Comments on "Tax, foreign investment and productivity":
Draft long-term insights briefing, February 2022

by

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General Comments

By and large, this is a well-constructed detailed analysis of the impact of taxation on foreign direct investment. It contains some very useful information making the case that New Zealand has a higher cost of capital for foreign direct investment compared to OECD countries due to taxation. Its strength is its careful review of various options with respect to company tax reform, which I found particularly well developed.

In my review of the document, I want to raise several general issues that need more attention for further development. Specifically,

- Why do we care about foreign direct investment (as opposed to the sum of domestic and foreign controlled investment)?
- What taxes should be included in evaluation of effective tax rates on capital investment and how might this affect New Zealand's ranking?
- What alternative forms of international financial arbitrage could be considered in measuring effective tax rates?
- How does income and capital risk impact effective tax rates?

While I will try to reference some additional papers relevant to this discussion, I am afraid that I will borrow many concepts from the work that I have developed in the past forty years. Since 1984, I have worked with Finance Canada to help develop marginal effective tax rate (METR) analysis based on original work with Robin Boadway and Neil Bruce (the first piece published in the Canadian Journal of Economics in 1984). I have published many extensions to this work over the years considering risk and tax losses, inventory holdings, small businesses, financial arbitrage and complicated issues such as tax holidays, asset-based capital taxes, minimum taxes, time-to-build capital models, resource taxation and international taxation (such as interest limitations, double-dip financing and deferral taxation of subsidiary profits). I apologize for perhaps too much attention to this work but the points I raise should be relevant to further analysis to build upon this excellent paper by New Zealand's Inland Revenue department.

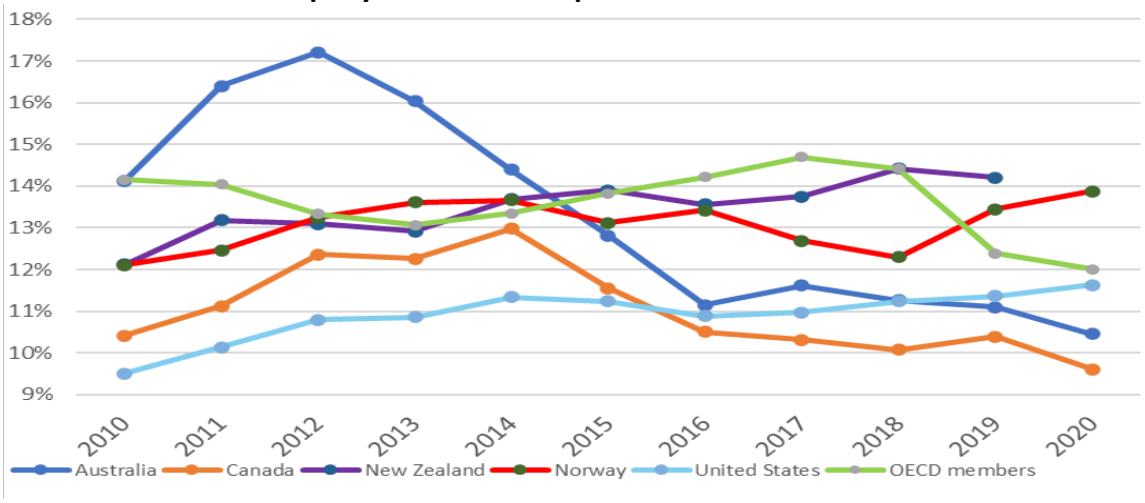
Below, I begin with several general points listed above. This will be followed by very specific comments on individual paragraphs through the report.

Why foreign direct investment as focus?

New Zealand's economic growth and productivity depends on total capital formation, both private and public investment. Of private investment, both domestic and foreign direct investment is critical for growth. As the paper makes clear, it is focused on foreign direct investment as an earlier paper written by Inland Revenue addressed tax policy and productivity. However, some justification is needed as to why limited foreign direct investment is a problem as opposed to private investment in general.

In some recent work, I happened to look at company investment as a share of GDP for various countries (OECD statistics), including New Zealand as shown in the figure below. As seen below, company gross fixed capital formation in New Zealand is better than Australia after 2015 and OECD countries in general. As the paper points out (page 11), foreign direct investment as a share of GDP in New Zealand is well below that in Australia and the OECD in general.

Company Gross Fixed Capital Formation as a share of GDP



There are differences in methodology when comparing fixed capital formation with foreign direct investment data that is important to keep in mind. Fixed capital formation is based on investment in real capital (e.g. machines, structures, and land). while foreign direct investment is typically measured as investment in foreign assets (equity and debt) with at least 10 percent ownership (which typically includes takeovers, retained earnings and greenfield investments). The point is whether New Zealand as an underinvestment problem with insufficient foreign direct investment.

A considerable literature has developed over the years regarding the benefits and costs of foreign direct investment. Benefits include access to international technology and management, higher rates of innovation and better productivity. It would be valuable for both policymakers and the public to know this literature and any documentation of FDI benefits in New Zealand.

What are the relevant tax policies impacting investment?

The paper focuses on company income taxes and withholding taxes on related and unrelated party debt interest. Yet, when it comes to the taxation of capital investment, several other taxes should also be considered including sales taxes on capital purchases, asset-based taxes (capital taxes and property taxes), and transfer taxes (stamp duties, real estate transfer taxes and financial transaction taxes which can impact interest rates). Non-credited withholding taxes on royalties and fees are also relevant. Data limitations might make it difficult to include some taxes such as municipal property taxes that are not easily measured by industry for most countries.

The New Zealand paper focuses on firm-level taxation for large companies and both firm and individual level taxation on dividends and capital gains (the latter absent in Australia) for small businesses. I will discuss below the issue of international financial arbitrage in an open economy. However, it is appropriate to exclude New Zealand's personal taxation in evaluating effective tax rates on FDI.

Some accounting firms will include taxes on labour such as payroll and personal income taxes in the cost of capital. This is incorrect to do so since it biases upwards effective tax rates. To understand this point, suppose two taxes are imposed on companies: company income taxes and an employer payroll tax. As often measured by some analysts, the effective tax rate would be equal to firm level taxes divided by profits gross of the company income and payroll taxes. However, the denominator of the effective tax rate is also expressed as after-tax profits plus company and payroll taxes. If the capital-labour ratio goes to zero, the effective tax rate is basically payroll taxes divided by payroll tax, or 100 percent. Instead, one should measure effective tax rates separately on capital, labour and other inputs (such as energy) and aggregate them to measure an effective tax rate on the marginal cost of production.[1]

In work that I have done over the years[2], we include sales taxes on capital purchases (which are important in some countries when some sales taxes are not refundable such as in Brazil, United States and Canada), asset-based taxes (except municipal property taxes), transfer taxes and withholding taxes applied to both residents and non-resident investors. The New Zealand paper covers the relevant ones for New Zealand since VAT is refundable for businesses and no transfer and general asset-based taxes are applied. However, when comparing rankings, it makes a significant difference as to which taxes are included. In our calculations, the stamp duty in Australia adds about 3 points to the METR, which would result in Australia having a

[1] See K. McKenzie, J. Mintz and K. Scharf, "The Measuring Effective Tax Rate in the Presence of Multiple Inputs: A Production-Based Approach", *International Tax and Public Finance*, Vol 4 (3), 1997, 337 - 360.

[2] For the latest version, see Philip Bazel and Jack Mintz, "2020 Tax Competitiveness Report: Canada's Investment Challenge", SPP Research Paper 14(21), The School of Public Policy, University of Calgary, September 2021. Finance Canada also includes sales taxes on capital purchases and asset-based taxes except property taxes. They do not include withholding taxes and real estate transfer taxes.

higher METR than New Zealand. The retail sales tax in the United States adds almost 5 points to the METR which in aggregate is 22.6 percent.

The OECD work only focuses on company income taxes as pointed out by the paper. It is also quite selective with sectoral and asset coverage which includes manufacturing, office buildings estate, transportation, communication, power, computers, software and research and development.[3] Excluded are resource sectors (agriculture, forestry, mining and oil/gas/coal) and other service sectors (business services (including many technology firms), construction, finance, wholesale and retail trade). The paper should acknowledge these limitations as various other studies have a wider breadth of coverage such as the Congressional Budget Office (United States) and Finance Canada.[4]

The important question, after adding more sectors and assets to the model, is whether it makes any difference to the qualitative conclusion that New Zealand investment is more heavily taxed with a METR of 20.1 percent than most OECD countries except for Costa Rica, Japan and Chile (company income tax only). It is also above the OECD average of roughly 23 percent.

In our work, using tax depreciation of 2 percent (declining balance) for structures, the New Zealand METR would be 25.7 percent. However, with our estimates, New Zealand's METR would be below five OECD countries: Japan (38.8 percent), South Korea (29.3 percent), Australia (28.1 percent), France (28.0 percent) and Germany at 26.1 percent).[5] [6] Many

[3] As the New Zealand paper notes, research and development is a small portion of capital in its METR model, consistent with most other studies. What should also be noted is that R&D might be supported by grants instead of tax support. For example, the US relies much more grants than tax support, which would result in a lower METR on capital if such support were included. In our work, we often exclude R&D since an international comparison should include both grants and tax support. When we have included tax and grant support, the METR declines by less than two points.

[4] Construction, mining and oil/gas and research and development are particularly complex to model since it involves a time-to-build model with two stages. Inputs (exploration, research and development, labour and capital) are hired to build capital (an office building, mineral reserves or a product) which takes several years. Once the capital is available for use (a building, reserves or patent), production takes place that leads to depreciation, amortization or depletion of the capital. For an example of time-to-build modelling for oil and gas, see J. Mintz, "Taxes, Royalties and Cross-Border Investments," in *International Taxation and the Extractive Industries*, ed. P. Daniel et al. (Washington D. C.: International Monetary Fund, Routledge, New York and London, 2016).

[5] In Bazel and Mintz 2021 (and earlier work), we use Finance Canada estimated economic depreciation rates for assets based on relatively up-to-date Statistics Canada analysis rather than BEA data that is out-dated. The average declining balance economic depreciation rate for structures is 6.7 percent (declining balance), over twice as high as average industrial and commercial depreciation rate used by New Zealand. An important factor in these estimates is the degree to which capital good prices fall, which might be higher in a Canada depending on the type of structures involved and temperature. However, Statistics Canada did find a substantial increase in economic depreciation in the past several years due to technological obsolescence (pipeline depreciation rates, for example, doubled when estimates were made in the past decade and half compared to the 1980s).

[6] If we matched the economic depreciation rate to tax depreciation rate at 2 percent for a METR of 19.8 percent, New Zealand would have a METR below 12 countries: Belgium (23.3 percent), Costa Rica 23.1 percent), United States (22.6 percent) Portugal 22.1 percent), United Kingdom (21.2 percent), Austria (20.6 percent) and Norway

countries that end up having a higher METR than New Zealand are due to other taxes on capital such as transfer taxes (Australia, France, Germany, South Korea and United States), asset-based taxes (Japan and United States) and sales taxes on capital purchases (United States).

The point is that there METR measurements vary significantly depending on the coverage of capital-related taxes, sectors, assumptions, and estimated parameters. The paper might wish to refer to some other studies to support the conclusion that New Zealand is a relatively high-tax country with respect to FDI.

International Financial Arbitrage

The most vexing problem in modelling effective tax rates on capital is with respect to financial arbitrage. Company investors include individuals who pay personal income tax on dividends and realized capital gains, pension funds that typically pay no tax on their capital income (although Australia is an exception) and non-residents who pay New Zealand withholding taxes and company or personal income taxes to their host governments. The key issue is that there are host of different tax rates across individual and intermediary investors.

Taking into account both company and personal taxes, some models have equalized before-tax rates of return on capital with differing after-tax returns. Others, perhaps arguably better grounded in theory, equalize the after-personal-tax returns earned by investors. Another approach is for the firm to be indifferent in issuing debt and equity (the cost of debt net of company tax savings is equal to the cost of equity finance), which implies after-personal-tax rates of return vary.

The New Zealand paper makes crucial assumptions that are helpful in sorting out international financial arbitrage. Foreign-owned multinational operating in New Zealand would invest in capital at the international rate of interest for debt and cost of equity finance. New Zealand savings are too small to affect the international cost of funds as it is a small open economy. Some empirical support might lend itself to home bias, based on asymmetric information, in equity financing that would be relevant to New Zealand-owned enterprises but for foreign-owned company investments in New Zealand companies, home bias is less relevant.

The paper assumes that the international interest rate on bonds is not equal to cost of finance on page 7 in the appendix, but these are equated in value (paragraph 2.13 page 12). This is a questionable assumption if investor tax rates on equity and debt are not the same. If one were to consider a global financial equilibrium, the international cost of funds at the margin would come from the investor who is indifferent between debt and equity, considering both company and personal income taxes [7]. This would be a global individual investor as corporate financial

(20 percent). I note that the OECD estimate of the METR for Canada is about half of the estimate made by Finance Canada primarily due to the absence of many sectors and certain non-company income taxes.

[7] The marginal source comes from investors who would be indifferent between equity and bond assets (Miller, M. H. 1977. "Debt and Taxes." *Journal of Finance,* vol. 32: 261–275. 1977). This implies that the marginal investor would be taxed on income with equal effective tax rates on equity and bonds, accounting for both corporate and

intermediaries and untaxed pension funds would prefer debt for tax reasons to avoid paying the company income tax. The paper might want to include some sensitivity calculations for different forms of international tax arbitrage in terms of how it impacts the cost of capital.

A significant advantage of the New Zealand paper model is to invoke an assumption similar to a static trade-off model for debt finance whereby companies trade off the bankruptcy/risk costs of debt finance with benefits of corporate tax deductibility. A weighted average cost of funds is used to discount future cash flows and the value of tax depreciation allowances.[8] Assuming the international investor is the marginal source of finance, the cost of equity would therefore be below the interest rate since the equity income is typically taxed more favourably (ignoring risk which is discussed below). One could also include bankruptcy cost in the cost of debt as well (by using a corporate bond rate).

However, the relevant personal taxes that affects the cost of equity finance depend on some sort of financial theory explaining dividend and retained earnings decisions. The "new" dividend theory argues that retained earnings is the marginal source equity finance (consistent with the "pecking-order" model of finance) so that dividend taxes are irrelevant in that they are capitalized in equity values. The after-tax cost of equity finance is therefore determined by the cost of finance reduced by (accrual-equivalent) capital gains taxes for the international investor which would be equal to the bond interest rate net of personal taxes paid on bond income. An alternative approach is the "traditional dividend theory" whereby dividends convey information to investors about the company's performance – both dividend and capital gains taxes affect the cost of equity finance. For the international investor, the after-personal tax cost of equity finance is reduced by both accrual-equivalent capital gains taxes and the dividend tax.[9]

Two additional complications are relevant to international arbitrage: incentives for foreign multinationals to finance investment in New Zealand with debt and incentive to shift profits out of New Zealand.

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personal taxes. Assuming binding constraints limiting short selling of securities, other investors would only hold debt or equity depending on their tax rates. Suppose the marginal investor is not taxed on capital gains and dividends at the individual level but fully taxed on interest. This would imply that the marginal investor holding New Zealand stocks would have an investor tax rate on interest equal to 28 per cent (those with higher personal tax rates would only buy equity and those with lower tax rates would buy only bonds).

[8] This approach is similar to A. Auerbach (https://www.nber.org/system/files/working_papers/w0254/w0254.pdf) and R. Boadway, N. Bruce and J. Mintz, "Taxation, Inflation and the Effective Marginal Tax Rate on Capital in Canada", *Canadian Journal of Economics*, 1984, 17 (1), 62-79. The OECD model is based on King and Fullerton (1984) that calculated METRs for each type of finance and then aggregated the METRs resulting in different discount rates for cash flows and tax depreciation allowances. No particular financial theory would support this latter approach.

[9] If international investors equate the after-tax returns on equity and bonds, then $i(1-m) = \rho(1-t)$, with i = bond interest rate, ρ = cost of equity finance, m = tax rate on interest income and t= tax rate on equity income. For the average G-7 individual investor we estimate the interest tax rate is 28 percent and the weighted average dividend and accrual-equivalent capital gains tax on equity income to be 22 percent. That implies the net-of-risk cost of equity finance to be about four-fifths of the bond interest rate.

Companies prefer to finance their international operations with debt issued in countries with high company tax rates and weak currencies (currencies that depreciate due to risk or high inflation). With a weak currency, a bond's expected value will fall leading to a capital loss. If the capital gains tax rate is below the regular tax rate, a firm issuing the bond in a country with a weak currency will benefit from this tax differential. Such exchange rate gains and losses could impact on the cost of finance for a subsidiary operating in New Zealand.

Until recently, New Zealand has had a relatively low inflation rate at a strong credit rating (unlike the 1980s and early 1990s when Kiwi bonds issued by multinationals were popular). The primary incentive for multinationals to issue bonds in New Zealand is to take advantage of its relatively high company tax rate compared to many countries with company tax rates below 28 percent. As the paper notes, foreign companies might use more debt relative to assets, reducing the METR. However, New Zealand's inflation rate has climbed to six percent. Although less than the United States, it is above some other countries like China and Japan that could result in further debt financing in New Zealand.

Like other countries, New Zealand has developed transfer pricing and thin capitalization rules to limit base erosion. However, some of these rules add additional complexity to modelling the METR. The thin capitalization rule is based on the ratio of New Zealand debt/asset ratio to the worldwide average. In the theoretical section of the paper (pp. 23 to 25), it does not appear that the theory for modelling investment takes into account the impact of capital investment and debt on the ability to deduct interest expense. Higher capital investment in New Zealand reduces the ratio of debt to assets (equity plus debt) enabling the company to issue more debt in New Zealand and lower the METR.[10]

A further complication is related to tax planning that could impact the METR calculation. With transfer pricing, investment in New Zealand will generate income that is partly taxed in other countries to the extent that profits are shifted abroad. This results in a lower METR on capital for FDI. If companies are using tax structures that enable "double dipping" for interest, the cost of finance will be much lower as company is able to deduct interest expense in multiple jurisdictions.[11] Without data, it is difficult to determine how much the METR is affected by tax planning strategies that are partly curtailed by thin capitalization rules. However, these issues need further exploration.

To that end, the global minimum company income tax will also affect the METR to the extent a company pays the top-up-tax either in the jurisdiction where the parent resides or in New Zealand should it impose a qualifying domestic minimum tax. While New Zealand company income tax rate is well above the minimum rate, it is possible some companies might pay

[10] See R. Altshuler and J. Mintz, "U.S. Interest Allocation Rules: Effects and Policy", *International Tax and Public Finance*, Vol. 2, No. 1, 1995, pp 7-36. analysis of the US water-edge interest limitation based on debt divided by domestic and net foreign assets. While these differ in impact compared to a world-wide ratio used by New Zealand, the point is that such rules can impact the METR calculation. See also Chen and Mintz 2009 at https://publications.gc.ca/collections/collection_2010/fin/F34-3-13-2009-eng.pdf.

[11] See Jack Mintz and Alfons Weichenrieder, *The Indirect Side of Direct Investment*, (MIT Press), 2010.

minimum tax with relatively fast write offs for capital (which is circumscribed in New Zealand). Much of this new with effects not fully understood yet.

Risk

The New Zealand recognized that the analysis becomes significantly complex when risk is considered (Appendix p. 28). It could be criticized for ignoring risk, but this is not the case. If risk is associated with income or gross profits (revenues net of current costs) and companies can fully write off losses on marginal investment from inframarginal profits, the model used is quite consistent. Leaving aside investor personal taxation, investors hold equity so long as the expected return on equity net of risk is equal to the bond interest rate. With full loss deductions, the cost of risk is implicitly deducted from the company income tax base, thereby resulting in risk not affecting the effective tax rate measure. For example, suppose the expected return on equity is 10 percent and cost of risk is 6 percent, leaving a net-of-risk return on equity equal to 4 percent. If the safe bond interest rate is 4 percent, the investor is indifferent between equity and bonds. Should the government impose a profit tax equal to 50 percent, after tax expected return falls from 10 to 5 percent. The cost of risk falls from 6 to 3 percent (due to full sharing of losses), leaving a net of risk return on equity equal to 2 percent. If bond interest is subject to a 50 percent tax rate as well, then the after-tax return falls from 4 to 2 percent. The investor is still indifferent between equity and bonds. If the expected return on equity is increased by one point as well as the risk premium, the effective tax rate remains the same at 50 percent.

As the paper acknowledges, these equivalencies with respect to risk break down in two ways. The first is related to "capital risk"[12], which arises from unknown economic depreciation of assets. Since tax depreciation is based on historical prices, the government does not share such capital risk. The capital risk term is added to the economic depreciation term, which is not multiplied by one minus the company tax rate. Given net revenues streams generated by capital investment are taxed, the lack of capital risk sharing raises the METR. It is not known how to measure this risk although Bulow and Summers used the risk premium from stock markets as a proxy.[13] The New Zealand paper notes this but wisely does not provide any estimates of capital risk impacts given the lack of estimates.

Income risk impacts the METR when loss offsetting is restricted. Even if losses are carried forward, they are not indexed at a nominal interest rate. The losses may also expire with a firm (although might be transferred to another company in a takeover). The New Zealand paper recognizes this issue but misses an important conclusion. Depending on its history, the lack of

[12] As termed by J. I. Bulow and L. H. Summers, [1984]: "The Taxation of Risky Assets," Journal of Political Economy, 92, 20-39.

[13] The METR should be calculated based on the cost of capital measured net of both depreciation and income or capital risk. V. Jog and J. Mintz, "Corporate Tax Reform and its Economic Impact: An Evaluation of the June 18, 1987 Proposals", in *Economic Impacts of Tax Reform*, ed. with J. Whalley, Canadian Tax Foundation, Toronto, 1989. 1989 show the impact of capital risk on the METR for Canada compared to the METR when only income risk is present. The METR is exceptionally higher using stock market premia.

loss offset under income risk can lead to higher or lower METRs. For those with a history of profits but incurring losses for the first time or start-up companies, the lack of loss-offsetting increases the cost of capital and the METR. However, if a firm is carrying forward past tax losses, the cost capital and METR may be reduced since profits are sheltered from taxation.[14]

Obviously, it would be very difficult to assess the impact of risk on New Zealand companies without detailed history on the timing of profits and losses in each sector. It should be recognized that some sectors might be more impacted by risk resulting in potentially higher METRs by examining estimates of equity risk premia. Further, international studies could be used to compare New Zealand's risk premia with other countries to understand the potential bias to enable some sensitivity calculations.

Conclusion: What is the best company tax?

As I final comment, I return to an overarching question that is quite relevant to company tax reform: what is the best company tax structure for productivity and competitiveness? Many companies will argue for competitiveness whereby a tax break might be needed given tax preferences available in other countries. This leads to a non-neutral domestic policy with some sectors more heavily taxed than others. An alternative view is not to compete on a case-by-case basis with other jurisdictions. Instead, one should pursue neutrality with equal tax burdens across business activities within New Zealand to improve productivity within New Zealand. The New Zealand paper makes a strong case for the latter (par. 2.28 in the main paper) in explaining the value of neutrality in this respect even if other trading countries choose a different approach favouring some jurisdictions.

[14] See R. Altshuler and A. Auerbach, "The Significance of Tax Law Asymmetries: An Empirical Investigation" The Quarterly Journal of Economics, Vol. 105, No. 1 (Feb., 1990), pp. 61-86.

Detailed Comments

Below I provide a list of other comments beginning with the main document numbered by each paragraph rather than page.

1.18 One might want to use the word “reduce” rather than “cut” since the latter is harsher in sound.

Figure 1.4: The switch in colours for countries compared to the earlier graphs makes it harder for the reader to follow. New Zealand should be red throughout.

1.27 The cost of capital formula could be adjusted for capital gains on holding assets as noted later. Economic depreciation is equal to d-q (d= physical wear and tear and q= real capital gains). One can modify equatio by imposing a tax rate on real capital gains for holding assets (the real capital gains can be obtained from deflators for assets assuming they are available). That would give NZ an advantage but empirically show how important it might be compared to other countries.

1.29 There are other small markets around the world (e.g. Ireland) that attract a lot of FDI.

1.32 Even if there are externalities, one cannot conclude what is the best form of intervention. Research support might be better given through a grant system rather than through the tax system as noted here. Further, if the global minimum tax goes through, NZ might want to switch tax credits into grants.

2.18 Do you have any estimates of “rents”. Once rents are adjusted for risk, how much is actually earned in NZ. If small, why worry about it? Further, are taxing rents accruing to foreigners appropriate or is it a form of tax exportation (as a fiscal externality)? Should rents be taxed on a source or consumption basis (note the VAT collects rents on a consumption basis for a country)?

3.3 As mentioned earlier, it would be helpful to make clear what assets, sectors and other key assumptions are used in the Hanappi OECD paper. Perhaps a box describing its methodology would be useful since the NZ paper relies so much on the OECD model comparisons.

3.9 Not sure I understand the statement here. A NZ multinational could be New Zealand controlled but still have a large portion (even majority) of its shares owned by non-residents. I know in Canada many large Canadian-controlled companies have significant non-resident ownership.

3.16 A point often forgotten is that a firm reinvesting profits causes its share value to increase (perhaps dollar for dollar). This results in capital gains that in many countries is taxable at least on a realization basis. Note NZ had top personal rate equal to the corporate income tax rate at one time – one could make a case for shares not be to be subject to capital gains taxes (as I

recall the top dividend tax rate net of the credit would also be zero if the company paid profit taxes at an effective rate equal to the top personal rate). With the drop in company income tax rates below the NZ top personal tax rates, capital gains taxation becomes more critical as noted in the paper.

4.4 Tax depreciation rates are provided throughout. It would be useful to readers to make clear that all reported rates are for declining balance (I understand that straightline can be used for real estate).

4.8 Some explanation is needed to explain why assets with faster depreciation rates have higher effective tax rates with inflation at 2 percent compared to no inflation. Inflation raises the cost of inventory and depreciable capital since cost deductions are based on historical prices. However, the deductibility of nominal interest is a benefit to the firm. The intuition is that assets that turnover more often than longer-lived assets, face a higher penalty (it is opposite of the argument made by Arnold Harberger that an investment tax credit favours investment in short-lived assets). I did differentiate the cost of capital with respect to the inflation rate using the assumption that a one-point increase in inflation causes the nominal interest rates to rise by one point. However, there is an alternative assumption: with personal taxation on nominal interest (and fixed after-tax return on bonds and equity), inflation would cause returns to rise by more than one point (a factor equal to 1 divided by the one minus the personal tax rate on equity or debt in this case). The appendix should be used to clarify these results.

4.8 It should be pointed out whether FIFO is used for inventory valuation as well as an assumption that inventories are held for less than one year. It is not immediately clear that the result is the same for the case of investment with 100% economic depreciation.

4.20 and 4.21 I am puzzled by the argument in this paragraph that a fully creditable withholding tax on interest causes the cost of borrowing to New Zealand to fall. It did not make sense to me in a typical small open economy setting. The effective tax rate might rise since both the company and fully creditable withholding tax are included as taxes (in the absence of the NRWT there would no NZ revenue but there would be foreign taxes payable that are not included in the METR). This does raise an issue about measuring the METR for NZ taxes, ignoring taxes paid by the parent.

5.4 The point that reductions in company income taxes removes the tax on profits earned on old capital is correct. However, this could be offset by a one-time wealth tax on the company to capture the benefit (this was suggested by the US Treasury report in 1984 when Reagan tax reform was proposed).

5.19 When discussing options for reform some mention should be made about the global minimum tax. Given NZ's company income tax rate, modest reductions will not have an impact on minimum taxes. However, accelerated depreciation and tax credits could be clawed back.

5.19 I agree that indexation for inflation is complicated but perhaps worthy when inflation rates become high enough. Also, removing indexation is a signal of tougher monetary policy to curb inflation. Of OECD countries, Mexico corrects liabilities for inflation as well as depreciation, inventory costs and capital gains. Chile has a partial correction for the liability side. Other countries that index profits for inflation include Argentina and, on the asset side, the Dominican Republic. As mentioned, some countries dropped indexation such as Israel and Brazil when inflation was controlled. However, even at 2 percent, inflation does create distortions.

5.19 The allowance for corporate equity will result in more companies in a tax loss position. If losses deductions are restricted, that creates a more unstable company tax over time (the move to lower rates and broaden bases in the mid-1980s was in part driven by the instability caused by growing loss pools). If losses are fully refundable, NZ could become a dumping ground for losses if other countries do not provide full loss refundability.

6.18 Does the global minimum tax put a floor on income from intangibles only. The carveout eventually equal to 5 percent of labour compensation and tangible assets may not be equal to income earned on tangible assets.

6.20 It is not clear as to why one cannot have a separate rent tax on location-specific rents over and above the company income tax. In fact, many countries do this for resource profits that are location specific. For example, the British Columbia, Alberta, UK and Norway have a general company tax applied to all sectors and then a specific company tax applied to rents earned by mining or oil and gas companies (in Alberta and British Columbia the additional tax is called a royalty or mining profit tax respectively, but it is essentially a rent tax for oil sands and mining respectively). If the company income tax is reduced, Norway raises the specific company tax rate as an offset. If rents are not related to location but instead innovation, what would be the implication for company tax policy in NZ? This should be made clear.

6.29 The problem of imposing a rent tax with full taxation of dividends and realized capital gains is that it becomes a double tax on rents. Companies will have an incentive to pay out rents in deductible payments like royalties, employment compensation or fees. The Mirrlees Report was consistent in that it recommended rent taxation at both the personal and company levels.

6.33 Even in 2019 and 2020, the weighted average company income tax rate among OECD countries has slightly fallen (not increased). However, some countries have been raising rates. It is true the simple and weighted average company income tax rates have fallen over time but a wide variation in statutory tax rates across countries remains. The race to the bottom is not leading to convergence to zero. I believe 137 countries have not signed the agreement for Pillar Two at this point although the final outcome still hinges on unanimity in Europe and US Congress passing legislation. If countries put in place the minimum tax, some might reduce the general company income tax rate to maintain productivity or competitiveness, as some experts predict.

7.3 It could be mentioned that the investment tax credit is equal to accelerated depreciation multiplied by the company income tax rate (under the global minimum tax accelerated depreciation will be preferable given the approach to timing differences and deferred tax liabilities that maintain some value – the ITC benefit can be entirely clawed back).

7.7 One could introduce an allowance for inventory costs as an offset for inflation that has been adopted by some countries in the past.

7.15 It is not at clear that only taxpaying firms with high METRs are of concern. Start-up companies could have an even higher METR by not being able to use cost deductions when in a loss position (the METR could be higher than the taxpaying firm METR).

7.17 One could have different acceleration depreciation rates for structures and machinery to provide a "neutral" tax preference for different economic depreciation rates.

8.16 If inflation provides a benefit to companies issuing debt but results in higher taxes on interest income for bond investors, is a correction for liabilities required if corporate and personal income tax rates are equal?

9.2 If there are specific liabilities associated with subsidiaries in a country, different from the corporate group, equity and debt financing may not be perfect substitutes. Further, managerial incentives for a subsidiary are affected by the choice of internal debt versus equity.

9.4 Given opportunities for tax planning, such as double-dip interest deductions, the high NZ company income tax rate makes such planning more attractive (tax relief is the sum of company tax rates faced by the parent and subsidiary).

9.5 As mentioned above, the METR is affected by the ratio of global debt to assets used to limit interest deductions. A company increasing its investment in New Zealand will find it can write off more interest expense, giving an extra incentive for investment. In other words, thin capitalization could actually reduce the cost of capital when this happens. This should be explicitly modelled.

10.5 It should be mentioned that the ACE recommended by the Mirrlees report would be compatible its suggested personal tax reform, which uses a tax free allowance for savings. This is much different than keeping capital income taxes at the personal level.

10.6 The ACE removes the tax on marginal inbound investments if we know how to measure the true normal rate of return that exempts profits. Using the government long term bond rate might not be sufficient to recognize risk when loss offsetting is imperfect, as the paper mentioned below. Further, marginal investments for multinational companies might have negative METRs if they can borrow abroad to finance investment in NZ, getting a second deduction for equity costs (a point recognized elsewhere) as found in Belgium. Further,

companies can lease capital abroad and still benefit from ACE. International tax planning will be easier.

10.9 If the global minimum tax is adopted by New Zealand would ACE be clawed back?

Box on page 77. I suggest adding the word “taxable” in front of retained earnings.

10.14 How would the risk premium be assessed? If loss offsetting is imperfect or firms are credit constrained (eg. smaller companies), we really don’t know how to measure the appropriate interest rate. If the allowance is wrong, the METR will be higher or lower than zero. If one looks at carry forward rates for cash flow taxes in Australia, Canada, Norway and UK, they are all over the map. Further, the ACE will increase the incidence of non-taxpaying companies that in itself creates instability in the tax system as companies try to trade tax losses.

11.3 One could also mention investor or equity financing tax credit incentives. These often undermine productivity since it encourages companies with poor economic prospects to issue equity to investors who are focussed on tax benefits.

11.12 Would a patent box regime with benefits tied to R&D activities be a good idea?

11.4 It would be useful to understand how much location-specific rent is earned in NZ.

11.15 Not all countries are able to get away with 78 percent tax rates on rents (most countries provide a deduction of the rent tax from taxable company income). It helps that the Norwegian government has a controlling share of some of its oil and gas companies. Countries with low rents and political instability provide a greater share of rents to attract the top resource companies. Note the METR with a resource rent tax is not zero when the company income tax is based on shareholder profits (there are important interaction effects), a point that I have made in several papers.

11.18 In a principal-agent model with the government as owner of the resource serving as the principal and the agent being a company with unknown quality, the contract will result in rent sharing in order to attract the best agent to satisfy a participation constraint (see Laffont and Mortimont). The discussion regarding Norway is more theoretical than consistent with experience.

11.23 Perhaps more should be said about tax holidays that many countries use (happily not New Zealand). Such holidays can result in higher METRs than the regular system given the lack of interest deductibility and mandatory accelerated depreciation as a company with long-lived assets has little depreciation to be taken at the end of the holiday. They open opportunities for tax planning as well.

12.3 With regard to full relief for double taxation do you include both dividends and capital gains? Capital gains arising from after-tax reinvested profits have already been taxed once.

Footnote 41 Company income tax collections depend not only on company tax policy. Norway has significant company tax revenues due to resource profits (Canada collects now 4 percent of GDP in company tax revenues largely due to its resource-based industrial structure). It might be useful to show what company tax revenues come from which sectors in New Zealand early in the document.

12.8 A significant reason for Sweden adopting the dual income tax was to reduce the disparity in effective tax rates on housing versus other assets. With mortgage interest deductibility and an insufficient including of imputed rent in the tax base, many Swedes refinanced their homes with debt resulting in tax losses from home ownership that was used to reduce their taxes. The dual income reduced the incentive to finance housing with debt (I heard this in a seminar given by one of the key individuals involved with the reform).

12.11 In recent years with negative real rates, taxation of nominal interest drives the real rate even more negative. This provides additional incentive for investment by borrowers, making the distortion even worse.

12.27 The exempt return is problematical to estimate for reasons given above. With negative interest rates for government bonds in Europe, some countries have had to adjust their allowance policies.

Comments on the appendix.

1.6 I would have introduced interest deductibility under the company tax in equation 1. It is done later so at least provide a forewarning since it is surprising not to see it here. It is provided clearly later in equation (4). While I would have started with a different cost of finance, I do find the presentation otherwise quite well done especially the clarity with equation (4).

1.8 Should depreciation be discounted by the nominal weighted average cost of finance (adjusted for company income taxes), not the real discount rate? The analysis later makes clear it is nominal finance costs that are used for discounting. Again, it would have been easier to have started with nominal and real costs and taxation in equation (1).

1.13 I am not clear how A is calculated until presented in 1.22. Some reference should be provided to the later discussion.

1.29 A reminder for a reader should be given why “m” is the appropriate tax rate given the imputation system for dividends.

2.13 As I mentioned above in discussion international financial arbitrage, it is not clear that the real return on equity should be equal to the real return on debt. Perhaps some justification should be provided here like equal personal tax rates for the marginal investor including zero.

2.16 It might be useful to different the cost of capital with respect to Π show that the cost of capital rises by A(1-τ) so that assets written off more quickly (higher A) results in a bigger inflationary impact. I derived this under the assumption that nominal interest rates rise point by point with inflation.

2.20 Are debt and assets based on market value, real values or book values?

2.28 It would be useful to be clear about inventory valuation under the company taxlaw. Is it FIFO, LIFO, averaging or optional? If averaging, then that affect the cost of capital by reducing the inflationary impact by a half.

2.54 It does not seem to me that actual interest rate limitation has been modelled to derive the METR. I should mention it can be complicated when the parent also faces an interest rate limitation rule in their own jurisdiction as well. No one has modelled both sides that I know of.