NEW ZEALAND

AND THE WOODY ALLEN SYNDROME

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<u>Acknowledgements</u>

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I.   <u>Introduction</u>

The way New Zealanders' think about the economy reminds me of Woody Allen. In most of his movies, the main character (Woody himself) is depressed and a bit neurotic. He goes to the analyst twice a week and is unhappy about his life. However, as the viewer soon realizes, the whining is not fully justified. After all, Woody has a beautiful girlfriend – indeed, much prettier than a guy like him is likely to get --, interesting friends, a nice apartment, and a well-paying job. Moreover, he lives in a charming neighborhood in Manhattan.

As Woody, many New Zealanders worry a lot. They worry about the economy and about the country's position in the world. They are convinced that things are going downhill, and believe that the future looks rather bleak. And yet, by almost every possible metric New Zealand is a success: it is at the very top of the World Bank's *Doing Business* ranking, according to the *PISA* test it has one of the strongest educational systems in the world, and *Transparency International* assures us that it is one of the least corrupt countries in the globe. And then, of course, there is the *All Blacks*! What else can you ask for? In fact, in almost every country I give speeches – and I do it very often –, I hear people say, "If we only were more like the Kiwis." But the similarity between New Zealand and Woody Allen goes beyond having a somewhat pessimistic outlook on life. As Woody's movies progress, the viewers realize that, although he is sweet and lovable, he has certain traits that could be improved on. In fact, if he worked hard on them, he would end up being a much happier and successful fellow. Similarly, and in spite of New Zealand's wonderful showing in ranking after ranking, there are a number of areas where reforms would make the country's position in the world even better.

Recent concerns about New Zealand's economic performance are multifold:[1] on the one hand the recovery from the global financial crisis has been slower than expected. On the other hand, the country has slipped in some of the OECD performance charts, including in the product market regulations rankings.[2] Moreover, recent analyses suggest that the income per capita gap between New Zealand and Australia is widening, rather than narrowing. Also, New Zealand's level of net indebtness is "too high," making the country vulnerable to external shocks.[3] In addition, the Christchurch earthquakes of 2010 and 2011 have affected a particularly vibrant region in the country's economy. It is estimated that the total cost of reconstruction will be almost 8% of GDP. Most of it, however, will be paid by reinsurance funds from abroad.[4]

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[1] This paper takes a short-term, forward-looking approach. A number of recent works, including the two reports by the "2025 taskforce" take a longer view perspective.

[2] See "Economic Development Indicators, 2011," p. 108.

[3] For comparisons with Australia see the two reports published to date by the "2025 taskforce." Also, see the joint report by Statistics New Zealand and the Treasury (2010).

[4] The "absorption" of the large transfer of funds to finance reconstruction is likely pose challenges to macroeconomic policy. In particular, it is likely to put upward pressure on the NZD. It is precisely for this reason that after the major 2010 earthquake Chile implemented macro policies aimed at avoiding such absorption issues.

The purpose of this paper is to analyze recent macroeconomic developments and to assess the extent to which these concerns on competitiveness, growth, imbalances, and vulnerability are warranted. In that regard, the paper (implicitly) goes through four questions: (a) Is New Zealand facing an economic problem? (b) If so, what is the nature of this problem? (c) What are the main causes of this problem? And (d), what, if anything, should be done about it? The analysis presented here follows my previous work on the subject – my 1990 and 2006 papers --, and looks at New Zealand's economic challenges through the "tradables-non tradables" and "international competitiveness" lens. I mostly look at issues related to relative prices, the allocation of resources, the real exchange rate, the fiscal-monetary policy mix, and competitiveness.

The main conclusions of this study may be summarized as follows: As my Woody Allen analogy suggests, I think that the situation is better than what many local analysts seem to believe. There is no imminent danger of a crisis, growth is likely to be relatively robust in the next few years, net indebtedness is indeed high but has declined recently (moreover, the composition of New Zealand's NIIP is very different than that of crisis countries such as Greece), and policies to address low savings and vulnerabilities are being put in place – or at least are being considered. In many ways, and as Willem Buiter (2006) nicely put it five years ago, New Zealand should "count its blessings, one by one." Having said that, I am also convinced that there are a number of policy areas that need attention, and that economic performance can improve markedly.[5] In particular, issues related to productivity growth and competitiveness should be addressed. In recent debates, many policy actions that address these issues have been discussed and have been added to the "catalog of conceivable policies." Yet, for a variety of reasons – mostly related to political economy considerations, I suspect --, no firm commitment has been made with respect to most of them. In that sense, and using a phrase from Bill Clinton's first presidential campaign, one may say: *"It's politics, stupid!"*

The rest of the paper is organized as follows: In Section II I provide an overview of the current thinking on the state of economic affairs. I call this view the "unofficial-official" story, and I assess whether this narrative focuses on the most important aspects of the problem, and whether the policy recommendations that emanate from it are appropriate. Section III deals with the real exchange rate, external imbalances, and competitiveness. In this section I investigate the extent to which New Zealand's RER behavior differs from that of other "commodity exporters," such as Australia, Canada, Brazil and Chile. I also investigate whether New Zealand's recent RER behavior has been affected by the "currency wars" between the U.S. and China. Section IV deals with competitiveness, and goes beyond the real exchange rate. Here I argue that broad and all encompassing measures of competitiveness should take into account the level of

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[5] Interestingly, the "Woody Allen" syndrome tends to be reinforced by reports from some of the international institutions. See, for example, OECD (2011) and the Concluding Statement from the IMF's 2011 Article IV consultation. One could argue that, to some extent, these institutions role is, indeed, to point out weaknesses rather than praise countries for their good policies. If this is the case, it is reasonable to discount these analyses' conclusions.

(in)efficiency of the non tradable sector, including the provision of public services.[6] I suggest a simple competitiveness indicator that does this, and I illustrate its usefulness using some New Zealand data. In Section V I provide some reflections on the issue of vulnerability to external shocks. I argue that this problem is best addressed within the context of an insurance framework. In Section VI I offer some remarks on the issue of vulnerability. Finally, Section VI contains some concluding remarks.

II.   The "Unofficial-Official" Story: An Assessment

II.1 The "Official-Unofficial" Story: A Narrative of New Zealand's economic conditions

In New Zealand there is a dominant narrative that attempts to explain the country's current economic challenges.[7] Although it has not been sanctioned by the authorities, this view is generalized enough that I have called it the "Unofficial-Official" story. The main elements of this story may be summarized as follows:

- At some point during the mid 2000s – most likely in 2006 – the fiscal anchor was loosened. Even though the government continued to run a surplus until 2008, this was smaller every year. By 2009 the fiscal balance had turned into a deficit of almost 2% of GDP. By the end of 2010 the net public debt over GDP ratio, which had declined to 10% in 2006, increased to almost 15%.[8] All of this meant that the *aggregate fiscal stimulus* in New Zealand – measured as the change in the fiscal balance – amounted to almost 9% of GDP between 2005 and 2010. This is one of the largest stimuli of any country during this period.[9]
- This change in fiscal policy overheated the economy and generated inflationary pressures. This, in turn, forced the Reserve Bank to run a *tight monetary policy*. Indeed, much tighter than what it would have run otherwise. The OCR reached the remarkable level of 8.25% in September, 2007 (that rate was maintained until July, 2008).
- This policy stance of "*somewhat loose fiscal-tight money*" is at the very center of the "Unofficial-Official" story and, according to it, resulted in high interest rates across the yield curve, and attracted considerable capital inflows. This, in turn, had a number of consequences:
  - The increased foreign flows helped finance a very large current account deficit that reached 8.8% of GDP in 2008. See Figure A.1.

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[6] In many analyses the terms "non tradables" and "services" are used interchangeably. This is not completely correct in the case of New Zealand, as a major service sector, tourism, has many of the characteristics of tradables.
[7] For a long view on the New Zealand economy, see, for example, Briggs (2003).
[8] These figures exclude New Zealand's assets in the superannuation fund.
[9] Brook (2011).

- o This was associated with a significant increase in the country's negative NIIP, which reached 90.3% of GDP in early 2009 – it has since improved to a negative 85.2% of GDP, still a very high number.
  - o Foreign funds intermediated by the banking sector helped fuel the significant increases in housing values observed since the early 2000s.[10] It is estimated that by 2007 housing prices had increased on average by 180% with respect to the mid 1990s. In fact, the OECD calculates that in major urban areas and some coastal regions price increases surpassed 200% in real terms.[11] It is estimated that housing prices declined by 12% during 2009; since then, however, they have recovered by approximately 5%.[12] Tax incentives have also contributed to the increased investment in the housing sector during the last decade or so. But residential housing prices are not all; farm prices experienced an even greater boom, and a more pronounced decline than residential properties – See Figure 1.
- In addition, the increased availability of foreign funds has been associated with low national savings. In particular, the higher prices in residential real estate allowed households to increase consumption at a very rapid pace. Between 2008 and 2010 *net national savings* averaged less than 2% of GDP.[13] See Figure 2 for savings rates between 1987 and 2009. In Figure 3 I present the evolution of New Zealand's households' housing equity injections and withdrawals since 1988.
- These large capital inflows and concomitant current account deficit – which, as pointed out, peaked at an astonishing 8.8% of GDP in the last quarter of 2008 -- resulted in a *strengthening of the real exchange rate*. The IMF has estimated that the degree of overvaluation of the NZD is in the 10% to 25% range. According to Cline and Williamson (2010) the NZD is one of the most overvalued currencies in the world. It is important to notice, however, that (very) large current account deficits are a long term phenomenon in New Zealand.[14]
- The (real) strengthening of the currency has contributed to the stagnation of the tradables good sector.[15] Since December 2005 the ratio of tradables to non tradables GDP has *declined by 21%*. In absolute terms, tradables output peaked in the third quarter of 2005. Between that point and the fourth

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[10] It is generally accepted that the housing boom started in 2002. The inadequate policy mix discussed above fueled that boom, giving it an additional momentum.

[11] OECD (2011), Chapter 2.

[12] For a comparative analysis, see Tumbarello and Whang (2010).

[13] Savings Working Group (2011).

[14] Edwards (2006), Munro and Sethi (2006).

[15] The data on tradables and nontradales should be used with some caution, as the classificationis not always straightforward.

quarter of 2007 it was essentially flat. Since then tradables GDP has *declined*, in absolute real terms, by 10.7%. See Figure 4 for an evolution of GDP ratio between tradables and non tradables..

- The fall in tradables output – both in relative and absolute terms -- has important implications for the pattern of economic development in New Zealand. In particular, in almost every country productivity growth tends to be faster in the tradables good sector than in the non tradables sector.[16] This means, then, that the sectors with the fastest rate of innovation and efficiency gains are stagnating. This, in turn, has implications for growth and well being.

- The 2008-2009 global financial crisis (GFC) showed that advanced nations may be subject to shocks that, until a few years ago, many analysts considered to be either impossible or having miniscule probabilities. In particular, the GFC showed that "sudden stops" and financial meltdowns can hit even the largest, richest, and (supposedly) best performing countries.[17] Indeed, the events of 2008-09 show that countries with large imbalances and/or poorly capitalized or supervised banking systems can be subject to very costly shocks. This change in the external conditions has underlined the fact that New Zealand is (highly) _vulnerable_ to changes in sentiments in the global market place. As a result of these developments, and as a way of reducing vulnerability, the Reserve Bank of New Zealand has moved towards the implementation of macroprudential regulations. The adoption of "core funding" for banks is the first step in this detection.

- To summarize, the "Unofficial-Official" story has four fundamental elements: (a) at some point the policy mixed became "*somewhat loose fiscal-tight money*". (b) This resulted in high domestic interest rates that attracted considerable capital inflows. (c) This, in turn, generated a real estate boom, a strengthening of the currency (with the resulting loss in competitiveness), very low national savings, a very large current account deficit, and a highly negative NIIP. (d) As a consequence of the above there has been a decline in tradables output (both in absolute terms and relative to nontradables), and an increased degree of *vulnerability* to external shocks.

II.2 Current Policy Discussions in New Zealand

The diagnosis contained in the "Unofficial-Official" story summarized above has generated a spirited policy debate in New Zealand, with a number of policy actions being proposed by independent analysts, working groups, and different official commissions.

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[16] For an analysis that compares sectoral productivity growth and levels in New Zealand and Australia see the "Taking on the West Island" 2011 report by the Treasury and Statistics New Zealand.

[17] Of course, students of the global economy were aware of this even before the GFC. See, for example, Edwards (2005) for an analysis of the likelihood of a "sudden stop" in the U.S.

Most policy suggestions are summarized in a handful of documents, including the January 2011 report of the *Savings Working Group*, the *2025 Taskforce* reports, and several Treasury and Reserve Bank papers.[18] In what follows I summarize the main overtones of this policy debate:

- The majority of the policy measures that have been recommended revolve around "fiscal consolidation."
- According to a number of analysts it is important to achieve a dual objective: assure public debt sustainability – that is, running a primary balance that satisfies the debt stability requirements --, and being able to run true "counter cyclical" fiscal policy in the future.[19]
- It has been argued that achieving these objectives would require introducing *institutional reforms*, such as the creation of a Stabilization Fund, or an Independent Fiscal Commission that would make critical decisions regarding fiscal policy.[20]
- Fiscal consolidation would allow the Reserve Bank to reduce the degree of *tightness of its monetary policy*.[21] That is, there would be a change in the "policy mix" away from "*rather loose fiscal-tight monetary*" that has prevailed during much of the last decade.
- It has been argued that "fiscal consolidation" would contribute to the achievement of a number of objectives. In particular, a different fiscal stance, supported by the proper institutions, would mean: (a) reducing vulnerability. This would work through various channels, including an increase in national savings, a lower current account deficit, and a reduced (negative) NIIP. (b) Reducing (or eliminating) real exchange rate overvaluation. (c) Arresting, and reversing, the decline in the share of tradadbles in GDP.
- Although fiscal consolidation is at the center of the debate, there is agreement that this is not a "silver bullet." Indeed, a number of other policies need to be put in place in order to deal with the country's external vulnerability, the housing market, low savings, and very large 85% of GDP) negative net international investment position.
- In terms of savings and vulnerability, some of the most important policy recommendations include:[22]
  - A return to a fiscal surplus of the order of 2% of GDP.

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[18] See the papers in the References section.

[19] Brook (2011)

[20] See Brook (2011) for a lucid discussion of these issues.

[21] It is hard, however, to argue that at the time of this writing (May 2011) the Reserve bank is pursuing a tight monetary policy. Currently the OCR is at 2.5%. (On March 10th, 2011 and in response to the Christchurch earthquake the RBNZ cut the OCR by 50 bases points.)

[22] This is not an exhaustive list. See, for example, the discussion in the Savings Working Group Report (2011).

- - Greater transparency in public accounts, including in terms of the Crown's balance sheet.
  - Introduce a broad tax reform that reduces distortions stemming from existing loops and/or inflation. Some of the specific suggestions include:
    - Indexing some tax items by inflation.
    - Broaden the tax base.
    - Increase the rate of the GST to 17.5%, with compensating policies for the poor.
  - Maintaining a voluntary KiwiSaver, with auto enrollment and a possibility for opting out.
  - Develop an annuities market.
- A number of analysts have also urged the implementation of structural, pro-productivity reforms, including further rounds of deregulation and privatization. Many of these recommendations are summarized in the *2025 reports*.

II.3 Assessment and the need for further analysis

A detailed analysis of New Zealand's data indicates that the diagnosis encapsulated in the "Unofficial-Official" story is largely correct. However, there are issues of emphases, details, and perspective that need to be addressed in order to have a more complete picture of recent economic conditions. In particular, there is a need to look at the current situation from a broader historical viewpoint, and to bring additional empirical analysis, as well as conceptual thinking, into the discussion.

My main comments on the "Unofficial-Official" story may be summarized as follows:

- Overall, the economy is in more solid grounds than what a number of analysts intimate. Although growth prospects are not stellar, they continue to be good. Having said this, it is also the case that performance may be (significantly) improved on. In order to do this, a number of issues related to productivity growth -- and in particular productivity in the non tradable sector -- need to addressed.
- Second, the country doesn't appear to be in imminent danger of facing a sudden stop, or a major external crisis. Of course, it is true that the world "changed" after the GFC, but that doesn't mean that New Zealand is about to experience a major reversal in capital inflows. Indeed, based on existing empirical work on the determinants of "sudden stops" and "current account reversals," it is possible to argue that New Zealand today is in a better position

than five years ago.[23] This is indeed what emerges from the evaluation of existing empirical analyses of the probability of New Zealand facing a sudden stop or a current account reversal.[24] In that regard, it is important to remember a number of issues regarding New Zealand's (negative) NIIP: In contrast with countries currently in difficulties (i.e. Greece), New Zealand's liabilities have a very important FDI component. Indeed, as I pointed out in my 2006 paper, much of these liabilities (and the concomitant current account imbalance) stem from the ownership of New Zealand banks by Australian investors. In addition, until recently, the government debt held by foreigners was rather low, as a percentage of GDP. Although this has changed in recent years, there is still time to take action aimed at controlling (or reducing) government liabilities. Indeed, both the Treasury and the RBNZ are clearly aware of the need to stabilize the public debt relative to GDP.

- Third, that the relationship between the tradables' good sector and the real strengthening of the currency seems to be rather complex. Indeed, according to J.P. Morgan's data, the bulk of the strengthening of the NZD seems to have preceded the slowdown of tradables production. In fact, a (simple) regression analysis suggests that there is no relation – either positive or negative – between the trade-weighted RER and the sectoral composition of GDP between tradables and non-tradables (more on this below).[25] It may also be the case that the RER (or at least the measured RER) is not the most appropriate indicator of the incentives to produce tradables instead of non tradables. If this is the case, then, a more comprehensive index of external competitiveness should be constructed and monitored through time. This is indeed what I do In Section IV of this paper. (See Figure 5 for an evolution of New Zealand's RER since 1976).

- Fourth, it is surprising that the current policy debate on the country's (high) degree of "vulnerability," has not been couched (at least partially) within an "insurance" framework. Indeed, when the probability of "bad states of the world" increases, it is generally recommendable to "purchase" additional insurance. Of course, many times it is difficult to "buy" insurance coverage – this is usually the case at the country level. In this case the clearer option implies utilizing "self insurance" mechanisms.

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[23] By now there are many studies on the determinants of sudden stops and current account reversals. For an analysis done in the mid 2000 with a New Zealand focus, see Edwards (2006).

[24] See, for, example my earlier paper (Edwards, 2006). I am aware, of course, that it is possible that since the GFC there have been structural changes in the determinants of the probability of facing an external crisis. Whether this is the case is to be determined through an empirical analysis. At this point, however, there aren't enough observations to undertake such a project.

[25] See the discussion in Section IV below.

Addressing all the issues raised in recent economic debates in New Zealand would require a monograph length treatment; that, clearly, is beyond the scope of this paper.

Instead of dealing with all of these questions, in the rest of this paper I address in detail two specific issues related New Zealand's macroeconomic conditions that have played a prominent role in the "Unofficial-Official" Story:

- In Section III I present an empirical analysis of real exchange rate behavior in New Zealand. In order to provide a comparative perspective I compare New Zealand's RER with those of other commodity exporters. Here I ask several questions, including what are the main drivers of RERs in New Zealand, if these are different from those in other countries, and what would be the consequences of changing the policy mix and/or experiencing a major reduction in commodity prices. I also address the issue of the relationship between the NZD and the USD, a question that has been raised in recent discussions about the Chinese yuan and the global "currency wars."
- In Section IV I deal with the relationship between productivity in the business and government services sectors' and international competitiveness, and I propose an indicator that takes explicitly into account the fact that non tradables are used as inputs in the production of importables and exportables. I argue that improving non tradables' productivity is one of New Zealand's greatest challenges going forward.
- Finally, in Section V I address some more general policy issues, including those related to reducing vulnerability.

III.- How Unique is Real Exchange Rate Behavior in New Zealand?

In this section I analyze the behavior of the trade weighted real exchange rate in New Zealand since 1990. More specifically, I use *monthly data* in an effort to determine the relative importance of the following factors in RER dynamics: (a) the terms of trade; (b) interest rate differentials for one bank year deposits (which are taken as a proxy that summarizes the country's macroeconomic policy mix);[26] and (c) the external environment, defined in several alternative ways.[27] This investigation is important for understanding the forces behind the NZD real strengthening since late 2000, and for assessing the likely future path of the RER. The analysis presented here differs from most other work on the subject in several respects:

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[26] Interest rate differentials are computed as nominal interest rate differentials relative to the US. An interesting question is what is the steady-state level of interest rate differentials.

[27] Using monthly data allows a finer analysis of the dynamics of adjustment to different shocks. However, for the case of New Zealand (and Australia) this poses a non trivial challenge: there are no official data at this frequency. For this reason, and as is discussed below, I use data from investment bank and other sources.

- I couch the analysis in a comparative framework, and I contrast New Zealand's experience with that of four other "commodity countries": Australia, Canada, Brazil and Chile.
- I use relatively high frequency (monthly) data. Most analyses of real exchange rate behavior in New Zealand have relied on quarterly data.
- I investigate several possible dynamics of RER adjustments to external shocks.
- I analyze whether, once controlling for other factors (fundamentals), the trade weighted RER in the U.S. has had an independent effect on New Zealand's own real exchange rate. This possibility has been recently advanced by a number of observers that have argued that the current strengthening of trade weighted RER in commodity countries is largely the result of "collateral damage" from the "currency wars" between the U.S. and China. The story, according to this view, goes as follows: for a variety of reasons -- including an unsustainable current account deficit, and an overly expansive monetary policy (QE2) -- the USD needs to depreciate with respect to a basket of U.S. trading partners' currencies. However, because of China's policy of controlling the value of the renminbi, the USD cannot drop in value relative to the currency of its second most important partner. Consequently, and in order to achieve the required trade-weighted correction, the USD needs to significantly *over-depreciate* with respect to other currencies -- including the NZD.[28]
- I explicitly consider the role of interest rate differentials as determinants of RER behavior. As noted, this is important in order to assess the role of the policy mix ("lose fiscal-tight money") in recent RER dynamics in New Zealand.
- I explicitly investigate the possible role of nonlinearities.
- I evaluate the relative effects of "terms of trade correction" vs "fiscal consolidation" on New Zealand's real exchange rate.

The rest of the Section is organized as follows: I first provide a broad discussion on the behavior of the trade-weight basket RER for New Zealand since 1976. I then report results from a series of regressions on RER dynamics for New Zealand dollar and other four commodity currencies. Finally, I discuss the implications from this analysis for the "Unofficial-Official" story discussed above.

III.1 A preliminary look at the data

In Figure 5 I present the monthly evolution of New Zealand's the RER since 1976. These figures – as well as those for the other commodity countries analyzed in this

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[28] On "collateral damage," currency wars and the commodity countries, see Edwards (2011).

Section -- are from JP Morgan's renowned real exchange rates data set. As may be seen, and as Mabin (2010) has aptly summarized, a number of periods – or long waves – can be identified for New Zealand.[29] Some salient facts that emerge from Figure 5 may be briefly summarized as follows:

- The NZD is today considerable stronger that its level when the OCR was introduced as the main monetary policy tool in 2000.
- After a brief decline between February 2008 and January 2009, the NZD resumed its strengthening.
- In late 2010 the RER was 9% below its June 2007 peak.

III.4 The Determinants of Real Exchange Rates in New Zealand: A Comparative Perspective

In this Section I report econometric results obtained from the estimation of a number of RER equations for the New Zealand dollar and the other four commodity currencies – Australia, Canada, Brazil and Chile. The RER equations are estimated jointly using both *Seemingly Unrelated Regressions* (SURE) and *Three-Stages Least Squares*. This comparative approach is important for assessing the possible "exceptionality" of New Zealand's RER behavior. I then use the estimated regressions to analyze how different shocks (both policy and external) are likely to affect the real currency value.

As a starting point, consider the following, two-equation, error correction model of the trade-weighted real exchange rate, RER:[30]

$$(1) \quad \Delta \log RER_t = \theta(\log RER_t^* - \log RER_{t-1}) + \lambda \Delta \log RER_{t-1} + \epsilon_t$$

$$(2) \quad \log RER_t^* = \sum \gamma_i \pi_i + \mu$$

In equation (1) $\log RER_t^*$ is the natural logarithm of the "equilibrium" RER and is assumed to depend on a number of "fundamentals." In equation (2), π_i is "fundamental" *i*. Some of these fundamentals will be in logarithm form, and some may enter into equation (2) in levels, quadratic or interactive forms. Notice that, in equation (1), if λ is equal to zero, the dynamic structure becomes very simple, and is characterized by a

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[29] See Mabin (2010, 2011) for excellent analyses on the recent evolution of the real exchange rate in New Zealand and its impact on the overall economy.

[30] This equation assumes that the Log of the RER cointegrates with its "fundamentals." Analyses of the long term behavior of New Zealand's RER suggests that this is stationary. Tests for the five RER as a group (using a common sample, trend, and individual intercept) reject the null hypothesis of unit root.

partial adjustment process: in this case, the actual RER converges slowly and smoothly to its long run equilibrium level. If, however, λ is different from zero, the adjustment process will be characterized by oscillations. In the empirical analysis that follows I investigate this issue empirically, and I allow the data to tell whether $\lambda = 0$.

The main interest of this study is to understand the importance of international prices – and, in particular, commodity prices -- and interest rate differentials in the determination of the RER. In addition to these variables, and for the "currency wars" reasons mentioned above, I include (the logarithm) of the RER in the U.S. as a possible fundamental. In addition, in some of the regressions I also included a time trend, a dummy variable for the Lehman crisis, and some quadratic and interactive terms.[31]

III.3.1 Basic Estimates

The actual equation to be estimated for each country is obtained after combining (1) and (2):

$$(3) \qquad \log RER_t = \ \theta \log RER_{t-1} + \theta \sum \gamma_i \, \pi_i + \theta \lambda \Delta \log RER_{t-1} + \ \vartheta_t,$$

Where ϑ is an error term that is correlated across countries. That is, the variance-covariance matrix in the joint estimation for the five nations contains valuable information on the nature of the relationship of the different cross currencies.[32]

The basic estimates, for the five countries in the sample, are presented in Table 1, which comes in two parts: Part 1 contains the estimated coefficients, while Part 2 has statistics that summarize the "goodness of fit" for each currency in the sample. The first point to be made is that these results are quite good, as far as monthly data go. Not only is the fit very good, but most of the coefficients of the "fundamentals" are significant at the conventional levels.

From a comparative perspective, the results differ in a number of ways across countries:

- First, the dynamics of adjustment is smooth and simple in New Zealand and Australia (that is, the estimated coefficient of λ is not different from zero), while it is cyclical in Canada, Brazil and Chile.

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[31] Studies that use lower frequency data tend to include other "fundamentals" that change rather slowly through time, including openness, productivity growth differentials, and the share of government expenditure. These data, however, are generally not available on a monthly frequency, and are not included in this paper. One way of dealing with their possible role is by including time trends and "year" dummies. See the discussion below.

[32] Of course, this is a reduced form, and as such it is subject to the usual caveats.

- Second, the RER in the US appears to exercise an independent influence on the RER in every country in the sample, but in Canada. Interestingly, however, the coefficient of the U.S. RER is positive, instead of negative, as suggested by the "collateral damage" hypothesis of the "currency wars." That is, with other things given, a depreciation (appreciation) of the USD is translated into a move in these commodity countries (except Canada) RER in the same direction. It should be noticed, however, that in New Zealand and Chile this coefficient is only marginally significant. Moreover, the point estimates are rather small; in fact, the smallest one corresponds to New Zealand.

- Third, in all countries, except Canada, the coefficient of the commodity prices index is positive, as expected, and statistically significant. This confirms the view that, with other things given, in these countries an improvement in the terms of trade results in a real strengthening of the currency. (I discuss the magnitudes of these coefficients below).

- Fourth, in three of the countries – New Zealand, Australia, and Brazil --, the coefficients of interest rate differentials are significantly positive, indicating that with other things given an increase in domestic interest rates will result in a real appreciation. This is consistent with simple "carry trade" effects.[33] In addition, and as I argue below, this is consistent with the view that a policy stance that results in higher interest rates will tend to result in a real strengthening of the currency.

- Finally, in all five countries the coefficient of the lagged RER is smaller than one, but quite high, suggesting a somewhat slow adjustment of the equilibrium RER to shocks in its fundamentals. It is important to notice, however, that these results were obtained with monthly data. Thus, the corresponding yearly coefficients for the lagged dependent variable are much smaller, ranging between 0.527 and 0.164.

The results in Table 1, then, indicate that, broadly speaking and with the exception of Canada, the RER in these countries respond to similar forces. There are, of course, and as one would expect, differences in terms of the magnitude of the different coefficients. More specifically, the main implications of these results for New Zealand may be summarized as follows:[34]

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[33] The carry trade directly affects nominal exchange rates. Movements in nominal rates are, precisely, the main cause of RER movements in the short and medium run.

[34] In the discussion that follows I am excluding Canada, since the results in Table R.1 indicate that its RER behavior doesn't respond to the same forces as in the other nations.

- Convergence towards equilibrium is slower in New Zealand than in the other countries. Still, even in New Zealand it is fairly rapid: in one year *almost one half* of a unitary disturbance to the equilibrium RER will be corrected.

- The elasticity of the RER with respect to changes in commodity prices is highest in Brazil, and lowest in New Zealand. This is true both for the long run and short run elasticities. Having said this, it is important to emphasize that the long run commodity elasticity of the RER in New Zealand is not trivial: 0.33.

- The coefficients of the interest rate differential are highest in New Zealand and lowest in Brazil. These, however, are not elasticities, and, thus, should not be compared among them, nor with the commodity prices elasticities. Strictly speaking, these coefficients are semi-elasticities and may be converted into elasticities for different values of interest rate differentials. As an illustrative exercise I computed the interest rate differential *elasticities* at the mean value of the interest rate differentials in the 2000s. The (point) log run elasticity for New Zealand is 0.122, while that for Australia is 0.012. That is, in elasticity terms – and when these are evaluated at an historical average --, New Zealand's RER is ten times more sensitive to interest rate differentials than Australia's!

In Table 2 I report the results from alternative specifications that include time trends and quadratic terms (including interactive terms). In addition, in the last panel I present results from Three-Stage Least Squares. Due to space considerations I only include the results for New Zealand: those for the other countries are available on request. The results are robust, and largely confirm the main conclusions from Table 1, in terms of New Zealand's RER response to both commodity prices and interest rate differentials. The most salient findings in this table are: (a) the trend coefficient is barely significant, and its point estimate is very low. And (b) as before, the effect of the terms of trade (commodity prices) on the equilibrium RER is positive; however, it is it is so at declining rates.

III.3 What does all of this mean?

An important question is what does all of this mean for New Zealand? A useful way of answering this question is by inquiring what would happen to the trade weighted RER if two shocks were to take place. Consider the following possible hypothetical events:

(a) Commodity prices decline by 50%. This would roughly bring them back to their 2005-06 level (but still leave them higher than the 1990-2010 average).

(b) The interest differential declines by 200 basis points. This would happen, for instance, if the policy mix was altered through a tighter fiscal policy. This means that, from a historical perspective, and taking the decade of the 2000s as a benchmark, New Zealand's interest rate differential becomes almost identical to Australia's differential.

The question, then, is what would be the (long term) RER reaction to these two "shocks". In performing this exercise I have used the parameter estimates from Table 1; if, however, the estimated coefficients from Table 2 are used, the results are very similar. Before proceeding a note of caution: the purpose of these exercises is to analyze the relative importance of these two "shocks"; in that regard this should not be interpreted as suggesting that the Reserve Bank runs a laxer monetary policy. The outcomes from this exercise are as follows:

- With everything else given, a negative terms of trade shock that reduces commodity prices by 50% would result in a long run weakening of New Zealand's trade-weighted RER of 16.7%.
- A reduction in interest rate differentials between New Zealand and the US to a level equivalent to the (average) Australia-US differential, would result in a long term weakening of New Zealand's trade-weighted RER of 8.6%.
- If these two "shocks" took place simultaneously, there would be a long term weakening of New Zealand's trade-weighted RER of 23.8%. Interestingly – or, coincidentally --, this figure is close to the upper bound of estimates of the extent of New Zealand's degree of trade-weighted RER overvaluation.[35]

There is, of course, a substantial difference between the two exercises presented above. While New Zealand is not really able to affect international commodity prices, it can (to a significant extent) influence its interest rate policy. Indeed, and as has been argued by Labuschagne and Vowels (2010), the relatively high interest rates in New Zealand are largely the result of a combination of factors, including, in particular, *the policy mix and the low savings rate*. This suggests that policies aimed at rectifying these issues – including polices conducive to "fiscal consolidation" – would help reduce interest rate differentials, and through this channel would contribute to generating a depreciation of the trade weighted RER. An important question, and one that is beyond the scope of this paper, is how powerful the different policies –fiscal, monetary, and

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[35] OECD (2011).

saving promoting – will be in reducing the interest rate differential.[36] In Section V below I discuss some of the policies suggested for encouraging savings.

IV. International Competitiveness and the (In)Efficiency of the Non Tradables Sector

Conceptually, the real exchange rate is a proxy for the relative price of non tradable to tradable goods. Thus, it measures the incentives to devote resources to the production of non tradables.

In the Salter (1959) -- or Australian -- model, revived by Rudi Dornbusch in the 1970s and 1980s, the RER is the slope of the production possibilities frontier; in this framework, and with other things given, a lower (or more depreciated) RER will encourage the production of tradables. In that sense, the RER is usually considered to be a measure of the degree of *international competitiveness* of a country.

There are, however, a number of reasons why in practice the relative price of non tradables to tradables may differ from the real exchange rate. These include the presence of differential rates of productivity growth across countries, and subsidies and taxes, among other. As it turns out, in New Zealand, the relative price of non tradables and the trade weighted RER *don't move closely together*. This may be clearly seen in Figure 6, where I have plotted a measures of the RER calculated by the RBNZ and a measure of the relative price of non tradables to tradable, calculated by the Treasury.[37] If instead of using the RBNZ index of the RER I use the JP Morgan index the result is almost identical.

The divergence between the RER and the relative price of non tradables suggests that other indexes, beside the real exchange rate, may be more useful as a measure competitiveness. A natural candidate for this is *relative unit labor costs*. Indeed, numerous studies have relied on this indicator of competitiveness, which explicitly takes into account the evolution of labor productivity. A limitation of these studies, however, is that they tend to be at the aggregate, economy-wide, level.

IV.1 The Non Tradables Sector and International Competitiveness

In this Section I propose a disaggregated indicator of competitiveness that explicitly takes into account the fact that non tradables are used as inputs in the production of exportable as well as importable goods. The perceptive reader will notice that this indicator, which I call *effective competitiveness index*, has its roots in the

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[36] Of course, one could think of a number of scenarios where a reduction in interest rates stemming from a Central Bank action would have undesirable effects on other important variables such as inflation. A general equilibrium model would, in principle, allow analyzing the ramifications of such a policy.

[37] Regression results suggest that, while the relative price of non tradables is negatively correlated (as expected) with the share of tradables in GDP, the RER is not. That is, while the relative price does behave like the slope of the production possibilities frontier in the Australian, tradable-non tradable model, the RER (in either version) does not.

literature of effective rates of protection pioneered by W. Max Corden, among others. In order to focus on the tradable-non tradable relationship, in the main exposition I ignore issues related to currency values. These are discussed in greater detail in Subsection IV.1.3 below.

Consider an industry *i* that produces tradable goods that are also produced in the rest of the world. The domestic price of good *i* (P_i) may be written as follows:

(4) $\quad P_i = VA_i + \sum a_{ij} P_j + \sum b_{ik} q_k.$

Where VA_i is domestic value added, the a_{ij} are input-output coefficients defined as units of (tradable) intermediate good j required to produce a unit of good i, P_j is the domestic price of tradable intermediate good j, the b_{ik} are input-output coefficients defined as units of (non tradable) intermediate good k required to produce a unit of good i, q_k is the domestic price of intermediate good k.[38]

There is, of course, an equivalent equation for the "world," defined as the price (and related cost and production structure) in the "*most efficient country*."

(5) $\quad P_i^* = VA_i^* + \sum a_{ij}^* P_j^* + \sum b_{ik}^* q_{ik}^* .$

The asterisks refer to "most efficient" foreign producer, in terms both of prices and techniques. Before proceeding, a number of points should be made:

- The prices of tradable goods *i* and *j* are not independent across countries. Indeed, without any loss of generality it is possible to write: $P_i = P_i^* + t_i$, and $P_j = P_j^* + t_j$. Here t_i and t_j are import tariffs, or export subsidies.[39]
- The input-output coefficients are the inverse of productivity measures, and, as pointed out, don't need not be fixed or constant.
- a_{ij}^* and b_{ik}^* represent the "most efficient" way of producing good i. Technology in the country in question (New Zealand, say) may, in

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[38] Of course, as in the ERP literature, there is no need for the a_{ij}s to be fixed. They should be interpreted as the "optimal" input-output coefficient. I have written the import tariff as being specific, purely for convenience.

[39] Remember that, for now, I am ignoring currency issues; I am implicitly assuming a unitary exchange rate. Of course, if instead of specific import tariffs I use ad-valorem ones, the results are almost identical.

> principle differ from this "most efficient" technology. More
> specifically, we can write: $a_{ij} = a_{ij}^* + \alpha_{ij}$, and $b_{ij} = b_{ij}^* + \beta_{ij}$.
> Here, α_{ij} and β_{ij} are "*domestic inefficiency factors*." Of course, it is
> possible that $\alpha_{ij} = \beta_{ij} = 0$. In this case the domestic country
> produces good i at the maximum level of efficiency. On the other
> hand, if $\alpha_{ij} > 0$, $\beta_{ij} > 0$, productivity in the country in question is
> below "world class productivity."

A useful way to think about a particular industry's ability to compete internationally is to
compare value added at home with the value added obtained by the "most" efficient
producer in the world. This measure, which I call *Effective Competitiveness Index (ECI)*,
is conceptually very close – and in special cases identical -- to the "effective rate of
protection" (ERP). More specifically:[40]

(6) $\quad ECI_i = \dfrac{VA_i - VA_i^*}{VA_i^*}.$

It is easy to show that:

(7) $\quad ECI_i = \dfrac{(P_i - P_i^*) - \left(\sum \alpha_{ij} P_{ij}^* + \sum a_{ij} t_j\right) - \left(\sum b_{ik} q_k - \sum b_{ik}^* q_k^*\right)}{\left(P_i^* - \sum a_{ij}^* P_j^* - \sum b_{ik}^* q_k^*\right)}.$

In what follows I illustrate this equation for the cases of exportable and importable
sectors.

IV.1.1 Exportables

Consider first the case of exportable industries with no export subsidies. In this
case $P_i = P_i^*$, and $ECI_i \leq 0$. The more negative the ECI, the less competitive is the
local export industry in the global market place. If $ECI_i = 0$, the country is fully
competitive; in fact, in this case it *is* the "most efficient country" in the world. Values
lower than zero measure "uncompetitiveness" as a proportion of value added in the most
efficient country. Also, notice that if there are no non tradables ($b_{ik} = b_{ik}^* = 0$), and no
inefficiencies in local production ($\alpha_{ij} = 0$), the ECI index becomes identical to the basic
equation for the effective rate of protection.[41]

It is useful to analyze in detail the sources of inefficiencies or "un-
competitiveness" for an exportable sector i (Remember that, since there are no export
subsidies, in this case: $P_i = P_i^*$):

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[40] This is, of course, the general concept of the effective rate of protection. As will be seen below, the actual
operational formula is different, as the *ECI* emphasizes
[41] [Long detailed explanations on treatment on non-tradables and on limitations of ERP, with references to Corden
and Balassa]. [Limitation: partial equilibrium nature]

(a) The first source of "uncompetitiveness" is related to possible inefficiencies (low productivity) in the production of the exportable in question, and is given by term $\sum \alpha_{ij} \ P_{ij}^*$.

(b) The second source is given by the fact that import tariffs are levied on imported inputs used in the production of good i. This source is captured by $\sum a_{ij} \ t_j$, the average import tariff on intermediate inputs. If the country in question has a very open trading system, and most import tariffs are very low –as in the case of New Zealand --, then this term will tend to be zero. (This source of "uncompetitiveness" in exportables was strongly emphasized in the literature on ERPs, where agriculture and mining usually had *negative* rates of protection).

(c) The third source is related to inefficiencies in non tradables and is given by $(\sum b_{ik} q_k - \sum b_{ik}^* q_k^*)$. This is the excessive cost of non tradables used in the production of good i in the domestic country, over and above what it costs in the "most efficient" country. This source is ignored in most traditional analyses but, as I show below using New Zealand-based examples, can be potentially very important.[42] These no tradable-related inefficiencies may be the results of two factors. The local price of non tradables may be higher than in the most efficient country – that is $q_k > q_k^*$. This will be the case if the domestic production of non tradables is more inefficient that the production of the same goods and services in the "world class" country.[43] In addition, it is possible that the productivity of non tradabales is lower in the country in question, which is equivalent to saying that $b_{ik} > b_{ik}^*$.

In this framework, then, a sector or industry is "uncompetitive" internationally if the structure of prices and productivity levels "*squeezes*" value added at home relative to the level it has in the most efficient country. As pointed out, since everything is measured relative to this "most efficient" country, the highest possible value the *ECI* can take is zero.

An example based on New Zealand data

It is useful to illustrate the *ECI* by an example that uses data relevant to the New Zealand case:

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[42] On the treatment of non tradables in effective protection computations see the essays in Corden (19850.

[43] In contrast with the tradables sector, where domestic prices will be related to international prices – and in some cases quite rigidly so --, in the non tradable case production inefficiencies will be translated into higher prices.

- Assume that there are no export subsidies, and that tariffs on imported inputs are very small, so they may be ignored, without affecting the main results (that is, $\sum a_{ij} \, t_j \approx 0$, in equation 7).
- Consider, as a first approximation, that the domestic country (i.e. New Zealand) has world class efficiency in the production of exportables. Indeed, this is not an unrealistic assumption: according to a recent study by Yang (2011) on productivity levels in New Zealand and Australia, the level of labor productivity in New Zealand tradables is, on average, slightly higher than in Australia.[44] In terms of the index this assumption means that $\alpha_{ij} = 0$.
- Assume further that the only source of non tradables inefficiencies is the difference between b_{ik} and b_{ik}^*. Consider the case where this difference is 30%. This is, in fact, approximately equal to the differential in (the inverse of) labor productivity in non tradables and services, in Australia and New Zealand (see Yang, 2011).
- Finally assume that in the "most efficient" country intermediate imported inputs represent 25% of the gross value of output, and that non tradable inputs represent another 25%. That is, value added is 50% of the gross value of output, $\sum a_{ij}^* = 0.25$, and $\sum b_{ik}^* = 0.25$.[45]
- The above implies that, given the assumption that the production of i requires 30% more non tradables in the local country, $\sum b_{ik} = 0.325$.
- Given these assumptions, it is possible to compute the *ECI*. It turns out that $ECI_i = -0.15$. That is, the level of "*uncompetitiveness*" of this sector in the local country (i.e. New Zealand) is equivalent to 15% of value added in the "most efficient country."

In the discussion below I introduce the role of currency values in the computation of the ECI. I also discuss how different developments and policies affect the degree of "*uncompetitiveness*."

IV.1.2 Importables

Consider now the case of an importable good subject to an import tariff t_i and whose imported inputs are subject to import duties t_j. In this case the ECI becomes:

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[44] The Yang (2011) paper calculates labor productivity levels by sector in both New Zealand and Australia. Of course, b_{ik} is not exactly the inverse of *labor productivity;* indeed, it is a broader measure of productivity. However, the assumption that the gaps in productivity levels are similar for labor and non tradable productivity seems very reasonable, and will be used in the rest of this paper.

[45] This assumes, without loss of generality, that prices of all goods are normalized to one. This assumption is usually made in the ERP literature.

$$(8) \qquad ECI_i = \frac{t_i - \left(\sum \alpha_{ij} P_{ij}^* + \sum a_{ij} t_j\right) - \left(\sum b_{ik} q_k - \sum b_{ik}^* q_k^*\right)}{\left(P_i^* - \sum a_{ij}^* P_j^* - \sum b_{ik}^* q_k^*\right)}.$$

That is, the existence of import tariffs will provide *protection* to the local activity, allowing it to have a higher value added. However, this does not mean that the local production of good *i* will be "internationally competitive."[46] As before, the presence of import duties on imported inputs and of inefficiencies in the non-tradable goods market will result in a reduction in competitiveness. A simple inspection of equation (8) shows its similarity with the concept of ERP.

IV.1.3 Exchange Rate Adjustment

The analysis up to here has ignored exchange rate issues. Indeed, an implicit assumption is that equations (7) and (8) are expressed in a common (foreign) currency. In reality, of course, this is not the case. Once this is recognized, equation (7) for *ECI* becomes (where E is the nominal exchange rate, defined as NZDs per basket of foreign currencies):

$$(9) \qquad ECI_i = \frac{(^1/_E)(P_i - \sum a_{ij} P_j - \sum b_{ik} q_k) - \left(P_i^* - \sum a_{ij}^* P_j^* - \sum b_{ik}^* q_k^*\right)}{\left(P_i^* - \sum a_{ij}^* P_j^* - \sum b_{ik}^* q_k^*\right)},$$

Consider again case where good *i* is an exportable, and there are no export subsidies, or import tariffs. Then, assuming the "law of one price" it is possible to write: $P_i = E P_i^*$, and $P_j = E P_j^*$.

It is easy to show that in this case, and with other things given, a strengthening of the local currency – that is a decline in E – will result in further reductions in the level of competitiveness of industry *i*. Take the example presented above, where the *ECI* is, originally, equal to -0.15. Assume further, and for expository simplicity, that the initial nominal exchange rate is $E = 1$. Assume now that there is a nominal (and real) appreciation of 20%, and the new exchange (*E*) rate is 0.8. This means that the new *ECI* is equal to -0.30. That is, the degree of this industries "*uncompetitiveness*" has doubled as a result of the 20% strengthening of the currency.

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[46] It is important to emphasize that, while providing "protection," import tariffs will result in misallocation of resources and economic costs. This, of course, is the point extensively made in the ERP literature.

On the other hand, if there is a (real) depreciation of 10% of the domestic currency the *ECI* will become equal to -0.082. That is, as expected, the country will become more "competitive" in the global market place. If, instead, the real (and nominal) depreciation is 15%, the *ECI* becomes equal to -0.057. And if we assume an even larger real depreciation of 20%, the ECI becomes -0.033.

The above example illustrate a very important aspect of New Zealand's economic conditions: the improvement in "competiveness" stemming from a (real) depreciation – even from a sizable one – is limited in relation to the potential improvement in competitiveness stemming from an increased efficiency in the production of non tradables. Consider, for example, the hypothetical case where the extent of domestic inefficiencies in non tradables is reduced to one half – that is, $\sum b_{ik} = 0.27$, instead of 0.325, then the *ECI* becomes -0.04. This is a greater improvement in exports' competitiveness than what would be achieved with a large (real) depreciation of 15%.

IV. 2 Productivity in the non tradables sector: An illustration and the need for further work

The analysis presented above emphasized the role of "inefficiencies" (or low productivity) in the non tradable sector as a major determinant of the exportable (or, more generally speaking, tradables) sector degree of international competitiveness. A practical limitation (at least for now) of the approach proposed in this section refers to data availability. Most comparative analyses on productivity in New Zealand refer to productivity *growth*. For example, in the 2010 "Taking on the West Island" paper by Statistics New Zealand and the Treasury, it is pointed out that there are a series of the methodological difficulties involved in using productivity *levels* in international sectoral comparisons. For this reason, most of discussion in that paper -- as well as in the two volumes published thus far by the 2025 Taskforce --, refers to (labor) productivity *growth* rates.[47]

In a recent paper Yang (2011) presents data on labor productivity *levels*, for various sectors, in both New Zealand and Australia for three sub periods during 1989 and 2006 – see Figure 7 for a summary of the cross country productivity differentials. These data are quite revealing: they suggest that in two tradable sectors (agriculture and mining) New Zealand's productivity levels exceed those of Australia. On the other hand, New Zealand's productivity is significantly lower than Australia's in the non tradables sectors, with the exception of utilities during in the most recent period. Indeed, for services as a group (many of which constitute the non tradables sector), New Zealand's productivity is only 75.3% that of Australia during the most recent period (2001-2006).

In the illustrations (examples) I presented above I used figures that are roughly in line with the results in Yung. However, it is important to notice that as I point out in Sub

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[47] Statistics New Zealand publishes fairly detailed data on productivity growth. See, http://www.stats.govt.nz/browse_for_stats/economic_indicators/productivity/productivitystatistics_mr7810.aspx

Section IV.1 these are merely examples. More definitive computations of these indexes – or similar ones – would require obtaining more reliable data on productivity levels that are closely related to the concepts in the indexes. However, I would argue that even though these are just illustrations they do make a powerful point: a low level of non tradables productivity in non tradables is possibly the most important drag on New Zealand's international competitiveness.

The discussion presented above has implications both in terms of future analytical and empirical work, as well as in terms of policy actions:

- In terms of future work it is important to undertake detailed studies on productivity level, using sectoral data. These studies should specifically incorporate the fact that non tradadbles (including business and government services) are inputs in the production of tradables, and should inquire which are the *specific sources* of low productivity in the non tradables sector. The recently created *Productivity Commission* should take a leading role in this endeavor.
- Future analytical and empirical work on the New Zealand economy should also focus on the decline of the tradables output, and analyze incentives to produce international goods. As was pointed out above, it is surprising that the RER doesn't seem to work as the slope of the production possibilities frontier. Why not? What works, besides the relative price of tradables and non tradables? These are important questions, whose answers twould help guide policy actions.
- With regards to policy, it is quite evident that there is a need to improve productivity levels in the non tradables sector, including in the government services sector. A task force recommending specific actions should be assembled in short order, and an ambitious time table should be put in place. Many – or one may even say most – policy actions could be taken in short order, and would not have to wait for the studies discussed above.

V. **Some Reflections on Vulnerability**

In this penultimate section I discuss, briefly, some analytical and policy issues related to New Zealand's (perceived) high degree of vulnerability. This idea is, perhaps, best articulated in the 2011 "Savings Report." Generally speaking, that document makes the following points:[48]

- "New Zealand's level of debt is too high."
- "This liability makes New Zealand economy vulnerable."
- "Increasing savings is essential to reduce the vulnerability."

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[48] See the first Box in page 6.

From here, the Savings Working Group goes on to recommend a number of specific policies to increase savings and, thus, reduce vulnerability. Some of its most important policy recommendations are quite general and mostly uncontroversial, and include the following:

- A return to a fiscal surplus of the order of 2% of GDP.
- Greater transparency in public accounts, including in terms of the Crown's balance sheet.
- Introduce a broad tax reform that reduces distortions stemming from existing loops and/or inflation. Some of the specific suggestions on taxes include:
    - Indexing some tax items by inflation.
    - Broaden the tax base.
    - Increase the rate of the GST to 17.5%, with compensating policies for the poor.
- Maintaining a voluntary KiwiSaver, with auto enrollment and a possibility for opting out.
- Develop an annuities market.
- Issuing inflation indexed bonds as a way of encouraging investing in long term financial instruments.
- A number of measures geared at improving the public's financial literacy.
- Improve the quality and availability of economic data.[49]

One of the most surprising aspects of New Zealand's policy debates – including in the Savings Report -- is the absence of discussions on the role of insurance as a way of reducing macroeconomic risks. There are several ways, of course, to use insurance to try to diminish the costs associated with a bad state of the world. Although some of these "insurance-based" mechanisms are not easily available at the country level, it is important to discuss them, and to consider ways of increasing their use. Indeed, couching the vulnerability debate within an insurance framework will help develop sharper policy proposals. Of course, a detailed analysis of insurance-based mechanism would require a paper of its own. At this point, it is sufficient to say that it is important for New Zealand's economic authorities to analyze the vulnerability question from this perspective.

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[49] As a long time observer of the New Zealand economy I am still impressed (and surprised) by the fact that many important data – including data on the CPI – are only available at the quarterly frequency.

Traditionally, a distinction has been made between "self insurance" and "market-based" insurance mechanisms. However, in addition to these two categories, it is useful to think of "architecture-based" schemes, or insurance mechanisms that rely on the international architecture.

- *International reserves*: This is the simplest form of self insuring against external shocks. Does New Zealand hold enough reserves? Should a process of adding reserves to current holdings be initiated? If so, how fast should reserves be accumulated?
- *Macro prudential regulations*: In the aftermath of the GFC this topic has become central to policy discussions. New Zealand has already made some moves in this direction – in particular, through the core funding for banks --, but a deeper discussion needs to take place. In Table 3 I present a summary of some of the most important macro prudential tools currently being considered by policy makers from around the world. Progress in this area should be fast.
- *Taxes on capital inflows*: These have become more popular during the last few years, mostly as a result of Chile's experience during the 1990s. However, thorough empirical analyses have questioned their effectiveness (Edwards and Rigobón, 2010). In addition, these seem to be redundant if a good set of macro prudential regulations have been put in place.[50] In spite of this, it makes some sense to look formally into them as a possible insurance tool. My conjecture is that after looking at them – and to the extent that macroprudential regulations will be stepped up --, taxes on capital inflows will be ruled out.
- *Bonds indexed to the terms of trade or the borrowing spread:* For some time now, MIT's Ricardo Caballero and his associates have argued that countries subject to major terms of trade shocks could protect themselves by issuing bonds indexed to those shocks (Caballero, 2003). In principle these bonds would work similar to existing CAT bonds and would be indexed to the country's export prices or their borrowing costs. It is unclear whether after the GFC there would be a market for this type of instruments. In spite of this, it is important, to seriously explore this possibility.
- *Preapproved swap lines from major central banks*. The RBNZ received a swap line from the US Federal Reserve for USD 15bn on October 28th, 2008. It expired in January 2010, without being drawn on.[51] This swap line helped New Zealand hold the line during the most pressing days of the GFC. It would be interesting to explore the possibility of signing agreements with two or three major central banks – say, the Fed, the RBA, the Bank of Japan -- where such swap lines are preapproved, and would become accessible under clearly predetermined states of the world. A related but more intriguing insurance-related tool would be to sign on for an IMF Flexible Credit Line *(FCL)*, an

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[50] This point has been made repeatedly by José De Gregorio, the governor of the Central Bank of Chile.

[51] See, http://www.federalreserve.gov/newsevents/press/monetary/20081028a.htm.The main purpose of these types of swap lines is to deal with financial markets liquidity problems.

instrument developed by the Fund to work as an insurance policy. The limitations of this tool are three, however: only three countries have so far signed for FCLs', these credit lines are mostly seen as options for emerging countries, and there is still a sense in the market place that signing on to the FCL has a negative effect on countries' reputations. In spite of these limitations, it would be positive to look into the FCLs – and even discuss them with the IMF – seriously. It makes little sense to rule them out without a thorough analysis.

VI.   **Concluding Remarks**

The main conclusions of this paper may be summarized as follows:

- New Zealand's economic conditions continue to be solid. Indeed, prospects are rosier than what pessimist observers have intimated. I have called the somewhat pessimistic view that permeates the discussion the "Woody Allen syndrome".
- Having said that, there are a number of areas that deserve attention and a number of policies and reforms that should be undertaken in order to improve performance and reduce vulnerability.
- The dominating narrative on the economic conditions – which I have called the "Unofficial-Official" story -- focuses on the right issues and is, largely, correct.
- In particular, everything suggests that the quest for "fiscal consolidation" is eminently reasonable. Moreover, as has been suggested by Brook (2011) it is important to build an institutional framework that would give both independence and credibility to fiscal policy. It is not recommendable, however, that Fiscal Commissioners come (or are seconded) from the RBNZ. True independence (both actual and perceived) is of essence.
- Although mapping a specific route to fiscal consolidation is well beyond the scope of this paper, it is clear that this needs to take place through a combination of revenue-enhancing measures and expenditure-reducing reforms. In particular, in designing these policies a number of principles should be considered: (a) New tax policies should go beyond the revenue motive; it is important to reduce distortions and encourage savings. In that regard, tax exemptions should be eliminated and taxes that discourage investment in rental housing units should be put in place. (b) In reshaping expenditures it is important to consider the social implications of different measures. In particular, it is of essence that "mean testing" is introduced into social programs, and that those that currently (mostly) benefit the upper and middle classes – including the students' loans program for tertiary education – are revised, reform or eliminated.

- In order to have clearer guidance on how to face reform it is necessary to improve the understanding of key aspects of the economy, including:
  - o the forces behind the decline in tradables output (both in relative and absolute terms);
  - o the main drivers of the trade-weighted RER. In particular, how is "fiscal consolidation" likely to affect the long run level of the RER;
  - o the way in which inefficiencies in the non tradadables services (including government services) sectors impacts on the degree of international competitiveness of the tradables sector.
- There is also a need to couch the discussion on "vulnerability" to external shocks within a comprehensive analytical framework. In this regard, using an insurance framework seems natural.
- The empirical, comparative analysis of RER dynamics presented in Section III showed that the behavior of the RER in New Zealand is similar than those in other commodity countries:
  - o Both the international price of commodities and interest rate differentials (which summarize the macroeconomic policy mix) play an important role in explaining RER dynamics.
  - o Generally speaking, the results suggest that changes in international commodity prices have a greater effect on the trade weighted RER than a decline in interest rate differentials. Having said that, the empirical analysis does suggest that a reduction in interest rate differentials to the (average) level of Australian differentials would result in an equilibrium RER depreciation of approximately 9%.
- The empirical analysis indicates that the RER – in any of its versions – is not a (very) good indicator of the incentives to devote resources to the production of tradables. In a sense, then, the RER is a poor proxy for the slope of the "production possibilities frontier." This suggests that alternative indicators of competitiveness should be developed and calculated.
- In Section IV one such indicator is proposed. An illustrative exercise, based on labor productivity levels suggests that, inefficiencies in the non tradable (including government services) sector have reduced New Zealand's exports' competitiveness by 15%. The analysis suggests that reducing services' inefficiencies is a more effective way of improving competitiveness than engineering (or hoping for) a RER depreciation.
- The results in the previous bullet are tentative and preliminary. A more detailed analysis would require a significant improvement in data availability. It is urged that the newly formed *Productivity Commission* devotes considerable effort to obtaining these data. However, it is important to notice that improving productivity in the non tradables sector is fairly pressing, and that the implementation of a broad policy package to achieve this should not wait until all studies are completed.

- The debate on the country's vulnerability to external shocks is timely and has been carried out in a professional way. At times, however, the discussion has lost focus and there has been a lack of policy priorities. In that regard, it is advisable that the debate is carried out within the context of an "insurance" framework. When the probability of a "bad state" of the world increases, the rational thing to do is to buy more insurance. Of course, the challenge is that, for countries, the insurance market is not very well developed. Although a detailed analysis of this issue is well beyond the scope of this paper, in Section V I make some suggestions on possible ways of increasing the country's "insurance coverage."

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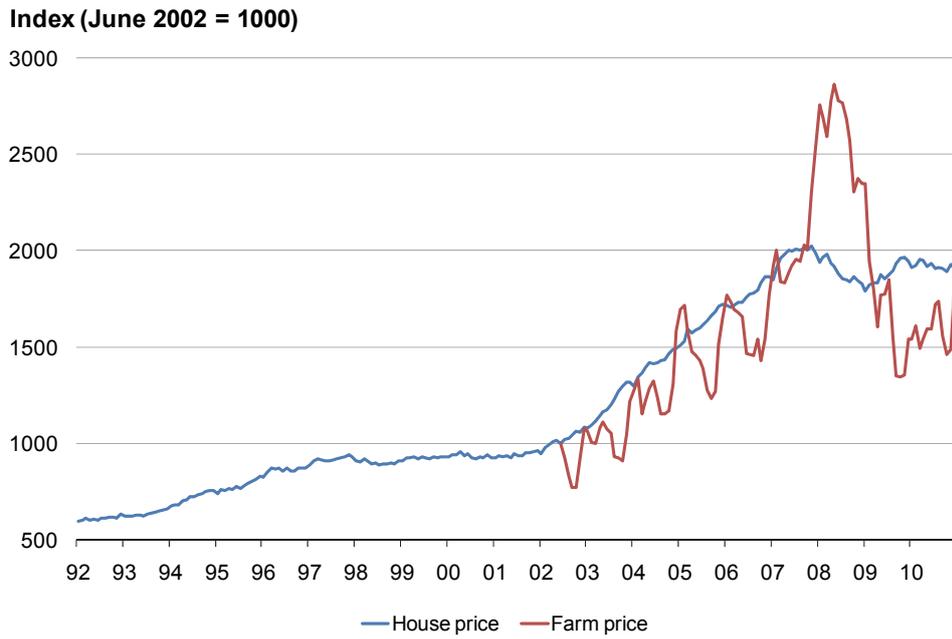
Index (June 2002 = 1000)

Figure 1: House and Farm Price Indexes, 1992-2010. (Source: André, 2011)
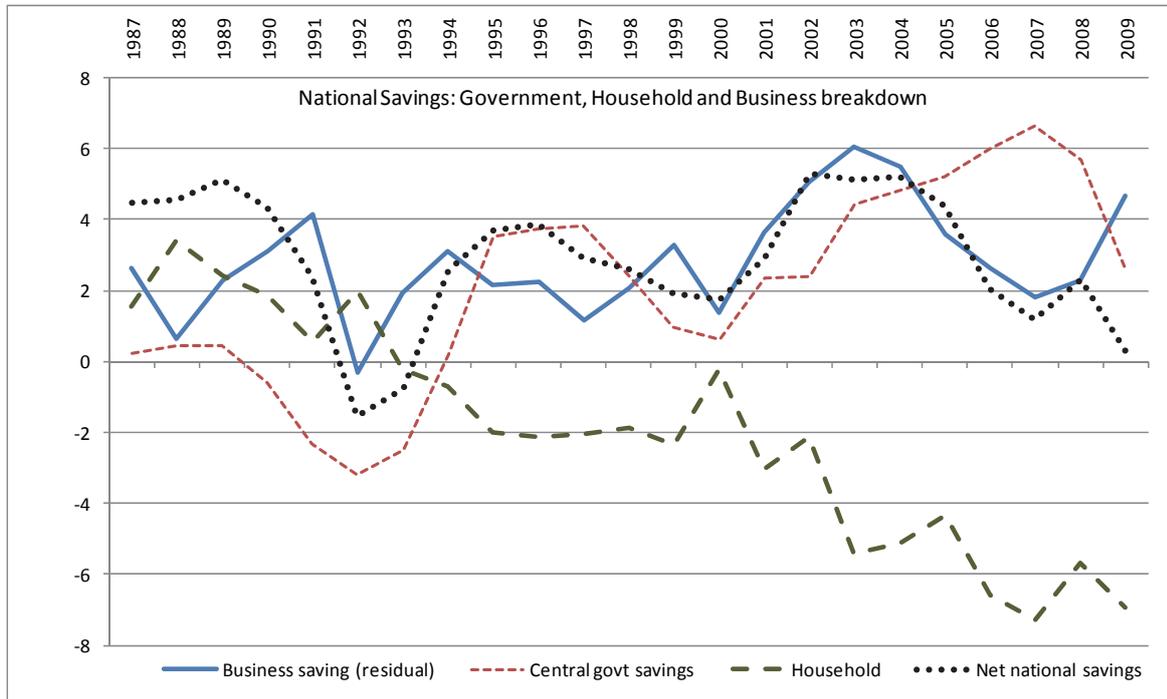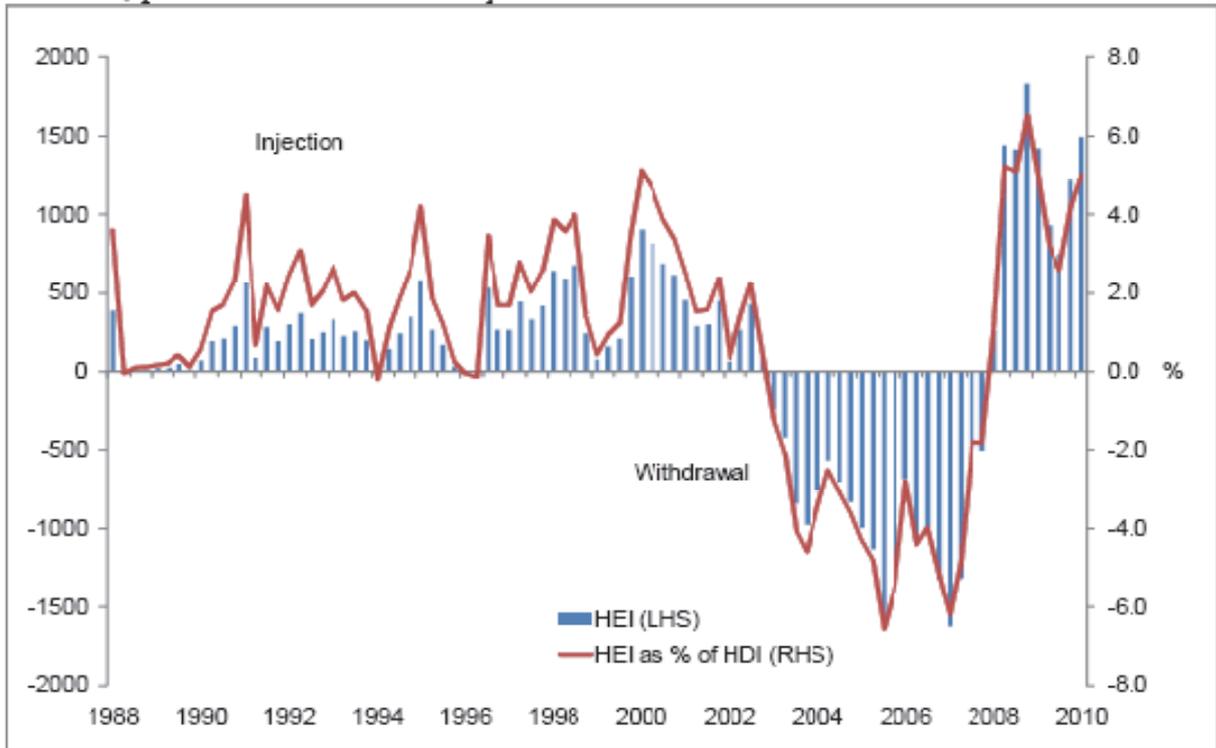
Figure 2: Net National Savings in New Zealand, 1987-2009 (Source: Gemell and McAlister, 2011).

Smillion; percent of household disposable income

Source: RBNZ

Figure 3: Household Equity Injections and Withdrawals, 1988-2010 (Source: Gemell and McAlister, 2011).

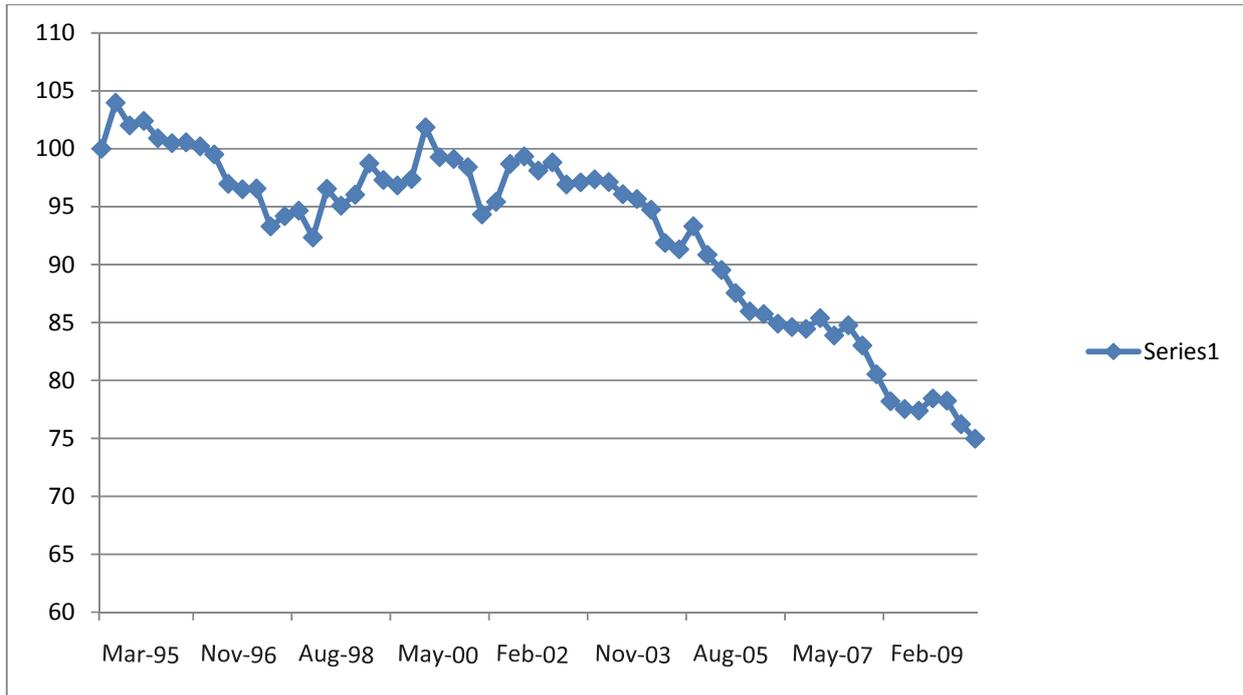Figure 4: Ratio of Tradables to non-tradables output, 1995-2010. (Source: The Treasury)

REER_NZ
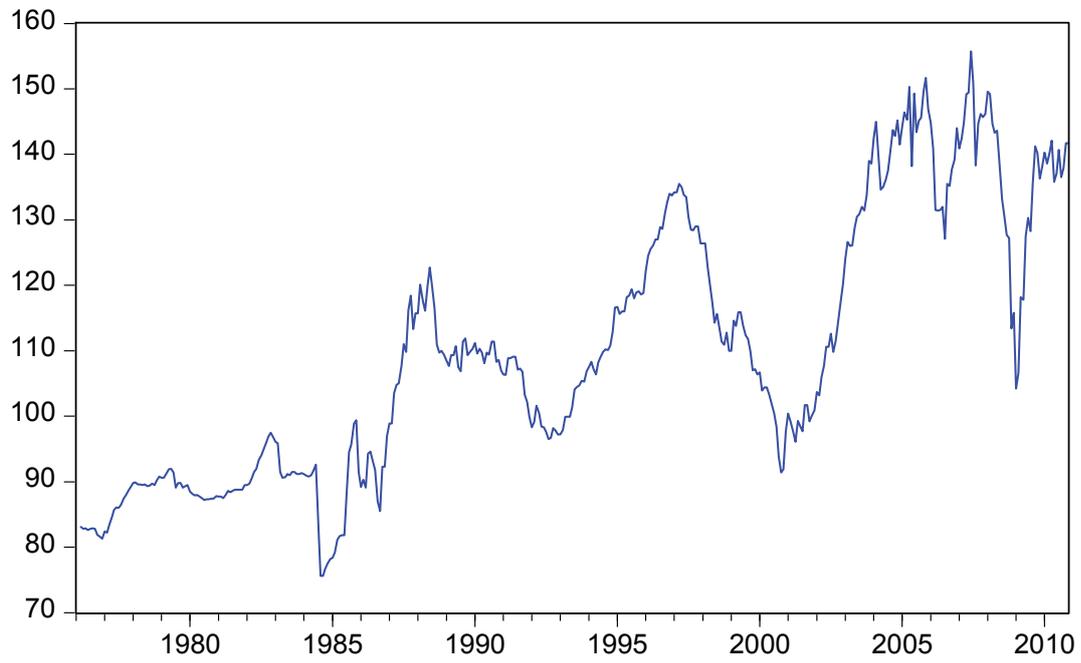
Figure 5: Trade Weighted Real Exchange rate Index, 1976-2010 (Source: JP Morgan)
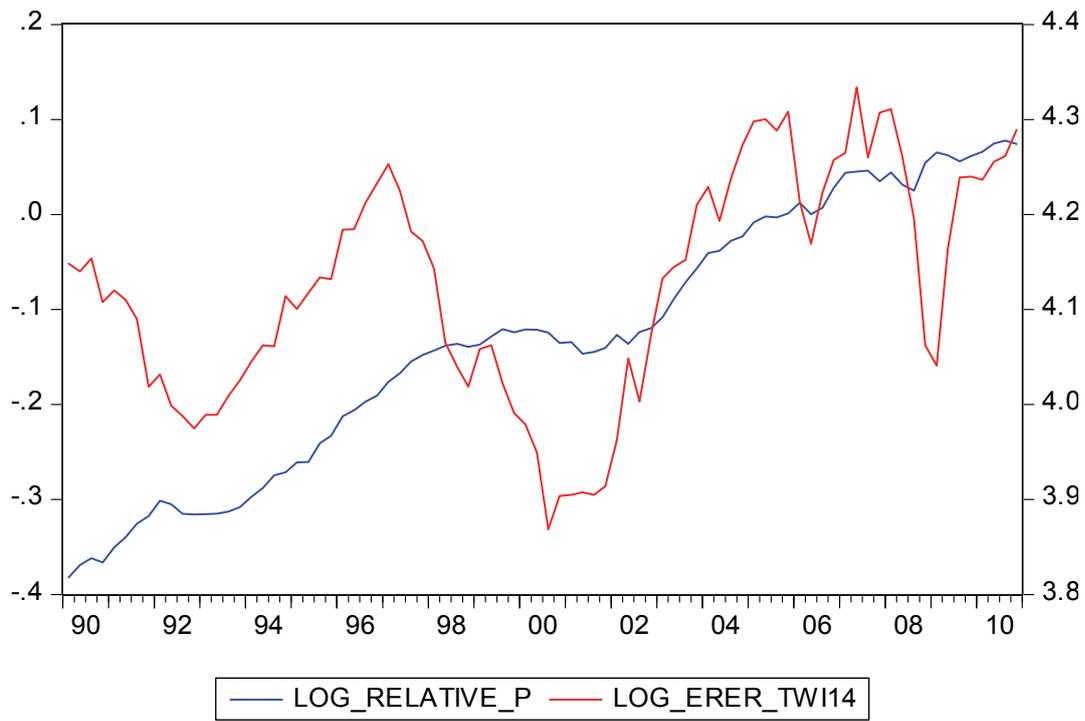
Figure 6: Logarithm of RER and Relative Price of Non Tradables to Tradables (Quarterly Data, 1990-2010)
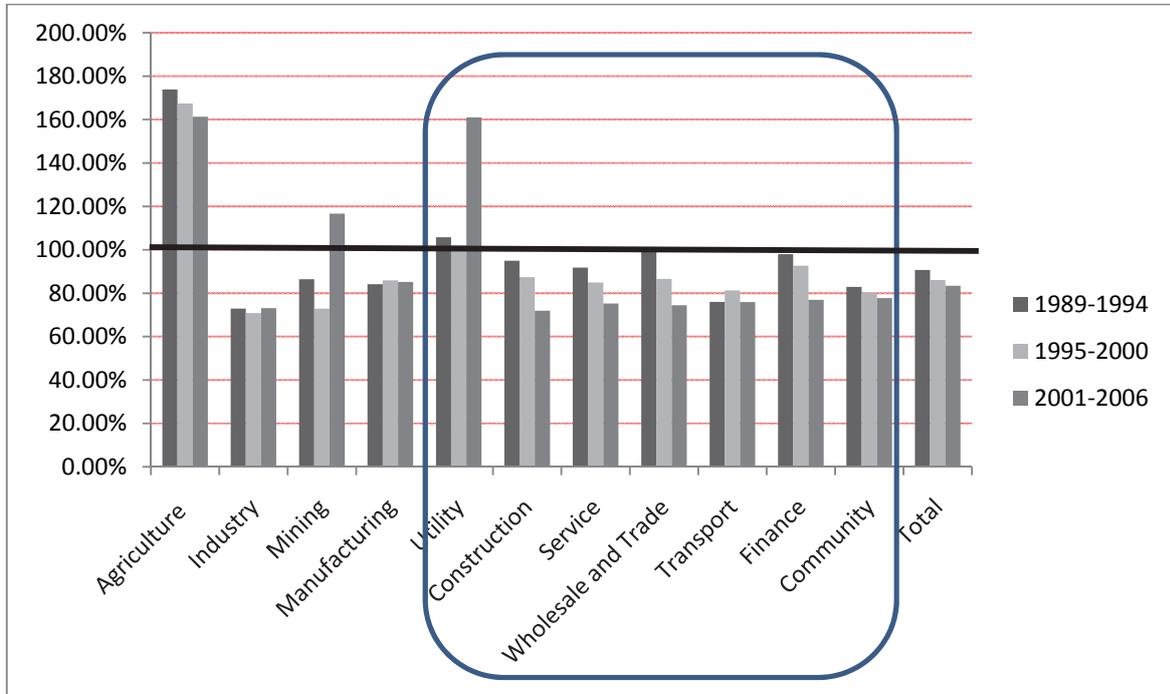
Figure 7: New Zealand labor productivity *levels* as a percentage of Australia's: Various sectors, 1989-2006 (Source: Yang, 2011)
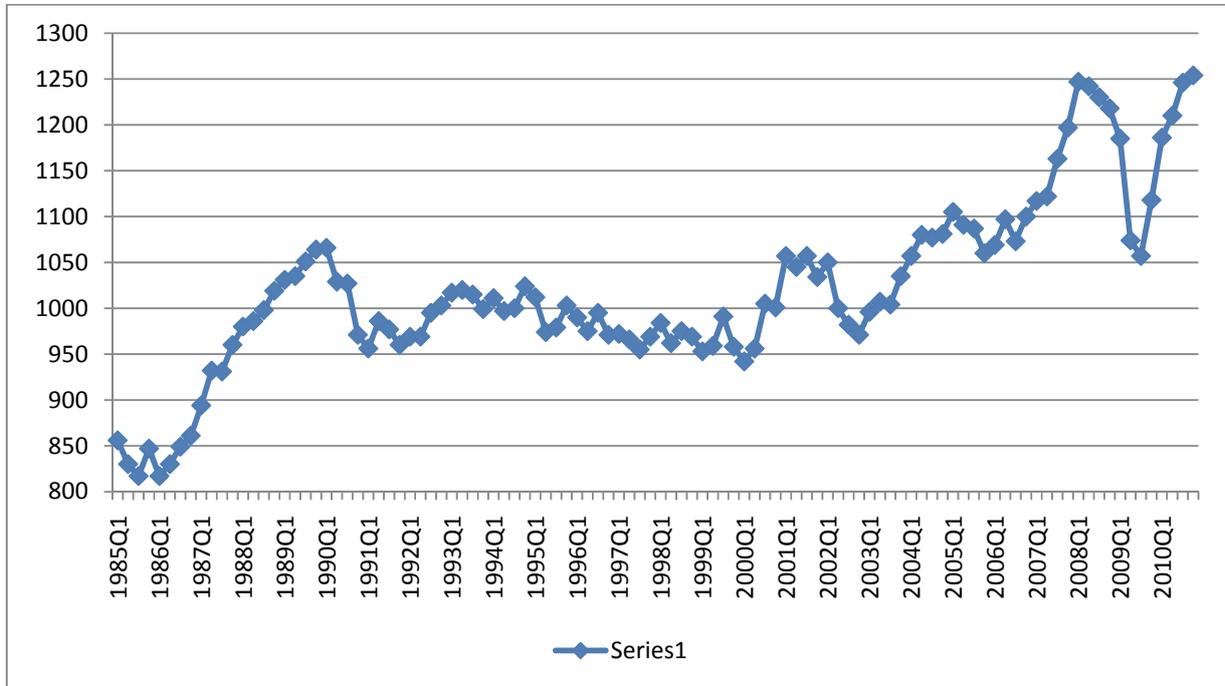
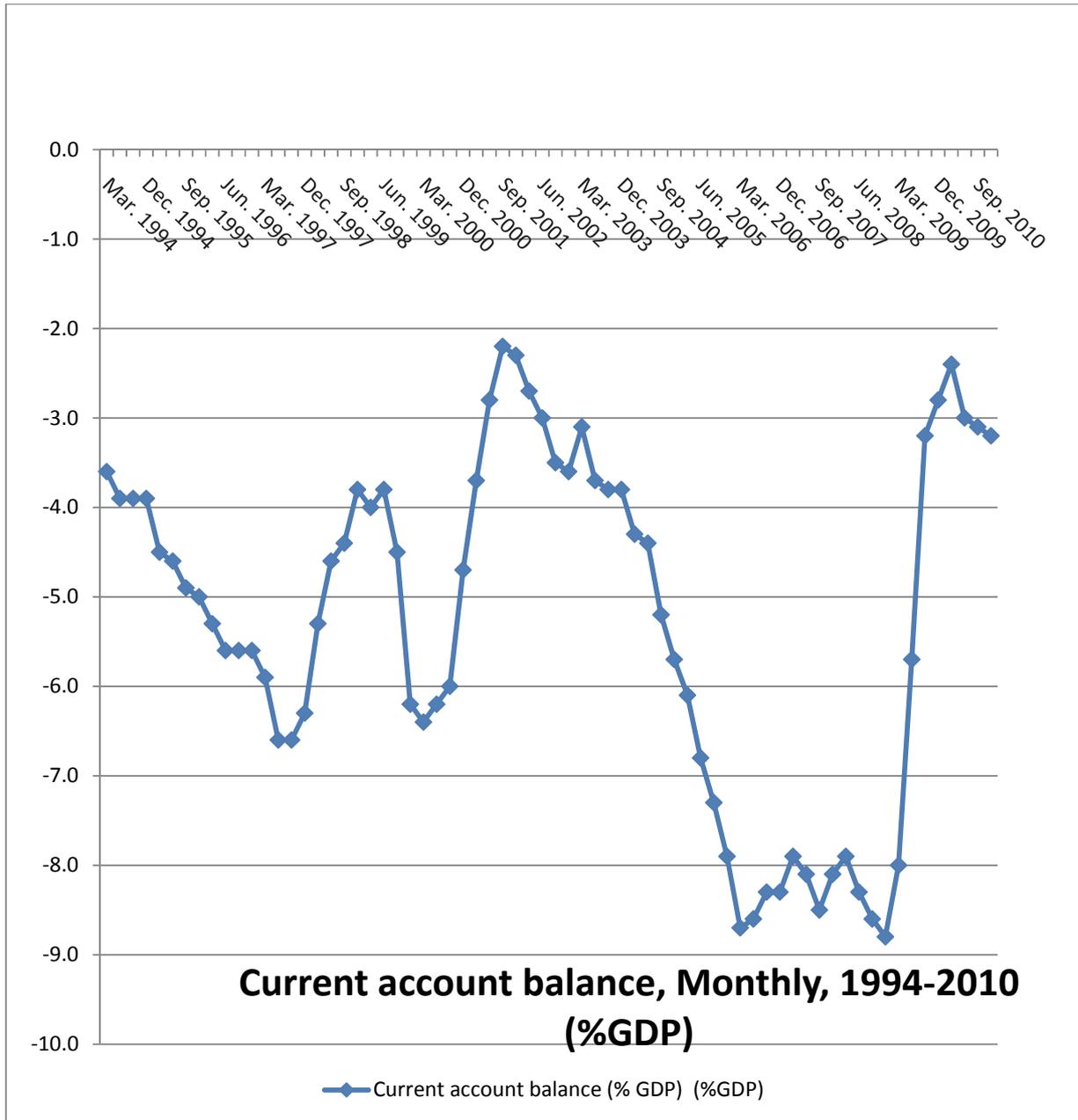FIGURE A1: Terms of Trade Index in New Zealand, Quarterly data, 1985-2010

Figure A2: Current Account Balance as % of GDP, Monthly Data, 1994-2010

TABLE 1 (Part 1): SURE Estimates of RER Equations for New Zealand, Australia, Canada, Brazil and Chile

	Coefficient	Std. Error	t-Statistic	Prob.
NEW ZEALAND				
Constant	-0.063189	0.152778	-0.413599	0.6792
Log RER US	0.049458	0.028052	1.763074	0.0782
Log RER (t-1)	0.948855	0.015162	62.58089	0.0000
Log Comm Prices	0.017125	0.008416	2.034844	0.0421
Δ Log RER	0.028045	0.056922	0.492695	0.6223
Differential	0.002410	0.001125	2.141560	0.0324
AUSTRALIA				
Constant	-0.147407	0.203528	-0.724259	0.4691
Log RER US	0.081843	0.035838	2.283731	0.0226
Log RER (t-1)	0.889659	0.026958	33.00115	0.0000
Log Comm Prices	0.063386	0.013844	4.578734	0.0000
Δ Log RER	0.004377	0.053368	0.082020	0.9346
Differential	0.001901	0.000809	2.350930	0.0189
CANADA				
Constant	0.301667	0.464473	0.649482	0.5162
Log RER US	0.025907	0.063778	0.406209	0.6847
Log RER (t-1)	0.896474	0.043454	20.63050	0.0000
Log Comm Prices	0.011436	0.012514	0.913839	0.3610
Δ Log RER	-0.166072	0.079548	-2.087700	0.0370
Differential	-0.001180	0.002072	-0.569728	0.5690
BRAZIL				
Constant	-0.471183	0.268362	-1.755770	0.0794
Log RER US	0.115698	0.051652	2.239952	0.0253
Log RER (t-1)	0.859606	0.028104	30.58674	0.0000
Log Comm Prices	0.130470	0.025815	5.054047	0.0000
Δ Log RER	0.095993	0.059351	1.617385	0.1061
Differential	1.13E-06	5.47E-07	2.068001	0.0389
CHILE				
Constant	-0.053537	0.194222	-0.275648	0.7829
Log RER US	0.063000	0.039289	1.603511	0.1091
Log RER (t-1)	0.906511	0.025686	35.29171	0.0000
Log Comm Prices	0.042862	0.014410	2.974400	0.0030
Δ Log RER	0.204906	0.060519	3.385806	0.0007
Differential	-0.000125	0.000247	-0.506442	0.6126
Determinant residual covariance		2.59E-16		

TABLE 1 (Part 2)

NEW ZEALAND
Observations: 249

R-squared	0.966781	Mean dependent var	4.785227
Adjusted R-squared	0.966097	S.D. dependent var	0.136176
S.E. of regression	0.025074	Sum squared resid	0.152771
Durbin-Watson stat	2.041789		

AUSTRALIA
Observations: 251

R-squared	0.956159	Mean dependent var	4.721291
Adjusted R-squared	0.955264	S.D. dependent var	0.143603
S.E. of regression	0.030373	Sum squared resid	0.226020
Durbin-Watson stat	1.977023		

CANADA
Observations: 153

R-squared	0.853575	Mean dependent var	4.628929
Adjusted R-squared	0.848595	S.D. dependent var	0.066098
S.E. of regression	0.025719	Sum squared resid	0.097238
Durbin-Watson stat	1.773593		

BRAZIL
Observations: 250

R-squared	0.970592	Mean dependent var	4.719434
Adjusted R-squared	0.969989	S.D. dependent var	0.248544
S.E. of regression	0.043057	Sum squared resid	0.452354
Durbin-Watson stat	1.983503		

CHILE
Observations: 250

R-squared	0.967303	Mean dependent var	4.595492
Adjusted R-squared	0.966633	S.D. dependent var	0.142325
S.E. of regression	0.025998	Sum squared resid	0.164917
Durbin-Watson stat	1.959800		

TABLE 2: RER Equations for New Zealand, SURE and 3SLS: Alternative Specificactions

	Coefficient	Std. Error	t-Statistic	Prob.
SURE				
Constant	-1.646572	0.528223	-3.117189	0.0019
Log RER US	0.090799	0.031840	2.851720	0.0044
Log RER (t-1)	0.917316	0.017915	51.20384	0.0000
Log Comm Prices	0.641876	0.194194	3.305333	0.0010
Δ Log RER	0.006712	0.058809	0.114134	0.9092
Differential	0.003752	0.001202	3.121929	0.0018
Lehman	-0.062638	0.019472	-3.216835	0.0013
Log Comm Sq	-0.016400	0.008296	-1.976824	0.0483
SURE				
Constant	-1.306395	0.575011	-2.271949	0.0233
Log RER US	0.023356	0.054936	0.425145	0.6708
Log RER (t-1)	0.902920	0.020467	44.11597	0.0000
Log Comm Prices	0.663701	0.194085	3.419642	0.0007
Δ Log RER	0.001634	0.058646	0.027859	0.9778
Differential	0.003442	0.001212	2.841041	0.0046
Lehman	-0.067050	0.019618	-3.417757	0.0007
Log Comm Sq	-0.021564	0.008871	-2.430875	0.0152
Time trend	9.76E-05	6.50E-05	1.501928	0.1334
THREE SLS				
Constant	-1.257433	0.577144	-2.178717	0.0296
Log RER US	0.019418	0.055078	0.352553	0.7245
Log RER (t-1)	0.904388	0.020496	44.12596	0.0000
Log Comm Prices	0.648490	0.194890	3.327461	0.0009
Δ Log RER	0.006556	0.058689	0.111711	0.9111
Differential	0.003183	0.001244	2.559125	0.0106
Lehman	-0.021803	0.008866	-2.459104	0.0141
Log Comm Sq	-0.065550	0.019703	-3.326985	0.0009
Time trend	9.95E-05	6.50E-05	1.531209	0.1260

TABLE 3: Alternatives for Macroprudential Policies

Macroprudential instruments

1. Risk measurement methodologies	Examples
By banks	Risk measures calibrated through the cycle or to the cyclical trough
By supervisors	Cyclical conditionality in supervisory ratings of firms; Develop measures of systemic vulnerability (e.g. commonality of exposures and risk profiles, intensity of inter-firm linkages) as basis for calibration of prudential tools; Communication of official assessments of systemic vulnerability and outcomes of macro stress tests;
2. Financial reporting	
Accounting standards	Use of less procyclical accounting standards; dynamic provisions
Prudential filters	Adjust accounting figures as a basis for calibration of prudential tools; Prudential provisions as add-on to capital; smoothing via moving averages of such measures; time-varying target for provisions or for maximum provision rate
Disclosures	Disclosures of various types of risk (e.g. credit, liquidity), and of uncertainty about risk estimates and valuations in financial reports or disclosures
3. Regulatory capital	
Pillar 1	Systemic capital surcharge; Reduce sensitivity of regulatory capital requirements to current point in the cycle and with respect to movements in measured risk; Introduce cycle-dependent multiplier to the point-in-time capital figure; Increased regulatory capital requirements for particular exposure types (higher risk weights than on the basis of Basel II, for macroprudential reasons)
Pillar 2	Link of supervisory review to state of the cycle
4. Funding liquidity standards	Cyclically-dependent funding liquidity requirements; Concentration limits; FX lending restrictions; FX reserve requirements; currency mismatch limits; open FX position limits
5. Collateral arrangements	Time-varying Loan-to-value (LTV) ratios; Conservative maximum loan-to-value ratios and valuation methodologies for collateral; Limit extension of credit based on increases in asset values; Through-the-cycle margining
6. Risk concentration limits	Quantitative limits to growth of individual types of exposures; (Time-varying) interest rate surcharges to particular types of loans
7. Compensation schemes	Guidelines linking performance-related pay to ex ante longer-horizon measures of risk; back-loading of pay-offs; Use of supervisory review process for enforcement
8. Profit distribution restrictions	Limit dividend payments in good times to help build up capital buffers in bad times
9. Insurance mechanisms	Contingent capital infusions; Pre-funded systemic risk insurance schemes financed by levy related to bank asset growth beyond certain allowance; Pre-funded deposit insurance with premia sensitive to macro (systemic risk) in addition to micro (institution specific) parameters
10. Managing failure and resolution	Exit management policy conditional on systemic strength; Trigger points for supervisory intervention stricter in booms than in periods of systemic distress

Source: Taken from Galati and Moessner (2011), who, in turn, adopted it from BIS (2008)