Centre for Housing Research
AOTEAROA NEW ZEALAND

Kāinga Tipu

# How Does Nelson, Tasman and Marlborough Housing Adjust?

**A report for the *Affordable Housing in the Nelson, Tasman and Marlborough Regions: A Solutions Study* Research Programme**


PREPARED BY

**Motu Economic and Public Policy Research**

FOR THE

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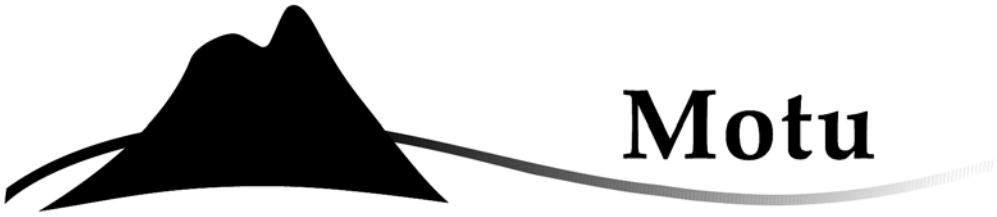


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# Contents

# Table of figures

# Tables

# 1 Executive Summary

Between 2002 and 2005, house prices in Nelson, Tasman and Marlborough rose sharply; rents also rose, but to a lesser degree. This paper considers how these price and rent rises are a response to imbalances within the housing markets in these regions. We also analyse the role of other adjustment mechanisms in correcting these imbalances.

Price rises in any market signal that demand for the item exceeds supply at pre-existing prices. Price pressures may arise from increased demand, or from increases in supply costs. These factors are as relevant for housing as they are for other products. In the case of housing, one expects to find a relationship between house prices and rents in any given area. With broadly stable interest rates and capital gains expectations, a rise in house prices flows through to a similar rise in rents, and vice versa. The timing of the shifts in house prices and rents may vary depending on the factors initially causing the rise.

Prior analysis has identified several factors underlying strong increases in demand for housing in Nelson, Tasman and Marlborough. These include: earlier strong economic performance (e.g. in horticulture, viticulture and tourism) which lifted employment and incomes in the regions, an inflow of migrants planning to retire in the regions, and an influx of tourists and part-time dwellers, many of whom have purchased second homes. One effect of these factors has been an influx of population into the three regions. Different segments of this influx have sought accommodation of varying types. Housing is not homogeneous. The nature and degree of imbalances can therefore differ strongly across different accommodation sub-markets (including rental sub-markets).

House supply is relatively fixed in the short term (e.g. over a year), so an increase in housing demand places pressure on house prices. Over time, developers respond to profitable opportunities arising from increases in house prices relative to development costs. Thus house price rises tend to bring forth new supply. Developers will build on vacant urban or urban-fringe land, or

subdivide and build on existing urban land (in-fill housing). The extra houses that are released onto the market help to cap house price rises and may induce prices to fall back somewhat from their peaks.

Our empirical work on new house supply across the whole of New Zealand indicates that house supply does respond to house prices in this manner. Increases in house prices relative to development costs lead to extra new housing supply. Increased costs act to stifle new supply because development becomes less profitable. Development costs include both the cost of land for residential purposes and construction costs. Other costs, such as local authority housing consent processing costs (and delays) are also relevant factors. High local authority costs (or long processing delays) can be a factor in reducing the responsiveness of new house supply to house price increases.

The longer that new supply takes to come on stream after an increase in housing demand the greater will be the house price increase for any given demand increase. Indeed, with no increase in development costs, an immediate and full response of new housing supply to increased demand would normally result in house prices remaining unchanged following the increase in demand. As a hypothetical example, consider the case of a new vineyard that requires 20 workers. If that vineyard itself supplies the accommodation for those 20 workers, there is no increase in housing pressure on the surrounding property market. Similarly, an increase in pensioner housing units suitable for prospective pensioner inward-migration may relieve potential price pressures in that market segment.

A consequence of these findings is that where population and housing demand rises strongly - as in Nelson, Tasman and Marlborough - it is imperative that new housing supply comes on-stream quickly to mitigate the price impacts of the influx of new residents (including vacation residents). Supply therefore needs to be more responsive in regions subject to strong demand fluctuations than in more stable regions. The new supply has to be suitable for the types of housing that have increased in demand (whether family residences, holiday homes, temporary worker accommodation, pensioner housing, etc). Regulation, in turn, needs to be more flexible in its treatment of residential planning and housing

consent processes in areas subject to major housing demand shifts. For instance, if a region has potential for major changes in seasonal worker requirements, planning regulations and consent processes must be flexible enough for appropriate new supply (e.g. worker hostels) to be developed and built quickly. If the region has potential for major changes in vacation house demand, the same processes must be flexible enough to enable new supply to come on stream quickly.

Relevant planning and consent processes include processes relating both to land use and to house construction on residentially zoned land. Restrictions on land use can exacerbate residential land price pressures especially where vacant residentially zoned land is already in short supply. Delays and/or costs in housing consent applications are reflected in higher development costs, exacerbating house price pressures and worsening housing affordability. The revisions to the Building Act in 2005, and consequent planning delays and cost increases, may have intensified some of these pressures. In some cases, the delays, processing costs or zoning restrictions may apply to a particular segment of new developments (e.g. worker hostels or coastal housing) creating particular supply restrictions and affordability pressures in those accommodation segments.

Our empirical work suggests that Nelson, Tasman and Marlborough are each within the middle 50% of New Zealand local authorities in terms of the responsiveness of new housing supply to changes in demand. Tasman has faced stronger residential land price pressures than either Nelson or Marlborough and has also had slower supply responsiveness to price pressures. However it has had a faster overall rate of new housing supply after abstracting from these factors. Overall, consistent with prior research in this programme none of the three authorities is found to have had particularly restrictive, or particularly permissive, processes relating to new residential supply relative to other New Zealand local authorities.

This does not mean, however, that supply responsiveness in these regions is appropriate for the demand pressures faced in each market segment. As discussed above, regions that are subject to sharp fluctuations in housing demand need particularly responsive new housing supply; supply needs to be responsive

across the relevant accommodation segments (not just for typical residences). Particularly strong responsiveness of new housing supply to demand pressures is not evident in these three regions.

The relatively strong land price increases witnessed in these areas, particularly Tasman, highlights the need to ensure a plentiful supply of new residential land with appropriate infrastructure designed to service dense residential settlement. The shortage of infrastructure for new developments in certain areas was a feature identified earlier in this research programme. For instance, the expansion of housing around the outskirts of the major towns in Tasman tends to be limited by lack of waste water provision and also by the need to improve flood protection. In Marlborough, expansion of residential housing around the outskirts of Blenheim is stifled by zoning regulations preventing subdivision of horticultural land, despite that land being suitable for new housing demand.

There is, of course, a need to balance alternative land uses for the benefit of the wider community. Using good horticultural land for housing may reduce employment opportunities within a district; use of agricultural land for housing may conflict with a desire for open space near the existing town. The analysis here does not state that these types of restriction are "wrong". Rather, we make the observation that these restrictions affect the responsiveness of housing supply to demand changes, and so impact on land prices, house prices and housing affordability.

Over time, the same restrictions also impact on rents (and rental affordability). In this respect, our empirical analysis across the whole of New Zealand indicates that rental increases tend to incorporate the effect of house price increases as well as interest rate trends. Lower interest rates since the early 1990s has led to a fall in the rental yield (i.e. in rents relative to house prices) across New Zealand. This effect has been shared across Nelson, Tasman, Marlborough. At times, rent increases may lag behind house price increases (as they appear to have done in the current cycle) meaning that rents may keep rising well after house prices have stopped rising. Thus supply restrictions that impact on house prices may have a long-lasting effect on the path of rents in an affected area.

Housing affordability is important not only for individuals' wellbeing; it is also central to a well functioning labour market that enables mobility of labour where job vacancies arise. Effective regional development policy therefore needs to address housing affordability issues. In turn, the supply-related considerations discussed in this paper need to be given prominence in local authority planning and regulatory processes.

# 2 Introduction

This paper examines the adjustment dynamics within each of Tasman, Nelson and Marlborough of several housing related variables. In particular, we examine adjustments in the number of houses, house prices and rents in each area. Some of the analysis is conducted at the Territorial Local Authority (TLA) level (i.e. Nelson, Tasman, Marlborough) and some is conducted at the area unit (AU) level within each of the local authorities. An area unit corresponds approximately to a suburb within a town.

Our approach is to derive relationships describing dynamic adjustment mechanisms across all the areas (TLAs or AUs as appropriate for the data at hand) in New Zealand and then to apply these findings specifically to adjustments within NTM. Two technical papers by Arthur Grimes and Andrew Aitken (2006a and 2006b) describe the background work, and are available on request.

The response of new house supply and of house prices following a change in demand for housing is of central policy importance. Resources may be misallocated where short run prices diverge from their long run trends. Prospective purchasers suffer where prices are higher than they need to be. Sellers suffer if prices are artificially low. Social policy concerns surrounding housing affordability issues are present when houses prices and house rents rise relative to incomes, and these effects are magnified when prices jump well above long run trends.

In section 3, we focus on the response of new house supply in each of Nelson, Tasman and Marlborough. In particular, we examine how changes in house prices and in costs of developing a new house (i.e. construction costs and land costs) affect the size and speed of new housing supply following an increase in demand for housing. We discuss how the nature of this responsiveness affects price dynamics following a change in housing demand.

Section 4 concentrates on the rental market and on the relationship between rents and house prices. Using market prices as an indicator of future

rental growth expectations, we find that pressures in the rental market could remain for some time in each of the Nelson, Tasman and Marlborough urban areas.

The results in section 3 and 4 are used as a basis for some policy discussion in the concluding section. In particular we focus on the role of new housing supply - and of facts that are conducive to new supply - in alleviating the housing affordability issues in each of Nelson, Tasman and Marlborough. These issues have particular importance for local and central government decisions relating to zoning, building regulation, consent processing and infrastructure provision.

# 3 House Supply and House Price Dynamics

Grimes and Aitken (2006a; henceforth GA(a)) analyse two inter-related features of regional housing markets.[1] These features relate to the dynamics of new housing supply and to the effects of new housing supply on house prices. Both features are highly relevant to recent housing adjustment dynamics within each of Nelson, Tasman and Marlborough.

Grimes and Aitken first examine the determinants of intended new housing supply (i.e. of new housing consents). They do so across all 73 mainland territorial local authorities (TLAs) in New Zealand since 1991 - including each of Nelson, Tasman and Marlborough. They demonstrate that a model relating new housing consents to local house prices and development costs satisfactorily explains intended housing starts. Importantly, development costs include both construction costs and residential land prices.

Second, they examine the impact that local supply responsiveness has on price dynamics. Several recent international studies have examined the impact of zoning and other housing-related regulations on house prices. The GA(a) New Zealand-specific study supplements these analyses. It explicitly examines the interaction of supply responsiveness with the speed and degree of local price adjustment following demand shocks. As detailed in Grimes and Aitken (2005), each of Nelson, Tasman and Marlborough experienced sizeable increases in house demand due to population, income and other factors in the post-2000 period, with consequent serious price pressures. The analysis in GA (2006a) is useful in determining the role that house supply responsiveness played in lessening (or exacerbating) those price pressures.

New housing supply results principally from the decisions and actions of property developers, who in turn respond to client demand and market conditions. Housing developers are profit-seeking agents. A developer seeks to

[1] This analysis, and its description, is drawn upon heavily in this section. References to related work, especially from the United States, are listed in GA (2006a).

build a new house where the expected house sale price exceeds the full costs of developing and building the house. The developer's total costs comprise land costs, building costs (materials and labour) and financing costs (determined by the nominal interest rate, adjusted for a housing-specific risk premium).

The planned rate of change in housing supply equals the rate of new housing consents granted relative to the existing housing stock. We use housing consents as a measure of planned changes since a new house can be constructed legally only following the granting of a consent by the relevant TLA, which is the unit of analysis in the study. Actual expansion of supply relative to intended expansion is affected by scrapping (demolition) of existing houses and by the number of consents that are not actioned. These latter effects are partly offsetting and are generally minor relative to the number of consents granted;[2] thus we focus on the intended house supply decision using housing consent approval data.

As derived in GA(a), this hypothesised structure enables us to explain the ratio of new housing consents to the housing stock in each TLA on the basis of a small number of variables measured at the local level:

- the ratio of house prices to total development costs, with local elasticity of response, $s_i$ ;[3] where:
- total development costs are a (geometrically) weighted average of construction costs and residential land prices with weight $w_i$ on residential land costs and weight $(1- w_i)$ on construction prices;
- a TLA-specific effect reflecting local conditions;[4] and

[2] Where these effects are consistent over time and/or over regions, they are catered for by the inclusion of time and region fixed effects in the estimated equations; random occurrences are catered for in the equation's residual term.

[3] The coefficient $s_i$ measures the number of new housing consents in area i expressed as a ratio of that area's existing housing stock (i.e. approximately the rate of change of housing supply) given a 1% increase in house prices relative to total development costs. Thus if $s_i$ equals 0.5, a 1% increase in house prices (holding total development costs constant) would bring forth a ½% increase in house supply.

[4] I.e. TLA fixed effects.

- an economy-wide effect across all TLAs that varies across time reflecting national economic conditions (including interest rates).[5]

As discussed further below, house prices incorporate the effects of local economic and demographic influences. These economic and demographic influences therefore impact on new housing supply through their effect on prices.

Central and local government regulations may have an impact on new housing supply in two ways. First, regulations may impact on residential land prices. An efficient allocation of resources in the economy requires that each resource is used for the purpose for which it is valued most highly.[6] If land on the outskirts of a town is valued for agricultural purposes at $20,000 per hectare and is valued at only $19,000 per hectare for residential purposes, then the efficiency criterion indicates that it should be used for agricultural production. However, if the population of the town expands, the growing population will demand more land to provide extra housing. The valuation placed on the same parcel of land for residential purposes will rise, perhaps to $22,000. In this case, since the land is valued more highly for residential production than for agricultural production, the efficiency criterion indicates that it should be used for residential purposes.[7] In an efficient market, the land would be sold to a developer for $22,000 thus earning a capital gain for the existing landowner.

If, however, the land is zoned solely for agricultural purposes, the land price would stay at $20,000 rather than rise to $22,000 (since, barring expectations of a zoning change, no agriculturalist would pay more than $20,000 for the land). Increased pressure would be placed on the existing limited supply of residentially zoned land within the town as the expanding population bids up the

[5] I.e. time fixed effects.

[6] Other considerations may, of course, compete with the efficiency criterion; for instance, equity concerns or a community desire for open spaces. A more complex consideration is where local jobs (and hence local house prices) are themselves dependent on maintaining intensive agricultural land use close to the town. In this case, societal valuation of the land may diverge from that of an individual developer and/or seller; the application of the efficiency criterion should then be based on the societal valuation that includes the spillovers (externalities) across all residents.

price of land on which to build within the town borders. Alternatively, prospective buyers may purchase an existing house. This decision also has the effect of bidding up house prices. Constraints on the zoning of land for residential purposes, especially in a town with an expanding population (for whatever reason), are therefore likely to increase land prices. In turn, house prices will increase since house prices reflect the value of the structure (the house) plus the value of the land on which the structure is sited.

Land prices reflect geographical and topographical constraints as well as regulation-related constraints. For instance, suitable residential land may be constrained by rivers, flood plains, mountains, etc. Prices will also be influenced by the availability and/or cost of provision of residential infrastructure such as water supply, sewerage, electricity and gas reticulation, roading and public transport (or the potential for it). Some of these infrastructure aspects are affected directly by TLA decisions (e.g. water provision) and some by geographical conditions (e.g. the cost of flood protection).

Because of this combination of geographic, regulatory and TLA-provision influences (as well as the value of the land in alternative uses), we cannot say that high land prices solely reflect local regulatory conditions. Nevertheless, whatever the proximate determinants of land prices, regulatory and infrastructure decisions are an influence on development costs (and hence on land prices) and so are a crucial determinant of new house supply decisions.

A second route through which regulation may impact on new house supply is by affecting the speed and degree of new house construction given the house prices, construction costs and land prices faced by a developer. If construction can start immediately following signs of forthcoming pressure for new housing, prices will not jump as far (for a given demand increase) as they will where new construction is delayed or curtailed. This is because delays will increase housing scarcity over the foreseeable future relative to a situation with fast supply response. Current and prospective residents will have to pay more for

[7] The implicit value accruing to homeowners by living in their own house is included as a separate item in a country's Gross Domestic Production (GDP), as are rents paid to landlords. Thus a house is treated as a productive capital good - which, of course, it is.

scarce residential supply. Prospective residents, in a town with a rapidly expanding house supply, may choose to delay their shift until such time as they can move into a new house, or they may be prepared to commute for a period of some months from an alternative location. These options are less attractive if new supply is delayed for a long time. In this case, prospective residents are more likely to purchase (or rent) an existing house in the town, bidding up prices in the process.

Each of these effects is accounted for in the empirical work in GA(a). Increases in land prices are accounted for directly as an input into total development costs and thence supply decisions. The responsiveness of new consents ($s_i$) is estimated individually for each TLA. In addition, we estimate a TLA-specific effect that indicates the growth in new housing net of any price and cost influences. This TLA-specific effect may also reflect regulatory and/or geographical conditions.

GA(a) estimate the relationship for intended housing starts for 73 TLAs from 1991q2 to 2004q2 (a total of 3,869 observations) using a range of econometric (statistical) estimation techniques. They first estimate the relationship based on an assumption that adjustment responses ($s_i$) are identical across all TLAs. They then re-estimate the relationship based on the more realistic assumption that adjustment responses differ across TLAs.

The identical adjustment specification yields estimates indicating that each 1% increase in house prices relative to total development costs induces an increase of between 0.5% ad 1.1% in new housing consents as a ratio of existing housing. The range of estimates corresponds to results using alternative statistical estimation techniques; the 'best' technique[8] indicates that the average responsiveness is at the upper end of this range, i.e. 1.1%. The share of land costs in total development costs ($w_i$) is estimated at between 18% and 33% (with the upper estimate being based on the preferred estimation technique).

[8] I.e. using instrumental variables estimation. The 0.5% estimate is obtained using ordinary least squares estimation.

When we repeat the estimation allowing for TLA-specific adjustment responses, we find a substantial range of responsiveness across authorities. Differences are statistically significant implying that local conditions do affect the responsiveness of new housing supply to price and cost developments. Using the preferred estimation technique, the mean responsiveness parameter ($s_i$) across local authorities is 0.67%. As shown in Table 1, the lower quartile, median and upper quartile of estimates across local authorities are 0.18%, 0.53% and 1.02% respectively. Thus the upper quartile TLA has housing supply responsiveness to a given price or cost shock that is over five times as large as that in the lower quartile TLA.

The Nelson, Tasman and Marlborough supply responsiveness parameters are 0.82%, 0.38%, 0.82% and 0.76% respectively. Tasman's new housing supply is estimated to be noticeably less responsive than either Nelson's or Marlborough's to price and cost developments. Compared with local authorities across New Zealand, each of Nelson, Tasman and Marlborough lie in the middle half of authorities (i.e. between the upper and lower quartiles); Tasman is below the median while Nelson and Marlborough are above the median. Overall, each of the three authorities' supply responsiveness to prices can be considered as within normal bounds for New Zealand.

**Table 1: Supply Responses**

| | TLA Supply Responsiveness ($s_i$) | TLA Specific Supply Effect | TLA Land Price Increase 1991-2004 |
|---|---|---|---|
| Tasman | 0.38% | 0.13% | 188% |
| Nelson | 0.82% | -0.27% | 170% |
| Marlborough | 0.76% | -0.12% | 163% |
| NZ Lower Quartile | 0.18% | -0.62% | 77% |
| NZ Median | 0.53% | -0.13% | 130% |
| NZ Upper Quartile | 1.02% | 0.65% | 188% |

Notes: A high supply responsiveness parameter indicates that new housing supply adjusts quickly to price and cost changes in that local authority. A positive (negative) TLA-specific supply effect means that new supply is relatively strong (weak) after accounting for price and cost effects in that local authority. High land price increases act to reduce the supply of new housing.

Land prices in Nelson, Tasman and Marlborough rose at a rate that placed each between the median and upper quartile of New Zealand TLA land price increases over 1991-2004 (Tasman's increase being the upper quartile). To the extent that high land prices curtail new development (by increasing total development costs) these higher than average land price increases - more so in Tasman than in Nelson or Marlborough - act to depress new housing supply, in turn placing pressure on house prices. Again, however, the price developments in each of Nelson, Tasman and Marlborough are not wholly out of line with New Zealand norms (at least up till 2004), although Tasman's land price rises are at the upper end.

Unlike the picture indicated by the estimated supply responsiveness and by land price developments, Tasman is more responsive than either Nelson or Marlborough after accounting for price impacts. Tasman's TLA-specific supply effect is slightly positive (compared with a New Zealand mean value of zero). Nelson's and Marlborough's TLA-specific supply effects are each slightly negative. However, all three regions lie well within the lower and upper quartile of estimates for all TLAs across New Zealand, so are within the norm for New Zealand.

Together, these estimates suggest that to the extent that supply issues have contributed to strong residential price rises within Nelson, Tasman and Marlborough, similar issues are shared also by other New Zealand authorities. As indicated in a previous paper in this research programme (DTZ, 2005) there does not appear to be anything particularly restrictive about the zoning, planning and supply-related regulatory responses in the three authorities relative to those in other New Zealand TLAs. This does not mean that lack of supply response is *not* having an effect on prices in Nelson, Tasman and Marlborough; just that the effect in these regions is similar to the effects of supply responsiveness on house prices experienced by many other TLAs across New Zealand.

Each of Nelson, Tasman and Marlborough has had faster land price growth than the median, with Tasman at the upper quartile for New Zealand. The supply of land for residential purposes, more than the responsiveness of construction to observed prices, therefore appears to be a feature in these regions

that may warrant supply-side attention. In turn, this finding concentrates attention on issues of urban (and rural) planning, residential zoning (e.g. relating to new subdivisions and in-fill regulations), and provision of infrastructure for new residential developments. The last of these issues was shown to be particularly important in certain areas (e.g. eastern Tasman) in prior work in this research programme (DTZ, 2005).

# 4 Rental Market and Expectations

The ratio of rents to house prices (also known as the rental yield) can be used to derive market-based expectations about future housing developments.[9] For example, two areas that have similar housing types and housing quality and similar amenities to one another may have approximately equal residential rents. If the former area has higher house prices than the latter (after adjusting for any quality differences) the implication is that buyers expect rents to rise faster in the former area than in the latter, and so they will pay more for a house in that area. Given that current rents reflect the value of living in an area "today", the corollary of this situation is that buyers expect the former area to improve in quality relative to the latter over time.

There are a number of reasons why expected future rent growth may be higher (and hence the rental yield lower) in one area than in another. To the extent that these reasons are well-informed rational evaluations of likely future paths, it is quite possible to see rental yields differing across areas at any given time even in a well-functioning market. We examine several cases where this may be the case below.

The first case in which rental yields may differ across areas is where job prospects in one area are expected to improve relative to those in another. For instance, if significant vineyard plantings take place near one residential area, and it is known that these plantings will require a substantial on-vineyard and downstream processing workforce in future years, it is rational for house prices in the area to be bid up at time of planting. The higher prices reflect an anticipation of higher future demand for housing and hence higher future rents. This will occur even if current employment (and current rents) remain unaffected by the initial plantings. This case may be particularly applicable to analyses that make comparisons across areas that are in different commuting zones (also known as

[9] To do so, one needs also to control for housing composition and related issues across areas, which we do in our estimation work.

"labour market areas"). One instance may be a comparison of Blenheim relative to Nelson.

It is less useful for explaining developments in contiguous areas where commuting is easily possible - for instance, one Nelson suburb compared with another. In these latter cases, prospective workers could live anywhere within the relevant commuting zone, albeit with locational choice affected by transport costs and availability. The availability and cost of transport is a factor that helps determine the size of the relevant commuting zone. It can therefore influence the response of local prices to local economic and demographic shocks. A wider reach of transport systems, greater availability (e.g. frequent buses) and lower cost (e.g. lower petrol prices or less congestion), each help to reduce the jump in local house prices in response to local upward housing demand pressures.

A second case is where prices in the lower rental yield (higher priced) area incorporate an anticipated infrastructure improvement, such as improved water supply or waste water facilities. Many studies internationally show that rents and house prices are highly responsive to changes in the quality of infrastructure that service the locality (see, for example, Haughwout, 2002; McMillen and McDonald, 2004).

This case again potentially interacts with transport provision. Anticipation of a major new transport artery serving a locality will be reflected in house prices for that locality well before the new transport link is opened. This is the case even though current rents will not jump in anticipation of the opening (because the improved service is not yet on-stream). Rental yields will thus be relative low (i.e. prices will be high relative to rents) in the period between announcement of the project and its coming on-stream. This reason for rental yield differences is particularly useful in explaining changes in prices and yields within a conurbation - for instance, Richmond relative to Nelson - in situations where infrastructure changes are anticipated. [10]

[10] This case conceptually applies also to a situation in which there is no new infrastructure, but where congestion surrounding an existing infrastructure facility is anticipated to worsen. In this situation, prices for property serviced by the infrastructure should fall relative to existing rents. Anticipated changes in the cost of using infrastructure (e.g. changes in petrol prices) will have a

A third case that results in different yields and prices across areas is where changes in zoning or other development restrictions are anticipated for one area but not for another. For instance, at the city fringe, expected zoning changes to rural land that would enable that land to be subdivided for residential purposes will lift the price of the land in question (provided that the land is valued more highly by the market for residential use than for agriculture). Similarly, within a city, anticipated changes to zoning regulations that will permit higher density housing in an area generally lifts values of subdivisable sections relative to similar sections in areas anticipated to retain restrictions on subdivision and/or on new high density housing.

A fourth case in which prices and yields may change in one area relative to another is where there is an anticipation of changing relative desirability of the two areas over time. For instance, a trend towards higher value being placed by purchasers internationally on "sunshine coasts" will be reflected in the prices of property in such an area, even if rents (for current dwellers) have not yet caught up. In this circumstance, we would expect rental yields to fall (prices to rise) in an area close to the coast (in a sunny location) relative to one further inland. Similarly, expectation that a particular area will, in future, attract greater numbers of retired people (from out of town) may bid up prices in the relevant area.

The response of prices and rents in each of these cases is affected by the anticipated response of new housing supply in the affected areas. If, for instance, anticipated increased retirement demand can be met entirely (at existing costs) over the relevant period by an increase in properties with desired characteristics, there should be no change in price and/or rental yield as a result of this factor. Where it is anticipated that supply (at existing costs, including land costs) cannot alter fully in line with the increased demand, prices will be bid up.

One factor that affects rental yields and prices across all areas is changes in the cost of capital for housing purposes (i.e. in mortgage interest rates

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similar effect on property prices and yields. Thus high petrol prices should lower the price of houses on the outskirts of a city if those properties are used by commuters.

plus any risk premium relevant to housing purchase). Because there is a national capital market, this factor does not explain divergences in rental yields or prices across areas, although it does help explain changes in rental yields over time (in all areas).

With efficiently functioning property and capital markets, the return to owning housing should equal the return to other investments (after adjusting for risk). The annual expected return to owning a rental house equals the annual net rental yield (calculated after deducting ownership charges such as depreciation, maintenance, rates, and rental default) plus the expected rate of capital gain on the house. A consequence of the annual expected return in each area being approximately equal to the nationally set cost of capital, is that the expected returns will be approximately equal across areas at a given time. If the risk premium is fairly constant over time, we should expect that the expected return to housing less the risk free interest rate will be reasonably stable over time.

We can use these observations to deduce market expectations of expected capital gains and expected rental changes over time for each area for which rent and price data is available. This approach is used by Grimes and Aitken (2006b; GA(b)) using annual area unit data across New Zealand for the period 1992 to 2004. An area unit is comparable to a suburb within a city or town, or to a similar population grouping in rural areas. Consistent data are not available across all of the relevant time period for all New Zealand area units, and the smaller the population, the more "noisy" the data becomes. GA(b) use data for 645 area units across New Zealand and use statistical techniques to smooth the data to remove some of the variability due to small numbers of newly rented or purchased properties within an area.

They use standard capital market relationships to derive both market-based capital gains expectations and expectations of rental growth rates from the observed rental yields in each area unit in the sample. The derived capital gains expectations are shown to have statistically significant predictive power over actual future capital gains and rental growth rates in an area. Similarly, rental growth expectations are shown to have statistically significant predictive power over actual future rental growth rates and capital gains in an area. In each case, the

statistical relationships are derived from over 5,000 observations covering 645 area units for the period 1997 to 2004.[11]

In the current paper, we concentrate on the data and results for area units within each of Nelson, Tasman and Marlborough. Of the 645 area units used in the GA(b) study, 11 fall within our areas of interest: 4 in Nelson [Britannia Heights, The Wood, Toi Toi, and Isel Park], 2 in Tasman [Richmond North and Motueka West] and 5 in Marlborough [Picton, Blenheim Central, Redwoodtown, Whitney, and Witherlea (the last four being in/around Blenheim)]. A map of the area units that have rent and price data covering the entire 1992-2004 period is included as an Appendix.

Figure 1 presents the rental yields (rent/price ratios) for these 11 area units for the period 1992 to 2004 using the raw data. Figure 2 presents the rental yields using the smoothed data. Both the smoothed and the raw data indicate a trend across all the area units of a declining rental yield over this extended period. An alternative way of describing this trend is that house prices have been rising relative to house rents consistently over this period.

In the absence of changing capital gains expectations, changing risk premia and changing ownership costs, we would expect rental yields to follow the path of the risk-free interest rate. Under these circumstances, the difference between the rental yield and the risk free interest rate (90 day bank bill yield) should be approximately constant over time. We graph this differential in Figure 3 for each of the 11 area units (using the raw rental data). Once we do so, the downward trend disappears. Thus the general decline in rental yields since the early 1990s mirrors the general decline in interest rates over the same period. The decline in interest rates can therefore be seen as a key reason (at least through to 2004) for the rising trend in house prices relative to rents across each of these suburbs within Nelson, Tasman and Marlborough.[12]

[11] The rental growth expectations are used over a longer period: 1994-2004.
[12] A similar pattern occurs across the whole of New Zealand over this period.

Figure 4 presents the derived measure of implied annual capital gains expectation for each of our 11 area units in Nelson, Tasman and Marlborough.[13] After a period of initially high capital gains expectations early in the 1990s, capital gains expectations moderated across almost all the area units through to 2002. Thereafter, capital gains expectations rose strongly relative to earlier rates. As discussed in an earlier paper in this research programme (Grimes and Aitken, 2005) these expectations were subsequently realised as house prices rose strongly across Nelson, Tasman and Marlborough.

In Figure 5, we present the derived measure of implied annual expected rental growth for the 11 area units. As with the capital gains expectations, we see a "U-shaped" pattern to most of these series. Rental growth expectations were high early in the period and were increasing again after 2002 in all 11 area units.

It is this last result that is perhaps most important for rental markets across the three local authorities. These graphs indicate that pressure on rental markets remained strong at the end of the period. Thus even after prices steadying in 2005, pressures remain on the rental market since rents remain low relative to prices in each of the 11 area units. While it is possible that prices will fall to re-establish lower rental yields, it is more likely that prices will stabilise (especially if interest rates decline over 2007[14]) and rents will continue to increase. From a housing affordability viewpoint, this could further worsen the affordability of rental housing in these areas. In the concluding section, we discuss how this prospective trend might be mitigated, based especially on the analysis presented in section 3.

[13] These expectations represent deviations from the average rate over the whole period for the whole country. It is therefore the trends in them that are relevant here rather than the absolute levels.

[14] This pattern is predicted by the Reserve Bank of New Zealand in its March 2006 *Monetary Policy Statement*.

# 5 Conclusions

Between 2002 and 2005, house prices in Nelson, Tasman and Marlborough rose sharply; rents also rose, but to a lesser degree (Grimes and Aitken, 2005). In this concluding section, we consider how these price rises form part of an adjustment mechanism responding to imbalances within the housing markets in these regions. We analyse also the role of other adjustment mechanisms in correcting these imbalances.

Price rises in any market typically signal that demand for the item exceeds supply at the pre-existing price. If supply stays the same or increases, the implication is that the proximate cause of the price rise is an increase in demand. Alternatively, costs of supply may have risen in which case new supply will be forthcoming only at higher prices, and these higher costs will be reflected in prices of existing products (in this case, houses).

In the case of housing, one expects also to find a relationship between house prices and rents in any given area. With broadly stable interest rates and capital gains expectations, a rise in house prices should flow through to a similar rise in rents, and vice versa. The timing of the shifts in house prices and rents may vary depending on the factors initially causing the rise.

Prior analysis has identified several factors underlying strong increases in demand for housing in Nelson, Tasman and Marlborough. These include: earlier strong economic performance (e.g. in horticulture, viticulture and tourism) which lifted employment and incomes in the regions; an inflow of migrants planning to retire in the regions (driven by quality of life factors such as climate and natural and social amenities); and an influx of tourists and part-time dwellers, many of whom have purchased second homes (driven also by factors such as climate and coastal location).

One effect of these factors has been an influx of population into the three regions. Different segments of this influx have sought accommodation of various types. Housing is not homogeneous. Seasonal workers in the viticulture

industry have different housing needs from a wealthy Cantabrian seeking a holiday house. The nature and degree of imbalances can therefore differ strongly across different accommodation sub-markets. As discussed below, this observation has relevance for planning and zoning processes.

Housing affordability can be conceptualised in a number of ways. One way is to relate the cost of a "typical" house (say the median priced house in an area) to the "typical" income in that area (say the median household income). Distributional aspects can be taken into account by focusing instead on housing and incomes at the lowest quartile or lowest decile. Another way to analyse housing affordability is to relate housing cash-flows to income. This measure places greater emphasis on the effects of mortgage interest rates since cash-flows are dominated by mortgage interest payments (for owner-occupiers). Under this measure, house prices may rise relative to incomes when interest rates decline, but the measure of housing affordability may remain unchanged. For renters, the relevant measure of housing cash flows is rents. If interest rates fall and house prices consequently rise, rents may remain unchanged (for reasons outlined earlier in the paper) and so rental affordability may remain unchanged. In some circumstances, housing affordability may be influenced by the size of the required deposit for purchasing a house relative to incomes. The reduction in deposit ratios required by some lending institutions now makes this factor less relevant - and certainly harder to measure - than the preceding measures, and we do not discuss it further here.

Where house prices rise owing to an increase in demand, housing affordability (at least according to the first measure) will worsen if the typical price rise exceeds the typical rise in incomes (as it has in Nelson, Tasman and Marlborough). House supply is relatively fixed in the short term (e.g. in the space of a year) and so the increase in demand places pressure on the price of existing houses, resulting in generalised house price increases. Over time, developers respond to profitable opportunities arising from increases in house prices relative to development costs. Thus house price rises tend to bring forth new supply. Developers will build on vacant urban or urban-fringe land, or subdivide and build on existing urban land (in-fill housing). The extra houses that are released onto the

market help to cap house price rises and may induce prices to fall back somewhat from their peaks.

Our empirical work on new house supply across the whole of New Zealand indicates that house supply does respond to house prices in this manner. Increases in house prices relative to development costs lead to extra new housing supply. However increased costs act to stifle new supply because development then becomes less profitable. Development costs include both the cost of land for residential purposes and construction costs. Other costs, such as local authority housing consent processing costs (and delays) are also relevant factors. High local authority costs (or long processing delays) can be a factor in reducing the responsiveness of new house supply to house price increases.

The longer that new supply takes to come on stream after an increase in housing demand (and in prices) the greater will be the house price increase for any given demand increase. Indeed, with no increase in development costs, an immediate and full response of new housing supply to increased demand would normally result in house prices remaining unchanged following the increase in demand. As a hypothetical example, consider the case of a new vineyard that requires 20 workers. If that vineyard itself supplies the accommodation for those 20 workers, there is no increase in housing pressure on the surrounding property market. Similarly, an increase in pensioner housing units suitable for prospective pensioner inward-migration may relieve potential price pressures in that market segment.

A consequence of these findings is that where population and housing demand rises strongly - as in Nelson, Tasman and Marlborough - it is imperative that new housing supply comes on-stream quickly to mitigate the price impacts of the influx of new residents (including vacation residents). Supply therefore needs to be more responsive in regions subject to strong demand fluctuations than in more stable regions. The new supply has to be suitable for the types of housing that have increased in demand (whether family residences, holiday homes, temporary worker accommodation, pensioner housing, etc).

Regulation, in turn, needs to be more flexible in its treatment of residential planning and housing consent processes in areas subject to major housing demand shifts. For instance, if a region has potential for major changes in seasonal worker requirements, planning regulations and consent processes must be flexible enough for appropriate new supply (e.g. worker hostels) to be developed and built quickly. If the region has potential for major changes in vacation house demand, the same processes must be flexible enough to enable new supply to come on stream quickly if there is a desire to cap price increases in that market segment (and also to cap price increases in segments that can be substituted for holiday accommodation).

Relevant planning and consent processes include processes relating both to land use and to residential construction on existing residentially zoned land. Restrictions on land use can exacerbate residential land price pressures especially where vacant residentially zoned land is already in short supply. House prices (and rents) fully reflect residential land prices, so zoning restrictions can have a direct effect on housing affordability. Delays and/or costs in housing consent applications are reflected in higher development costs and slower housing development following a demand surge. Both of these factors exacerbate house prices and therefore lead to a worsening in housing affordability. The revisions to the Building Act in 2005, and consequent planning delays and cost increases, may have intensified some of these pressures. In some cases, the delays, processing costs or zoning restrictions may apply particularly to a segment of new developments (e.g. worker hostels or coastal housing) creating particular supply restrictions and affordability pressures in those accommodation segments.

Our empirical work suggests that Nelson, Tasman and Marlborough are each within the middle 50% of New Zealand local authorities in terms of the responsiveness of new housing supply to changes in demand. Tasman has faced stronger residential land price pressures than either Nelson or Marlborough and has also had slower supply responsiveness to price pressures. However it has had a faster overall rate of new housing supply after abstracting from these factors. Overall, consistent with prior research in this programme (DTZ, 2006) none of the three authorities is found to have had particularly restrictive, or particularly

permissive, processes relating to new residential supply relative to other New Zealand local authorities.

This does not mean, however, that supply responsiveness in these regions is appropriate for the demand pressures that they face in each market segment. As discussed above, regions that are subject to sharp fluctuations in housing demand need particularly responsive new housing supply; and supply needs to be responsive across the relevant accommodation segments (not just for typical residences). Particularly strong responsiveness of new housing supply to demand pressures is not evident in these three regions.

The relatively strong land price increases witnessed in these areas, particularly in Tasman, highlights the need to ensure a plentiful supply of new residential land with appropriate infrastructure that is designed to service dense residential settlement. The shortage of infrastructure for new developments in certain areas was a feature identified by the DTZ report, earlier in this research programme. For instance, the expansion of housing around the outskirts of the major towns in Tasman tends to be limited by lack of waste water provision and also by the need to improve flood protection. In Marlborough, expansion of residential housing around the outskirts of Blenheim is stifled by zoning regulations preventing subdivision of horticultural land, despite that land being suitable for new housing demand.

In each of these cases, and in others, the issue is *not* one of mindless planning constraints preventing housing expansion. There is a need to balance alternative land uses for the benefit of the wider community. Using good horticultural land for housing may reduce employment opportunities in a district; use of agricultural land for housing may conflict with a desire for open space near the existing town. The analysis here does not state that these types of restriction are "wrong". Rather, we make the observation that these restrictions affect the responsiveness of housing supply to demand changes, and so impact on land prices, house prices and housing affordability.

Over time, the same restrictions also impact on rents (and rental affordability). In this respect, our empirical analysis across the whole of New

Zealand indicates that rental increases tend to incorporate the effect of house price increases as well as interest rate trends. Lower interest rates since the early 1990s has led to a fall in the rental yield (i.e. in rents relative to house prices) across New Zealand. This effect has been shared across Nelson, Tasman and Marlborough. At times, rent increases may lag behind house price increases (as they appear to have done in the current cycle) meaning that rents may keep rising well after house prices have stopped rising. Thus supply restrictions that impact on house prices may have a long-lasting effect on the path of rents in an affected area.

These considerations need to be taken into account in local authority planning and regulatory processes. Other papers in this research stream isolate specific housing-related issues in Nelson, Tasman and Marlborough from the perspective of residents in these areas. These experiences will be instrumental in isolating where the key shortages are in accommodation needs in these regions. They will also be especially useful in thinking about specific factors stifling adjustment to these shortages. The final paper in this research programme (due June 2006) will apply the insights from all the studies in the programme to formulate potential actions that can address the housing affordability issues in the three regions. The responsiveness of housing supply and its effects on both the owner-occupier and rental markets, as highlighted in the current study, will be one aspect that underpins that analysis.

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* References marked with * are available in electronic form from andrew.aitken@motu.org.nz

# Appendix A: Nelson, Tasman & Marlborough Area Units included in Rental study

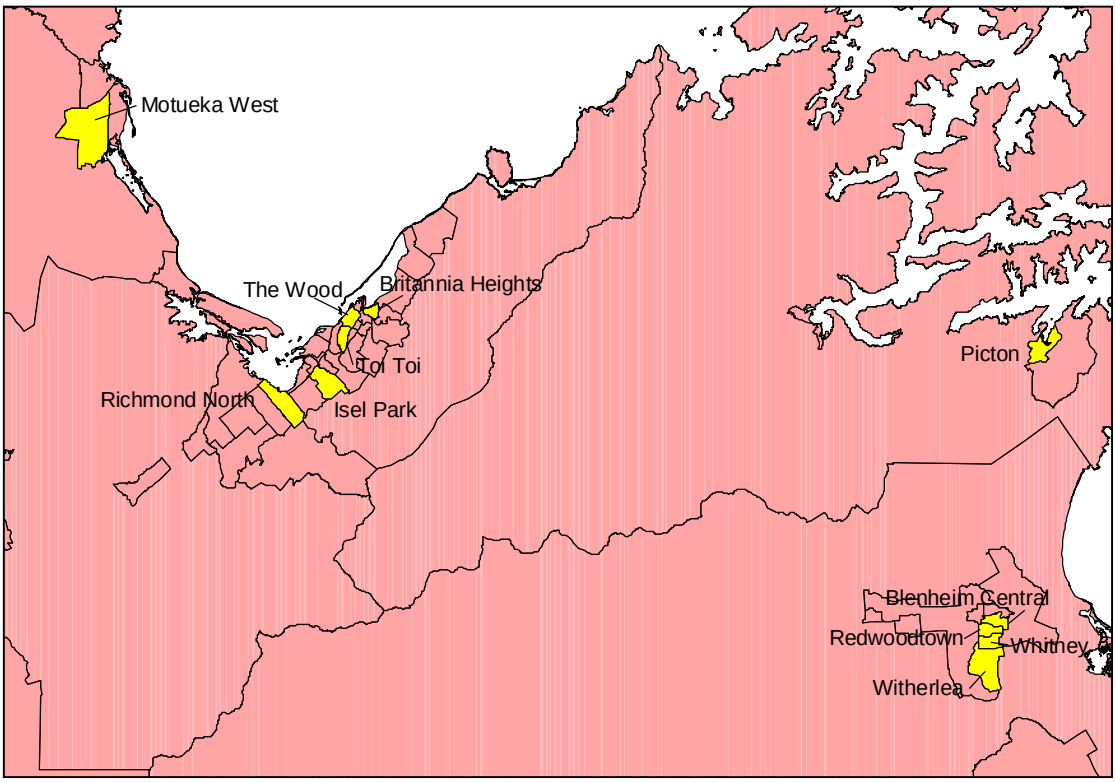


**Figure 1: Rental Yields (Raw Data)**

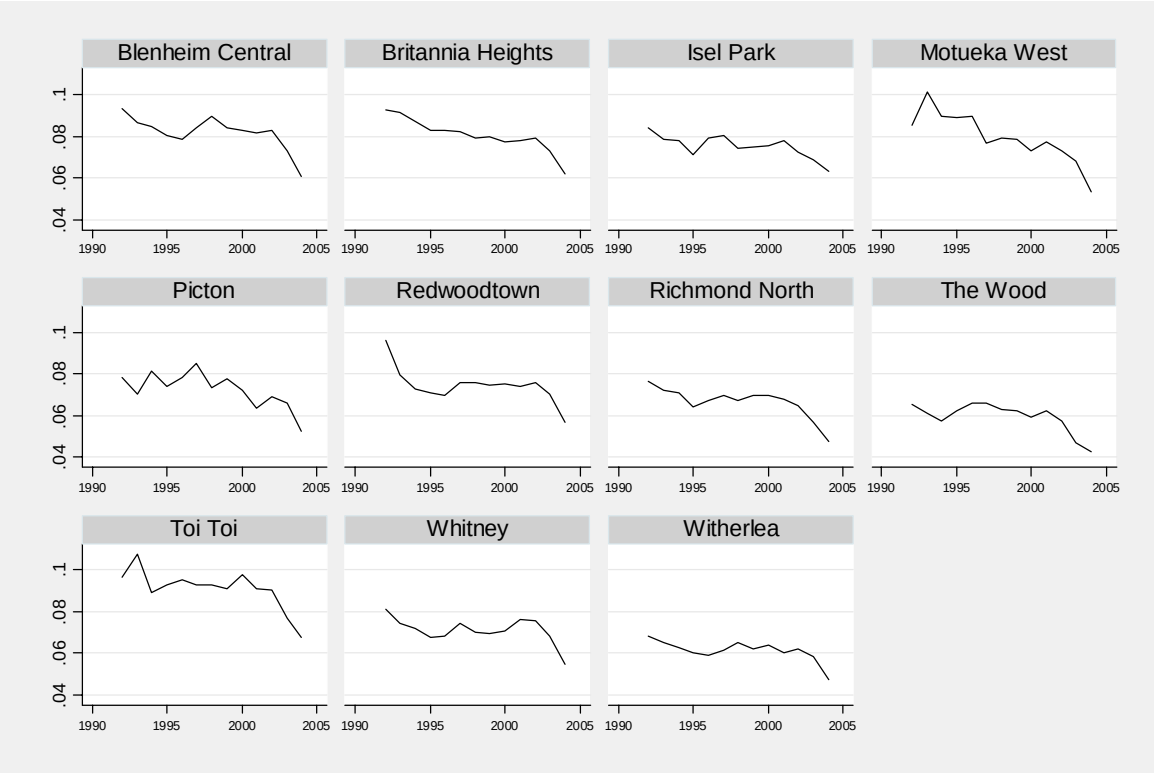


**Figure 2: Rental Yields (Smoothed Data)**

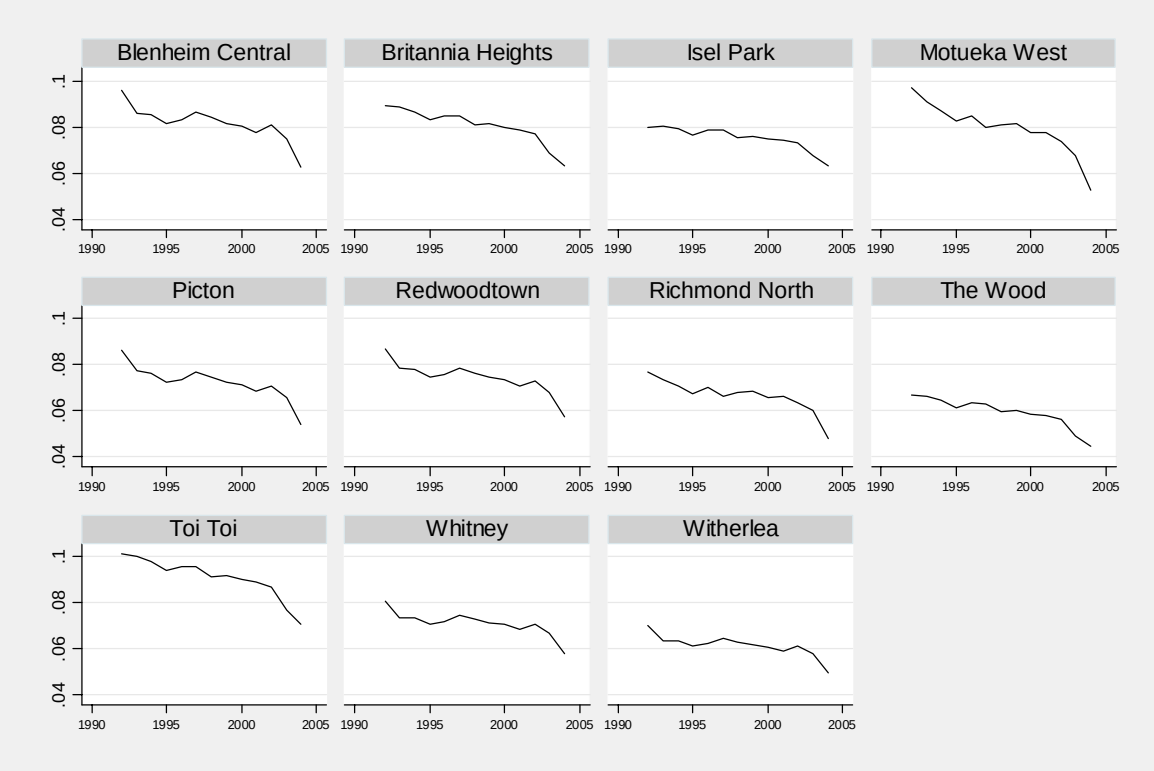


**Figure 3: Rental Yield Less 90 Day Interest Rate**

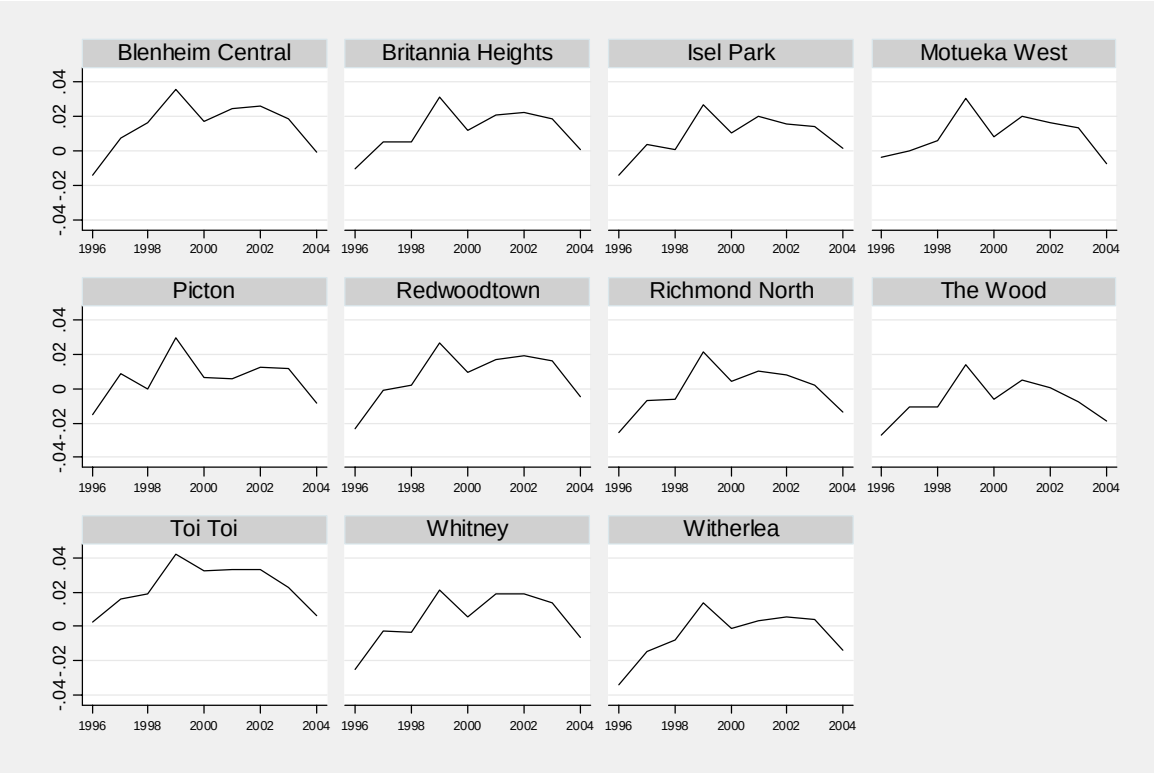


**Figure 4: Implicit Capital Gains Expectations**

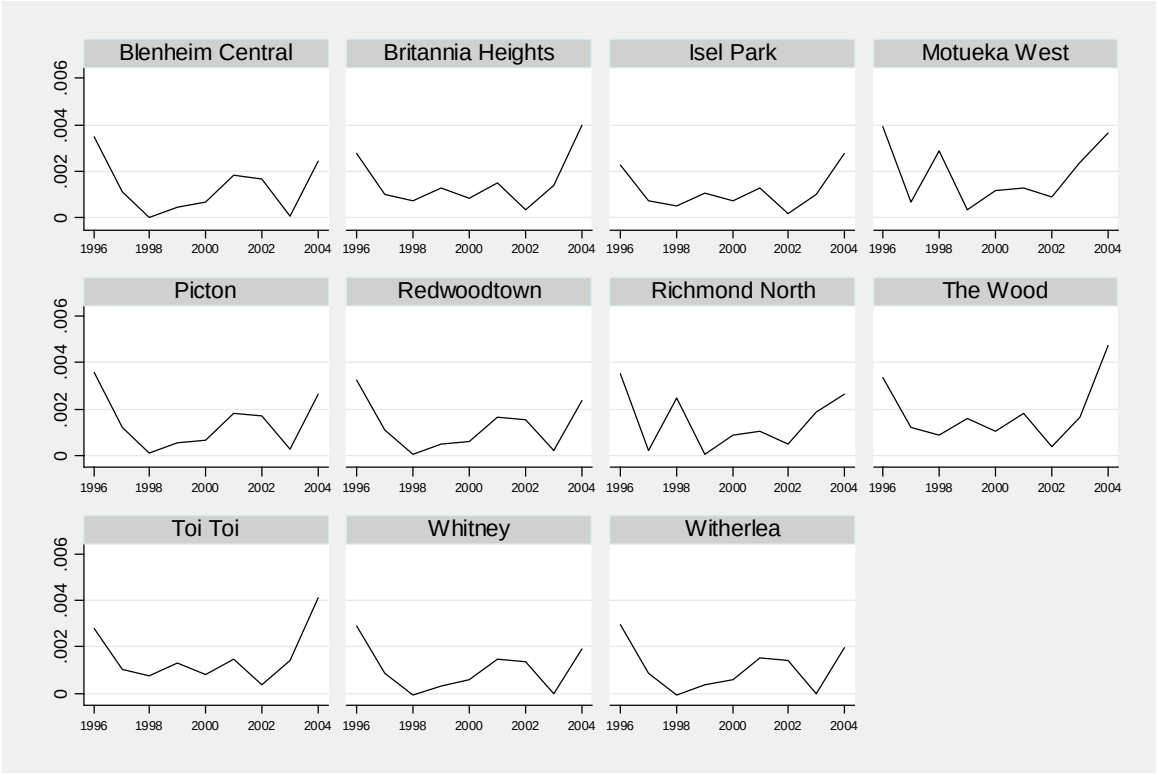
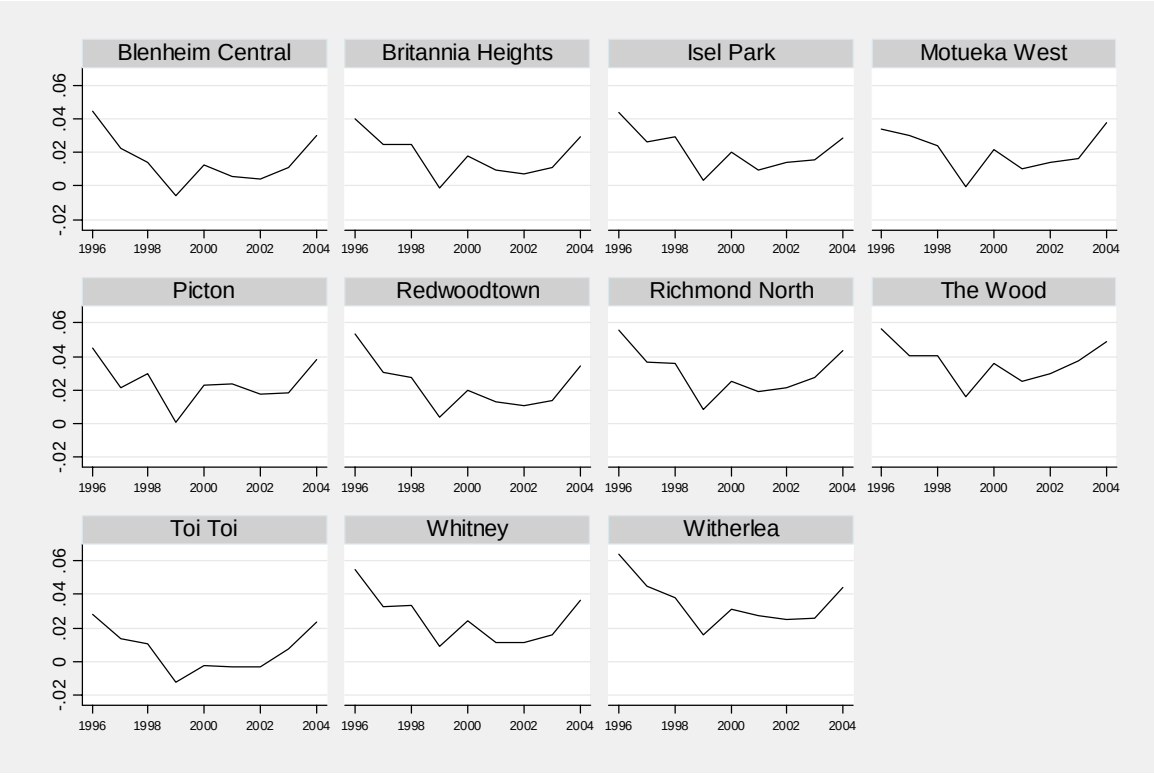


**Figure 5: Implied Rental Growth Expectations**



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