Land Supply Constraints and Housing Prices in New Zealand

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Acknowledgements

The author wishes to thank Saku Aura for advice on the modelling approach, Aaron Schiff, John Kim, Susan Fairgray, Kyle Balderston, Mehmaz Rohani, Peter Nunns, and the participants of one of the RIMU sessions for positive feedback.
Executive summary

The housing sector in New Zealand is not meeting the needs of an increasing population. The National Policy Statement on Urban Development Capacity (NPSUDC) mandates that plans of high and medium growth regions and cities should provide development capacity to meet long-term housing demand and improve housing affordability. The success of the NPSUDC relies on the responsiveness of housing prices to changes in land supply.

Results from a calibrated model show that a 10 per cent decrease in Auckland’s housing prices requires land supply to increase by 17 per cent, equivalent to 78,000 additional dwellings. A 50 per cent decrease in prices requires a 184 per cent increase in land supply, equivalent to 385,000 additional dwellings. However, price responsiveness is decreasing as preferences to stay or settle in Auckland become stronger. That is, increasingly large changes on land supply are needed to achieve price decreases. Hence, land supply per se is insufficient to improve housing affordability.
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Land supply constraints and housing prices in New Zealand
1.0 Introduction

Housing prices in New Zealand have received much attention in recent years due to their significant and persistent increases. In March 2016 the median house price in Auckland was $820,000, whereas for the rest of the country it was $373,800. When compared to March 2015, these prices represent increases of 14 and 12 per cent, respectively (Real Estate Institute of New Zealand, 2016). The social and economic consequences of the price increases manifest in different forms. For example, 2013 Census data on home ownership by households show that 64.8 per cent of households owned their home or held it in a family trust in 2013, down from 66.9 per cent in 2006 (Statistics New Zealand, 2014). Even more, the ratio of weekly rent paid relative to income (a proxy measure for housing stress) is almost 40 per cent for households earning between $30,000 and $70,000 per annum\(^1\).

Consequently, at least one in every 100 New Zealanders were homeless at the latest census in 2013, compared with 1 in 120 in 2006, and 1 in 130 in 2001 (Amore, 2016).

Other concerns arising from the increasing housing prices relate to the existence of a speculative housing bubble in New Zealand (Engsted, Hviid, and Pedersen 2016; Shi, Jou, and Tripe 2014; Grimes and Aitken 2010) and the heterogeneous competition circumstances between local residents and foreign investors (Land Information New Zealand, 2016). Hence, as acknowledged by the National Policy Statement on Urban Development Capacity (NPSUDC), New Zealand’s current housing market is not meeting the needs of the population (Ministry for the Environment and Ministry of Business, Innovation and Employment, 2016).

In almost all policy discussions (see Krupp, 2016), it is hypothesised that the solution (or at least the alleviation) of what is being coined as a ‘housing crisis’ should rely on increasing the supply of residential land. That is, the policy focus should be on removing regulations or constraints that limit the supply of land (Aura and Davidoff 2008) in order to incentivise the growth and densification of cities (Glaeser and Gyourko 2003; Glaeser, Gyourko, and Saiz 2008; Gyourko 2009; Nieuwerburgh and Weill 2010) and, consequently, the development of new and affordable dwellings (see Krupp and Voutratzis 2016; Grimes, Liang, and Liang 2008). The NPSUDC prescribes that the housing crisis should be addressed by means of local governments providing sufficient and feasible development capacity to meet long-term demand (Ministry for the Environment and Ministry of Business, Innovation and Employment, 2016). This added capacity should occur primarily by enhancing the competitiveness of land and housing markets. Thus, increasing land supply per se should be the key for housing to become more affordable in New Zealand. Hence, the purpose of this report is to investigate how responsive housing prices are with respect to changes in land supply.

While it is acknowledged that land supply constraints affect housing prices (Grimes, Liang, and Liang, 2008; NZIER, 2015), it is difficult to assess the role of those constraints econometrically because it is not possible to observe the same city at the same time with different regulations (Aura and Davidoff, 2008; Glaeser, Gyourko, and Saiz, 2008). Then, a

\(^1\) Data from New Zealand Census 2013, author’s calculations
calibrated model based on Aura and Davidoff (2008) is used to investigate how land supply changes affect housing prices in several cities of New Zealand.

This study takes a particular focus on Auckland as it is New Zealand’s most populous city, where land use planning has not kept pace with the increasing demand (NZIER 2015), which in combination with constrained topography and regulation, has contributed to the increases of prices (Saiz 2010). Results show that to achieve a 10 per cent decrease in Auckland’s housing prices, land supply should increase by 17 per cent, equivalent to 78,000 additional dwellings. A 50 per cent decrease in prices requires a 184 per cent increase in land supply, equivalent to 385,000 additional dwellings. However, price responsiveness is decreasing as preferences to stay or settle in Auckland become stronger. That is, increasingly large changes in land supply are needed to achieve price decreases. Therefore, increasing land supply *per se* is insufficient to improve housing affordability.

To represent coordinated actions between Auckland and surrounding areas, simulations incorporate a hypothetical region called ‘H-Auckland’. Results show that if H-Auckland loosens the constraints on land, price decreases are greater compared to a standalone Auckland region. Overall, the main implication is that land supply and competitiveness of markets should be complemented by other regulatory actions in order to bring forth the development of affordable housing.

This report is organised as follows: Section 2 describes the model; Section 3 shows the calibration strategy and simulation results; and Section 4 offers some concluding comments.
2.0 Modelling Strategy

The modelling strategy presented here relies on a model developed by Aura and Davidoff (2008). The model assumes that homogeneous households\(^2\) move freely and balance housing cost against wage differentials or preference for living in a city. The model is static and its solution represents a steady state (a long-run equilibrium). It assumes that the price of a square metre of structure or floor space is constant\(^3\) and land is in fixed supply. The model abstracts away from environmental amenities, living conditions, wage consequences and land heterogeneity within market segments.

There are \(N\) households that choose to live in a city where there are \(L\) units of land, changes in population (e.g. because of migration) may be analysed as the varying share of the national population. The city is occupied in equilibrium with an endogenous price \(\eta\) per unit of land, and land supply is subject to transportation, infrastructure or regulation constraints.

Preferences and land supply give rise to equilibrium price of land \(\theta_i\) at which household \(i\) is indifferent between living in the city and living at the next preferred location, \(\theta_i\) varies across wealth, ability, preference or wage match with the city. For simplicity, the minimum value of \(\theta_i\) for a household living in the city with price \(p\) is \(p\). The \(i\) subscript is dropped for now and it is assumed that across households there is a distribution of \(\theta\) which is related to the effects of land controls on price.

Define a land clearing condition as follows:

\[
N \int\limits_q^\infty l(p, \theta) f(\theta) d\theta - L = 0
\]  
\(1\)

where \(l(p, \theta)\) is the Marshallian demand\(^4\) for land at price \(p\), averaged across all households, and households have probability density function \(f(\theta)\) in the population. The first term inside the integral of (1) denotes demand across all households both current and incoming.

Differentiate (1) with respect to \(L\):

\[
N \left( dq \int\limits_q^\infty l(p, \theta) f(\theta) d\theta + \int\limits_q^\infty \frac{\partial l(p, \theta)}{\partial p} dL f(\theta) d\theta \right) = 1
\]

and evaluate the integral of the first term in parentheses, so that the elasticity \(\eta_{PL}\) of prices with respect to land supply is:

\(^2\) There is no difference between investors and owners. Heterogeneity and differing purchase power is left for future research

\(^3\) For simplicity, structure or floor space may be interpreted as living spaces.

\(^4\) A Marshallian demand function specifies what the consumer would buy in each price and income situation, assuming it solves a utility maximization problem (Nicholson and Snyder, 2005).
\[ \eta_{PL} = L \left( N \bar{l}(p, \bar{p}) f(p) + \int_0^\infty \frac{\partial \bar{l}(p, \theta)}{\partial p} \frac{d \bar{p}}{d \theta} f(\theta) d\theta \right)^{-1} \]

Note that land allocation per capita for inframarginal households is \[ \frac{L}{N} = \bar{l}(p)(1 - F(p)) \]
where \( F(p) \) denotes the cumulative distribution function of households and \( \bar{l}(p) \) averages \( l(p, \theta) \) across \( \theta \in [p, \infty] \) such that:

\[ \eta_{PL} = \left( \frac{-\bar{l}(p, \bar{p}) f(p)}{\bar{l}(p)} \frac{1}{1 - F(p)} + \int_0^\infty \frac{\bar{l}(p, \theta) \eta_{ql}(p, \theta)}{\bar{l}(p)(1 - F(p))} f(\theta) d\theta \right)^{-1} \tag{2} \]

where \( \bar{l}(p, \bar{p}) \) is the average land demand of marginal households, \( \bar{l}(p) \) is the average land demand of inframarginal households, \( f(p) \) is the marginal hazard ratio of living in a city evaluated at \( p \), that is, the probability of a new household settling in the city given land price \( p \). The second term in (2), \[ \int_0^\infty \frac{\bar{l}(p, \theta) \eta_{ql}(p, \theta)}{\bar{l}(p)(1 - F(p))} f(\theta) d\theta \equiv \bar{\eta}_{lp}, \]
is the average demand elasticity for inframarginal households weighted by individual land consumption. We have then:

\[ \eta_{PL} = \left( \frac{-\bar{l}(p, \bar{p}) f(p)}{\bar{l}(p)} \frac{1}{1 - F(p)} + \bar{\eta}_{lp} \right)^{-1} \tag{3} \]

Thus, equation (3) measures the responsiveness (elasticity) of land prices relative to changes in land supply. This is defined in terms of the ratio of average demand of marginal to inframarginal households, the marginal hazard ratio which incorporates the share of the national population in the city \( (1 - F(p)) \), market price \( p \), and the elasticity of land demand with respect to land prices \( (\bar{\eta}_{lp}) \).

Housing and land prices may operate separately. Grimes and Aitken (2010) acknowledge that land price cannot be ignored in considering the relationship between housing supply and prices. They define two cases: First, when there is no response of land prices to housing price changes, which occurs when residential land is in perfectly elastic supply. As population increases relative to the number of houses available, this extra demand places pressure on housing prices, which brings forth new supply. Second, when land is in perfectly inelastic supply, land costs capitalise the entire increase in housing prices caused by a demand shock. At that stage, extra construction is no longer profitable and will not be forthcoming because there is no incentive for developers to build new houses. Hence, for modelling purposes, it is further assumed that land supply is almost perfectly inelastic and is the major driver of the increases of housing prices. Therefore, results derived from simulations on Equation (3) may be interpreted as an approximation of the changes in housing prices because of changes in land supply.

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5 Those households not on the margin of market or already residents in a city.
6 Those households entering the housing market of any city, that is, new residents.
3.0 Calibration and Simulation

Similar to Aura and Davidoff (2008), \( \eta_{qp} \) takes on two values: -0.4 or -0.7. Further, \( \theta \) follows four different distributions in the population: uniform, Pareto, normal, and lognormal. The key issue for the interpretation of results and policy implications is that a high (low) \( \theta \) may signal:

- (i) current residents showing high (low) willingness to stay in the city and, consequently, high (low) land demand,
- (ii) new entrants showing higher (lower) incomes and, consequently, high (low) land demand, or
- (iii) high land demand (but holding income constant).

Given that \( \theta \) may not be directly observable, the median valuation \( \theta \) in the population is specified as a fraction of the price \( p \) normalized to \( p = 1 \). This implies that the closer this fraction is to 1, it signals stronger preferences of the median household to stay or settle in a particular city. That is, if median values of \( \theta \) equal 10, 30 and 60 per cent of \( p \), then in the long run the median household would move to the city if prices were 90, 70, or 40% lower than currently observed. These conditions are also sufficient to identify \( f(p) \) and \( F(p) \) given \( p \) is known at the 50th percentile and the observed price (normalized to one) at \( 1 - F(1) \) (Aura and Davidoff, 2008).

Furthermore, assume the ratio \( \frac{i(p,p)}{i(p)} \) is equal to one. The fraction \( 1 - F(p) \) of population that lives in a city is calculated based on the New Zealand Census 2013. Auckland, Hamilton, Christchurch, Wellington and Tauranga are taken as case studies. In addition, we simulate a hypothetical H-Auckland region, which represents the scenario where Auckland and surrounding areas coordinate actions and release more land for residential housing. This scenario tests if larger effects on prices arise from those coordinated actions. The implicit assumption is that a household would be willing to settle in this hypothetical region regardless of distances to CBD or labour markets, and be indifferent with respect to other cities. We assume that H-Auckland contains 40% of New Zealand population.

Table 1 shows values of the elasticity of price with respect to land supply \( (\eta_{pl}) \) with varying shares of national population and median valuations (the threshold)\(^7\).

Though it is not possible to estimate a true value for the threshold, it may be reasonable to assume that, at least for Auckland and H-Auckland, it is high or approaches 1. Results show that price responsiveness is decreasing relative to the threshold. That is, though loosening regulations may increase land supply, sharp price decreases should not be immediately expected because of the large queue of people wanting to stay or settle in Auckland (Aura and Davidoff, 2008; Gyourko, 2009).

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\(^7\) Note that Median _\( \frac{\theta}{p} \)_ is the fraction of the price (the threshold) at which the median individual is willing to move to the city or region.
However, the elasticity is greater in absolute value for H-Auckland. For example, under the lognormal distribution and a threshold equal to 0.9, the value of the elasticity for H-Auckland \( \eta_{pi} = -0.36 \) more than doubles the estimate for a standalone Auckland region \( \eta_{pi} = -0.17 \). Thus, the results show that there is room for coordinated actions (probably led by local councils) that could complement the operation of markets.

Under any of the assumed distributions for \( \theta \), \( \eta_{tp} = -0.4 \) leads to higher \( \eta_{pi} \) in absolute value. That is, the less responsive land demand is with respect to prices, then the greater the reaction of prices to small changes in land supply. However, regardless \( \eta_{tp} \), the values of \( \eta_{pi} \) are sensitive to the selection of the assumed distribution of \( \theta \). For example, for Wellington with \( \eta_{tp} = -0.4 \) and threshold of 0.6, \( \eta_{pi} \) ranges between -0.08, under a Uniform distribution, to -0.26, under a Pareto distribution.

Consequently, though it is not possible to empirically test for the distribution of \( \theta \), we may surmise that realizations of \( \theta \) are not equally likely across households and the first moments of this distribution may not be necessarily equal, thus, assuming uniform or normal distributions may not be appropriate. We may further surmise that as relatively wealthy households are willing to move to Auckland, then a more skewed distribution of household income may apply (Cheung, 2007). Therefore, we would lean on the side of interpreting our results in terms of the Pareto or lognormal distribution (see Table 2).

For the cases of Tauranga and Hamilton, under the lognormal distribution, \( \eta_{pi} \) is not far from -0.25 for a median threshold price of 0.3 (lowest in absolute value relative to the rest of the regions); and, price responsiveness in Wellington and Christchurch are quantitatively the same, given their similar population sizes.
### Table 1: Elasticity of land price with respect to land supply $\eta_{pl}$ for different distributions of willingness to pay $\theta$ and land demand elasticities $\eta_{qp}$

<table>
<thead>
<tr>
<th>Region</th>
<th>Share</th>
<th>Median $\theta_{Price , p}$</th>
<th>Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>$\eta_{pl} = -0.4$</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Pareto</td>
</tr>
<tr>
<td>Auckland</td>
<td>31%</td>
<td>0.1</td>
<td>1.645</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.3</td>
<td>-1.254</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.9</td>
<td>-0.202</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.1</td>
<td>-2.012</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.3</td>
<td>-1.708</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.9</td>
<td>-0.397</td>
</tr>
<tr>
<td>H-Auckland</td>
<td>40%</td>
<td>0.1</td>
<td>-0.854</td>
</tr>
<tr>
<td>Wellington</td>
<td>8.5%</td>
<td>0.1</td>
<td>-0.534</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.3</td>
<td>-0.258</td>
</tr>
<tr>
<td>Christchurch</td>
<td>8.1%</td>
<td>0.1</td>
<td>-0.841</td>
</tr>
<tr>
<td>Tauranga</td>
<td>2.8%</td>
<td>0.1</td>
<td>-0.357</td>
</tr>
<tr>
<td>Hamilton</td>
<td>3.0%</td>
<td>0.1</td>
<td>-0.366</td>
</tr>
<tr>
<td>Wellington</td>
<td>8.5%</td>
<td>0.1</td>
<td>-1.101</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.3</td>
<td>-0.911</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.9</td>
<td>-0.611</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.1</td>
<td>-0.191</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.3</td>
<td>-1.255</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.9</td>
<td>-1.130</td>
</tr>
<tr>
<td>H-Auckland</td>
<td>40%</td>
<td>0.1</td>
<td>-0.880</td>
</tr>
<tr>
<td>Wellington</td>
<td>8.5%</td>
<td>0.1</td>
<td>-0.355</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.3</td>
<td>-0.680</td>
</tr>
<tr>
<td>Christchurch</td>
<td>8.1%</td>
<td>0.1</td>
<td>-0.672</td>
</tr>
<tr>
<td>Tauranga</td>
<td>2.8%</td>
<td>0.1</td>
<td>-0.453</td>
</tr>
<tr>
<td>Hamilton</td>
<td>3.0%</td>
<td>0.1</td>
<td>-0.233</td>
</tr>
</tbody>
</table>

Note: Share stands for the share of population in any city. Median $\theta_{Price \, p}$ is the fraction of the price (the threshold) at which the median household is willing to move to the city.

Land supply constraints and housing prices in New Zealand 12
Gyourko (2009) notes that high prices should elicit a strong housing supply response in the high-income/high-amenity markets, whereas low housing price areas should be associated with a weaker supply response. However, supply differs across markets because of the distortions introduced by land use constraints. Table 2 then shows the effect on prices in case the constraints are relaxed, that is, the price changes if land supply is doubled and the required increases in land supply to achieve price decreases of 10 and 50 per cent. In all cases we assume a constant elasticity equal to that found if $\theta$ follows a lognormal distribution.

For Auckland, even if the land supply is doubled the price responsiveness is decreasing relative to the threshold. As the threshold approaches 1, the effect on prices of doubling land supply is offset by the stronger preferences to reside in Auckland. Furthermore, if the threshold is equal to 0.6, to achieve a 10 per cent decrease in price, land supply should increase by 17 per cent (additional 8640 ha in urbanised area), equivalent to 78,000 additional dwellings. To achieve a 50 per cent decrease, land supply should increase by 184 per cent (additional 94,000 ha in urbanised area), equivalent to 385,000 additional dwellings\(^8\). These figures are within the range of the estimates in Auckland Council’s Auckland’s Capacity for Growth Study (Balderston and Frederickson, 2014) which assesses the ability of residential and business land to accommodate growth in the city. That study reports there is capacity for between 258,000 and 417,000 additional dwellings. However, for a threshold equal to 0.9, the required land supply increases to achieve price decreases of 10% and 50% are, respectively, 84% and 5334%. That is, because of the influence of the strong preferences to reside in Auckland, increasingly large increases in land supply are required to achieve price decreases and, consequently, housing affordability.

Table 2 also shows that in order to get the same price decreases in H-Auckland, increases on land supply are lower. Consistent with the results in Table 1, coordinated actions introduce further flexibility on improving housing price responsiveness.

\(^8\) Calculations are based on the 2013 Census to get the number of occupied private dwellings, GIS estimates to get the average number of dwellings per hectare, an estimate of 2 per cent for vacancy rate, and baseline urbanised area of 50,821 ha in 2010. Calculations are available on request.
Table 2: Effects of changes on price and land supply

<table>
<thead>
<tr>
<th>Region</th>
<th>Share</th>
<th>Median $\theta_{Price}$</th>
<th>Price Effect of 2L (%)</th>
<th>$\Delta L$ (%) for 10% decrease in price</th>
<th>$\Delta L$ (%) for 50% decrease in price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land demand elasticity $\eta_{iq}$:</td>
<td></td>
<td>-0.4</td>
<td>-0.7</td>
<td>-0.4</td>
<td>-0.7</td>
</tr>
<tr>
<td>Auckland</td>
<td>31%</td>
<td>0.1</td>
<td>-66</td>
<td>-49</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.3</td>
<td>-55</td>
<td>-44</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.6</td>
<td>-37</td>
<td>-32</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.9</td>
<td>-11</td>
<td>-11</td>
<td>84</td>
</tr>
<tr>
<td>H-Auckland</td>
<td>40%</td>
<td>0.1</td>
<td>-75</td>
<td>-64</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.3</td>
<td>-68</td>
<td>-60</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.6</td>
<td>-55</td>
<td>-50</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.9</td>
<td>-22</td>
<td>-22</td>
<td>33</td>
</tr>
<tr>
<td>Wellington</td>
<td>8.5%</td>
<td>0.1</td>
<td>-37</td>
<td>-20</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.3</td>
<td>-24</td>
<td>-16</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.6</td>
<td>-12</td>
<td>-10</td>
<td>75</td>
</tr>
<tr>
<td>Christchurch</td>
<td>8.1%</td>
<td>0.1</td>
<td>-37</td>
<td>-19</td>
<td>17</td>
</tr>
<tr>
<td>Tauranga</td>
<td>2.8%</td>
<td>0.3</td>
<td>-24</td>
<td>-16</td>
<td>31</td>
</tr>
<tr>
<td>Hamilton</td>
<td>3.0%</td>
<td>0.3</td>
<td>-16</td>
<td>-10</td>
<td>53</td>
</tr>
</tbody>
</table>

Notes: Share stands for the share of population in any location. $\Delta L$ is land change required to achieve any level of price decrease.
4.0 Discussion

The National Policy Statement on Urban Development Capacity places land supply as the key to improve housing affordability in New Zealand. Then, the purpose of this report is to investigate the responsiveness of housing prices to changes in land supply. The main result is that the responsiveness of housing prices is decreasing relative to households’ preferences to stay or settle in Auckland. This implies that increasingly large changes in land supply are required to achieve price decreases. Hence, land supply per se is not sufficient as a policy for houses to become more affordable in New Zealand.

There is a particular focus in Auckland as it shows a polycentric urban form that adds complexity to the land markets and the nature of their responsiveness to location across space. Other environmental and economic features of the city have also made it attractive for settlement of value-added industries. In addition, land use planning has not kept pace with the increasing demand (NZIER 2015), which in combination with constrained topography and tight land use regulation, pressure on housing prices is increasing (Saiz 2010). The contribution of those and other factors affecting housing prices (e.g. competition between investors and residents, immigration) are yet to be quantified in future research.

The main implication from the results is that the lower responsiveness of prices in Auckland feeds into the regional asymmetry in prices, which is explained by an inelastic supply of land and the increasing number of high-income households nationally, at least some of whom want to live in a supply constrained city (proxied by the θ threshold). Thus, Auckland arises as a “Superstar City” as housing prices grow relative to housing unit growth. High-income households are willing to live in such a city, with limited housing units, and are not willing to allow building to satisfy the demand. Consequently, in the long run, lower income households are crowded out of the city by higher income households (Glaeser et al., 2008; Gyourko, Mayer, and Sinai, 2013).

In actual New Zealand markets the elasticity of residential land is affected by regulatory constraints, planning delays and geographical factors. NZIER (2015) notes that relaxing land use regulations, or even how these regulations are interpreted and enforced, would help to build a more flexible and responsive housing market at the city level. Results in this report however show that, though loosening regulations may increase land supply, sharp price decreases should not be immediately expected because of the large queue of people wanting to stay or settle in Auckland (Aura and Davidoff, 2008; Gyourko, 2009) and lengthy consent and building processes (NZIER, 2015).

Nonetheless, the model in this report assumes that it is feasible to enable large changes on land supply and that infrastructure is readily available so that households are willing to move into the new areas. Another insight from this research is that the results do not inform how the additional supply of housing is achieved, that is, it could be either by relying on similar current housing (e.g. standalone houses or units) so that occupied land extension is high, or the additional supply could rely on growing high (e.g. tall buildings) where land extension is lower but with a large number of units. Therefore, the price decreases would still occur but
magnitudes may differ if general equilibrium effects are incorporated (see Krupp 2016; Krupp and Voutratzis 2016).

Issues not considered in this report are worth mentioning. First, we do not investigate the determinants for the inelasticity of land supply apart from land regulations. Second, the model ignores migration patterns across labour-market areas. Finally, equity issues arising from the “Superstar City” tag on Auckland should be investigated because of the strong focus of the NPSUDC on the efficiency side of markets. That is, equity is the other side of the coin that should not be omitted from the public debate.

In conclusion, even assuming competitive markets as expected by the NPSUDC, the modelling results do not show that housing affordability improves in the long-run. Therefore, other regulatory policies, based on initiatives probably led by the central and local governments, should be explored.
5.0 References


Voutratzis, Alex, K., Jason. (2016, July 11). “Regulations that limit the stock of housing suitable for younger people, such as height restrictions and view shafts, need to be axed and pronto.” Retrieved July 21, 2016, from http://www.interest.co.nz/opinion/82528/regulations-limit-stock-housing-suitable-younger-people-such-height-restrictions-and