the fiscal and regulatory environments in the two countries, consider now a summary of the evolution of the New Zealand housing market in recent years. Embedded within this review are comparisons to the US experience. As illustrated in Figure 1, housing prices in New Zealand have increases substantially over the past twenty years. However, most of the growth occurred between 2001 and 2007, a period of worldwide increases in housing prices.⁹ Between 2008 and 2011, housing prices were stable, but beginning in about 2011 prices in Auckland and Canterbury resumed an upward trend. Interestingly, while rental prices have increased over time, rate of growth has been substantially below housing price increases. Relative to income, the ratio of housing prices to household income increased from about three to one in the early 1990s to about five to one today.

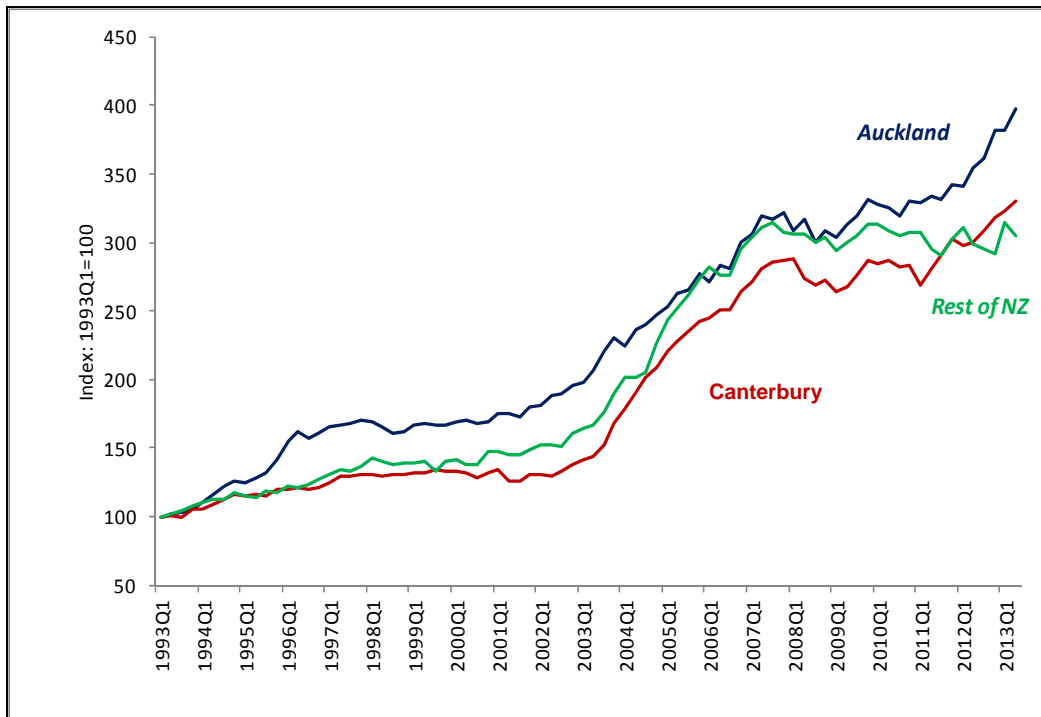
⁷ The Minneapolis and St. Paul region in Minnesota is one such area that has been successful in developing cooperative regional development policies.

⁸ The Tenth Amendment to the US Constitution states: "The powers not delegated to the US by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people. However, federal government does offer public housing programs and offers development subsidies in targeted areas.

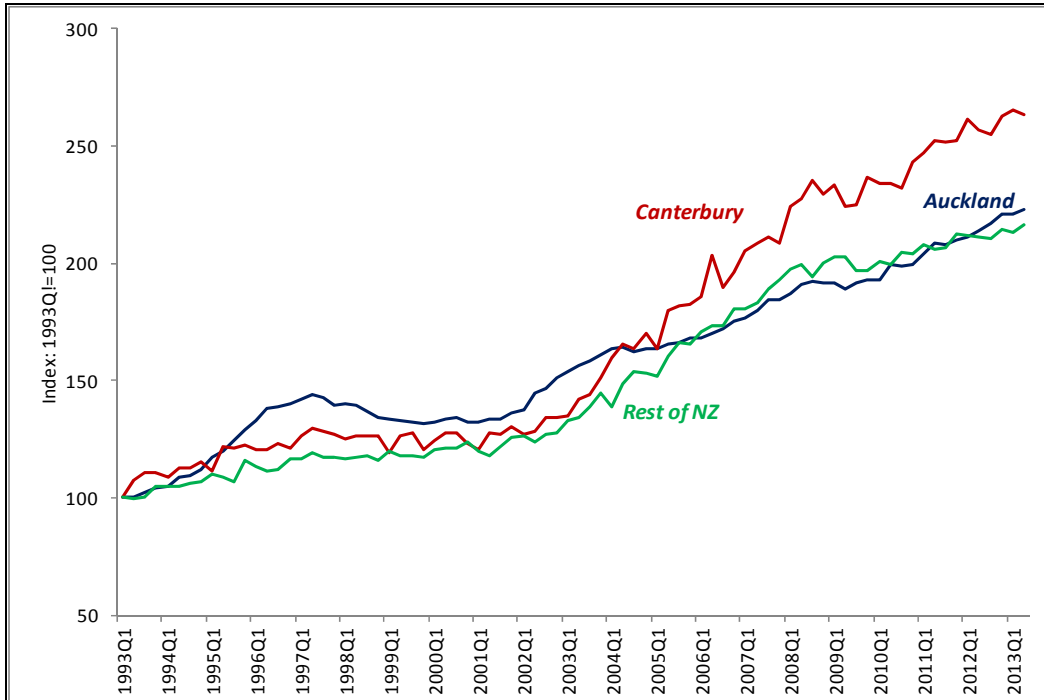
⁹ In fact, as shown in the a report by the New Zealand Productivity Commission (20012), real housing prices were relatively stable between 1970 and the early 2000s.

Figure 1: New Zealand Housing and Rental Prices

Panel A – Housing Price Index



Panel B – Rental Price Index

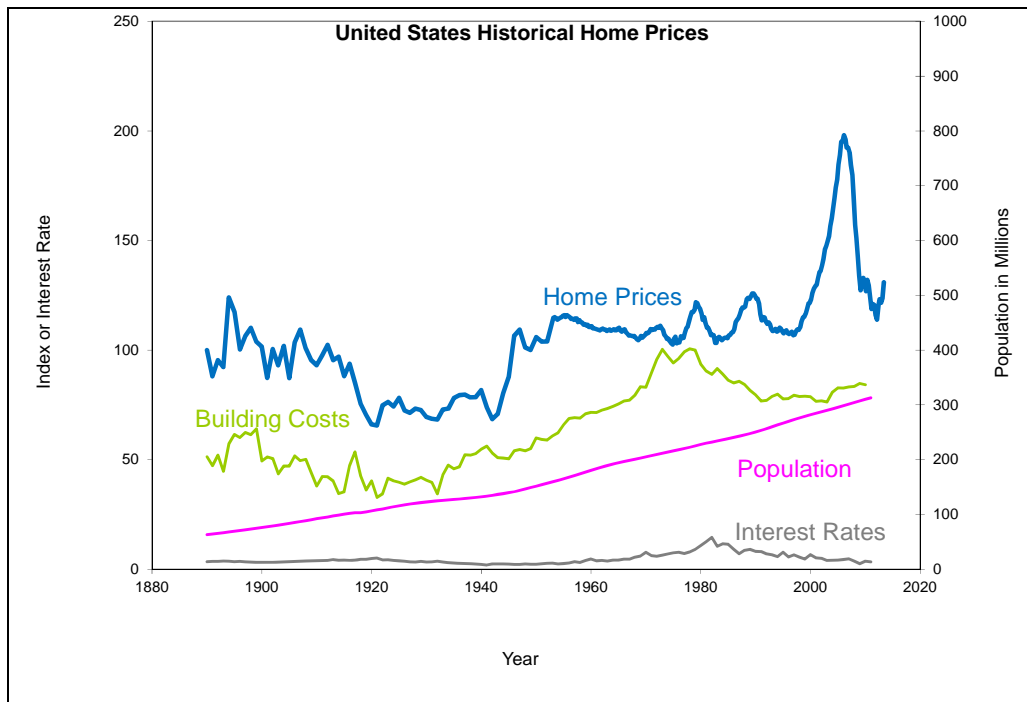


Source: New Zealand Treasury (2013).

The Case-Shiller housing price index for the US is presented in Figure 2, showing a very similar ramping up of housing prices nationwide starting in the late 1990s, but then a precipitous drop beginning 2008. Note, that real housing prices were quite stable dating back more than a hundred years. That is, with the exception of the ramping up of housing prices during the recent massive bubble, prices in the US roughly matched the increase in

general prices as measured by the consumer price index, even during periods of significant population growth.¹⁰

Figure 2: United States Housing Price Increases

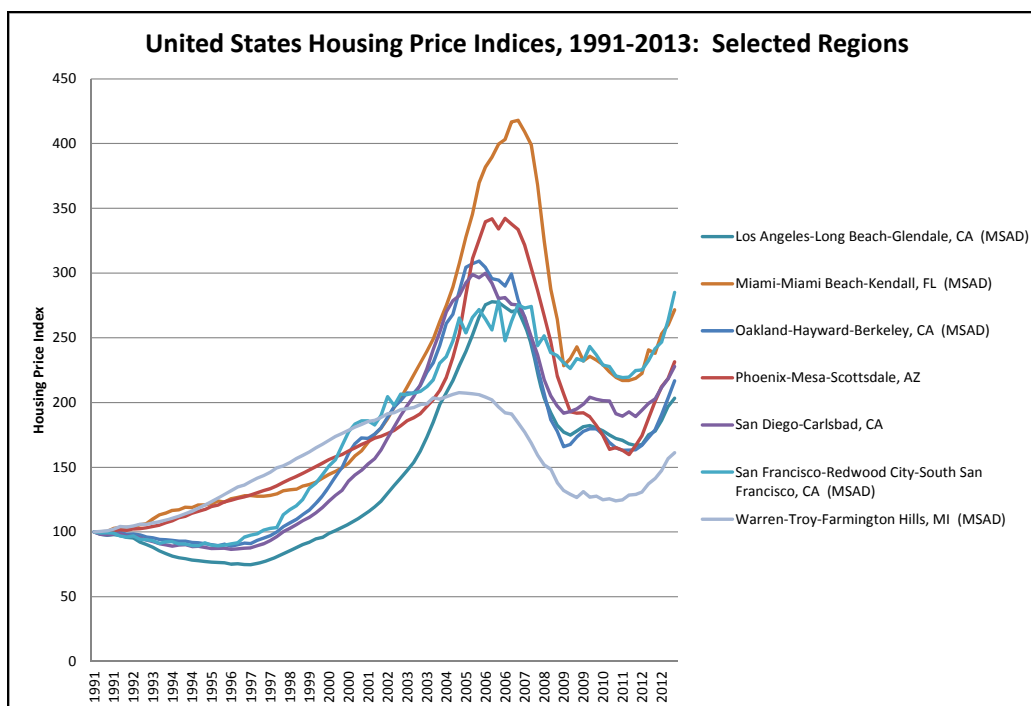


Source: <http://www.irrationalexuberance.com/index.htm>

Focusing more narrowly on the recent housing bubble period, Figure 3 demonstrates that the ramp up in housing prices varied significantly from region to region. Among the metropolitan regions shown in Figure 3, the Warren-Troy-Farmington Hill metropolitan area (Michigan) experienced the slowest rate of housing price growth, whereas the Miami (Florida) metropolitan area experienced the most significant growth.

¹⁰ Note that while nationwide housing prices were stable until about 2001, there is considerable variation in housing price growth across regions.

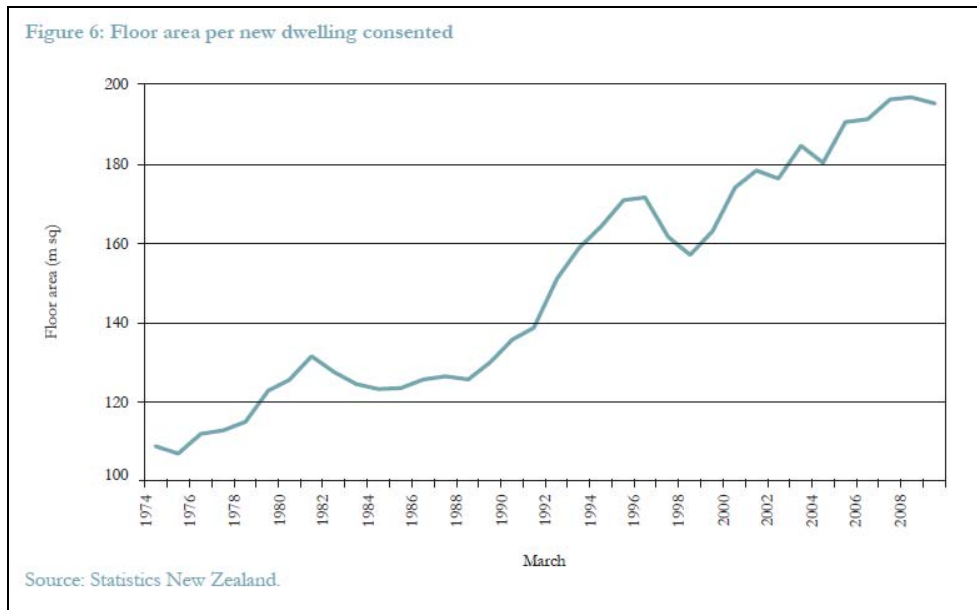
Figure 3: United States Regional Housing Prices



These regional differences are the result of a variety of factors, ranging from differences in population growth to supply restrictions, some of which will be discussed later in this report. Note that the more recent ramping up of prices in New Zealand and the US coincide with one another, suggesting that global pressures (which are heavily influenced by US monetary policies and lending practices) affected housing prices in both countries.

Over time, the quality of housing in New Zealand has improved considerably. For example, as shown in Figure 4, the average size of a New Zealand new home increased by about 40 percent since 1990. Similarly, the average size of new homes in the US has also increased substantially over the years. In addition, many older homes in New Zealand have undergone significant remodelling, and new standards for insulation and the like have been implemented over time.

Figure 4: New Dwelling Floor Area over Time

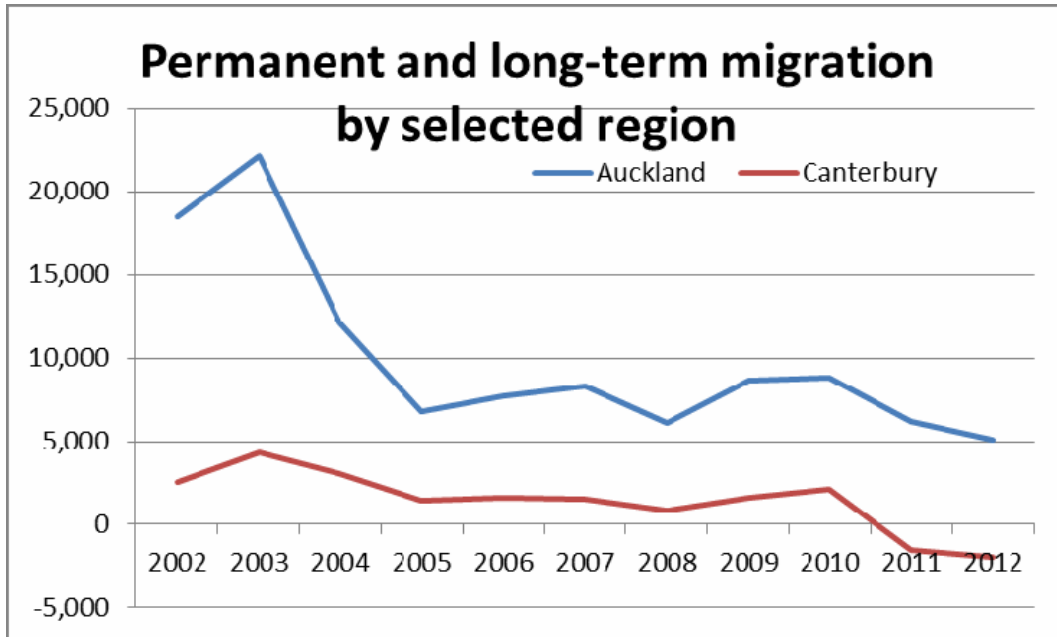


Before describing the global housing price increase and the bursting of the bubble in the US, consider the more recent housing prices increase in New Zealand. As shown in Figure 1, it appears that only the Auckland and Canterbury regions are experiencing housing price pressure. If one removes these markets, the other New Zealand housing markets appear to be stable¹¹. Canterbury's rising housing costs are the result of the 2010-2011 earthquakes and the challenges associated damaged housing stock and a slow recovery. Auckland's housing demand pressure, however, is driven by population growth and to some extent by international in-migration. Since 2006, Auckland's population grew by about 118,000 people. However, this growth is due to both the natural rate of population increase and international in-migration, with the lion's share of the increase due to due to natural population growth. Yet, in-migration appears to play an important role in the Auckland housing market.

Research by Coleman and Landon-Lane (2007), MacDonald (2013) and Stillman and Mare (2008) indicate that international in-migration increases housing prices. However, as shown in Figure 5, since 2003 permanent long-term net migration in the Auckland region has declined considerably in recent years. This suggests that while international migration may place some pressure on housing demand, it is not likely to be the primary driver in the coming years. Note also that net migration in Canterbury was actually negative in the wake of the earthquakes.

¹¹ As noted in the Productivity Commission Housing Affordability Report (2013), in the past rising prices in Auckland eventually spread to the rest of the country. We should not exclude this possibility in the current context.

Figure 5: Net migration in Auckland and Canterbury



Source: 2012 Demographic Trends, Table 5.06, Statistics New Zealand:
http://www.stats.govt.nz/browse_for_stats/population/estimates_and_projections/demographic-trends-2012.aspx

Another potential driver of housing price increases is rural to urban migration. If there is a rapid transition from low value land in rural areas to higher value land in urban areas, one might expect a corresponding increase in the housing costs. However, as show in Table 2, there has been little change in the percent of population in rural vs. urban areas over the last 20 years.

Table 2: Population Distribution by Urban Area, 1991-2006 Censuses

Area of Residence	1991	1996	2001	2006
	Percent of Population			
Main Urban	69.6	70.2	71.0	71.8
Secondary Urban	6.9	6.5	6.3	6.0
Minor Urban	9.0	8.7	8.4	8.1
Rural Centre	2.3	2.3	2.1	2.0
Rural and Other	12.2	12.3	12.1	12.0
New Zealand	100.0	100.0	100.0	100.0

Data Source: http://www.stats.govt.nz/browse_for_stats/population/Migration/internal-migration/urban-rural-migration.aspx

Figures 6 and 7 below show net migration across the US (Figure 6) and state housing price increases by state (Figure 7).¹²

¹² The Federal Reserve Bank of New York offers geographic depiction of nationwide annual prices changes dating back to 2003. Click on <http://www.newyorkfed.org/home-price-index/> to see the illustration.

Figure 6: United States Net Migration by Region, 2000-2010¹³

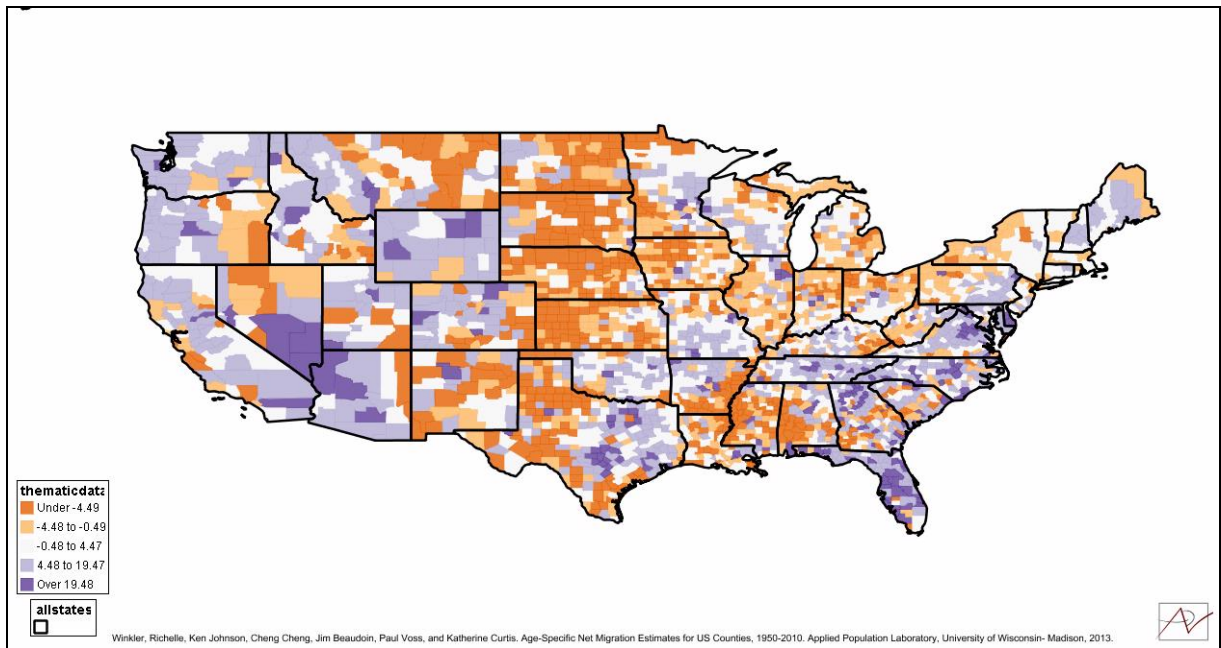


Figure 7: United States Home Price Appreciation, 1998-2010

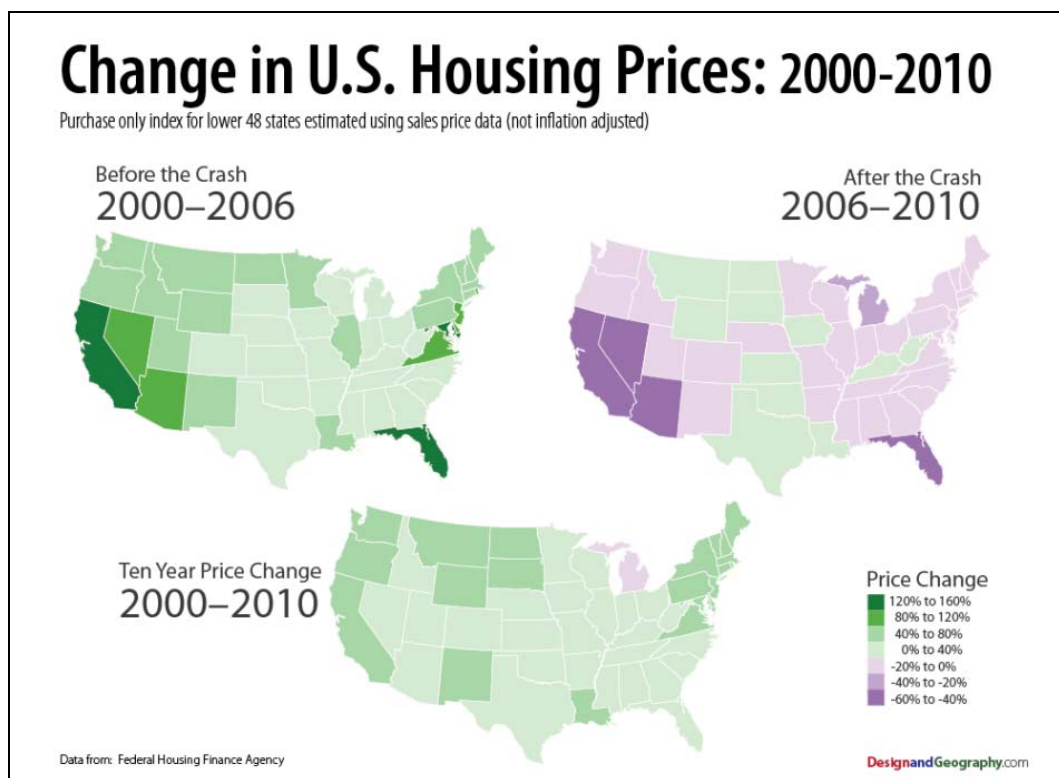


Image from <http://designandgeography.com/2011/04/27/housing-price-index-for-the-united-states-2000-2010/>

Taken together, the maps show that the highest price increase areas, particularly during the period prior to the real estate crisis, are those that experienced net population inflows, though there are also other drivers of housing price trends. During 1998-2006, housing prices in the US grew at an unprecedented pace. While a few economists such as Robert

¹³ In-migrants in the legend are per every 100 individuals.

Shiller had warned of a bubble prior to the crash beginning in 2007-2008, most did not recognize the risks until it was too late.¹⁴ Much has been written about the causes of the bubble and thus it is perhaps only useful to summarize and refer readers to other sources.¹⁵ Among the culprits are subprime mortgage lending, the opaque securitization process of mortgages, and government policies designed to promote affordable lending. The presentation of the geographic distribution of US housing price growth offers motivation to more carefully consider local housing market conditions and the policies of local governments across the US.

4 Regional Targeting, Land Use Constraints and Urban Economics

What is also of interest are the linkages between nationwide policies such as the setting of interest rates, loan to value ratios, capital requirement, and other borrowing standards, and local/regional housing market trends and land use regulations. In the US, the places that experienced the greatest run up in housing prices are those that faced the most restrictive regulatory environments (Gyourko, *et al.*, 2008; Huang and Tang, 2011). However, it must be recognized that land use regulations are endogenously determined. That is, high income places experiencing population pressure tend to adopt more restrictive regulations in an effort on the part of existing residents to retain their quality of life. Nevertheless, the patterns are clear: Land use restrictions tend to drive up housing prices; such regulations can delay and/or restrict what would be an appropriate housing supply response.

In the US, where housing construction is on a much larger scale and tends to be more responsive to demand pressures, the construction industry overbuilt in response to rising prices resulting from the housing price bubble. When the bubble burst in 2008, the US had a significant overstock of housing, which then exacerbated the housing price decline. In addition, construction of new homes dropped from a peak of 1,280,000 in 2005 to 300,000 in 2011.¹⁶ Beginning in 2012-2013, the US construction industry began to emerge and there is now some concern that there may be a shortage of workers; after being out of work for so long, many construction workers found employment in other industries.¹⁷

In New Zealand, the smaller scale nature of firms within the construction industry reduces the likelihood of generating supply overhang like that experienced in the US. On the other hand, smaller scale construction companies are not able to respond to rapid population growth such as is now being experienced in Auckland. However, the small scale nature of New Zealand's construction firms is not just a reflection of a smaller market. Rather, small firms are also the result of the land regulatory environment. That is, New Zealand construction firms tend to be small because land regulations are such that large scale land acquisition is difficult, and the approval process for large scale development is such that the time for obtaining approvals is lengthy and variable, and thus uncertain. Further, large scale development often entails significant upfront infrastructure costs; significant

¹⁴ See Shiller (2009) for a discussion of the real estate bubble and the bursting of the bubble in late 2007.

¹⁵ See Follain and Giertz (2013) for an excellent overview of the causes of the US housing bubble.

¹⁶ For historical data on new home sales, see <http://www.census.gov/construction/nrs/pdf/soldann.pdf>.

¹⁷ See <http://jobs.aol.com/articles/2013/05/10/construction-industry-shortage-skilled-workers/>.

delays due to various factors including local government approvals can result in significant financial stress and even bankruptcy. This uncertainty coupled with significant upfront costs make it more difficult for small to medium sized construction companies to grow; this exposure may be prohibitive. Basset, Malpass and Krupp (2013) also cite the importance of incentives in the development process and recommend change in infrastructure finance to better align the incentives of local government officials to be more responsive to housing pressure.

With Auckland's recent consolidation of local authorities and subsequent revamping of land use regulations, it may be that the uncertainty due to unexpected delays in the development process will be reduced. Time will tell. However, it may be prudent to reconsider the balance in the public-private partnership in funding and putting in place needed infrastructure, particularly for larger scale developments that seems necessary to match existing and anticipated demand in Auckland. It may be that too much risk/uncertainty is borne by developers, and that achieving faster supply responses require that national and local governments take on a share in the risk. Further, a shift to sharing in risks could better align the incentives of developers and local governments and therefore open the way for smaller construction firms to grow and/or merge to deliver the needed larger scale developments.

There is a growing recognition in the US that nationwide central bank policies targeted at the housing market may be too blunt an instrument. Smith and Weiher (2012), two economists from the US Federal Housing and Finance Agency, recently proposed a region-specific countercyclical capital buffer regime for residential mortgages. A key assumption of their proposed approach is that regional housing prices have stable long-run trends and such trends can be identified. If deviations from the trend can be identified, then central banks can impose capital requirements based on regional market conditions. The work of Smith and Weiher (2012) and Follain and Sklarz (2005) suggests that it is possible to use econometric methods to identify regional housing price bubbles.¹⁸ To date, the US has not implemented locally based capital requirements, in part because there are substantial barriers to overcome in implementing such a strategy in such a large and diverse economy. However, implementing locally based capital requirements (or other macroprudential tools) in a smaller country such as New Zealand is potentially more feasible.

In particular, given that Auckland is the only region experiencing rapidly rising housing prices driven by population growth, it may be prudent to consider a targeted response as opposed to a nationwide response such as the loan to value speed limit (LVR) policy recently adopted by the Reserve Bank of New Zealand.¹⁹ Instead, perhaps differential LVR requirements could be implemented regionally. If policymakers desired to temporarily take the heat off housing market demand in Auckland in order to give supply an opportunity to catch up, one could implement a higher capital requirement and/or a higher LVR restriction in the Auckland region, and then gradually phase out the differential requirements proportional to the distance from the city core so as to minimize potential spatial distortions created by abrupt changes in requirements at jurisdictional borders. Importantly, the central bank would have to make it clear to economic agents that the imposition of the regional requirement is not permanent and is intended to allow developers the time they need to respond to increasing long-run demand pressures. Calibrating differential requirements would also be administratively complex and pose a range of technical challenges.

¹⁸ Follain and Giertz (2013) offer a more detailed discussion locally based capital requirements.

¹⁹ The LVR speed limit requires banks to limit high LVR (less than 20% deposit) lending to 10% of their total residential mortgage lending flow.

However, if housing demand pressure in Auckland is in part being driven by international in-migration, then one would also have to determine whether and where in-migrants get loans; increasing capital requirements and the LVR requirements in Auckland may not necessarily affect housing purchase decisions of immigrants. In recent work, McDonald (2013) shows that an increase of 1000 international arrivals increases housing prices in Auckland by about 5 percent. He also shows that reductions in departures of the same magnitude increase prices by about 2 percent. Further, the type of in-migrant also seems to matter; European arrivals of 1000 have a 7 percent impact, but in-migrants from Asia and Oceania have much smaller effects. McDonald (2013) suggests that the anticipated housing price effects due to international in-migration will be small because net migration in the future is likely to be the result of fewer departures and most new migrants are expected to come from Asia and Oceania. Apparently, migrants from Asia and Oceania have very different housing preferences than do Europeans. In addition, in-migrants from Europe are often New Zealanders returning to New Zealand and may be more likely to influence the housing market (Stillman and Mare, 2008).

It is important to recognize that a growing and vibrant urban area will tend to experience increasing land values. In fact, a positive price gradient and rising land values in a growing urban area is often a sign of a healthy regional economy. It is therefore critical to properly define “success” in the housing market, and this requires thinking about how prices should evolve in a dynamic, growing, land constrained region. The target housing price increase in a high amenity land constrained environment, even with an optimal supply response, is probably higher than the rate of increase in the general price level.²⁰ The response to increasing land values should be higher density development in the core areas and increased development on the periphery. However, local authorities often impose restrictive land use regulations that prevent high density development and increased development on the periphery. A key issue is how to create incentives for local leaders to respond to market conditions quickly and efficiently. Importantly, aerial photographs and land use analysis suggest at Auckland may be approaching a physical land constraint as well; land is truly becoming scarce. While there is still opportunity (absent land use regulation restrictions) to increase density, it appears that green space is becoming more limited.

There is also some tension that exists between the granting and protection of property rights and permissive land use regulations. In some ways, a more permissive land use regime may enable denser redevelopment in core city areas, but there are potential negative net private benefits of development for existing residents. The granting of permission to build on the urban periphery as well as redevelopment in urban core areas depends greatly on how property rights are defined. As one extreme illustration, consider a 2005 US Supreme Court ruling on *Kelo v. City of New London*. As it is in New Zealand, eminent domain provides an avenue for the seizing of private property for public purposes such as construction of a highway, provided the public entity justly compensates the owners for the taking. The *Kelo v. City of New London* provided a landmark ruling that justified public takings for the purpose of private development. The court ruled that the City of New London could seize 90 acres of a blue collar neighborhood, condemn the property, and then extend a 99 year lease at a price of \$1 to a developer who was to then build an upscale development that included a waterfront hotel, office space and high end housing.²¹ In response to the ruling, there was a substantial citizen opposition not

²⁰ A high amenity land constrained environment in the presence of growing demand can lead to higher land/housing prices, particularly if the amenity-driven price response is high.

²¹ See <http://law2.umkc.edu/faculty/projects/ftrials/conlaw/takings.htm> for more details regarding this ruling.

only in New London but throughout the entire country. Prior to the ruling, seven US states specifically prohibited the use of eminent domain for economic development purposes. By 2012, 37 other states enacted similar types of legislation that placed limits on the power of municipalities to invoke eminent domain for purposes of economic development. The lesson is that intervention on the part of the public sector to alter a property rights regime to facilitate urban intensification can invoke substantial citizen opposition; care must be taken in revising property rights and land use rules.

While comparisons of Auckland with growing urban areas in the US may be of use, some caution is warranted in the selection of comparable regions. As one illustration, Bassett, et al. (2013) have looked to urban areas such as Houston, Texas where land use regulations are permissive and housing price growth modest. While the features of the regulatory environment in Houston are certainly worthy of consideration, in general Houston and other Texas cities are dissimilar to Auckland. Texas cities tend to be located in flat open spaces and thus have few physical impediments to growth; these regions have avoided housing price growth in part by growing out in a sprawling fashion. Even if Auckland wanted to adopt a similar strategy, the nature of its physical environment prevents such an approach. If one looks to growing cities in the US that are more similar to Auckland in terms of natural amenities, terrain and bodies of water (such as San Diego, San Francisco, or Seattle), we see that these areas have also experienced rising housing costs.

Several recent studies of US land and housing values may be of particular relevance for the current New Zealand situation. The first is that of Gyourko, *et al.* (2008) who used information collected from a survey of local governments to create a land regulation index (the Wharton Residential Land Use Regulatory Index). They show that restrictive land use regulations are not necessarily present in places with higher population densities. Rather, more restrictive environments are related to the desire of higher income households to preserve a low density quality of life. This study also suggests that housing prices tend to be driven up by more restrictive regulatory environments.

Saiz (2010) uses satellite-generated data on terrain elevation and the presence of water bodies to ascertain the amount of land available for development in urban areas around the US. His research shows that regions most constrained by geography tend to have the most inelastic housing supply, and thus higher housing prices. In the case of New Zealand, as population pressures mount the terrain and bodies of water (particularly in Auckland and Wellington) could very well generate inelastic housing supply.

Albouy and Ehrlich (2012) estimate the relationship between urban land values and the price of residential housing. Specifically, they use information from the American Community Survey to estimate housing price differentials across US metro areas. They also use construction cost index data and construction wage data to estimate the determinants of housing costs. Albouy and Ehrlich (2012) report that the average cost share of land is about one-third; however, the share varies from 10 to 50 percent from areas where land is cheap to where land is expensive. They also find that housing costs increase when land use regulations and geographic constraints are significant. In related work, Albouy (2009) shows that in many US urban areas the differential between undeveloped land and developed land on the fringe is about equal to the cost of converting agricultural land into development (i.e., the costs of infrastructure).

Recent research on the Auckland housing market by Grimes and Liang (2009) and Zheng (2013) examined the land price differential between undeveloped land just outside Auckland's metropolitan urban limit (MUL) and just inside the MUL. Their estimates show

a substantial price differential: land just outside the MUL was up to nine times less valuable than land just inside the MUL. This finding provides evidence that Auckland's MUL is a binding constraint and places pressure on land prices within the MUL. Further, the MUL may be forcing a "leap frog" development pattern, where the MUL constraint results in a less coherent regional development pattern.²²

This evaluation suggests that the housing market, particularly in Auckland, is supply constrained. What options are there for relaxing locally imposed land use regulations? How can we better align the incentives of local authorities with the broader social gains associated relaxing the regulatory constraints, thus enabling a more rapid housing supply response? Without such incentives individual communities may be averse to some types of new development, particularly if local officials are primarily concerned with maximizing the welfare of existing residents within their own community. In a broader sense, the size and density of an urban area should be determined by the balancing of marginal social benefits of development with the marginal social costs of development. However, local authorities do not always have the incentives to consider development in a broader regional context. What policy options are available to align local land use decisions with these broader regional and national considerations?

The amalgamation of local councils in Auckland in 2010 provides a greater incentive to implement land use plans that meet the needs of the region as a whole. The amalgamation resulted in a number of significant changes, which among other things include the following:

1. The 2010 inception of a single regional governance structure embodied in the Auckland Council.
2. All communities transitioned to property value taxation (some communities had previously used land value taxation).
3. A single system of development contributions (prior each community had their own individual policies).
4. Streamlining of regulatory approval process, including the creation of Special Housing Areas (SHA) to speed the process of development.

It is too early in the process to determine the degree to which these changes will improve housing supply responsiveness. However, these changes appear to be in the right direction in that the single regional council will consider development patterns in a broader regional context as opposed to a more localized context. The changes in development contributions will reduce distortions in the sense that developers can potentially avoid fees by building in places with lower development contributions. Further, a streamlining of the regulatory approval process may reduce the time required for developers to obtain the approvals they need. On the negative side, many economists would have recommended that the Auckland region adopt land value taxes instead of property value taxes because land value taxes encourage the highest and best use of land and are more efficient than a property tax.²³

In New Zealand, local authorities are given permission to charge "development contributions" to help cover the public infrastructure costs of new construction. A

²² The role that metropolitan urban limits play in development is complex. See Grimes and Liang (2008) for a review of key literature on metropolitan urban limits.

²³ See Dye and England (2010) for an excellent review of the theory and practice of land taxation.

development contribution is paid for by the developer, who then typically embeds these costs into the price of the newly constructed home. The work of Burge and Ihlanfeldt (2006a) in Florida suggests that such fees enable local authorities to more readily approve new development because such contributions offer a source of funding for the required infrastructure. However, studies also show that these fees are fully passed on to home buyers in the form of higher prices (Delaney and Smith, 1989). Further, Burge and Ihlanfeldt (2006b) show that impact fees tend to discourage multi-family housing development. Skidmore and Peddle (1998) study the effects of impact fees (or development contributions) across communities in the Chicago region (Illinois). They find that the adoption of impact fees reduce the rate of residential development and property taxes. Their findings demonstrate a significant shifting of the infrastructure finance from the community as whole to new home buyers. In summary, while development contributions offer a needed source of infrastructure funding, they may also increase housing prices and reduce the construction of more affordable and dense development.

One potential central government intervention that might help to align the incentives of local councils with broader regional housing needs and reduce the risks borne by developers of large scale housing projects is to subsidize development contributions. The subsidy could be designed in such a way as to: 1) Reduce or limit housing price growth; 2) encourage the development of dense multi-family housing; 3) better align the development incentives of local authorities with broader regional needs; 4) spread a portion of the risks of infrastructure investment currently borne by developers to local and central governments. One would have to think carefully about the conditions for the subsidy, as policy interventions often result in unintended consequences. With this important caveat, listed below are six factors to consider if such a subsidy were to be offered:

Criterion A: Set the subsidy rate to equal x percent of the development contribution, where x was set such that the marginal social benefits of development = marginal social costs of development. In practice, it is difficult to determine “optimal” development and thus the optimal matching rate. However, it may be possible to identify the positive/negative externalities associated with different types of development and then set the subsidy such that development patterns move in the direction of the optimal. Note that it is entirely possible for the matching rate to be more than 100 percent, and resources could be made available to fund new infrastructure as well as needed infrastructure reinvestment.

Criterion B: Provide subsidies in regions where growth in housing demand exceeds growth in housing supply.

Criterion C: Offer a higher subsidy rate for more dense and/or affordable housing in urban core areas.

Criterion D: Allocations from central government could be recouped from the revenues generated from goods and services tax on the new housing.

Criterion E: The subsidies could be structured such that they offset the burden and risk borne by developers who are often asked to fund infrastructure for larger housing projects.

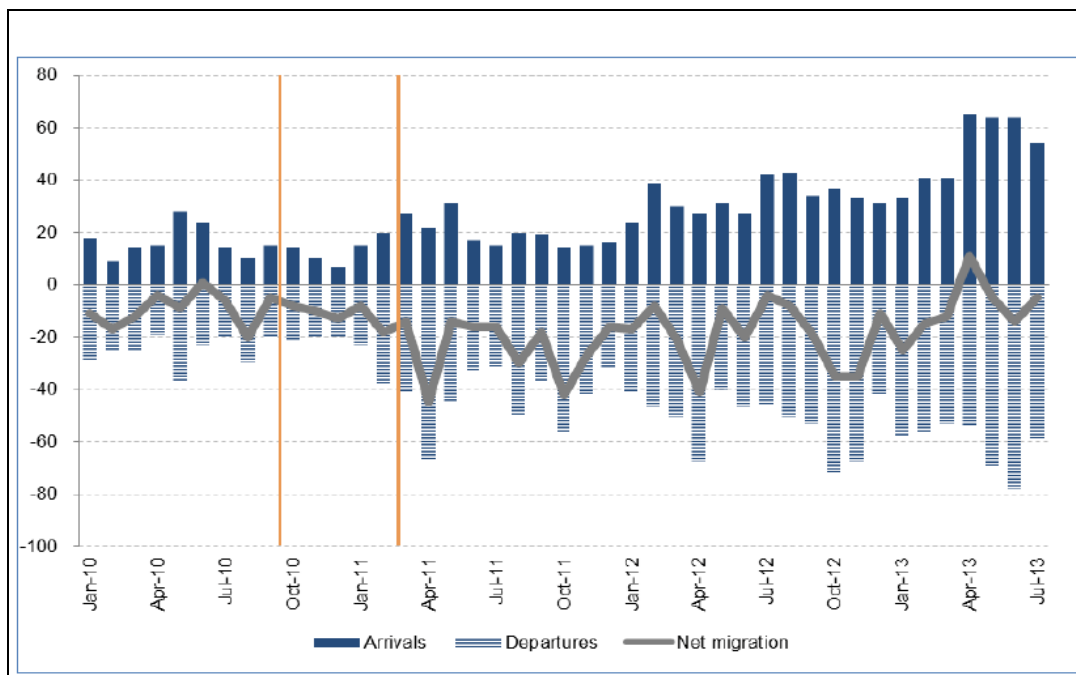
Criterion F: Offer a full subsidy rate in targeted zones and then reduce the subsidy rate in proportion to the distance from targeted zones. The gradual reduction in the subsidy rate would help to reduce abrupt changes in the costs of development from one area to another.

5 Other Options for Taking the Pressure off Auckland

Strategies for taking the pressure off the Auckland housing market may require key investments elsewhere in the country. Prior to the Canterbury earthquakes in 2010, Christchurch was also experiencing significant population growth.²⁴ However, after the earthquake population growth slowed significantly, and the number of international students attending Canterbury University dropped precipitously. Further, as illustrated in Figure 8 below, Canterbury net business growth has been negative in the period following the quake. While there have been new business arrivals, these are likely related to construction. What happens once the major construction is completed?

Of the businesses that departed, where did they go and will they return as key infrastructure is rebuilt? Will Canterbury once again emerge as a major attractor of talent from abroad? Importantly, a thriving Christchurch can divert some of the housing pressure from Auckland. One could argue that the country's economic balance and regional growth trajectory (and thus the regional housing markets) will depend greatly on the Christchurch recovery. Christchurch is arguably the only other metropolitan area that can compete with Auckland for international in-migrants, and thus relieve some of the growth pressure in Auckland.

Figure 8: Business Migration into Canterbury



Source: PowerPoint Presentation by Ilan Noy (2013)

²⁴ Given my background in the economics of natural disasters, I regret not be able to consider more fully the housing recovery challenge in Canterbury. Professor Ilan Noy at the Victoria University Wellington is perhaps the world's foremost expert on the economics of natural disasters and is an excellent resource.

As with other land-constrained growing regions, land values in Auckland will likely continue to rise. However, to relieve pressure on housing prices, New Zealand could consider the following strategies (primary government assignment in parentheses):

1. Introduce incentives, subsidies and other policies designed to increase density and expand development at the urban periphery as discussed above and by others (local and central government).
2. Use locally targeted capital requirements to temporarily take the heat off demand in order to give time for supply to respond to long-run housing demand pressures (Reserve Bank of New Zealand).
3. Promote development in Auckland region satellite communities (matched with coherent transportation infrastructure) in order to relieve pressures on the Auckland core (local and central government).
4. Strengthen other urban areas such as Christchurch so as to provide options to those who desire the amenities associated with of living in highly urbanized areas (central government).
5. Reduce the risk borne by developers by reducing uncertainty in the potentially lengthy and variable regulatory consent processes and by sharing in the risk associated with the financing of infrastructure for large development projects (local and central government)
6. Increase the costs of holding undeveloped property for speculative purposes by implementing a land value tax (perhaps substituting a land value tax for the property value tax). A land tax encourages the best and highest use of land, which means denser land use in core urban areas (local and central government).

6 Summary: Data Needs, Research Questions and Recommendations

While existing research shows that a number of factors influence the rate of housing price growth, a land-constrained growing region will likely continue to experience land value increases faster than the general rate of inflation. The degree to which increasing land values translates to higher housing prices depends greatly on the degree to which land is constrained due to the physical environment, the initial conditions development (e.g., section sizes) and land use regulations (which are in part driven by the preferences of existing residents to retain their quality of life). Further, it is unlikely that there is a single all-encompassing solution to achieving affordable housing in New Zealand. Rather, achieving affordability will require multiple strategies. Increasing land values and a steep urban land value gradient in Auckland is in part the result of its own success: People want to live in Auckland. Increasing land values is not in and of itself a bad thing. However, to the degree that the rate of housing price increase in Auckland is driven by regulation-induced supply constraints, it makes sense to consider policies targeted at alleviating such constraints.

It should also be acknowledged that data needs and limited evaluation prevent us from fully understanding the nature of the housing price issue. Listed below are several data needs and research questions that, if addressed, may help inform policies:

1. Existing evidence suggests that land use regulations limit supply, and yet little is known about the differences in such regulations across the country. The development of a land use regulation index like that of Gyourko, *et al.* (2008) would improve our understanding of the policies in place and the effects of such policies on housing supply and prices.
2. Some New Zealand cities such as Auckland and Wellington also face potential geographic constraints that limit land availability. However, little is known about how these physical land constraints lead to land value differences and thus housing price differences. The development of physical land constraint index similar to Saiz (2010) would be of value.

Listed below are several research questions that if addressed may help to inform housing affordability policy responses:

1. Estimate the impact of land use regulations and physical land constraints on housing price growth (should such indices be created for New Zealand).
2. Estimate the impact of the imposition of development contributions on various aspects of the housing market in New Zealand (housing and land prices, development, affordable housing and density).
3. Estimate the impact on development of moving from a land value tax to a general property tax in the Auckland region. When the Auckland Super City was formed, many communities were forced to switch from a land value tax to a property value tax. As highlighted earlier, many economists favor a land tax because it encourages more dense development in high land value areas, and is efficient in the sense that does not generate distortions or disincentives for development. This exogenously imposed change in the local government fiscal environment provides an opportunity to see how local (and perhaps national) tax policy can be used to achieve land use/housing objectives.
4. This report offers a general discussion of how an intergovernmental subsidy from the central government to local governments in the form of a development contribution matching grant could be implemented to better align the incentives of local authorities with broader regional development needs. However, more work should be done to inform how such a subsidy could be devised. The development of a land use model that would inform a potential development contribution subsidy framework could be of value in identifying anticipated impacts on housing supply and demand, availability of affordable housing and agglomeration economies.
5. Develop a regional econometric model of housing prices to identify housing bubbles.²⁵ Such a model would enable the implementation of locally targeted capital requirements for lending institutions in New Zealand. Locally targeted capital requirements could temporarily take the heat off high-demand in markets such as Auckland and thus give house builders an opportunity meet long-run housing demand. However, such an approach would have to be accompanied by clear messages from the central bank

²⁵ The work of Grimes, et al. (2009) could for the basis of such a model.

about long-term housing needs in the region so that builders will make decisions based on long-run expectations and not short-run policy actions such as local targeted capital requirements.

6. Study the impact of the Christchurch earthquake in order to better understand the linkages (population and business flows, international student flows) between Christchurch and Auckland. Evaluate strategies to strengthen Christchurch's position in the New Zealand economy, thus offering an option to Auckland for those looking for an urban living experience.
7. Explore ways to alter the local government regulatory environment and the infrastructure funding framework so as to reduce the risk/uncertainty for developers. These factors may enable the emergence of larger construction firms to meet the significant supply needs in the rapidly growing Auckland region.

While no single policy is likely to fully address the relatively high rates of housing price growth in Auckland, addressing the challenge across multiple dimensions could contribute to housing affordability now and in the future for all of New Zealand.

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