



Tax Working Group
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This paper contains advice that has been prepared by the Tax Working Group Secretariat for consideration by the Tax Working Group.

The advice represents the preliminary views of the Secretariat and does not necessarily represent the views of the Group of the Government.

The advice refers to economic modelling commissioned by the Secretariat. The commissioned analysis is one input into the Secretariat's advice, as part of a range of evidence that has been reviewed. The commissioned analysis should not be attributed to the Secretariat and nor does it reflect the Secretariat's views. The commissioned analysis is preliminary and may change after further work. The results of the modelling depend on assumptions and are subject to considerable uncertainty.

Coversheet: Potential high-level effects of proposals to extend the taxation of capital income

*Background Paper for Session 14 of the Tax Working Group
3 August 2018*

Purpose of discussion

This paper provides additional analysis of some of the broad economic effects of extending the taxation of capital income by taxing more capital gains. The analysis includes information to help the Tax Working Group understand how different sectors of the economy may be affected, with a particular focus on the housing market. The paper should be considered alongside the companion paper *Distributional analysis and incidence*.

Key points for discussion

- Does the Group disagree with any aspects of the Secretariat's characterisation of the likely economic effects of extending the taxation of capital income by taxing more capital gains?
- How would the Group like this material in this paper to be reflected in the interim report?
- What areas should be further explored or elaborated upon?

Recommended actions

We recommend that you:

- a **note** further modelling analysis commissioned by the Secretariat on housing market effects will be provided when analysis is complete;
- b **indicate** what aspects of this paper should be included in the interim report; and
- c **indicate** any particular further work for the Secretariat on the effects of propose tax changes.

Potential high-level effects of proposals to extend the taxation of capital income

*Background Paper for Session 15
of the Tax Working Group*

August 2018

Prepared by the Inland Revenue Department and the New Zealand Treasury

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Executive Summary

This paper builds on earlier papers provided to the Group in April and May. It provides additional analysis of the potential broad economic and fiscal effects of extending the taxation of capital income by taxing more capital gains (ETCI), based on the broad design choices that the Group has agreed to date. The additional analysis includes a summary of initial modelling work that the Secretariat commissioned on potential housing market effects. A description of the model written by its designers is attached as Appendix A, but the Secretariat would caution from drawing strong conclusions from it given its inherent complexity and uncertainty. The Secretariat is seeking to work with its developers to gain more insight into how it derives its results.

The economic effects of an ETCI are complex to assess because there is a range of effects that move in different directions. There are few empirical studies to draw on. The broader effects of ETCI on social, human and natural capital are even more complex, although as mentioned in earlier reports, broadening the capital income tax base should improve fairness and social capital. In many instances, specific impacts will depend on aspects of detailed design. Critically, the overall effects will depend on the way the ETCI revenue is ‘recycled’, which is not considered in detail here.

An ETCI is forecast to be fiscally positive with revenues starting small than building up to about 1% of GDP per year after 10 years. Chapter 2 provides information on variations and options that the Group could consider and how they would affect the overall fiscal impact. These include, replacing the fair dividend rate (FDR) method for taxing foreign shares with ETCI, substituting a risk-free return method (RFRM) for taxing residential rental property for ETCI, and for reinstating some building depreciation together with ETCI.

The analysis given here is based on a comparison between “before” (no ETCI) and “after” (ETCI in effect) conditions. However, in practice, it will take time for full effects to work through (as it takes time for asset sales and investment decisions to be made), and some of these effects could begin before implementation of ETCI. This is because announcement of a policy change, and expectation of a policy change, could cause investors to factor a probability of a policy change into their decisions. It is likely that some consequences of implementing of ETCI have already begun, as the Tax Working Group process has raised this as a possibility. This means that further adjustments after announcement and implementation will not be as pronounced.

Extending the taxation of capital income by taxing more capital gains is expected to have a number of effects on the broad economy:

- an increase in the tax on capital income would be expected to reduce domestic saving and investment levels, although limited application of the additional tax to non-residents would mitigate the overall impact on aggregate investment;
- by reducing variability of effective tax rates on different investments, there should be an overall improvement in the neutrality of savings and investment decisions;
- an ETCI would raise revenue;
- if the revenue from an ETCI was used to finance reductions in other areas of capital income tax in a way that improved the neutrality of tax settings, this would

offset the negative effects of an ETCI on levels of savings and investment. This could potentially lead to an increase in overall economic efficiency and improve economic growth and productivity;

- whether or not an ETCI would ultimately increase overall economic efficiency will depend on the impact of the downsides of an ETCI. This includes the impact of lock-in, which in turn will depend on detailed design issues that are still to be worked through;
- revenue from an ETCI might be used to attain other objectives the Group discussed when examining revenue negative options.

An ETCI would affect different investments by reducing after-tax returns. Investors would not be willing to invest in particular assets unless the pre-tax return was higher. There are two channels this can occur through

- One channel by which this can happen is through a fall in the price of appreciating assets. In this case current investors may suffer a loss.
- Another possible channel is for those owning the assets are able to earn higher returns. For example, if ETCI reduces investment in rental properties, this might be passed on at least in part by an increase in rents;

In some cases it is more likely that there will be little change in the price of assets. This is most likely to be the case if foreign investors are an important investor and they are not subject to the tax.

In other cases it may not be possible for those owning assets to pass on any of the extra tax impost. In these circumstances an ETCI will be more likely to result in a fall in the price of the asset. For example, it may be difficult for farming and agriculture businesses to pass on additional taxes by charging more for their products if the products are sold on world markets and New Zealand is a price taker on these markets.

There will often be some substitutability with other investments. The relative attractiveness of unaffected investments would increase. A more neutral tax treatment will tend to promote economic efficiency and capital productivity in the longer run by encouraging investment to flow to areas of greatest productivity rather than areas which are most tax advantaged.

The productivity outcome of ETCI could be improved if it is combined with efficient reductions in capital taxation. One example is reinstatement of some building depreciation. The fiscal cost of building depreciation is partially offset by an increase in revenue from ETCI. This is briefly explained in Chapter 6. The Secretariat will provide the Group with an updated costing for building depreciation when it is available.

An ETCI is likely to be strongly counter-cyclical in terms of its macroeconomic effect, and add to the tax system's function as an automatic stabiliser. However, an ETCI also raises the risk of pro-cyclical expenditure responses. Governments may be more likely to add to cyclical pressures by spending more during periods of increased revenue generated by asset price growth, and reducing expenditure when tax revenues fall during periods of asset price weakness.

An important concern of an ETCI is the impact on the housing market. Theory suggests that an ETCI will result in higher rents and might also be expected to lower the price of houses. However, data from other countries does not suggest that tax changes have had large impacts on rents or the overall trend in housing prices.

1. Introduction

Purpose

1. This paper builds on earlier papers provided to the Group in April and May. It provides additional analysis of the potential broad economic and fiscal effects of extending the taxation of capital income by taxing more capital gains (ETCI), based on the broad design choices that the Group has agreed to date. Most of this analysis will be based on theory and first principles analysis, but where there is contributing empirical data this will be noted.
2. The additional analysis includes a summary of initial modelling work that the Secretariat commissioned on potential housing market effects. A description of the model written by its designers is attached as Appendix A, but the Secretariat would caution from drawing strong conclusions from it given its inherent complexity and uncertainty. The Secretariat is seeking to work with its developers to gain more insight into how it derives its results.
3. There are important effects of ETCI which are not analysed in the paper. For example the paper on Closely Held Companies discussed in session 14 focussed on pressures arising because of a lower company tax rate than the top personal rate. These pressures may become larger if future governments wish to reduce the company tax rate or increase the top personal marginal tax rate. ETCI would help in reducing pressures caused by the non-alignment of these rates and help make our basic tax structure more sustainable in into the future. The focus of this paper is on the effects of the tax on particular sectors rather than on these broader issues.
4. This paper also provides some guidance on the fiscal implications of combining some different options, such as, ETCI with FDR and RFRM and reinstating some building depreciation.

Content and scope

5. This paper:
 - a. Outlines the how extending the taxation of capital income to include more capital gains is likely to work in practice (chapter 2);
 - b. Discusses the broad economic effects of extending the taxation of capital income (chapter 3);
 - c. Discusses particular efficiency issues arising from the design of the tax proposals (chapter 4);
 - d. Discusses how the proposal will impact particular sectors, in particular accommodation (chapter 5); and
 - e. Outlines the fiscal implication of combining ETCI with some other tax options that the Group has been considering (chapter 6);

2. Background

Extending the taxation of capital income

6. The Tax Working Group is working towards writing an interim report which will suggest important changes to rebalance the tax system. These will be developed for the final report to be published in 2019.
7. The main change being considered by the Group is extending the taxation of capital income. This would be done primarily by taxing more realised gains, and there is a subgroup designing the details of that and reporting back to the Group. This change is the main reform discussed in this paper.
8. This paper discusses some high level economic impacts of this reform. The economic impacts of the overall package of reform recommended by the Group will depend on how revenue is applied or recycled.
9. While final decisions have not yet been made, this analysis is done on the assumption that extending the taxation of capital income will have these features:

Scope of tax

- There will be a tax on the gain from the sale of assets that have appreciated in value;
- the tax will apply to the sale of business and investment property as well as second homes
- the tax will not apply to personal use assets other than real property;
- the tax will not apply to income realised by operation of law other than from a sale (for example, an award of damages in tort or for breach of contract, unless the income is already taxable under current principles);
- the tax will not apply to income realised from the sale of a family home; and
- the tax will apply to sales after an effective date (say, eg, 1 April 2021), but, for property acquired before that date, only value appreciation since the effective date is taxed;

Tax calculation

- the tax will apply to nominal gains and at ordinary income tax rates;
- losses will be immediately deductible except losses realised from the sale of liquid portfolio investments (and related instruments) will be ring-fenced and be deductible only against gains from the sale of similar property;
- there will be some rollovers (deferral of taxation) on transactions such as
 - sales and dispositions that keep an asset in the same ownership group;
 - division of property under a relationship property settlement;
 - gains from a compulsory acquisition or insurance claim for destruction of property, to the extent the amounts received are reinvested in similar property; and

- there will be a deemed disposition of assets for market value in some cases in the case of migration, gifts, and death. However, in the case of gifts and death, rollovers will apply if the donee / heir had an interest in relationship property with the person, and of illiquid assets such as family businesses (but not rental property).

Coordination with other regimes

- The ‘fair dividend rate’ (FDR) rules will continue to apply to foreign shares, and a tax on realised gains will apply to sales of New Zealand and Australian shares.
- The application to portfolio investment entities (PIEs) is yet to be decided, but for the purpose of this analysis, we will assume that the tax will apply to Australasian shares on accrued gains, with a discount to arrive at an effective tax rate that is similar to a tax on realisation. PIEs will continue to use FDR for foreign shares.

Other tax proposals

10. We are assuming the Tax Working Group proposals will not include a land tax. The Group has been considering whether to apply a risk-free return method (RFRM) for some assets, such as rental properties, instead of a tax on realised gains. This paper comments on whether that option would be expected to have a similar or different impact in some areas.

11. Other possible reforms that will be touched on in the paper are:

- allowance of building depreciation; and
- liberalising the loss carryforward rules by allowing them to be retained when a company is sold, primarily for start-ups seeking additional capital.

3. General economic effects

Overall economic effects of tax changes

12. Tax changes will affect the economy through multiple channels. The effects are highly uncertain and will depend on the government's overall fiscal settings, the structure of the economy and how households and businesses respond to policies.
13. The section below considers the impacts of an ETCI on economic growth and macroeconomic settings. The analysis considers the impact of an ETCI in the short term and long-term.

Economic growth

Long term

14. In the long-term, an ETCI could be expected to influence economic growth. Whether it is positive or negative and the level of impact will depend on the net impact of an ETCI on investment, productivity, and labour-supply. These impacts are considered in the sections below.

Short term

15. In the short term, extending the taxation of capital income may dampen growth through its effect on aggregate demand.
16. Aggregate demand may be dampened if the policy leads to a reduction in consumption and/or investment spending. Household spending may respond to changes in household wealth and disposable income. If house prices fall in response to the policy, household spending may be lower than otherwise in response to reduced household wealth. Higher tax payments would also reduce household disposable income, all else equal. In addition, investment spending could be affected, particularly in the property sector.
17. The effect on growth will depend on the overall net fiscal impact of measures in the short term and the saving behaviour of households and firms. As policy would be signalled in advance, the Reserve Bank could be expected to set official interest rates to mitigate the effects on aggregate demand to maintain stable inflation.
18. The timing of any economic effects is uncertain. As prices may adjust in anticipation of the policy, private consumption and investment behaviour may be affected prior to implementation.

Domestic investment, private and national savings

19. Increasing the taxation of capital income will increase effective tax rates on some investments, and thereby could be expected to reduce levels of investment. Other

measures would help to mitigate these effects. However an ETCI may not have significant effects on foreign investors¹ and so the impact of investment in sectors where foreigners are important investors would likely be minimal. As New Zealand is a small open economy that imports capital, marginal investors will often be foreign investors who will be less affected by an ETCI.

20. An ETCI would be expected to reduce the incentive to save if the instrument the saver was contemplating is expected to earn capital gains. The revenue generated from an ETCI is likely to raise national savings (through government savings) by more than a reduction in private savings the tax would be likely to cause, provided the revenue is not spent.

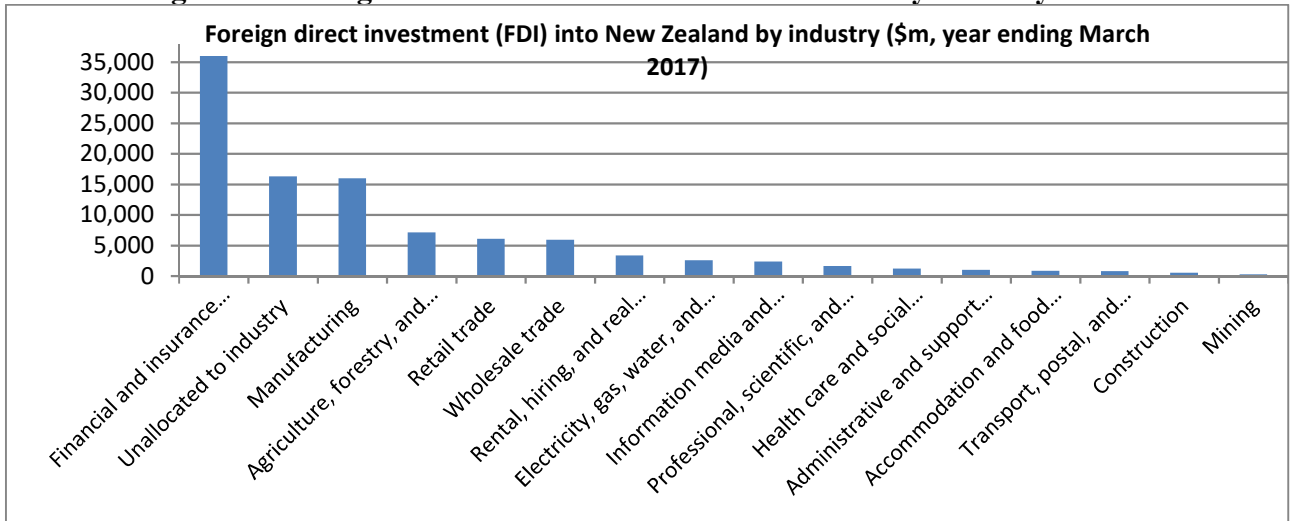
Foreign direct investment (FDI)

21. An ETCI is expected to have a relatively small impact on overall foreign investment into New Zealand. This is because capital gains taxes are generally designed to exclude (non-land) capital gains that are directly received by a foreign investor. Such capital gains will often be subject to the capital gains tax that operates in the foreign investor's home country. We understand the tax on capital income being considered would not apply to non-residents except to the extent they invest in New Zealand land, land-rich companies or sell assets of or through a New Zealand branch.²
22. Non-residents could be exposed to a tax on capital gains by investing in an industry or operation that earned capital gains, such as commercial property investments, agriculture, or forestry. Non-residents thinking of making new investments in these areas would probably be willing to pay less for these than they were before the tax on gains was imposed.
23. As shown in the chart below, investment in financial services (banks and insurance companies) is the largest category of foreign investment, and it is one that would be exposed to a New Zealand tax on capital gains (see Figure 2). It is not clear why this sector earns significant untaxed capital gains, since gains from trading portfolio shares held as part of a bank's or insurer's own reserves should already be taxable. If this reflects the fact that this industry often trades shares on behalf of other investors (such as managed funds taxed as portfolio investment entities), then those untaxed gains should be considered to be gains of the investors rather than the non-resident providers of FDI.
24. Other areas of foreign investment do not appear to be greatly impacted by the addition of a new tax on capital gains. However, there are a few areas, such as forestry, where a large portion of total investment comes from non-residents.

¹ Except where they invest in a company where the company itself earns capital gains. This is discussed further in the foreign direct investment section.

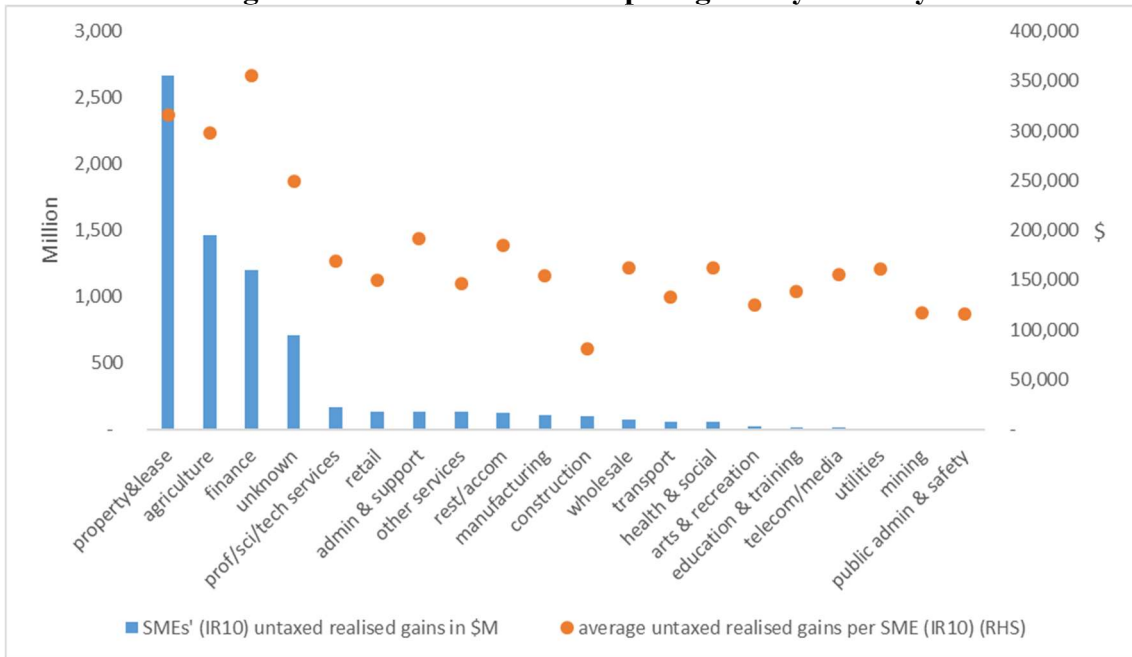
² In fact, New Zealand would be prevented from collecting a capital gains tax from residents of the other country (other than gains made from selling New Zealand land and gains attributable to a New Zealand permanent establishment) under 20 of our double tax agreements (including those with Australia, the US, the UK and other major trading partners).

Figure 1: Foreign direct investment into New Zealand by industry



Source: Statistics New Zealand, Balance of Payments, year ended March 2017

Figure 2: Untaxed realised capital gains by industry



Source: Secretariat

Investment allocation and productivity

25. To the extent that tax changes promote a more efficient allocation of capital, there may be increases in capital productivity and in multi-factor productivity. The extent to which it does so will depend on the extent of coverage and the design of the tax regime. A first order effect should be to improve the allocation of capital, by reducing overinvestment in assets expected to appreciate in value as a primary form of income.

26. On the other hand, a transactional efficiency cost such as lock-in may inhibit the transfer of assets within the economy to owners who could use the assets most

efficiently. If the revenue from extending the taxation of capital income is recycled into efficient reductions in the taxation of capital income, an improvement in capital productivity and multi-factor productivity is likely to be stronger.

Labour market

27. An ETCI would be expected to have small impacts on labour supply as it is generally not a tax on labour income, although there could be some impacts via any impacts on household income and wealth.

Long term

28. The level of employment is unlikely to be affected much by a capital gains tax in the long term.
29. There are some cases where labour income takes the form of capital gains (such as an owner renovating a house and selling it for a gain). Taxing this form of labour similarly to other forms (such as employee wages) should improve the efficiency of decisions as to how people choose to use their labour to earn income.
30. There could be transitional impacts for workers if the tax measures lead to structural shifts in the economy that re-allocate capital and labour across firms and industries. The net effect on employment would depend on the speed at which jobs change and workers can re-train.
31. Wages could be influenced to the extent that long-term labour productivity is affected (which will depend on impacts on investment and multifactor productivity). Greater investment and productivity would support higher real wages in the long term.

Short term

32. The short-term impacts on the labour market are expected to be minimal. Any short-term impact on aggregate demand could be expected to affect employment growth and wage growth.

Inflation

33. An ETCI would not be expected to have a long-term impact on the rate of general inflation. However, it would be expected to change relative prices including rental and asset prices. Changes in rents would affect the Consumer Price Index (CPI), whereas asset prices are not in the CPI basket. There could be a temporary increase in CPI inflation if rents rise in response to the tax changes. Possible impacts on rents are discussed in chapter 5.

Impact on share markets and interest rates

Long term

34. An ETCI could impact on share prices as a capital gains tax influences market participants' valuations and portfolio allocations. The value of shares in companies that are not publicly traded or likely to be acquired by non-residents and which earn currently untaxed capital gains should be lower than they otherwise would be. General values of publicly traded shares should be little changed as non-residents' buying and selling activity will play a large part in determining market values and the tax will not apply to them.

Short term

35. There could be a degree of volatility in financial markets around the time of a policy announcement as financial markets assess the implications of the policy affecting New Zealand equity prices and exchange rate. However, any volatility is likely to be short lived with limited implications for economic performance.
36. If policy induced changes to national saving, there could be impacts on interest rates. However, the change in tax settings are not expected to be significant enough to have a large effect.

Impact on financial system

37. Tax changes could, in principle, affect the financial system as changes in key financial prices (primarily asset prices) affect the demand and supply of credit, the risk characteristics of borrowers, and any direct impacts on financial institutions' tax liabilities.
38. An ETCI is unlikely to affect the soundness of the financial system. The New Zealand banking system has high profitability and strong liquidity and capital buffers. Stress tests of the major banks showed resilience to a scenario that included a severe recession and large falls in house prices.
39. Modelling often suggests taxing capital gains will reduce house prices, although under some assumptions it could increase house prices and data we have identified does not suggest it would not have a large impact in reducing prices. While a reduction in house prices could increase financial stress for some highly leveraged borrowers, a key determinant of default is whether borrowers can continue service their debt. Debt servicing largely depends on borrowers' income relative to mortgage payments, which will be largely unaffected by the tax changes.
40. The Reserve Bank of New Zealand monitors financial stability and implements prudential supervision and regulation to promote the soundness and efficiency of the financial system, and would consider the implications of any future developments.

Fiscal and macroeconomic effects

41. Changes to the tax system will impact on the level, composition and volatility of government revenue. The net fiscal impact on the Government's revenue, expenses,

budget balance, debt and net worth will depend on the overall package of tax measures and decisions of the government on how it uses any additional revenue.

42. An ETCI is expected to lead to increased tax revenue in the order of 1% of GDP after ten years. This will take time to build up and will be contingent on economic developments. If, for example, asset prices are falling following the period of an ETCI, there could be limited revenue (or even a fiscal cost if losses exceeded gains).
43. A tax on realised capital gains (and losses) would be a more volatile tax base than the current tax bases. Therefore, careful fiscal management will be required to manage the risks. The risks are manageable because the revenues from an ETCI are expected to be moderate compared to the size of the economy and total tax revenues.
44. Capital gains are generally correlated with economic activity. Therefore, tax revenues could fluctuate with the economic cycle to greater extent with an extension of the taxation of capital income. This would increase the ‘automatic stabilisers’ (see Box).
45. This means that in times of high economic activity, tax revenue rises, which automatically brakes the cyclical growth. When the economy is weak, tax revenue reduces (particularly when it comes to taxing capital gains) so lower taxation provides an automatic stimulus to the economy. In principle, larger automatic stabilisers would contribute to greater macroeconomic stability. However, there is a political-economy risk that revenue volatility will lead to offsetting discretionary fiscal policies, which could mean that policy exacerbates the economic cycle. For example, in an economic boom, the government may have temporary revenue windfall from an ETCI and be tempted to increase government spending or cut taxes. When the economy enters a downturn, capital gains tax revenues may be much reduced, leading to pressure for reductions in spending or higher taxes.

The tax system and the ‘automatic stabilisers’

The tax system policy can contribute to stabilising the economy through the ‘automatic stabilisers’ or discretionary fiscal measures.

The automatic stabilisers refer to tax revenues and government spending that are linked to the economic cycle. The tax system automatically helps to stabilise spending in the economy because when incomes fall (rise), taxes automatically fall (rise) because taxes are levied on income (absent any discretionary policy change that counteracts the automatic stabilisers). This provides more (less) money to households and firms than otherwise.

Automatic fiscal stabilisers are generally considered to be more effective for macroeconomic stabilisation than discretionary fiscal policy. The automatic stabilisers do not suffer from the information, decision, and implementation lags that often impair the timeliness of discretionary actions during normal business cycles (Blanchard, Giovanni, & Mauro, 2010).

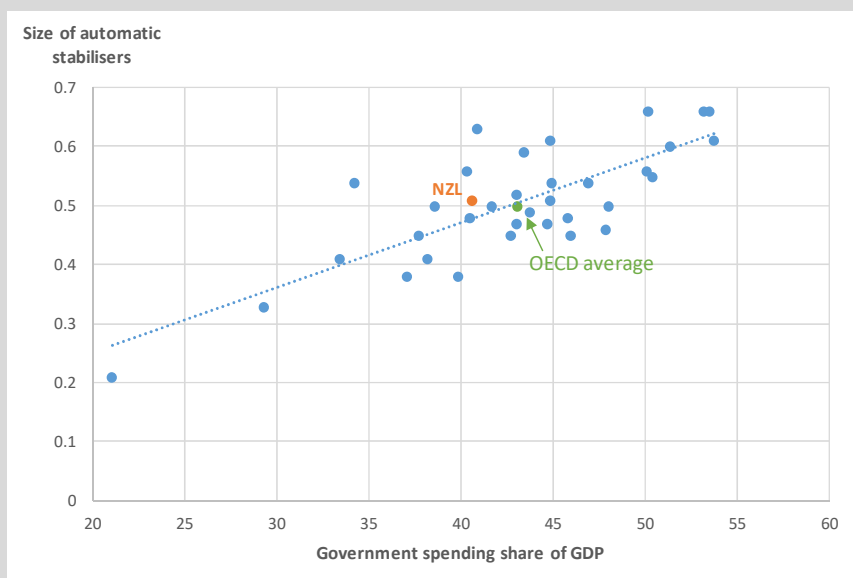
The size of the automatic stabilisers depends on the design of the tax and transfer system. There is a high correlation between the size of government and the size of the automatic stabilisers.

The size of automatic stabilisers is measured by estimating the sensitivity, or elasticity, of the budget balance to a reduction in the output gap (the output gap is the temporary deviation in real GDP from its potential level). For New Zealand, the budget balance is estimated to increase automatically by 0.5% of GDP for a 1% increase in the output gap (ie, an elasticity of 0.5).³ New Zealand's automatic stabilisers are estimated to be around the average for OECD economies (Figure 1). Different types of taxes have different sensitivities to the economic cycle – corporate income tax is estimated to be more sensitive than personal income and indirect taxes (Table 1).

An ETCI would make the budget balance more sensitive to asset prices, which can be volatile. The OECD has estimated the sensitivity of tax revenue to asset prices in OECD countries (Price & Dang, 2011). Unsurprisingly, New Zealand's tax revenue is not very sensitive to asset prices at present. Some countries' budget balances are found to be very sensitive to house price cycles, which can account for up to 3% of GDP in either direction: notably Ireland, the Netherlands, Spain, Italy and to a lesser extent the United Kingdom and Switzerland. Equity price cycles tend to have a smaller impact in almost all countries.

Asset price cycles are larger than, and correlated with, business cycles. Asset prices gaps (temporary deviation from an estimated fundamental value) are found to have larger effects on the budget balance than output gaps and, with a few exceptions, house and equity prices are found to have a counter-cyclical impact (Price & Dang, 2011).

Figure 1: Automatic stabilisers in OECD economies



Source: OECD

³ Based on elasticity estimates from the OECD (Price, Dang, & Botev, 2015). These elasticity estimates are used by the Treasury to estimate the cyclically-adjusted budget balance in *Economic and Fiscal Updates*.

Table 1: Elasticity of revenue, expenditure and budget balance with respect to the output gap

Component of budget balance	New Zealand	OECD average
Corporate income tax	2.4	2.1
GST	1.3	1.2
Personal income tax	1.2	1.8
Other indirect tax	1.0	1.0
Social security contributions	-	0.7
Total revenue (weighted average)	1.1	1.1
Expenditure	-0.2	-0.1
Budget balance	0.5	0.5

Source: OECD

4. Transactional efficiency issues

Lock-in and rollovers

46. “Lock-in” is one of the most commonly discussed efficiency costs of an extension of the taxation of capital income. Because a sale of an asset will trigger a tax liability, taxpayers will have an incentive to defer a sale. Deferring the tax will reduce its cost in present value terms. A realisation based tax could also stop taxpayers from selling an asset to reinvest in a similar asset, because the taxpayer would have only post-tax proceeds to reinvest, so the taxpayer would then have a less valuable asset (unless additional funds are provided for the purchase).
47. There have been many empirical studies of the significance of lock-in, and while some have found that lock-in does not appear to be much of an issue in particular areas (e.g. with respect to the ownership and sale of portfolio shares) other, more recent studies have found real effects.
48. In its 2010 report, *A Tax System for New Zealand’s Future*, the Tax Working Group questioned the extent to which the lock-in effect actually occurs in practice:

The extent to which lock-in actually occurs in practice is much less clear. According to Burman and White (2003), the literature indicates that lock-in may not be as much of a problem as is often suggested. For example, if lock-in was a significant issue, then asset realisations would be very sensitive to the rate of tax. However, studies from the United States have found that gains are not very sensitive to tax rates (Auerbach 1989). Burman and Randolph (1994) explore responses to permanent and temporary changes in tax rates on capital: they find that permanent changes in tax rates have little or no effect on realisations, whereas there may be a large response to temporary rate changes.
(Victoria University of Wellington Tax Working Group, 2010)
49. However, in the Secretariat’s view, a number of recent studies suggest that lock-in effects may be significant. For example, a more recent paper re-examines the United States study of Burman and Randolph and updates it using more recent data and improved ways of filtering the data. It finds strong, permanent lock-in effects for individuals in the United States (Dowd, McClelland, & Muthitacharoen, 2015).
50. The lock-in effects will depend to a large extent on design features. The United States allows rollover of assets with a step-up basis at death which means that no capital gains tax at all ends up being levied on gains that are passed on as an inheritance. This may be increasing lock in.
51. There are other studies that have considered the effects of capital gains taxes on mergers and acquisitions and found that they may have a significant effect in discouraging this activity (Ayers, Lefanowicz, & Robinson, 2003) and (Feld, Ruf, Schreiber, Todtenhaupt, & Voget, 2016).
52. “Rollovers” are common provisions in capital gains tax systems which defer a tax otherwise resulting from a sale in some situations. The potential gain is preserved by deeming the cost base of the asset (transferred to another person) or the replacement

asset of the selling taxpayer, to be the same as the cost base of the transferred asset. Rollovers may be motivated for different reasons. These include:

- *Fairness*: A rollover can be created because it is considered unfair for a taxpayer to pay tax because of an involuntary disposal such as an insurance payment for property destruction.
- *Tax base protection*: For example, losses on the sale of property to an associated person may be rolled over to prevent artificial realisation of losses.
- *Efficiency*: Where the impact of lock-in may be viewed as particularly costly.

53. An efficiency-motivated rollover proposed with an ETCI is a rollover for business restructuring which may transfer assets among different entities within a commonly-owned group. For example, there could be rollover for a taxpayer who contributes an asset to a company in exchange for 100% of its shares (incorporation of a new company) or by a shareholder that already owns 100% of the shares (a contribution of capital). The reason for rollover in these situations is that without it the restructuring might not happen (since the taxpayer does not want to dispose of the asset, but rather shift it around among controlled companies, it might be particularly reluctant to do this if there were a significant tax cost). But if the restructuring will help the taxpayer operate its business more efficiently, why should the tax system prevent this?

54. There are benefits and costs to rollovers. A benefit of rollover provisions is short-term alleviation of lock-in which allows people to keep or transfer assets as they deem fit without the tax system interfering with this.

55. A cost of rollover includes lost revenue for the government as the longer tax is deferred the less value it has when collected. Another cost is ultimately higher lock-in effects, as the accumulated untaxed capital gain grows larger it becomes a higher cost to an ultimate disposal that is not subject to rollover.

56. Rollover on death (and gifts and generation-skipping transfers in trusts) may have adverse effects on family wealth inequality. As tax on appreciation of family wealth may be deferred for very long periods, family wealth inequality may grow compared to the situation of tax on death with few allowances for rollovers.

Loss ringfencing and neutrality

57. When there is uncertainty about the future path of asset prices, symmetric treatment of gains and losses means that the government shares in the risk of investments. Currently, this happens when gains and losses are on revenue account, but not when gains and losses are on capital account.

58. If capital gains are taxed but capital losses are ringfenced, then there will be an asymmetry in the treatment of gains and losses and this will tend to make the tax system less neutral.

59. The question of capital loss ring fencing is connected to the question of rollover relief. If rollover relief is extensive, taxpayers have the option of deferring gains (by rolling

“winners” over), and accelerating losses (by selling “losers”). To prevent abuse, countries generally introduce capital loss ringfencing if rollovers are extensive. The result is a system that may discourage risky but potentially high expected return investments. This is a very important design consideration, because some of the efficiency benefits from taxing capital income more neutrally can be reduced or reversed if capital loss ring fencing is extensive.

5. Sectoral and incidence analysis

60. This chapter provides a description of how ETCI may effect a number of sectors in the economy. Most discussion is on the housing market. Also discussed more briefly are effects on agriculture, commercial property, and start-ups and innovation.

The housing market

61. The impact of ETCI on the housing market is complicated by the fact that the tax would apply to the sale of rental properties but not owner-occupied housing. As an aid to understanding how the tax may impact housing, the Secretariat has commissioned modelling from Andrew Coleman and Andrew Binning, and has also reviewed some other models. These models help us to understand channels of impacts and possible general directions of trends, but indications of precise outcomes should be taken with a high level of caution given the inherent oversimplification of models and the interaction of many real influences that cannot be incorporated into a workable model.
62. There has been relatively little modelling in New Zealand of the likely effects on the housing market of extending the taxation of capital income (ETCI). There has been considerable international modelling of the effects of taxes on housing decisions. Examples include (Follain, Hendershott, & Ling, 1992) (Poterba, 1984) (Poterba, 1990) (Poterba, 1992) (Sommer & Sullivan, 2018). These have focused on the effect of different tax rules on owner-occupied as well as rental housing.
63. Although the Coleman/Binning modelling was based on a tax on capital gains, other ways of increasing the effective tax rate on rental property (such as RFRM) would be expected to have a similar impact. Allowing depreciation of residential buildings would tend to reduce tax burden on rental property investment, and should reduce the magnitude of these changes. Removal of loss ringfencing should also mitigate against these trends.

Model commissioned by Secretariat

64. The Secretariat commissioned Andrew Coleman (University of Otago), in conjunction with Andrew Binning (New Zealand Treasury), to model the long-term economic effects of an ETCI in the housing market. This work is based on an economic model that has been previously published by Andrew Coleman. A paper by Andrew Coleman and Andrew Binning is attached as Appendix A.
65. Models to analyse complex issues like the effects of taxes on housing markets and rents are necessarily highly stylised. The commissioned model assumes that prior to an ETCI being introduced, taxpayers base decisions on the tax rules at that time and behave as if they believe these will continue forever. After an ETCI is introduced, taxpayers base their decisions on the new tax rules in place and behave as if they believe these will continue forever.

66. The model was used to estimate the effects of introducing a capital gains tax if the only source of capital gains is inflation at a rate of 2% per annum. We have not been able so far to model the situation where there is also a 1% real capital gain⁴. Key conclusions of the model are as follows:

- The effects of ETCI will depend on the interactions in the demand and supply of different types of assets, different qualities of housing and in the choice between owning and renting accommodation. The model simulates the behaviour of many households (differing in age, wealth, income and gender) over multiple generations. The effects of ETCI on the housing market are highly uncertain given this complexity and the requirement to provide parameters that cover all this behaviour.
- An ETCI will increase the ratio of rents to the price of rental housing. This is necessary in order for landlords to continue to be willing to invest in rental property.
- An ETCI on landlords would increase rents and homeownership rates in the long run. Depending on assumptions the model suggests an increase in rents, and a decrease in home ownership rates.
- The price of housing *increases* slightly. From our understanding of the model, this is driven by the fact that rented housing typically has more people per dwelling than owner occupied housing. When fewer houses are rented, this means that more houses in total are required which puts upward pressure on property prices for all housing. Because none of the tax would be ultimately borne by owners of rental property and all of the tax would be passed on in higher rents, the impact of the tax on the housing market would be regressive if the model is accurate.

67. While the modelling is useful in drawing out more sophisticated channels by which tax changes can affect prices and rents, the Secretariat does not consider that the headline changes in rents and prices (in particular) are a precise (or even accurate) reflection of what is likely to happen in the real world. The main reasons are that:

- The model (like most models) assumes that tax changes are completely unpredicted until they are made, at which point they are predicted to be permanent. In practice, expectations of the future may be much vaguer than this and this may moderate the effects of any tax changes.
- Some rental properties are already subject to tax on gains when sold (for example under the bright-line test). This is not incorporated into the model and would temper the results.
- If rents do increase and this causes some people to move to owner occupied housing, there are a number of decisions that households can make which may affect whether total demand for houses increases or not. The fact that there are

⁴ This is the real capital gain forecast in the Budget Economic and Fiscal Update 2018 and is the rate of real capital gain we are assuming in our revenue estimates.

more people per dwelling in rented houses at present does not necessarily mean that total demand for housing will increase.

- Empirical data, discussed below, suggests that other changes in the market are likely to swamp any effects from tax changes.
- The model is a ‘certainty model’. This means it assumes that the price of all houses increase at the same real rate. In practice, houses may sometimes generate gains and at other times generate losses. The ETCI that is being designed will not only tax any gains but also allow deductions for losses. By doing so, the risk-absorbing nature reduces the expected cost for landlords.

Westpac model

68. (Stephens, 2018) also modelled the effects of ETCI on the housing market. This estimates the effects of changes in tax parameter on the rent to price ratio in a very similar way to the Coleman/Binning modelling work commissioned by the Secretariat. It is, however, a very much simpler “single equation model” which does not have any of the general equilibrium analysis in the model commissioned by the Secretariat. Thus, it has no way of estimating how much of any change in the rent to price ratio is going to be from a change in rents and how much is to be from a change in price. It assumes that one-third is a change in rents and two-thirds is a change in price.
69. As in the Coleman/Binning model, it is assumed that the marginal investor in rental housing is someone on a 33% marginal rate who borrows to invest.
70. The results of Westpac model are in the table below. The key result is that ETCI applied at a 10% rate would reduce house prices by 10.9% and increase rents by 5.5%.

Table 1: Westpac model assumptions and results

Parameter	Westpac model
real rate of capital gain (g)	1.5%
inflation (r)	2.0%
ETCI rate (tc)	10.0%
marginal tax rate (t)	33.0%
interest rate (i)	5.25%
risk premium ⁵ (f)	1.45%
cost of maintaining property (m)	\$10,932
initial annual rent (R0)	\$23,200
initial house value (V0)	\$560,000
adjustment impact on house price versus rental price	1/3 rental, 2/3 house price
after ETCI annual rent (R1)	\$24,476 (+5.5%)
after ETCI house value (V1)	\$498,960 (-10.9%)

71. The Westpac model assumes that ETCI tax rate is 10 percent. If the modelling had assumed ETCI is applied at a full marginal tax rate of 33%, it would find that house prices would fall by 28.5% and rents rise by 14.7%.
72. The Coleman model and the Westpac model both estimate an increase in rents but they have different estimates of the effect on prices with Westpac suggesting a substantial fall while the Coleman model suggesting a slight increase in prices. In the Westpac model, however, the split between increasing rents and falling prices is set by assumption rather than being derived from the model.

Other models

73. There has been other analysis as well. For example (Coleman & Scobie, 2009) provide a model of housing rental and ownership in which additional taxes on landlords would lead to an increase in rents and a fall in prices in the short to medium term with an larger increase in rents and no change in prices in the longer term.

Conclusion on models

74. In all of the models discussed above:

- the price-to-rent ratio (which determines part of the pre-tax return on rental property investment) fall;
- real rents rise; and
- real house prices either rise slightly (Coleman model) or fall (Stephens model) but if they increase, they increase less rapidly than real rents.

⁵ This term is a catchall term that captures things like rates, insurance, maintenance, property manager's fees etc. In the Stephens model, the items that are tax deductible are captured by the cost of maintaining property term.

75. Because of the highly stylised nature of the models, the Secretariat considers that the models should not be relied on for precise estimates of the size of the changes in rents and house prices that are likely to occur if extending the taxation of capital income is introduced in New Zealand. The very large increases in rents predicted by the models seem big compared to what has happened in New Zealand when it cut personal tax rates and eliminated building depreciation in 2011 or in other countries when they have introduced capital gains taxes as is discussed further below. At the same time the Secretariat accepts (even though it is not evident in the data presented below) that the tax is likely to put upward pressure on the rent to price ratio.

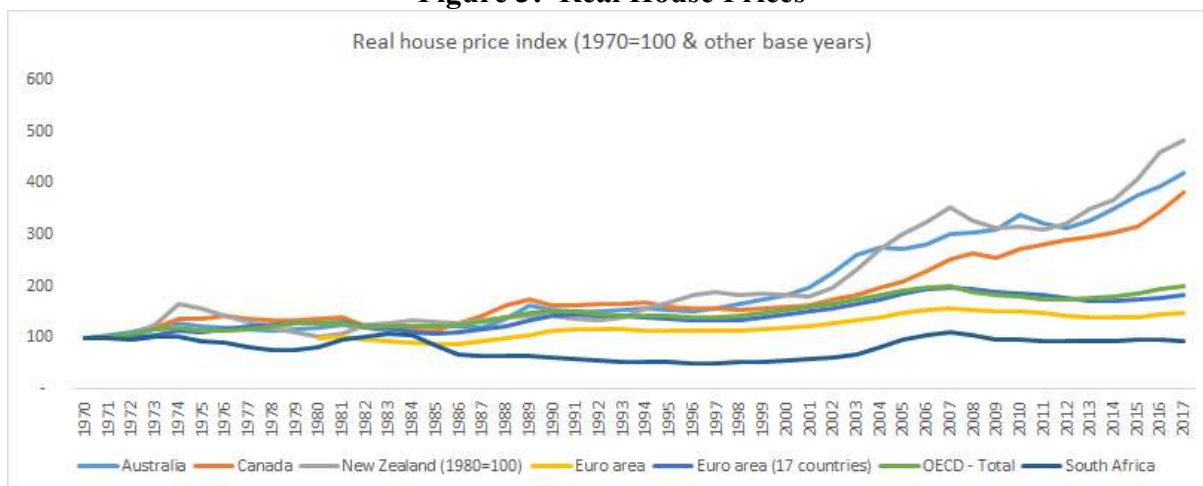
Empirical data

76. Some empirical data is available to show what happened when taxes on capital gains were introduced in Canada (1972), Australia (1985), and South Africa (2001). We can also observe what happened when building depreciation was removed and personal tax rates reduced in New Zealand in 2011. This is not a sophisticated analysis but allows us to eyeball whether tax changes are having obvious and large effects.

77. The stylised models we have discussed are suggesting substantial increases in the rent to price ratio and in real rents. We therefore examined whether there was evidence of this from international data.

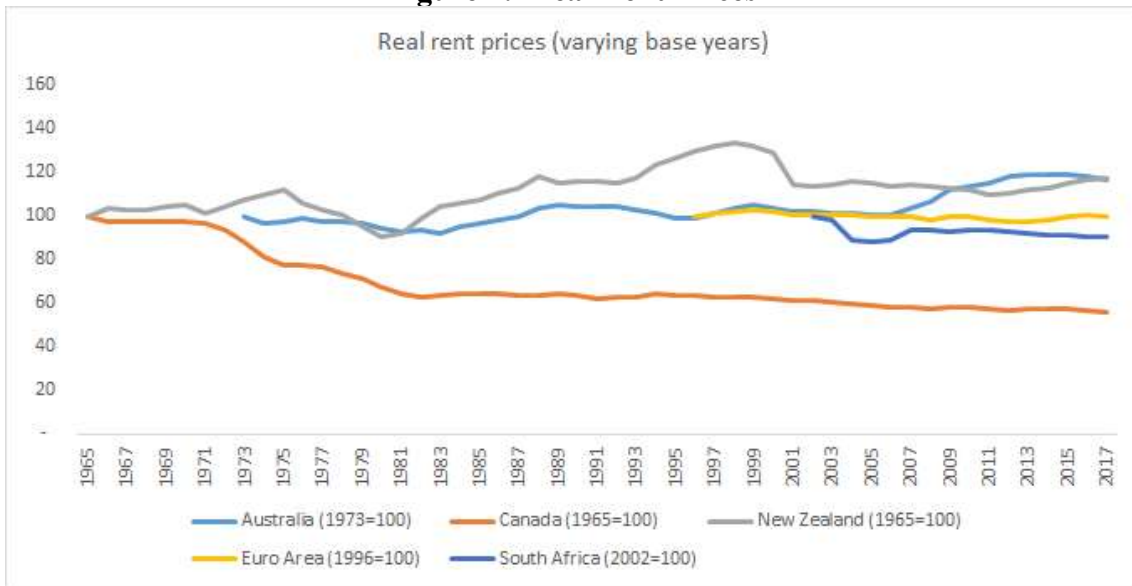
78. Using comparative data from the OECD (on housing prices, rents and inflation) the picture from selected countries and the OECD are as follows:

Figure 3: Real House Prices



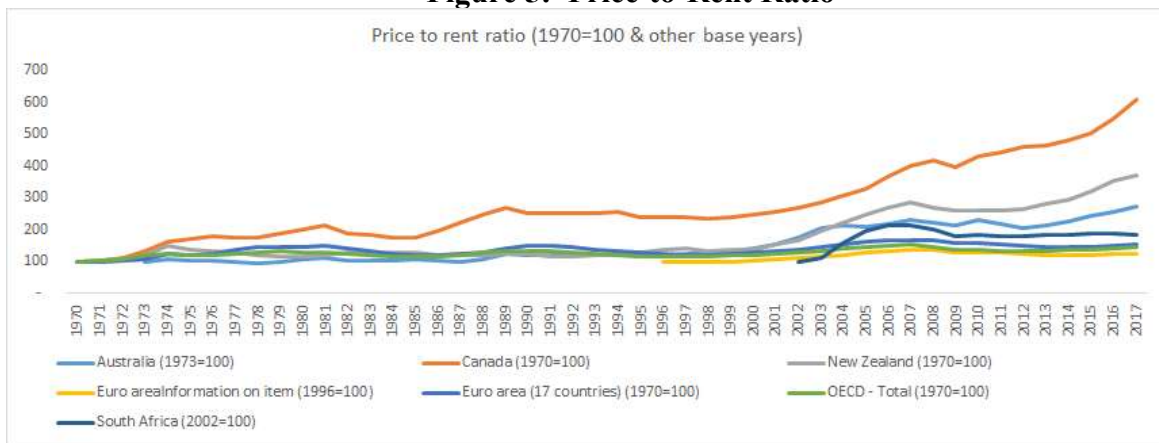
Source: OECD and subsequent Secretariat analysis

Figure 4: Real Rent Prices



Source: OECD and subsequent Secretariat analysis

Figure 5: Price-to-Rent Ratio⁶

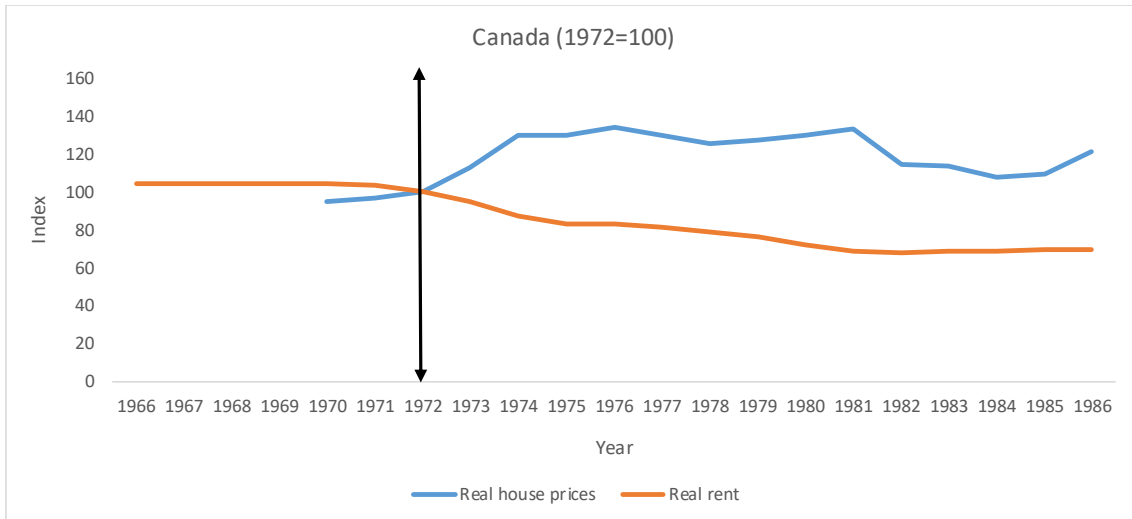


Source: OECD and subsequent Secretariat analysis

79. The following graphs show movements in real house prices and rents for a number of countries for the years before and after they increased the tax on rental properties (subject to data availability):

⁶ Economists and modellers usually use the term rent-to-price ratio, while the OECD publishes the price-to-rent ratio, which is the inverse. An increase in the rent-to-price ratio is equivalent to a reduction in the price-to-rent ratio.

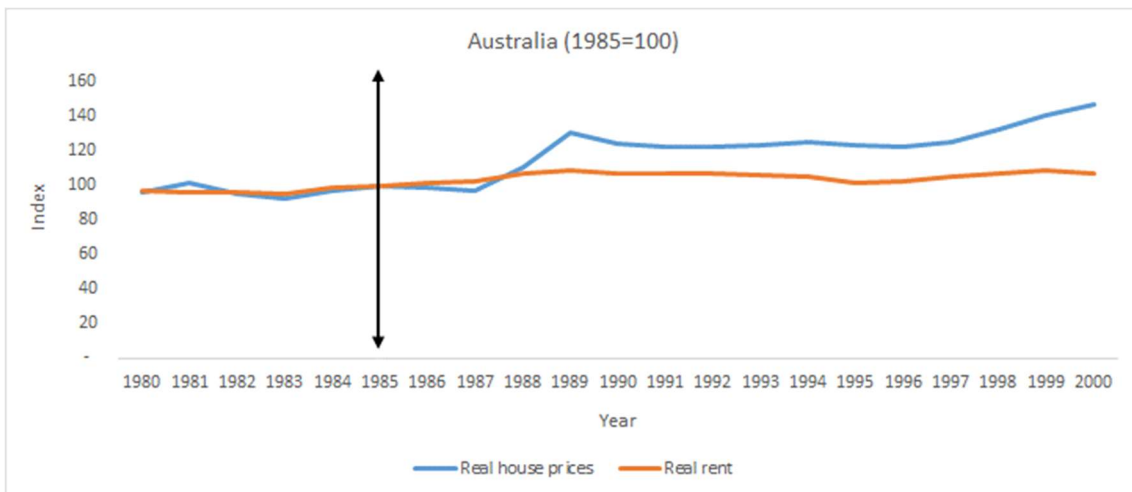
Figure 6: Canada – Capital Gains Tax effective 1972



Source: OECD and subsequent Secretariat analysis

80. It should be noted that Canada introduced rent controls in the 1970s, which were repealed in the 1980s, resulting in reductions in real rents.

Figure 7: Australia – Capital Gains Tax effective 1985

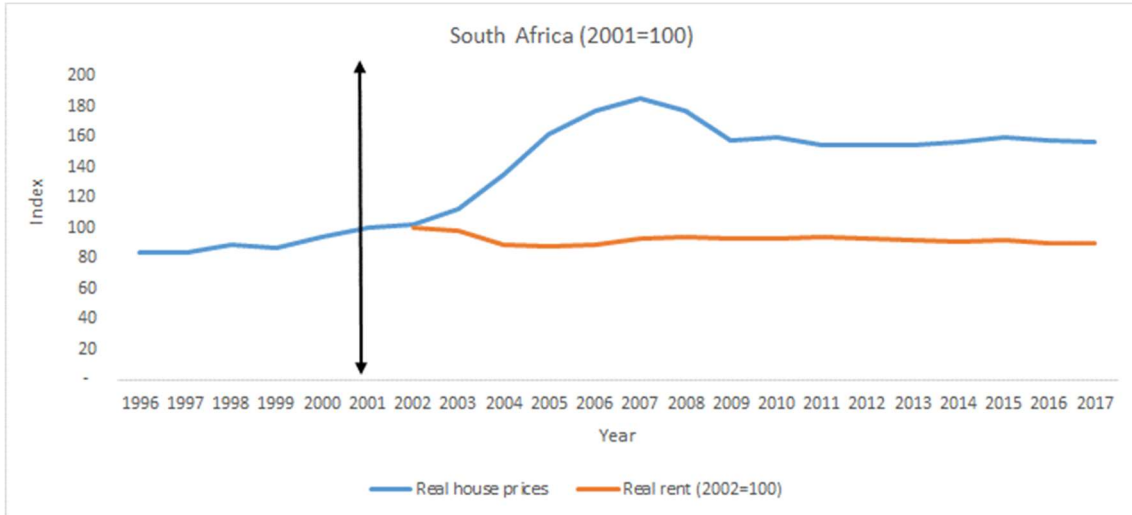


Source: OECD and subsequent Secretariat analysis

81. In Australia, a capital gains tax was announced in 1983 and became effective in 1985. However, there was no noticeable change in housing prices until 1987. This was when restrictions on negative gearing (loss ringfencing) were removed and that may or may not have been a contributing factor. The data does not suggest that rents were affected by either policy. A complicating factor when considering the Australian

capital gains tax was that existing assets were grandfathered and so it may have been slow to take effect.

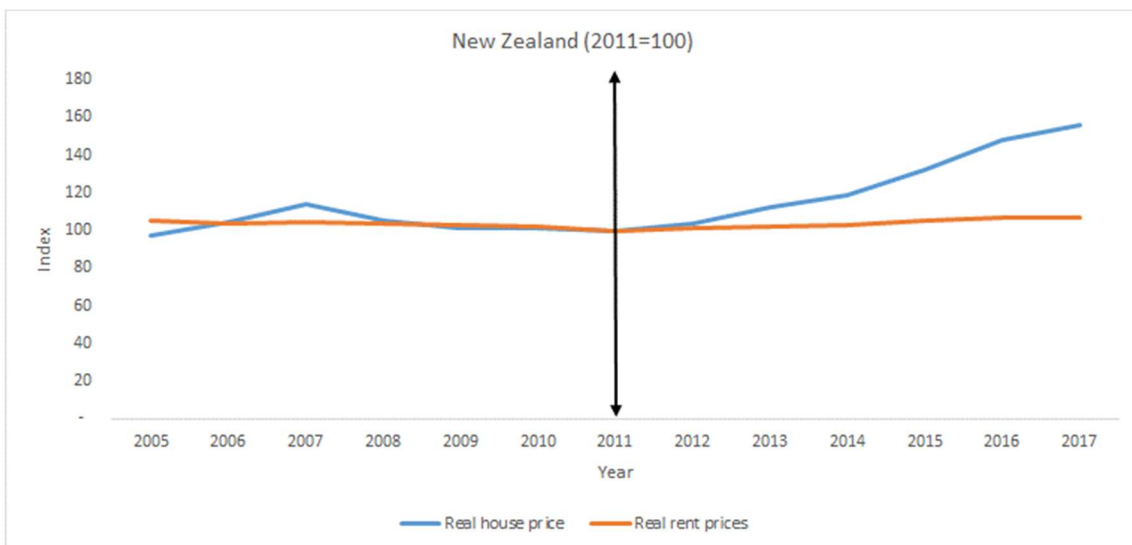
Figure 8: South Africa – Capital Gains Tax effective from 2001



Source: OECD and subsequent Secretariat analysis

82. In South Africa, there does not appear to be much change in real rents, while there is an appreciation in the real price of housing after the introduction of a capital gains tax. We are not aware of any other policy changes or economic conditions that would have had a significant impact on rents and prices.

Figure 9: New Zealand removal of building depreciation and reduction in tax rates from 2011



Source: OECD and subsequent Secretariat analysis

83. The removal of building depreciation and reduction of income tax rates would both have a predicted outcome of real rents rising, and house prices either falling or rising slightly.
84. There is no evidence from this data that when taxes on investment property have been imposed, there has been large and concerning increases in the rent to price ratio or large increases in the levels of rents. Indeed in most cases the rent-to-price ratio moved in the opposite direction from the changes predicted by most models. There is little evidence of rents being affected by the change, and prices tend to increase, although it is not clear that this is due to the policy change, or other policy changes, or is coincidental. It seems likely that tax effects on these variable are small compared to the effects of other things happening in the economy. There is no obvious evidence for concerns that the tax changes have been regressive because they have pushed up rents significantly.

Transitional / Cyclical impacts

85. When a policy such as ETCI is proposed, it is often assumed that some asset classes such a real property almost continuously appreciate. Of course, that is not always true, as the property market is cyclical and is subject to (sometimes deep) cyclical downturns.
86. If an ETCI were to come into effect while property prices were appreciating, then it should operate as generally predicted, with it being an additional cost to investing in rental property and so reducing its attractiveness as an asset class. This should reduce demand from property investors and, according to usual modelling, reduce price pressures on housing (although under assumptions in the Coleman model, a difference in dwelling tenant density could actually increase price pressures). Empirical evidence suggests changes resulting from the tax change alone are likely to be overwhelmed by other factors causing price and rent changes.
87. If an ETCI comes into effect when prices have peaked and are starting on a cyclical downward path, the tax operates as a subsidy reducing the investor's capital loss. This could reduce an investor's reluctance to purchase rental property if expectations of future price movements are uncertain. This is especially true if there is no ringfencing for losses on real property investments. There would be a fiscal cost and could make the tax overall negative for revenue for a period of time.
88. If instead of an ETCI there were an RFRM, the tax coming into effect at the top of the market would have a harsher impact of tending to deter property investors more than a ETCI and contribute to downward pressures on the housing market.

Commercial property investment

89. The value of commercial property investments, including through companies or trusts that are commercial property investment vehicles, are likely to fall as a result of

introducing ETCI. On the other hand, allowing building depreciation is likely to have the opposite effect. The overall outcome would depend on investors' perceptions of the relative benefits and costs of each policy considering factors such as the length of time before a property is expected to be sold and therefore attract additional tax.

90. Many commercial property investments are owned by public companies. The share price of such companies would be expected to fall when a reform to tax realised gains is announced, except to the extent the public were already expecting such a policy change and so had already factored it into the share price.
91. We have briefly reviewed indices for commercial property for Canada, South Africa, and Australia at the times they introduced their capital gains taxes. It is difficult to draw definitive conclusions from this data; however they do not provide evidence of clear price effects resulting from the introduction of capital gains taxes. Commercial property prices fell markedly in the late 1980s in Australia, but this also occurred in New Zealand at the same time, and was generally as a consequence of the 1987 share market crash and later recession. Price growth of South African office property buildings slowed in the years after the introduction of their capital gains tax, but was always positive and above 5% p.a, until 2004, when price increases were very high at ~25%.

Rural and agricultural investment

92. An ETCI is likely to reduce the value of farms compared to the continuation of status quo policies except to the extent that some expectation of such a tax is already incorporated in market expectations. There is likely to be little ability for farmers to be able to respond to the tax by charging higher prices as prices for their products will often be set on world markets. However, as the tax is not due until the farm is sold, it should not impose a current cost on farmers in terms of cash flow. The CAANZ Rural Advisory Committee has included in its submission estimates of farming profit from surveys of beef and lamb farms that show the addition of a capital gains tax would put their overall farming business in a net loss in some cases (although presumably no tax would be due if there were net losses from operations being carried forward, or if the capital gain were large enough to more than absorb all of the losses, then there would be an actual total profit for the business).
93. We have briefly reviewed an index for farm prices in Canada and South African data on the value of land and fixed improvements on commercial farms at the times they introduced their capital gains taxes (we have not located an Australian farm price index going back to the date of their capital gains tax).
94. The Canadian index shows no noticeable change around the time of introduction, with price growth increasing from around 1975⁷ (the capital gains tax was instituted in 1972). There is also no noticeable change in South Africa at the time of the introduction of their capital gains tax (2001), with prices increasing steadily from 1980 until now.

⁷ Source: Statistics Canada

Māori business

95. In general, Māori freehold land may be less exposed to ETCI due to Māori values of taonga tuku iho and the intergenerational objectives of Māori entities, Te Ture Whenua Māori legislation also restricts collectively owned Māori freehold land from being easily transferred on the open market. However, settlement assets, Tenths Trusts, and Māori collectively owned forestry (e.g., CNI) will be exposed in the application of extending the taxation of capital income. The Secretariat is preparing an assessment on the impacts of extending the taxation of capital income to Māori entities and various collectively owned asset types. The Secretariat will report to the Group on this later.

Start-ups, innovation, and intellectual property

96. An ETCI should have a generally neutral impact on early stage investment into start-ups. This is for three reasons:

- Submitters suggest that investors invest in a portfolio of at least 20 start-ups (and individual investors will typically only invest 5% to 10% of their overall investment portfolio into start-ups)⁸. Most of these start-ups will be unsuccessful and will generate capital losses which can be utilised by investors to offset capital gains in their wider investment portfolio. Start-ups are also designed to generate very high returns if they are successful, which means that the potential returns to founders and early-stage investors will still be very high, even if these gains are subject to ETCI.
- The current capital / revenue boundary is uncertain and can apply unevenly. In particular, the existing tax rules may already impose income tax on certain gains made by venture capital fund managers and employee shares owned by start-up employees. In this regard, the introduction of ETCI could provide greater certainty and consistency of tax treatment, as most capital gains would be subject to tax, not just some gains from start-ups.
- Any gains made by foreign investors who sell shares in New Zealand start-ups would not be subject to New Zealand's ETCI (see the earlier section on inbound investment). Foreign investment is important for the growth of New Zealand start-ups due to the small size of our early-stage capital markets and due to the expertise and opportunities that foreign investors can bring with their investment.

97. In their submission to the Tax Working Group, the *Angel Association New Zealand* (which represents start-up investors) concluded that:

“a well-designed capital gains tax policy, which includes property, together with a carefully defined and described high growth start-up ecosystem and its ventures,

⁸ Angel Association New Zealand submission to the Tax Working Group

would see resources channelled more efficiently and purposefully to support the success of these high risk, but high impact ventures. A capital gains tax, and a corresponding offset for capital losses, would allow early stage investors some respite from the inevitable failure of early stage investment.”

98. An ETCI would apply to intellectual property (IP) that is sold by New Zealand businesses. However, the impact of ETCI on IP may not be particularly relevant for innovative businesses because:
- The sale of patents is already subject to income tax in New Zealand⁹.
 - Start-ups are more likely to sell the entire business, rather than selling their IP or assets.
 - Larger and more mature businesses usually try to retain valuable IP in order to generate revenues from it, rather than sell their own IP.
99. The proposed introduction of an R&D tax concession will subsidise business R&D that is performed in New Zealand. In this context, an ETCI may help to ensure that the Government shares in the additional returns from R&D as an ETCI would apply to the sale of start-ups or IP that was generated as a result of the R&D subsidy.
100. Allowing start-up companies to retain their loss carryforwards when they accept additional capital or are sold to new investors who will develop their ideas will also help provide an encouraging environment for start-ups and innovation.

⁹ Income Tax Act, section CB 30.

6. Fiscal consequences

101. This chapter outlines the forecast fiscal consequence of ETCI alone and together with other policy changes that could modify or be in addition to ETCI. These are:
- Repeal of rental loss ringfencing from the commencement of ETCI;
 - An option to replace FDR on foreign shares with ETCI on foreign shares; and
 - An option to apply RFRM to residential investment property instead of ETCI.
102. A costing for reintroducing building depreciation deductions will also be provided to the Group when it is ready. The cost of reinstating building depreciation will be less when done in combination with ETCI than if it were done on its own. This is because the depreciation deductions increase the gain on sale when the building is sold, as depreciation is a negative adjustment to the cost base which is deductible in the year of sale. This will be most significant in outer years as properties with higher accumulated depreciation are sold.
103. All the costings are sensitive to assumptions, some of which are very uncertain. One of the most significant assumptions is the rate of appreciation of property, as this is variable and uncertain and, given the size of the base of properties sold each year, could lead to a large variation in actual revenues. Assumptions and risks to the ETCI costings are provided in Appendix B. The Secretariat is continuing to refine the estimates and update with more recent data as it becomes available.

Item 1: Extending the taxation of capital income (ETCI)

Description

104. Gain in the value of certain property will be taxed when they are sold. These are business and investment assets (not including shares in foreign companies (other than Australian companies) except in the variation for replacing FDR with ETCI) and real property (not including owner-occupied housing). Due to data limitations, the costing will incorporate expected revenues from only the following categories of assets:
- Residential investment property;
 - Commercial, industrial, and agricultural property;
 - Shares in New Zealand companies.
105. The tax is treated as if it comes into effect on 1 April 2021 and use the “valuation day” transition method (all sales made on or after the effective date are subject to tax, but only with respect to gains in value from the effective date). Property is assumed to appreciate by 3% per year.
106. Details of the policy such as loss restrictions, rollovers, and deemed disposals are not taken into account since there is no information to base an accurate assumption. As the appreciation assumption is an economy-wide net appreciation assumption for each category of asset, that implicitly is incorporating deductions for all losses as they

are realised (but disregarding any behavioural incentives to realise losses more frequently than to realise gains).

107. More information on the methodology for calculating the forecast and risks and caveats are provided in Appendix B.

Tax revenue (\$m)	Year 1 2021-22	Year 2 2022-23	Year 3 2023-24	Year 4 2024-25	Year 5 2025-26	Year 6 2026-27	Year 7 2027-28	Year 8 2028-29	Year 9 2029-30	Year 10 2030-31
All residential land, excluding the family home	50	170	330	530	770	1,020	1,300	1,600	1,910	2,240
Commercial, industrial and other land	50	120	230	360	520	690	900	1,120	1,360	1,620
Rural land	30	70	140	220	310	400	510	610	730	840
Domestic shares	160	500	1,030	1,060	1,090	1,120	1,160	1,190	1,230	1,260
Total	290	860	1,730	2,170	2,680	3,250	3,860	4,520	5,220	5,960

Item 2: Repeal rental loss ringfencing

Description

108. Rental loss ringfencing is removed from 1 April 2021, to coincide with implementation of ETCI. Accumulated losses are released in the first year, resulting in a large one-off impact in 2021-22. The revenue forecast is calculated by making adjustments to the current revenue forecasts for loss ringfencing.

Tax revenue (\$m)	Year 1 2021-22	Year 2 2022-23	Year 3 2023-24	Year 4 2024-25	Year 5 2025-26	Year 6 2026-27	Year 7 2027-28	Year 8 2028-29	Year 9 2029-30	Year 10 2030-31
Fiscal impact of removing residential loss ring-fencing	(570)	(190)	(190)	(190)	(190)	(190)	(190)	(190)	(190)	(190)

Item 3: Changes to the fair dividend rate (FDR) for foreign shares

Description

109. The fair dividend rate (FDR) method taxes owners of foreign (non-New Zealand and non-Australian) shares on a deemed return of 5% of the opening value of the shares, regardless of the actual return in dividends and capital gains. It is similar to an RFRM in taxing on a deemed return basis, but the rate used is high compared to the risk-free rate that is considered to be efficient and neutral as a deemed rate for tax purposes. The following costings are for potential changes to the FDR on foreign shares:

- Repeal the FDR on foreign shares and instead tax them on dividends and ETCI; or
- Continue FDR as is, or change the FDR rate to one that is closer to what an RFRM rate should be. The options are reducing the FDR rate to 3.5% (the rate

previously suggested to apply to RFRM), 2.7% (the yield on the 10 year government bond rate) or 1.8% (the yield on the 2 year government bond rate).

110. For purposes of the costing, foreign shares are assumed to appreciate at 5% per year and have a 2.4% annual dividend yield (the 20 year average for the Morgan-Stanley Capital Index).
111. The costing are changes compared to current baselines:

Tax revenue (\$m)	Year 1 2021-22	Year 2 2022-23	Year 3 2023-24	Year 4 2024-25	Year 5 2025-26	Year 6 2026-27	Year 7 2027-28	Year 8 2028-29	Year 9 2029-30	Year 10 2030-31
Fiscal impact of replacing FDR with ETCI	(170)	140	480	500	530	560	580	610	640	680
Fiscal impact of reducing FDR to 3.5%	(270)	(290)	(300)	(320)	(330)	(350)	(360)	(380)	(400)	(420)
Fiscal impact of reducing FDR to 2.7%	(420)	(440)	(460)	(480)	(510)	(530)	(560)	(590)	(620)	(650)
Fiscal impact of reducing FDR to 1.8%	(580)	(610)	(640)	(670)	(710)	(740)	(780)	(820)	(860)	(900)

Item 4: Replace ETCI with RFRM for residential investment property

Description

112. This option would apply RFRM to residential investment property instead of ETCI. The RFRM costings are given for three RFRM deemed income rates: 3.5% (as previously costed), and 2.7% and 1.8% as given above for FDR.
113. The RFRM costings are as per those given with *Housing Affordability* paper and are given for a low gearing (30% assumed gearing) and high gearing (60% assumed gearing) assumptions.
114. The costings given are as compared to inclusion in the ETCI base and not as compared to current baselines.

Assuming 30% debt levels

Tax revenue (\$m)	Year 1 2021-22	Year 2 2022-23	Year 3 2023-24	Year 4 2024-25	Year 5 2025-26	Year 6 2026-27	Year 7 2027-28	Year 8 2028-29	Year 9 2029-30	Year 10 2030-31
RFRM revenue relative to extending taxation of capital income on residential rentals, 3.5% rate	1,570	1,550	1,480	1,390	1,270	1,130	980	810	640	470
RFRM revenue relative to extending taxation of capital income on residential rentals, 2.7% rate	1,050	1,000	910	780	620	450	250	50	(170)	(390)
RFRM revenue relative to extending taxation of capital income on residential rentals, 1.8% rate	480	390	260	90	(100)	(320)	(560)	(810)	(1,080)	(1,350)

Assuming 60% debt levels

Tax revenue (\$m)	Year 1 2021-22	Year 2 2022-23	Year 3 2023-24	Year 4 2024-25	Year 5 2025-26	Year 6 2026-27	Year 7 2027-28	Year 8 2028-29	Year 9 2029-30	Year 10 2030-31
RFRM revenue relative to extending taxation of capital income on residential rentals, 3.5% rate	610	530	400	250	60	(150)	(380)	(620)	(880)	(1,140)
RFRM revenue relative to extending taxation of capital income on residential rentals, 2.7% rate	310	220	80	(100)	(310)	(540)	(790)	(1,060)	(1,340)	(1,630)
RFRM revenue relative to extending taxation of capital income on residential rentals, 1.8% rate	(20)	(130)	(290)	(490)	(720)	(980)	(1,260)	(1,550)	(1,860)	(2,180)

Appendix A: Model of housing market commissioned by Secretariat

A description of the model by Andrew Coleman and Andrew Binning follows from the next page.

Capital gains taxes and residential housing markets

Andrew Binning and Andrew Coleman

July 6 2018

1. Introduction

The effects of a capital gains tax on residential property are complicated. This is because the residential property sector has large owner-occupied and rental components, which are taxed differently, and property markets differ in terms of the ease with which new properties can be constructed. As these factors vary across regions a capital gains tax may have one effect in one region and a different effect in another. Moreover, the effect of taxing real capital gains are quite different to the effects of taxing capital gains that stem from generalised inflation so it matters whether nominal or real capital gains are taxed. This portion of the paper attempts to explain how these various issues are related, so that the ways that capital gains taxes may affect property markets can be explored.

Capital gains from rising residential property prices have comprised the vast majority of real and nominal capital gains in New Zealand since 2000 (see Table 1).¹⁰ Property price increases can be split into real and inflationary components, where the real component is defined as the total nominal increase adjusted for generalised inflation. Since 1923, property price inflation has occurred in three quite distinct phases (see Table 2).¹¹ In the first phase, from 1923 – 1962, the average annual inflation rate was 2.2 percent and the average real house price increase was 1.5 percent. In the second phase, from 1962 – 1990, the average annual inflation rate was 9.7 percent and the average real house price increase was 1.3 percent. In the third phase, since 1990, the average annual inflation rate was again 2.2 percent but this time the average real house price increase was 4.2 percent. Most of the real increase took place after 2000. This means that approximately one third of nominal house price increases since 1990 have been due to inflation and two thirds have represented a real increase. Sustained periods of real house price increases of this magnitude are historically unusual, and probably reflect the international decline in interest rates to century-low levels since real rents have scarcely changed since 1990.¹²

When governments impose taxes on an income basis it matters whether nominal capital income or real capital income is taxed. (It does not matter if governments impose taxes on an expenditure basis). When a government taxes nominal capital incomes, including nominal capital gains, the tax system is neutral towards different types of capital

¹⁰ Table 1 provides detailed information about the source of real and nominal capital gains in New Zealand between 2008 and 2016 using data from New Zealand's Annual Balance Sheet from Statistics New Zealand. Similar but less comprehensive data can be used to make calculations from 2000 which show a similar pattern for the whole period 2000 – 2016.

¹¹ This is based on Coleman 2017, and updated for the last two years of data.

¹² In real terms rents have increased at 0.1% per year since 1990.

income, but all capital income is taxed at rates higher than the statutory rate whenever there is inflation (Samuelson 1964). When a government taxes nominal capital incomes but excludes capital gains the tax system is biased against interest-earning securities as these are taxed at higher

Table 1: Real and nominal capital gains, 2008 - 2016

	2008	2009	2010	2011	2012	2013	2014	2015	2016	Sum
Nominal value (\$billions)										
Owner-occ. Housing	478	437	468	462	470	509	548	596	680	
Rental housing	138	131	141	143	151	163	176	195	225	
Total Housing	616	568	609	605	621	672	725	791	905	
Business (exc rental)	484	508	505	504	506	511	518	558	574	
Househld net wealth	913	848	905	933	947	1,019	1,076	1,178	1,312	
Nominal Capital Gains (\$billions)										
Owner-occ. Housing	1	-41	31	-6	8	39	39	48	84	223
Rental housing	8	-7	10	2	8	12	14	18	31	95
Total Housing	29	-48	40	-3	15	51	53	67	114	319
Business (exc rental)	36	24	-3	-1	2	5	7	40	17	126
Househld net wealth	21	-65	58	27	15	71	58	101	134	420
CPI										
	824	852	877	895	935	949	958	972	975	
Real Values (\$ billions, adjusted to 2016 prices)										
Owner-occ. Housing	549	488	512	484	485	520	552	599	680	
Rental housing	158	146	154	150	155	166	178	196	225	
Total Housing	708	634	666	634	640	686	730	794	905	
Business (exc rental)	556	567	552	528	522	522	521	560	574	
Househld net wealth	1,049	946	990	977	977	1,041	1,084	1,183	1,312	
Real Capital Gains (\$ billions, adjusted to 2016 prices)										
Owner-occ. Housing	7	-61	24	-28	1	35	32	47	81	138
Rental housing	4	-12	8	-4	6	11	11	18	30	71
Total Housing	11	-73	31	-32	7	46	44	65	111	208
Business (exc rental)	23	11	-15	-25	-6	0	-1	39	14	42
Househld net wealth	-11	-103	44	-14	1	64	43	99	129	252

Author's calculations from Reserve Bank of New Zealand household balance sheet data HC21 and HC22 and International Balance Sheet HM7 and Statistics New Zealand Annual Balance sheet. See Table A1.1 for series definitions. Note that Business assets exclude rental housing and refer to business assets located

in New Zealand, not business assets owned by New Zealanders. The capital gains on the net value of business assets (excluding rental property) owned by New Zealanders can be calculated as the difference between household net wealth and the total value of housing. The total capital gains are similar in the two cases.

Table2: Annual average property price increases in New Zealand, 1923 – 2017

	House prices 1923- 2017		
	Nominal increase	Inflation	Real increase
1923:2 – 1963:2	3.7%	2.2%	1.5%
1962:2 – 1990:2	11.1%	9.7%	1.3%
1990:2 – 2017:4	6.2%	2.0%	4.2%
1990:2 – 2000:1	4.3%	1.7%	2.5%
2000:1 – 2017:4	7.3%	2.2%	5.1%
	House prices and rents, 1975 – 2017		
	Nominal increase	Inflation	Real increase
	1975:1-2000:1		
House prices	8.4%	8.0%	0.4%
Rents	9.5%	8.0%	1.4%
	1990:2 – 2017:4		
House prices	6.2%	2.0%	4.2%
Rents	2.2%	2.0%	0.1%
	2000:1- 2017:4		
House prices	7.3%	2.2%	5.1%
Rents	2.2%	2.2%	0.0%

Source: Coleman 2017, based on Statistics New Zealand data.

effective rates than equity securities or property assets. Introducing a tax on nominal capital gains in these circumstances has complex effects as the neutrality of the tax system is improved but capital incomes are taxed at particularly high and variable rates. Introducing a tax on the nominal capital gains earned by landlords but not owner-occupiers makes the effects even more complex. This is because the tax system becomes even less neutral and there is an enhanced incentive for people to become owner-occupiers which may increase the demand for better quality properties. If the average inflation rate exceeds the average real increase in property prices these effects can be the dominant effects of a capital gains tax.

2. The effects of a tax on the inflationary component of nominal capital gains

Consider New Zealand's current tax system in which nominal interest income is taxed but capital gains are not taxed. Real interest earnings are taxed at rates higher than the statutory rate when there is inflation, because the inflation component of interest income is taxed. In contrast, the increase in the value of equity securities or land-based assets is not taxed, even though the real income from these assets is taxed at normal rates. This means the tax system provides an incentive to invest in equity securities and property assets rather than interest-earning securities. This incentive is increased if agents can deduct nominal interest payments from their taxable income, as the inflation-component of interest payments represents real savings, not real interest, and thus provides agents with a tax subsidy. Landlords who borrow to finance property investments benefit from this tax subsidy, but owner-occupiers do not.

These distortions – the taxation of the inflation component of nominal interest earnings, the non-taxation of the inflation component of nominal interest payments, and the non-taxation of capital gains - provide incentives for owner-occupiers and landlords to invest in real estate rather than lend money. These incentives may cause three types of effects:

- (i) owner-occupiers have an incentive to purchase larger and better-quality houses;
- (ii) owner-occupiers have an incentive to pay higher prices for properties that are conveniently located to desirable amenities (such as beaches, jobs, or the centre of town); and
- (iii) landlords and potential landlords have an incentive to bid down the rent/house-price ratio to take advantage of tax-free capital gains.

These three different motives mean the current tax system provides incentives for people to live in larger houses and for the rent/house-price ratio to be artificially low. The low rent/house-price ratio could result in low rents if the supply of housing is very elastic and prices change little in response to changing demand, or it could result in stable rents and high house prices if the supply of housing is inelastic and quantities change by little in response to higher prices. More generally, the tax system alters the

rent/house-price *ratio* by changing the incentives facing landlords. The *level* of rents and house prices associated with any rent/house-price ratio is determined by the other aspects of the housing market, particularly the relative size of the supply and demand elasticities for housing.

The economic effects of the interaction of inflation with the tax system are further complicated because nominal interest rates increase when inflation increases (the Fisher effect). This matters as many agents are restricted in the amount they can borrow. Most young potential owner-occupiers face two bank imposed restrictions:

- (i) a loan-to-value limit restricting the maximum amount they can borrow to some multiple of the value of the house; and
- (ii) a mortgage-repayment-to-income limit restricting their monthly repayments to be less than a particular fraction of their income.

When inflation increases, nominal interest rates increase, increasing the nominal amount of regular mortgage repayments. This limits the amount that households can borrow while still meeting the mortgage-repayment-to income ratio, even though the real cost of the loan is unchanged.¹³ Because inflation tightens the credit constraints that households face, fewer can purchase a house, and those still able to purchase a house have to make greater sacrifices in terms of other consumption to pay the inflation component of their mortgage interest payments. This makes home-ownership infeasible or less attractive for young households, and typically reduces their welfare. The reduction in welfare occurs either because they cannot purchase a house when they want to, or because the higher repayments force them to save more than they would have saved if the inflation rate was zero. This effect is concentrated on young households as they are most likely to face binding credit constraints. The interaction of this credit constraint effect with the non-neutrality of the tax system to the rate of inflation has important welfare consequences, particularly for younger credit-constrained households.

Since owner-occupied housing is a tax-advantaged investment option under New Zealand tax law, households have an incentive to purchase owner-occupied housing rather than rent or make other investments, particularly investments in interest-earning securities. This incentive increases as inflation increases. However, higher inflation also makes it more difficult to purchase housing, due to the way higher nominal interest rates tighten credit constraints on households. Consequently, while inflation increases the incentive of households to purchase owner-occupied housing, it also reduces their ability to do so. For this reason inflation can be welfare-reducing for low-income households. At the same time, the current tax system makes rental property a more attractive investment class as the inflation rate increases, which leads to lower rent/house-price ratios. If the supply of housing is inelastic and the rent/house-price ratio falls because landlords bid up house prices, the interaction of inflation with the

¹³ Suppose a household borrowed \$100,000 at a real interest rate of 5%. When the inflation rate is zero, they make an annual nominal and real interest payment of \$5000. If the inflation rate is two percent, the nominal interest rate increases to 7 percent, but \$2000 of the \$7000 nominal interest repayment is real saving as it reduces the real value of the loan to \$98,000.

current tax system will make young low-income households worse off as the combination of tight credit constraints, high nominal interest rates and high house prices increases the cost of home-ownership, and renting is no cheaper. If, however, the supply of housing is somewhat elastic, rents may fall and some young households will voluntarily choose to rent rather than purchase because renting involves lower cash outgoings than purchase and frees up money for them to spend on other goods and services. While the absence of a capital gains tax also reduces owner-occupancy rates among young households in this case, it actually raises welfare because these households have lower rents and can consume other goods and services. The result is somewhat perverse but is an example of the law of second best (Lipsey and Lancaster 1956). The law of second best says that if you have two policy interventions that distort markets, altering one distortion can make you worse off in some circumstances. If the tax system distortions were the only distortions affecting property markets, removing them would typically improve the welfare of young generations. But because there are also credit market restrictions, it is possible that the absence of a capital gains tax makes some young people better off. If landlords respond to the absence of a capital gains tax by reducing their rents, young people can be better off as they use the landlords borrowing ability to circumvent their own inability to borrow as much as they would like.

There is one additional effect of the tax system on the property market. Many young people share accommodation, either with their parents or with other people in flats. As they age, or form long term relationships, or as the cost of renting falls, they typically rent by themselves (or their partners). The time spent living with other people in shared housing is one of the main ways that aggregate housing demand adjusts to the available supply of housing. If rents rise sufficiently, people may prefer to share rather than rent by themselves, reducing aggregate housing demand; in turn the lower aggregate housing demand may reduce house prices overall. For this reason, if the rent/house-price ratio were to increase because of changes to the tax system, it may cause some people to substitute away from shared accommodation towards non-shared owner-occupied housing. This raises the total demand for housing and increases house prices. Paradoxically, a tax rule that made it relatively more expensive to rent rather than own could increase the aggregate demand for housing and lead to house price increases.

3. Taxes, rents, and house prices.

At the heart of any model examining the effects of the tax system on rents is an equation describing the incentives of landlords to invest in residential property. Following Poterba (1984), in this paper we use a “no-arbitrage” condition stating that landlords will invest until the expected after-tax return from investing in rental property is the same as the after-tax return from lending money. The following equation does not incorporate uncertainty, although an uncertainty premium can easily be added. To calculate this equation, let

τ = tax rate on ordinary interest income;

- τ_{cg} = tax on capital gains (the rate could be zero);
- P_t^h = house price at time t
- R_t = rent at time t
- E_t = non-depreciation expenses at time t
- D_t = depreciation expenses at time t
- i_t = nominal interest rate
- r_t = real interest rate at time t
- π_t = general inflation rate at time t
- π_t^h = rate of real house price appreciation at time t

The rent price equation is

$$\underbrace{[(R_t - E_t)(1 - \tau) - D_t]}_{(1)} + \underbrace{P_t^h}_{\text{future value of property}} (1 + (\pi_t^h + \pi_t + \pi_t^h \pi_t)(1 - \tau_{cg})) = \underbrace{P_t^h}_{\text{after-tax return from}} (1 + (r_t + \pi_t + r_t \pi_t)(1 - \tau))$$

Rent net of costs
lending

future value of property

after-tax return from

Rearranging the equation

$$\frac{R_t}{P_t^h} = \left[\frac{E}{P_t^h} + \frac{D}{P_t^h(1 - \tau)} \right] + r_t(1 + \pi_t) + \frac{\pi_t(\tau_{cg} - \tau)}{(1 - \tau)} - \frac{\pi_t^h(1 + \pi_t)(1 - \tau_{cg})}{(1 - \tau)} \quad (2)$$

The first term on the right hand side says that the rent/ house-price ratio will increase one-for-one with deductible expenses, and by more than one-for-one with non-deductible expenses such as depreciation. This means that an increase in rates or land taxes can be expected to increase the rent/house-price ratio, although the actual incidence of the tax will depend on the extent that rents rise (pushing the incidence onto the tenant) and the extent that house prices fall (pushing the incidence onto the owner.)

The second term says the rent/house-price ratio will change in response to the real interest rate. Again, the incidence of any change depends on supply and demand elasticities in the housing market.

The third term will be zero if the tax rate on capital gains is equal to the income tax rate, and negative if the capital gains tax rate is zero. This is the main term describing how the interaction of inflation with the tax system affects rents and house prices. With 2

percent inflation and a marginal tax rate of 33%, this term indicates that the current tax system provides incentives for the rent/house-price ratio to be 1 percentage point lower than under a neutral tax system. Imposing a capital gains tax will eliminate this non-neutrality.

The fourth term shows the effect of not taxing real capital gains. If real house prices increase at 1.5 percent per year, the absence of a capital gains tax reduces the rent/house-price ratio by 0.75 percentage points.

Comparing the third and fourth effects, and again assuming an inflation rate of 2 percent and a real house price appreciation rate of 1.5 percent, the combined effect of a capital gains tax would be to increase the rent/house price ratio by 1.75 percentage points. If the current rent/house price ratio is approximately 4%, the introduction of a capital gains tax would therefore increase the ratio by nearly 50 percent, with just over half of this increase due to the effect of generalised inflation, not the taxation of real capital gains. To make the example concrete, suppose the real interest rate is 4 percent, inflation is 2 percent, real house price increases are 1.5 percent, and a rental property costs \$350,000. The inflation component of interest income is \$7000, of which \$2300 is paid in tax. The inflation component of capital gains is also \$7000, but this is not taxed. If these capital gains were taxed, the rent would need to be increased by \$3500 to make the landlord equally well off – or the price would need to fall substantially to make a different landlord happy to purchase the rental property. In addition, the landlord currently makes \$5300 in real capital gains, which would fall by \$1800 if there were a capital gains tax. This loss would also need to be made up, or house prices would need to fall.

This equation determines the rent/house-price ratio landlords are assumed to require to justify their investments. However, the extent that rents change and the extent that house prices change depends on how much the total supply and demand for housing changes with rents and prices. If the supply of houses was very elastic then most of the adjustment would take place through an increase in rents. If the supply of houses were quite elastic, much more of the adjustment would take place through a decline in house prices. There are limits to how much house prices will fall, however, because owner-occupiers purchase as landlords sell and it is their demand that will determine how far prices fall. If a capital gains tax is only introduced on landlords, owner-occupiers will still be tax-advantaged reducing the amount that prices can be expected to fall.

4. A model of the effect of the New Zealand tax system on housing markets

To explore the different ways these mechanisms may affect property markets, we developed an economic model that includes many of these features. The model has five basic components.

(1) There are a large number of households that differ in terms of age, income, and wealth. These households earn income, demand goods and services, and choose to rent or purchase different types of housing. Their housing choices can change over time and they can borrow or save. If they lend money, they pay tax on their interest earnings. We assume there are four distinct phases of someone's life: two young stages (20 – 35 and 35 - 50); one middle aged phase (50-65); and one older phase (65-80).

(2) There are two types of houses in the model, large and small. People can rent a small house, share a small house with others, purchase a small house or purchase a large house. There is a supply function for small and large houses that can have different elasticities.

(3) Young households face loan-to-value and mortgage-repayment-to-income borrowing restrictions. These restrictions become more onerous when inflation increases and may prevent some people who want to own a house from being able to obtain financing or make them unable to afford financing.

(4) Middle aged households can become landlords. Rents are set at a level so that the after-tax expected returns from being a landlord are the same as the after-tax returns from investing in interest-earning securities. The returns from being a landlord are the rent that is earned plus any capital gain earned adjusted for depreciation and interest costs.

(5) The government raises revenue by imposing a variety of taxes. Currently we include

(i) income tax applied to all income, including nominal interest income and rents, payable at a rate of 20% on income under \$70,000 and 33% over \$70,000; and

(ii) GST on consumption, at a rate of approximately 15%.

We also examine what would happen if a capital gains tax were introduced on rented property or on all property. If one set of taxes is changed, we change the income tax rates or the GST rate to ensure that the total amount of tax revenue is constant.

We simulate the model by making assumptions about interest rates (which are assumed to be constant over time), the inflation rate and the income growth rate, and then calculate

(i) the prices of each type of housing and the rate of house price inflation;

(ii) the quantity of each type of housing;

(iii) the quantity of houses that are rented, shared, and owned;

(iv) the amount of tax revenue that is raised; and

(v) the lifetime welfare of each household.

By repeating the exercise for different possible tax regimes, we can compare the results. The comparison shows the long-term effects of the tax changes.

The model is calibrated to represent several aspects of New Zealand's society. We choose an income distribution that

(i) captures the way that income typically changes over an individual's lifetime, based on earnings in 2016;

(ii) captures the distribution of income across different households.

According to this distribution, income is low in the first stage of life, and is about 50% higher in the second and third stages before declining for older age groups. We capture the difference between singles and partnered households, and try and weight the number of each household type to represent the distribution in New Zealand.

To calibrate the housing market, we assumed that approximately one third of houses were large, and their price was approximately twice as much as small houses. The prices of the two classes were approximately \$350,000 and \$700,000, but the exact numbers are determined endogenously by the model. Real interest rates were either 3 or 4 percent, and the inflation rate varied between 0 and 3 percent.

3.1 Simulation results – the effect of capital gains taxes on the inflation component of capital gains

Tables 3a and 3b show the results of the model simulations when the inflation rate is 2 percent but there are no real capital gains. These simulations are designed to show the effects of a capital gains tax when young households are restricted in the amount they can borrow. Each table shows the effects on rents, prices and quantities and large and small houses under the current tax system, and then shows how these might change if a capital gains tax were introduced on landlords or on landlords and owner-occupiers. The capital gains are taxed at the owner's marginal tax rate, assumed to be either 20 percent or 33 percent depending on their income. Table 3a shows the effects when the supply of housing is quite elastic, and table 3b shows the effects when the supply of housing is moderately inelastic. In the base case rents are approximately \$14,000 per year, the price of a small house is approximately \$350,000, the price of a large house is approximately \$700,000, and just over two thirds of houses are small. (The actual numbers are determined endogenously.) Consequently the untaxed capital gains are about \$7000 per year, and the tax on this amount is about \$2300.

Table 3a: Effect of capital gains tax when capital gains are due to inflation.

	Elastic supply of housing ($\eta = 0.5$)		
	Current tax level	CGT on landlords	CGT on all houses
		Change from current tax level	
Annual rent	13800	+2300	+2100
Small house price	336000	+3300	+100
Large house price	634000	+12300	-11800
House price inflation	2%	2%	2%
Number small houses	1056000	+12000	+18000
Number large houses	443000	+17000	-17000
Fraction houses rented	36%	-13%	-7%
GST rate	13.9%	-0.9%	-4.3%

Source: Author's calculations using the Binning-Coleman model.

3.1.1. Elastic Supply

When the supply of housing is elastic, and a capital gains tax is introduced on landlords, rents increase – in this case by 2/3 of a percent of the value of a house, or approximately \$2300. House prices change by little. Since renting has gone up substantially relative to the cost of owning, there is a big decline in the number of people choosing to rent – in this case, by 13 percentage points. In the model, the decrease in the number of people renting occurs at all age groups and has two additional effects. First, because some of the people in rental accommodation were sharing with others there is an increase in the total demand for housing when rents increase after the capital gains tax is imposed. This leads to a small increase in house prices. Secondly, there is an increase in the demand for large houses, which leads to an increase in the price of large houses. The reason for this effect is quite subtle. When rents increase, some additional people decide to buy a house earlier in their lives, sacrificing their consumption and increasing their saving to do so as they cannot borrow more. As they save more when they are young, they have more to spend when they are older, and some of this additional wealth is spent on better housing. The larger demand for housing comes at the expense of youthful consumption, so the increase in lifetime welfare they gain is less than the increase in wealth they experience (see the Appendix for further discussion of this channel). The last effect of the change is a small decline in the GST rate. This decline in the GST rate is calculated to exactly match the increase in tax revenues arising from the capital gains tax, adjusted for the loss of tax revenues stemming from the decline in the rental sector. The extra revenue could also be refunded as a reduction in income taxes.

This decline in the rental sector is extremely large and warrants further explanation. The decline in renting reflects the *long run* change in the fraction of houses that are rented and represents the long run increase in home-ownership rates at all age groups. Under the current tax regime, people have a tax incentive to own their own home as imputed rents and capital gains are not taxed, but if they rent they have to pay tax on the interest

they earn on their savings. Even though people have a financial incentive to own their home, many cannot borrow enough to do so when they are young and have to wait. These people are prepared to rent even though the cost of renting is higher than the cost of owning because if they were to purchase they could afford very little else after paying their mortgage. These people also know they will probably own a house at some point in the future, and while they are waiting many will share with other people to save even more money, even though they may prefer to live by themselves. If a capital gains tax is introduced on landlords, rents increase much faster than the cost of owning a home. This induces people who are likely to buy sometime in the future to bring forward the time of their purchase, as renting is now more expensive compared to homeownership. If everyone either rented by themselves or owned by themselves, there would be no change in the total number of houses that are demanded. But some people will stop sharing and buy a house earlier than previously when rents rise, which increases demand for housing and has the potential to raise house prices. In addition there will be a small group of people who might have expected to rent for most if not all of their lives. If rents go up much more than house prices, they may revisit this decision and decide to purchase, a decision that not only reduces demand for rental accommodation when they are young, but also reduces demand for rental accommodation when they are old. Consequently some of the decline in the fraction of people who are renting represents the rise in home-ownership among older households, a phenomena that could take some time to observe. It is worth noting that since New Zealand made major changes to the way retirement savings are taxed in 1990/1991, home-ownership rates have dropped by 9 percentage points, a number of similar magnitude to the result of this simulation.¹⁴

The third column shows the effect of including a capital gains tax on all households. Even though this option is ruled out of the terms of reference, it is important to examine it as a hypothetical case as it illustrates some of the problems of only imposing a capital gains tax on landlords. In this case rents also increase, and there is only a modest change in house prices – although they fall, (not increase), because there is a smaller tax advantage to owner-occupiers from owning large houses. There are three main differences. First, there is a much smaller (although still sizeable) decrease in the size of the rental sector – the number of rental properties decreases by 7 percentage points, not 13 percentage points. The smaller decrease occurs because the long run cost of renting no longer exceeds the long run cost of home-ownership by so much, since both landlords and owner-occupiers pay the same capital gains tax.¹⁵ More young households will be content to rent as it does not cost much more than ownership and since it requires lower up-front payments, it allows them to consume more when young. In addition, more older households rent as the tax advantages of homeownership are

¹⁴ We do not wish to claim that the 13 % change in the simulations is close to the 9% decline actually observed between 1991 and 2013; merely that it is not ridiculously large given recent historical experience.

¹⁵ Owner-occupancy is still tax advantaged relative to renting however, as landlords pay tax on rent but owner-occupiers do not pay tax on the implicit rent they earn from owning their own house.

smaller than either the current situation or the situation with a capital gains tax on landlords.

Secondly, there is a decrease in the attractiveness of large houses, as they are no longer so tax advantaged as other forms of saving, notably interest earning securities. Both the inflation component of capital gains and the inflation component of interest income are taxed in this scenario, although housing retains a tax advantage as the imputed rent is not taxed. The reduced demand for large houses lowers their price relative to the current tax regime, rather than increasing it.

Thirdly, there is a much bigger increase in tax revenue, allowing a five-times larger decrease in the GST rate. The tax revenue increases by so much not only because more people are paying the capital gains tax, but also because wealthy owners own more expensive houses and pay additional tax amounts. Imposing a capital gains tax on all homeowners is progressive relative to a capital gains tax that only applies to landlords.

3.1.2. Elastic Supply

Table 3b shows the case when a capital-gains tax is introduced at the agent’s marginal tax rate, and the supply of housing is moderately inelastic. First consider the case that the tax is just imposed on landlords. The simulation results for the current tax regime are similar to the earlier results, except that house prices and rents are initially higher and the fraction of houses that are rented is larger due to the greater cost of purchasing a house. When a capital gains tax is introduced rents increase by \$2800 (reflecting the higher cost of houses) and there is a similar albeit smaller decline in the fraction of people renting. As people move

Table 3b: Effect of capital gains tax when capital gains are due to inflation.

	Inelastic supply of housing ($\eta = 2.0$)		
	Current tax level	CGT on landlords	CGT on all houses
		Change from current tax level	
Annual rent	15400	+2800	+\$2100
Small house price	373000	+10400	-\$2200
Large house price	654000	+15500	-\$15100
House price inflation	2%	2%	2%
Number small houses	1006000	+15000	+1000
Number large houses	457000	+5000	-6000
Fraction houses rented	42%	-11%	-6%
GST rate	14.2%	-1.2%	-4.8%

Source: Author’s calculations using the Binning-Coleman model.

from shared accommodation to their own houses there is still an increase in the aggregate demand for housing, but in this case the increase in the number of houses is

smaller and the increase in the price of houses is larger, although still relatively modest – 20,000 additional houses are demanded rather than 29,000, and the price of small houses increases by \$10,000 rather than \$3000. The same mechanisms are in place, for people have a larger tax incentive to own than to rent, but in this case the additional demand is choked off by rising house prices. The number of large houses still increases but the increase is lower than before as fewer people switch from renting to ownership when they are young, and thus fewer have amassed sufficient wealth to justify a large house.

When a capital gains tax is introduced on all houses in this simulation the prices of both types of houses fall. The decline is modest, however - \$2000 for small houses, \$15,000 for large houses – and so most of the increase in the rent/house-price ration still takes place as an increase in rents. The decline in house prices occurs because there is less demand for housing as the tax advantages of housing are lower than previously. The amount of revenue raised is larger due to the higher level of house prices.

Even though the supply of housing is far less elastic, it is noteworthy that most of the adjustment to the capital-gains tax still comes through changes in rents rather than changes in house prices. The reason for this is two-fold. First, while the rent/house price ratio has to change, house prices do not fall much because owner-occupiers compete amongst themselves to purchase the houses of the landlords. Even with a capital gains tax, housing still enjoys substantial tax advantages over rental property and interest earning securities as the imputed rent is not taxed but rents and interest are. Households have a strong demand to purchase and do so when able to do so. Secondly, aggregate demand for housing is relatively inelastic. In the model, and in reality, most households live in one house and do not share. As prices change, aggregate demand only changes as the number of households sharing changes, and this is a relatively small margin of adjustment. The assumptions about the supply elasticity have significant effects on prices and quantities when the total population is allowed to change. In the absence of population-driven changes in housing demand, changes in capital-gains taxes have much larger effects on rents and home-ownership rates than they do on prices.

3.1.3. *Welfare Analysis*

The model can be used to examine the welfare aspects of these interventions on new households. The following comparisons can be considered as the following thought experiment: if a *new* cohort were to be born in a country with the current tax system, or with one of the capital gains tax regimes, which people would be better or worse off? This comparison does not include any of the changes to the welfare of current inhabitants of the country that stem from changes in house prices, although these can be (and will be) considered separately. The welfare comparison is based on the likely lifetime experiences of these agents, although we can break this down to look at the experiences in each stage of a person's life.

Tables 4a and 4b shows the effect of introducing (i) a capital gains tax on landlords and (ii) a capital gains tax on all agents in the circumstances that all house price increases are due to inflation. The table shows the fraction of people who are worse off by at least

1 percent, the fraction of people for whom there is little change, and the fraction of people who are better off by at least one percent. The table shows the results broken down by average lifetime income. Note that within each income group there is a lot of variation in first period income - a student can start with low income in the first period of their lives but enjoy high life time income, for example. Table 4a shows the results when a capital gains tax is introduced on landlords, and table 4b shows the results when a capital gains tax is introduced on all households.

Table 4a indicates that a capital gains tax applied to landlords has poor welfare properties. Slightly more than 50 percent of people are worse off, and only a third are better off. Those who are worse off are concentrated in low income groups, particularly single people for whom house purchase is disproportionately difficult. Those who are better off typically have higher incomes, although some low income people are better off.

The key issue is that in the model the capital gains tax on landlords raises the cost of renting without inducing much change in the cost of homeownership. This badly affects people who rent for most of their lives, who are disproportionately low income. These people may want to purchase housing, but find it particularly difficult to do so. Some of the people who respond to this situation by purchasing a house instead of renting are also worse off. As the introduction of a capital gains tax does little to reduce house prices relative to the current situation in these simulations, these people gain relatively little financially from the tax change, and lose for two reasons: they have to pay higher rents for part of their lives, and if they purchase a house sooner than otherwise they have to reduce early-life consumption in order to afford the mortgage. There is some relief from the reduced GST rate. The reduction is small, however, and it benefits people with high income more than people with low income.

These simulations suggest there are a lot of adverse welfare consequences of introducing a capital gains tax on landlords. Again, this reflects the law of second best. The capital gains tax reduces one distortion (the absence of a capital gains tax on landlords) but leaves others in place (the absence of a capital gains tax on households and the borrowing restrictions that households face). The credit restrictions make it difficult for households to purchase property

Table 4a: Welfare effects of capital gains taxes when capital gains are due to inflation

Capital gains tax on landlords only, relatively inelastic housing supply ($\eta = 2.0$)

	Average income	Average Welfare change	Fraction worse off	Fraction same	Fraction better off
Capital gains tax on landlords relative to no capital gains tax					
Couples – 1	29676	1.7%	72.5%	0.0%	27.5%
Couples – 2	43538	19.4%	50.0%	10.0%	40.0%
Couples – 3	48615	3.3%	42.5%	25.0%	32.5%
Couples – 4	50598	1.7%	37.5%	42.5%	20.0%
Couples – 5	52296	-0.5%	40.0%	7.5%	52.5%
Couples – 6	58124	3.2%	32.5%	12.5%	55.0%
Couples – 7	60961	5.5%	27.5%	22.5%	50.0%
Couples – 8	74329	0.2%	27.5%	32.5%	40.0%
Singles – F 1	19370	-42.1%	100.0%	0.0%	0.0%
Singles – F 2	28656	-5.3%	90.0%	0.0%	10.0%
Singles – M 1	21424	-28.6%	100.0%	0.0%	0.0%
Singles – M 2	32259	-11.6%	90.0%	0.0%	10.0%
Total	46899	-0.9%	52.0%	15.3%	32.8%

Note: This table is constructed by ordering households by lifetime income. Eight equally sized octiles are constructed for couples and two equally sized quantiles are constructed for single females and single males. We compare the changes that occur after the introduction of a capital gains tax, relative to the no capital gains tax case.

Table 4b: Welfare effects of capital gains taxes when capital gains are due to inflation

Capital gains tax on all households, relatively inelastic housing supply ($\eta = 2.0$)

	Average income	Average Welfare change	Fraction worse off	Fraction same	Fraction better off
Capital gains tax on all households relative to no capital gains tax					
Couples – 1	29676	-0.2%	55.0%	15.0%	30.0%
Couples – 2	43538	15.7%	5.0%	10.0%	85.0%
Couples – 3	48615	9.9%	7.5%	7.5%	85.0%
Couples – 4	50598	7.0%	7.5%	5.0%	87.5%
Couples – 5	52296	7.3%	10.0%	10.0%	80.0%
Couples – 6	58124	6.0%	2.5%	2.5%	95.0%
Couples – 7	60961	11.7%	5.0%	2.5%	92.5%
Couples – 8	74329	7.5%	0.0%	5.0%	95.0%
Singles – F 1	19370	-17.5%	95.0%	5.0%	0.0%
Singles – F 2	28656	2.6%	10.0%	10.0%	80.0%
Singles – M 1	21424	-8.2%	90.0%	10.0%	0.0%
Singles – M 2	32259	3.1%	35.0%	10.0%	55.0%
Total	46899	5.5%	20.8%	7.5%	71.8%

Source: Author's calculations using the Binning-Coleman model.

without an excessive reduction in early life consumption, but these difficulties are to some extent alleviated when households rent. When the cost of rent is increased above the cost of home-ownership, households face the full effect of the credit restrictions and are worse off.

Why are some households better off from the reform? The households that are better off are those who are able to change their housing arrangements and can avoid the impact of the higher rents without being badly affected by the credit constraints. In the model, many of these agents are those who inherit houses. The higher cost of renting significantly increases the fraction of people owning a house, and this increases the fraction of people who get to inherit a house (as well as leave one to their children). This mechanism for reducing long run wealth inequality is captured in the model and is responsible for many of the observed increases in welfare. The reasoning is sound, but this aspect of the model is possibly subject to the greatest amount of uncertainty. It is also a very long run effect – it takes place two or three generations after the tax reform is introduced.

Table 4b shows the welfare implications of imposing capital gains taxes on all households. These are far more positive – now 70 percent of new households would be better off from the reform, and only 20 percent would be worse off. The difference reflects two changes. First, a lot of revenue is raised from the tax, and this is refunded as a lower GST rate, reducing the cost of consumption. Low income households that rent –

but not the lowest income households – gain much more from the GST rebate than they do when only landlords pay the tax, but they experience a similar increase in rents. This is partly because imposing a tax on all households is less regressive as high income households living in large houses also pay the capital gains tax. Secondly, there is a decrease in house prices as the higher user cost of housing (depreciation costs, interest rate costs, and tax costs) reduces the price of housing. Even though the size of the reduction is not enormous relative to the case where there is no capital gains tax, it is enough to raise the welfare of most new households. These households pay capital gains tax, but have this refunded as lower GST. These two effects are broadly balanced although some households will do better and others do worse. The reduction in house prices benefits all new households that purchase a house at some stage of their lives, as they save on interest payments. Collectively, therefore, new households will favour the tax. In this case, as is the case in all models with over-lapping generations, their gains are offset by the losses of current property owners (Feldstein 1978). To the extent that prices are artificially high because housing is a tax-favoured investment class, the rebalancing towards new generations will be consistent with what many people consider to be fair.

The contrast between the two sets of results is stark. Raising a capital gains tax on landlords when inflation is the cause of a large component of capital gains risks reducing the welfare of many people, quite possibly a majority of people, particularly those who have low incomes as it will raise rents without offering much compensation. In contrast, a capital gains tax on all households will be advantageous to a large majority of young and new households, even though it also raises rents. This is because it lowers house prices and allows a sufficiently large reduction in other taxes for households to afford either higher rents or their capital gains tax bill. The improvement in welfare stemming from lower house prices is offset by the welfare losses of current property owners, many of whom have gained from the artificially high prices induced by current tax arrangements.

5. Income growth, house price changes, and capital gains taxes.

The previous section analysed the effect of capital gains taxes when the capital gains stem from inflation. This section analyses the effects of capital gains taxes when there are real capital gains stemming from real income growth. The inflation rate is assumed to be zero to isolate the effects, and real incomes increase at one percent per year.

Over long periods of time, higher incomes generally result in a better quality housing stock as people use their income to buy bigger houses. This generates modelling difficulties as there is no obvious equilibrium except one in which ultimately everyone lives in bigger houses. Since the focus of the exercise is to understand how a capital tax may affect the level of house prices, in this simulation the supply of houses is made very inelastic ($\eta=5$) so that the higher housing demand resulting from higher incomes leads to a higher price for better quality houses. As there is no population growth in this scenario, changes in the total demand for housing occur only because of differences in

the fraction of people sharing with others. In reality, population growth is likely to be a cause of price increases as well, and in the long run houses get built for most residents of an area.

Table 5 shows the results of the simulation. In the basic simulation income growth of one percent per annum causes real house prices to increase by 0.8% per annum, which provides the capital gains in the model. If capital gains are not taxed but other income is taxed (the current tax regime), both landlords and households have an incentive to purchase more housing than otherwise. Consequently, introducing a capital gains tax on all households, owner-occupied and landlords, leads to modestly lower prices than the current tax regime, but higher rents as landlords raise the rent/house-price ratio to offset the higher taxes. The combination of higher rents and lower prices leads to a significant increase in the home ownership rate – in this simulation it increases by 5 percentage points. There is also a small reduction in the number of large houses, as these are no longer tax advantaged relative to other assets. Enough revenue is raised to allow the GST rate to fall by just over 2 percentage points.

A capital gains tax applied only to landlords has different effects. The tax on landlords raises the rents and increases the long run cost of renting relative to owning a house. This induces households to purchase a house, not just because it is cheaper than renting but because it provides a better after-tax return than lending money. This leads to a large decline in the number of people wanting to rent, and house prices, particularly better quality house prices increase to choke off the additional demand. Little revenue is raised from the tax, as non-taxpaying home-owners purchase the properties rather than landlords.

Tables 6a and 6b show the welfare implications of these simulations. Table 6a, showing the change in welfare for new households when a capital gains tax on landlords is introduced, suggests that the tax would reduce welfare by more than 1 percent for 55 percent of new households, and increase welfare by at least 1 percent for only 20 percent. Most of the adversely affected households are low income, and they are disproportionately single. This is because these groups rent, and rents increase, but they only get a modest rebate from the tax revenue as little is raised because most households do not pay the tax.

Table 5: Effect of capital gains tax when capital gains are due to income growth.

	Inelastic supply of housing ($\eta = 5$) Income growth = 1% per annum		
	Current tax level	CGT on landlords	CGT on all houses
		Change from current tax level	
Annual rent	13500	+800	+500
Small house price	362000	+2500	-4100
Large house price	654000	+16000	-6000
House price inflation	0.8%	0.8%	0.9%
Number small houses	1047000	-1000	+2000
Number large houses	452000	+2000	-1000
Fraction houses rented	46%	-10%	-5%
GST rate	17.9%	-0.5%	-2.2%

Source: Author's calculations using the Binning-Coleman model.

Table 6b indicates a very different situation if taxes were raised on all households. In this case 75 percent of new households are better off, and only ten percent of households are worse off. Most households are better off because of the decline in house prices. The capital gains tax is offset by the reduction in GST, so households that purchase at some stage in their lives gain from the reform by paying less for the house they purchase. Once again, the new cohort's gain is balanced by the loss absorbed by current owners of property. This mechanism is very similar to that occurring when inflation is the cause of property price increases. Note that even in these circumstances there is still a tax advantage for owner-occupied property as the imputed rent is not taxed.

Table 6a: Welfare effects of capital gains taxes when capital gains are due to income growth. Capital gains tax on landlords only, inelastic housing supply ($\eta = 5.0$)

	Average income	Average Welfare change	Fraction worse off	Fraction same	Fraction better off
Capital gains tax on landlords relative to no capital gains tax					
Couples – 1	29676	-4.9%	95.0%	0.0%	5.0%
Couples – 2	43538	15.5%	65.0%	5.0%	30.0%
Couples – 3	48615	9.4%	35.0%	12.5%	52.5%
Couples – 4	50598	3.7%	37.5%	20.0%	42.5%
Couples – 5	52296	1.2%	37.5%	32.5%	30.0%
Couples – 6	58124	0.6%	17.5%	57.5%	25.0%
Couples – 7	60961	-1.0%	32.5%	50.0%	17.5%
Couples – 8	74329	-3.2%	37.5%	60.0%	2.5%
Singles – F 1	19370	-15.0%	100.0%	0.0%	0.0%
Singles – F 2	28656	-3.7%	95.0%	0.0%	5.0%
Singles – M 1	21424	-11.0%	100.0%	0.0%	0.0%
Singles – M 2	32259	1.2%	85.0%	0.0%	15.0%
Total	46899	0.7%	54.8%	23.8%	21.5%

Source: Author's calculations using the Binning-Coleman model.

Table 6b: Welfare effects of capital gains taxes when capital gains are due to income growth. Capital gains tax on all households, inelastic housing supply ($\eta = 5.0$)

	Average income	Average Welfare change	Fraction worse off	Fraction same	Fraction better off
Capital gains tax on all households relative to no capital gains tax					
Couples – 1	29676	1.0%	25.0%	30.0%	45.0%
Couples – 2	43538	9.1%	0.0%	22.5%	77.5%
Couples – 3	48615	9.0%	5.0%	12.5%	82.5%
Couples – 4	50598	5.1%	2.5%	2.5%	95.0%
Couples – 5	52296	4.7%	0.0%	2.5%	97.5%
Couples – 6	58124	4.3%	0.0%	2.5%	97.5%
Couples – 7	60961	2.4%	5.0%	5.0%	90.0%
Couples – 8	74329	1.6%	10.0%	0.0%	90.0%
Singles – F 1	19370	-4.7%	60.0%	40.0%	0.0%
Singles – F 2	28656	3.4%	0.0%	25.0%	75.0%
Singles – M 1	21424	-2.0%	55.0%	40.0%	5.0%
Singles – M 2	32259	4.0%	5.0%	30.0%	65.0%
Total	46899	3.8%	10.8%	14.5%	74.8%

Source: Author's calculations using the Binning-Coleman model.

6. Qualification(s)

The analyses conducted and presented in this note come from a model. Models are simplifications of reality that allow answers to be formulated to complex economic questions in a consistent way. It is often the case that trade-offs are made when models are built, some aspects are simplified to allow more detail and realism in other areas. In this section we note some of the simplifying assumptions that were required to make the problem more tractable and their likely implications for the results.

A key contribution of this paper is the calculation of endogenous house prices and rents when there are ownership and rental sectors. Heterogeneity in housing markets is also introduced, although some simplifications are necessary to allow house prices to be endogenized. This circumvents an otherwise difficult problem. For example, we allow for a range of housing options, but we only consider two house types.

The model is setup to explain the long-run effects of tax policy interventions on the housing market. As a consequence it only allows for long term rational expectations and it only examines the effect of continuous changes in inflation and income growth. It doesn't examine how discrete changes to the level of interest rates or population may lead to one off changes in the level of house prices and rents, and how a capital gains tax may affect prices and expectations in these circumstances. These are likely to have

been an important component of New Zealand's recent history. The low level of international interest rates means these one-off changes may not reoccur – or they may even reverse.

The long run consequences of population growth are not captured in this model. These may have different effects than long run income growth. Long run income growth creates pressures to build better houses while long run population growth creates pressure to build more houses and houses that are either more costly to build or less conveniently located. This problem is less amenable to current modelling techniques as it involves long term changes in income-house price ratios when the housing supply is not elastic. We are currently considering this issue.

Finally, the model attempts to take into account the competition between landlords and owner-occupiers and the different credit constraints on these two parties. However we have not been able to model the effect credit constraints have on landlords. This is because many landlords are sufficiently wealthy that they will not be affected. Furthermore we are unable to determine which landlord is the marginal landlord. We are also unable to allow for “bubble” expectations among landlords. These features could also be important for understanding the New Zealand housing market and the impact of the introduction of a capital gains tax.

7. Conclusion

In this note we investigate the long-run impact of introducing a capital gains tax on residential property in New Zealand. We do this by developing an overlapping generations model of the housing market with four cohorts; two young, one middle aged and one retired. Each cohort consists of a large number of households that differ by income. The housing market consists of small and large houses; small houses can be rented, shared or owned while large houses are owner-occupied only. Agents choose consumption, saving, borrowing and their housing plans to maximize lifetime utility subject to their budget constraints. The two young cohorts face additional realistic borrowing, debt servicing and repayment constraints that make home ownership difficult. House prices and rents are determined endogenously within the model. We calibrate the model to match key features of the New Zealand housing market, income distribution and economy. The model is used as a laboratory to see how key housing market statistics and household welfare change, in the long run, when a capital gains tax is only imposed on landlords, and both landlords and owner-occupiers. We investigate the implications for both nominal and real capital gains.

Our findings can be summarised as follows:

- (i) Imposing a capital gains tax on landlords can worsen overall welfare, while imposing a capital gains tax on all houses can improve it.
- (ii) Introducing a capital gains tax raises rents more than house prices fall. This affects poorer and younger households as they are more likely to rent. House

prices don't fall by quite so much because owner-occupied housing is still tax advantaged, as imputed rents are not taxed.

- (iii) In the paper we have examined the effect of a capital gains tax when capital gains can be expected to be ongoing as they stem from generalised inflation or real income growth. The results are similar. Other factors that have generated house price growth like high population growth have not yet been analysed. Some factors such as declining interest rates that have contributed to high house price growth in the past are unlikely to occur on an ongoing basis and may not contribute to future house price growth, or could be reversed.

Raising a capital gains tax on landlords when capital gains are entirely due to inflation risks reducing the welfare of many people. Those who have low incomes face higher rents without much compensation. In contrast, a capital gains tax on all households will be advantageous to a large majority of young and new households, even though it also raises rents. This is because it lowers house prices and allows a sufficiently large reduction in other taxes for households to afford either higher rents or their capital gains tax bill. The improvement in welfare stemming from lower house prices is offset by the welfare losses of current property owners, many of whom have gained from the artificially high prices induced by current tax arrangements.

When capital gains are driven by real income growth and a capital gains tax is only imposed on landlords, welfare also falls for the majority of new households. Most of the adversely affected households are low income, and they are disproportionately single. These groups rent, and rents increase, but they only get a modest rebate from the tax revenue as little is raised, because most households do not pay the capital gains tax.

If capital gains are real and capital gains taxes are raised on all households, a very different situation emerges. A large majority of new households are better off because house prices decline. The capital gains tax is offset by the reduction in GST, so households that purchase at some stage in their lives gain from the reform by paying less for the house they purchase. Once again, the new cohort's gain is balanced by the loss absorbed by current owners of property, which is a similar mechanism that occurred when inflation was the sole cause of property price increases. Even in these circumstances there is still a tax advantage for owner-occupied property as the imputed rent is not taxed.

The modelling results in this paper suggest that tax rules that provide tax advantages to housing may hurt the households they are intended to help. This is because some of the tax advantage is captured as higher house prices. There is a long tradition in economic theory, dating back to Ricardo (1817) that well-intended government interventions can backfire if the incidence of the tax is shifted from the intended beneficiaries to property owners. Our results are in keeping with this literature. More recent analysis of these issues includes Skinner (1996), Gervais (2002), Hilber and Turner (2014) and Sommer and Sullivan (2018). These papers all suggest that tax concessions to housing are likely to reduce the welfare of young and new households by increasing the price of housing. Most of these papers are theoretical, like ours, but Hilber and Turner (2014) provide

empirical evidence that the U.S. policy allowing households to deduct mortgage interest payments from their taxes has not had the hoped for improvement in housing affordability as it has led to higher house prices. The broader lesson is that analysis of the effects of tax policies that does not incorporate how the incidence of the taxes may be changed via the effect on property prices can be deeply misleading. Our results are in keeping with this lesson.¹⁶

¹⁶ We have also undertaken analysis in this model investigating the introduction of a land tax. We find the introduction of a land tax has more extensive effects.

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Appendix

The effect of the tax system on young homeowners

The accompanying table (Table A1) outlines the calculations facing landlords and young potential homeowners. It is assumed that a first house costs \$400,000, costs such as maintenance and insurance and rates facing landlords and homeowners are \$5000 per year, the real interest rate is 4 percent, the tax rate is 33 percent, and inflation is either 0 or 2 percent. The table shows the relative cost of owning or renting for a household with an \$80,000 deposit.

There are five columns. The first column assumes there is zero inflation and no tax on capital income. In this scenario, neither the tax rate nor the inflation rate has any effect on the household's decision. In the remaining four columns the inflation rate is assumed to be 2 percent, but the tax regime varies: no taxes at all, the current tax regime, the current tax regime plus a capital gains tax on landlords, the current tax regime plus a capital gains tax on all households.

When the inflation rate is zero and there is no tax, landlords charge \$21,000 rent – just enough to cover the \$16,000 interest they could earn plus the \$5000 costs they face. If the young household lent their \$80,000 and rented, their net cash costs would be \$21,000 less \$3200 interest, or \$17,800. However, a standard 25-year amortizing mortgage of \$320,000 requires an annual payment of \$20,483, including \$7683 principal repayment. Purchasing a house means the household has to find this amount plus \$5000 costs, which is \$25,483 or \$7683 more than the cost of renting and lending. The additional cash flow requirement is exactly the same as the principal repayments they make. The overall cost of renting and owning is the same in these two cases but owning comes with the obligation to save more. If a household cannot borrow any additional amounts, they may choose to rent rather than own as this frees up cash for them to spend on other things.

If the inflation rate is 2 percent, nominal interest rates increase to 6 percent (6.08 percent to be precise). Suppose there is still no tax. Landlords need to make \$24,320 to be as well off as lending money, and as they make an \$8000 capital gain the rent stays more or less the same as before: \$21,320. If the young household lent their \$80,000 and rented, their net cash costs would reduce to \$16,456, as they earn higher interest to compensate them for the loss of the value of their capital. However, a standard 25-year amortizing mortgage of \$320,000 now requires annual payments of \$25,223, including \$5767 principal repayment. If the household purchases a house they have to find this amount plus \$5000 costs, which is \$30,223 or \$13,767 more than the cashflow necessary to rent. The total cost of homeownership and renting is still the same, because they make \$8000 capital gain in addition to the saving from the principal repayments. The cashflow requirement is nearly twice as large as when inflation was zero. Even though the cost of owning and renting are the same, inflation is likely to make many households defer home-ownership because they cannot find the additional cash, or cannot make the higher payments without suffering big drops in other consumption.

The situation for young households changes under our current tax system. Landlords can afford to charge lower rents as they get tax-free capital gains. Since interest income is taxed, but capital gains are not, rents can fall by nearly \$4000 to \$17380. A young household that rents and lends now has net outgoings of only \$14121. The cost of owner-

occupancy is unchanged. This means the cashflow saving from renting has increased to \$16,102. Taking into account the homeowners' savings and capital gains, renting is actually cheaper than owner-occupancy, by \$2335. (This is not true for people with a large amount of equity in their homes: for someone who owns outright, the tax system makes them \$4000 better off from owning rather than renting and lending, even though they would be equally well off if there was no tax). The current tax system therefore provides big cashflow advantages to renters, as well as making ownership cheaper overall, so long as they only have a small deposit.

What happens if a capital gains tax is introduced on landlords? Landlords no longer make tax-free capital gains and have to raise rents by nearly \$4000 to \$21,320 (the same as if there were no taxes at all) to make as much as lending their money. The increase in rents not only reduces the cashflow advantages of renting, but it makes it more expensive than owning. Potential renters now face a much more difficult choice. Under the current tax system renting saves them \$2335, and requires \$16,100 less cash. Under the new system it costs them \$1605 more to rent than own, and only frees up \$12,162. Many more people will want to purchase in these circumstances, despite the higher cash-flow costs. Other people will wish they could afford to make the high interest payments, but choose to rent because they can't afford the high mortgage payments that include large principal repayments.

If a capital gains tax is introduced on owner-occupiers and landlords, the calculus changes again. Rents remain elevated; the cashflow costs of homeownership remain the same (depending on when the capital gains tax is paid); but the overall gains from homeownership are reduced, and are once again negative for people with low equity in their homes. They are still positive for people who have a large equity position in their home, as they have to pay full tax on interest earnings but they only pay tax on capital gains, not their imputed rent.

These calculations indicate that a capital gains tax on landlords is likely to raise rents, assuming house prices stay the same. But won't house prices change? Yes, they will. But it is not obvious that they will decline. When a capital gains tax is introduced on landlords, home-ownership becomes more attractive than it does under the current tax system, and more attractive than a neutral (zero tax) system. This means young households will compete amongst themselves for the available supply of houses, for even though landlords no longer get a tax advantage the tax advantage households gain relative to renting and lending is larger, and it increases with the equity they have in their houses. This competition will place a floor on house prices. It is not clear how low the floor will be. It will be lower if there is a capital gains tax on all households as owner-occupiers will be less prepared to pay a premium to purchase as the advantages of homeownership are not as great.

It is possible that house prices could increase. Relative to the current tax regime, a tax regime with capital gains taxes on landlords increases the long run benefit and reduces the cashflow advantage of renting. This will make young households less willing to defer homeownership. Currently many young people share accommodation with each other or their parents, rather than purchasing a house by themselves (or with their partner) and leaving bedrooms empty.

If they share with other young people, this reduces the total demand for housing relative to the case that they rent or purchase and live by themselves. If they leave these shared housing arrangements earlier under the new tax regime, because the advantages of renting are so much lower, the total demand for housing will increase. Paradoxically, this increase in the total demand for housing could increase house prices. The net position will depend if credit-constrained young households are more willing than landlords to buy houses when the trade-off between the cashflow-advantage and the total-cost advantage or disadvantage of renting is altered. The model in this paper suggests they are leading to a modest increase in house prices.

**Table A1:
The costs and benefits of renting versus purchasing housing for different households**

	Inflation = 0%		Inflation = 2%			
	No tax		No tax	Current tax	CGT landlords	CGT all households
Lending \$400,000						
-after tax income	16000		24320	16294	16294	16294
Landlords with \$400,000						
-after tax capital gain	0		8000	8000	5360	5360
-costs	-5000		-5000	-5000	-5000	-5000
-rent	21000		21320	17380	21320	21320
Young household with \$80000 deposit						
Renting						
-interest	3200		4864	3259	3259	3259
-net rental	-17800		-16456	-14121	-18061	-18061
Owning						
-capital gain	0		8000	8000	8000	5360
-interest payment	-20484		-25223	-25223	-25223	-25223
-(principal)	7684		5767	5767	5767	5767
-costs	-5000		-5000	-5000	-5000	-5000
-total cashflow	-25484		-30223	-30223	-30223	-30223
-net costs	-17800		-16456	-16456	-16456	-19096
Advantage of ownership	0		0	-2335	1605	-1035
Cashflow disadvantage	-7684		-13767	-16102	-12162	-12162
Household with \$400,000 owning house outright						
Advantage of ownership	0		0	4085	8026	5386

Source: authors' calculations. The tax rates are assumed to be 0% or 33% in all calculations. The real interest rate is 4%. The inflation rate is either zero (first column) or 2% (remaining columns).

Appendix B: Methodology for calculating revenue forecasts

Extending the taxation of capital income

Assumption: Growth rate

1. Residential investment property is assumed to grow at a 3% nominal annual rate (2% inflation plus 1% real growth rate) similar to what is projected in the 2018 Budget Economic and Fiscal Update.¹⁷ That rate is also used for other categories of real property.
2. New Zealand shares are assumed to appreciate at 3% per year.¹⁸

Assumption: Size of base

3. The table below shows how initial values (from 1 April 2021) were derived from the most recently available data. From the most recent data available, prices are assumed to increase at a rate of 3% per year until 1 April 2021. In addition, the base for residential investment property and commercial and industrial are presumed to increase by an additional 2.8% to reflect additional building investment.

Base	Data Source	Observation Date	Value at Observation Date (\$Billion)	Grossed-Up Value at 1 April 2021 (\$Billion)
Residential rental property	Reserve Bank Household Balance Sheet	December 2017	269	324
Commercial, industrial and other property	Corelogic	October 2017	217	261
Rural	Corelogic	October 2017	181	199
Domestic shares	Reserve Bank Household Balance Sheet and Managed Fund Assets	March 2018	131	143

Assumption: Turnover rate

4. The costing incorporates a realisation basis. For real property categories, average holding periods are taken from Core Logic data as of the first quarter 2018. These are:

¹⁷ BEFU 2018 projects house prices to increase by 3.4% in 2021 and 3.7% in 2022.

¹⁸ NZX capital index information shows New Zealand shares appreciated by 3.7% per year on average from 1990 – 2017.

- Residential investment property – 6.40 years;
 - Commercial and industrial property – 7.12 years;
 - Agricultural property – 6.90 years.
5. New Zealand shares are assumed to have an average holding period of two years.

Risks: Risks that the forecast revenue could be understated

6. **Unknown parts of the base** – The forecast base uses elements of the base that are known through published statistics – values of real property and New Zealand shares. Some elements of the base are not known and so are not costed. These include – residential property that is not owner-occupied housing or residential investment property (eg, second homes), shares in Australian listed companies, and shares in private companies and intangible property such as goodwill, brands, trademarks and intellectual property.

Risks: Risks that the forecast revenue could be overstated

7. **Overlap with current revenue account property** – Some property is already subject to tax on gain when sold (revenue account property). The most significant of these are real property sold by developers and dealers. This is not adjusted for due to lack of information. This also includes property subject to the brightline rule and taxable under the intention test.
8. **Tax motivated behavioural change** – It is possible that taxpayers could change their behaviour to improve tax outcomes from a realisation based tax, such as accelerating realisation of losses and deferring realisation of gains. This is not incorporated due to lack of information to make an accurate assumption.

Risks that could either overstate or understate the forecast

9. **Variation from assumptions** – actual conditions may vary from what is assumed. In particular, the actual appreciation rate is likely to vary over time and be both above and below the assumed growth rate at times. Other factors, such as size of the base and turnover rates, could also vary from the assumptions.

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Glossary

Aggregate demand: The total demand for goods and services within a particular market.

Automatic stabiliser: Economic policies and programs that offset fluctuations in a nation's economic activity without intervention by the government or policymakers.

Capital income: Income that is a return on invested capital (that is, income from owning something rather than from personal effort) such as interest, dividends, rental income and the return on capital invested in a business.

Capital gains: An increase in the capital value of an asset.

Depreciation (economic): The decline in the market value of an asset over its life.

Depreciation (tax): The decline in the value of an asset for taxation purposes, which may differ from economic depreciation.

Effective tax rate: The amount of a person's income the person actually pays in taxes.

Fair dividend rate: A method of taxing foreign shares. Income is deemed to be 5% of the opening market value of shares, and tax is paid on this amount.

Financial institution: A business engaged in the business of dealing with monetary transactions, such as deposits, loans, investments and currency exchange.

Financial system: The system that enables lenders and borrowers to exchange funds.

Foreign direct investment: Investment in the form of a controlling ownership in a business in one country by an entity based in another country. It is distinguished from a foreign portfolio investment by a notion of direct control.

Inflation: A general increase in prices and fall in the purchasing value of money.

Labour supply: The total hours that workers wish to work at a given real wage rate.

Land-rich company: A company where most of the value of the company is attributable to land.

Lock-in: Where the deferral of taxes on capital gains until realisation deters investors from selling assets even when selling it would be profitable.

Loss-continuity: Rules that determine whether losses from a previous year can be applied in following years.

PIEs: A portfolio investment entity (PIE) is a type of entity, such as a managed fund, that invests the contributions from investors in different types of investments. Eligible entities

that elect to become a PIE will generally pay tax on investment income based on the prescribed investor rate of their investors, rather than the entity's tax rate.

Productivity: The ratio of outputs to inputs in a firm, sector or economy. Labour productivity is usually measured as output per hour worked. Multi-factor productivity is the growth in output that cannot be explained by growth in inputs (labour, capital etc).

Risk-free rate of return method (RFRM): RFRM is a method for calculating and taxing the income generated by an asset. Under RFRM, the total income generated by the asset is calculated by applying a risk-free rate to the equity held by the owner in the asset; the result is then taxed at the taxpayer's marginal rate.

Real property: Property consisting of land or buildings.

Realisation: Generally when an asset is sold, however can include some other situations such as where property is destroyed, gifted or inherited.

Relationship property settlement: Where property owned jointly by spouses or partners is split upon a relationship ending.

Rent to price ratio: The amount of rental income earned from a property as a proportion of the price of the property.

Rollover: Where the profit on the realisation of an asset is not taxed and is instead deferred until a later realisation of the asset.