Supporting Paper A5
Productivity, investment, exports and monetary policy

Introduction

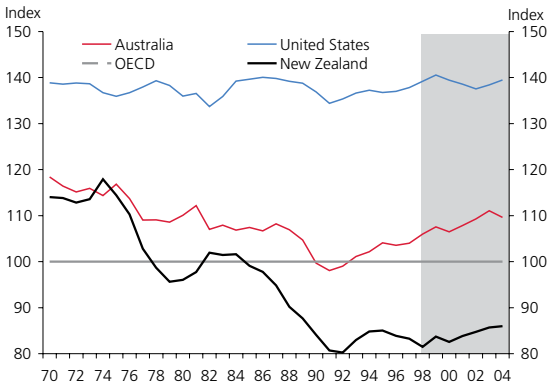
As we note in the main submission, there are several surprising aspects of New Zealand's otherwise strong economic performance over the last 15 years. In particular, per capita GDP growth has not been strong enough to begin to close the gap on other OECD countries, the stock of capital per worker remains low, and our export performance appears, on the face of it, quite disappointing. These are disconcerting outcomes, which matter for the future prosperity of all New Zealanders. As monetary policy has a big impact on short-term economic outcomes it is reasonable to ask whether the way the monetary policy framework has been designed and implemented is contributing to these disappointing longer-term outcomes. To date, the evidence does not suggest that it is.

Growth, productivity, and investment

The economic growth rate New Zealand can sustain without inflationary pressures accumulating picked up in the early 1990s and since then has compared quite favourably with potential growth rates in other OECD countries (and with the growth rates achieved in New Zealand in the previous couple of decades). Total economic growth has exceeded the OECD average rate for some years, but per capita GDP growth has only been sufficient to arrest a long-term trend decline in New Zealand's relative international living standards (figure 1) – indeed, if anything the gap to high-performing Australia has continued to widen. New Zealand's GDP per capita still lags behind OECD average levels by around 15 percent, Australian levels by around 20 percent, and US levels by around 40 percent.[1]

Figure 1

Per-capita GDP comparisons*



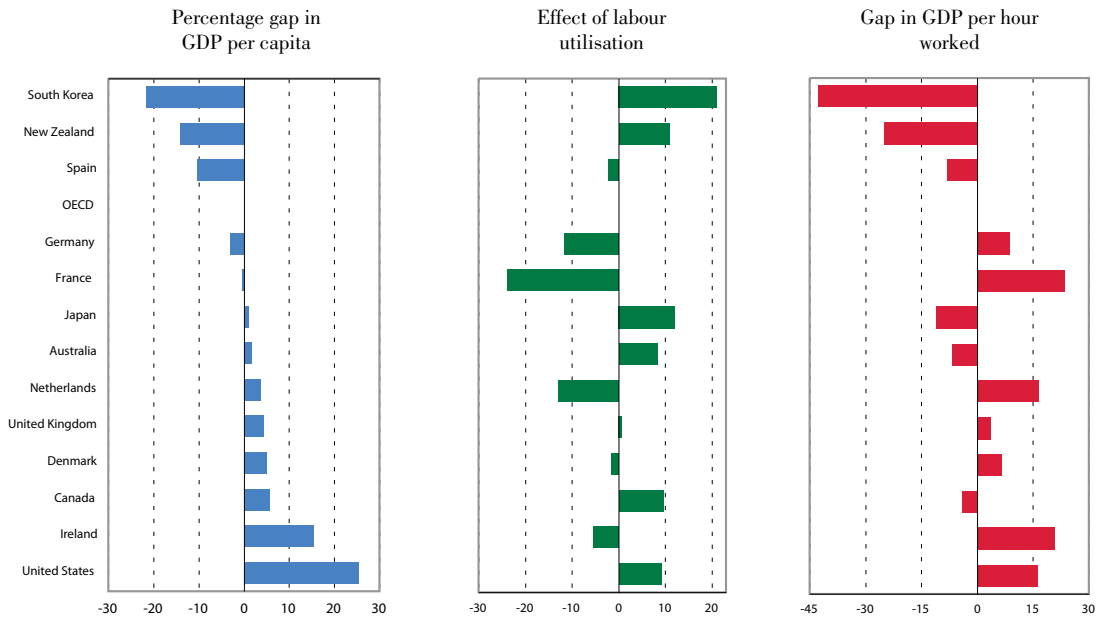
Source: OECD Factbook 2006.
* GDP per-capita adjusted for purchasing-power parities. OECD figures exclude the Czech Republic, Hungary, Poland and the Slovak Republic.

The gap in GDP per capita between New Zealand and the rest of the OECD can be decomposed into the contributions from the volume of labour, the volume of capital, and the effectiveness with which those inputs are being used ("productivity"). New Zealand scores well in respect of labour inputs: our labour market is efficient, our non-inflationary unemployment rate is lower than

[1] GDP is a measure of value-added in New Zealand. Servicing our unusually large stock of foreign liabilities means that the actual income per head available to New Zealand residents lags further behind OECD averages than the per capita GDP data in isolation suggest.

Figure 2

Decomposing the differences in GDP per capita*



Source: OECD.

* Data are for 2004. GDP differentials are calculated using PPP measures and are relative to OECD average. OECD figures exclude the Czech Republic, Hungary, Poland and the Slovak Republic.

those in many other countries, overall participation in the labour force is quite high, and New Zealand workers put in relatively long hours.

However, the level of labour productivity, measured as aggregate GDP per worker or per hour worked, remains poor. There are serious measurement issues with looking at total economy labour productivity. Statistics New Zealand's data on productivity in the "measured sectors" of the economy[2] gives a better idea of New Zealand's productivity performance. These data show that since the late 1980s New Zealand's productivity growth has been fairly strong relative to Australia's (the only country where the statistics are directly comparable). However, the data also suggest that the accumulation of capital equipment has lagged behind that in Australia. Other data consistently show that the level of capital equipment per worker remains low by high-income country standards, and that there has been little sign of any convergence in the last decade or so.

It matters that there is less capital per worker in New Zealand than in other countries. All else equal, more labour is required in New Zealand to produce a given level of output. This reduces New Zealand's labour productivity levels relative to those in countries with higher levels of capital per worker. In so doing, it undermines the scope for sustainable labour income growth. In addition, certain types of capital – in particular infrastructure and information and communications technologies (ICT) – are often thought to be associated with dynamic efficiency gains. Employing more of these types of capital is thought to have significant spill-over benefits for firms' productivity performances in general. As such, lifting infrastructure capacities and investing in "enabling technologies" may have an enduring effect on multi-factor productivity growth rates.

Looking back over the last 20 years, there are some specific reasons why the rate of capital accumulation in New Zealand might have been expected to have lagged behind the rest of the world for a while. First, following the economic reforms undertaken from the mid 1980s to the early 1990s, a significant fraction of New Zealand's existing capital stock, previously sheltered by protection and other regulatory barriers, became uneconomic and was scrapped, reducing capital per worker. Moreover, for much of the period real wage growth was relatively subdued, making it attractive to firms to emphasise adding additional labour rather than additional capital. Doing so has brought about a

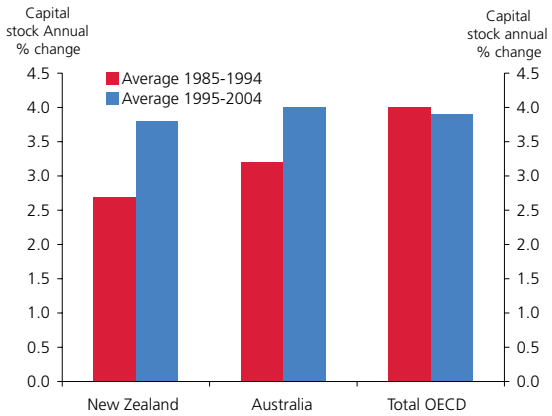
2 For further details see Drew (2007).

marked reduction in New Zealand's unemployment rate.

However, if a fundamental process was actually underway that would see the level of capital equipment per worker in New Zealand converge on the high-income countries' levels, we would have expected to see strong evidence of it by now.

Recent data suggests that capital deepening (ie lifting the stock of capital equipment per worker) has been beginning to take place at a faster rate. However, it would be unwise to take too sanguine a view of the last few years' data, given that domestic demand has been very strong in recent years, and that additional staff have been unusually hard to find, so that incentives to invest have been stronger than they might be on average over the medium term.[3] New Zealand firms have been adding enough capital to keep pace with the average across OECD countries. That is a reasonable performance[4] but not in itself good enough to lift productivity growth rates to levels that would lead to New Zealand's per capita incomes converging on those of upper income OECD countries.

Figure 3
Capital accumulation



Source: OECD Economic Outlook, No. 80.

There are a number of factors that might explain why the stock of capital is not growing faster in New Zealand. Further work is needed to better understand the issue and, in particular, what role, if any, there might be for policy initiatives. This is not our area of specialist expertise, but recent work by the Treasury suggests that New Zealand's capital shallowness, while broad-based, is especially apparent in several key domestically-oriented sectors. In these sectors firms are less likely to be exposed to international competitive pressures and may also face fewer economies of scale and less domestic competition than international counterparts in larger countries might.[5] From this perspective, it may be that policy interventions might best be targeted at the sectoral level and might consider, for example, whether there are regulatory or other impediments at this level.

At the macroeconomic level, a possible reason for New Zealand's low level of capital per worker is that real interest rates in New Zealand have been persistently higher than those in other OECD countries. New Zealand firms considering investing here, and reliant on New Zealand debt and equity markets for funds (and most of those starting out will be), face a higher cost of capital than firms based in other countries do.

In supporting paper A4 we discuss some reasons why New Zealand real interest rates may have been persistently higher than those in other countries. There are no simple answers. There is, however, little reason to believe that monetary policy is ultimately responsible for the persistently high level of interest rates in New Zealand – inflation has rarely undershot the target range and has typically been in the upper half of successive ranges. Instead, the explanation appears to rest with the saving and borrowing choices of the household sector. In a world in which foreign capital is not infinitely mobile, the household sector's claim on funds seems to be pushing up the level of interest rates needed to keep inflation in check in New Zealand. In so doing, that demand for funds boosts the overall cost of capital, and in so doing is probably "crowding out" some business investment.

3 In addition, notwithstanding the difficulties caused by the high level of the exchange rate, at high levels the cost of importing capital equipment is relatively cheap. The Reserve Bank's projections assume that capital deepening will keep on occurring over the medium-term. In part, this assessment is based on the very large volume of infrastructure investment expected to be put in place over the next decade.

4 As other papers in this submission have noted, business investment in much of the rest of the OECD was quite weak in the first half of this decade.

5 For example, the wholesale trade, retail trade, and transport and storage sectors all have capital per hour worked around half the levels of the United Kingdom. Collectively, these sectors comprise around 25 percent of GDP. See Mason and Osborne (2007).

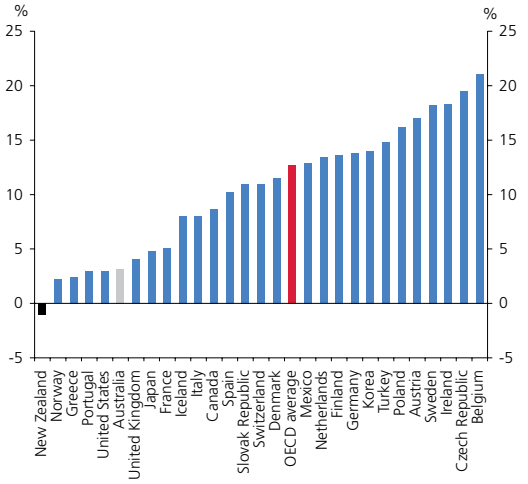
Of course, access to foreign debt and equity capital markets means that many of those looking at real investment opportunities here are not reliant on New Zealand dollar markets. For example, foreign-owned firms allocate funds to investment opportunities using their global cost of capital and choose the projects offering the best overall returns anywhere they operate. Indeed, the high New Zealand dollar cost of capital means firms conducting businesses in New Zealand are relatively more attractive to foreign owners. However, foreign capital is not infinitely mobile. In particular, new and small projects, which can become the foundations for large companies in the future, are not readily serviced by international markets. That is especially so for firms in the domestic economy who could not easily cope with the exchange rate risk associated with raising capital in foreign currency. Overall, a high domestic cost of capital is almost certain to be holding back the total level of real business investment in New Zealand. In so doing, it is acting as a drag on the potential for our living standards to improve relative to those in other OECD countries. That makes the high cost of capital a real issue for New Zealand's future prosperity. Changing the monetary policy regime offers no easy solutions though.

Exports

It has been suggested that a poor export performance may have hampered New Zealand's long-run productivity growth and income prospects. Two main arguments are proposed to link export performance to productivity performance. First, exporting firms are exposed to intense international competition and hence need to focus on productivity improvements in order to maintain or increase their presence in international markets. Second, in selling to world markets New Zealand firms can expand to reap scale and scope benefits not available by selling to domestic markets only. Even if there was no available evidence that the high exchange rate volatility has impaired trend productivity growth directly, exchange rate volatility might still matter, for overall productivity prospects, if it has adversely affected the willingness of firms to become exporters in the first place.

An assessment of New Zealand's overall trade performance is not as straightforward as it might seem. Depending on the data concepts used, quite different assessments can be reached. The most common measure is to look at changes in raw trade (export plus import) to GDP ratios as a proxy for trade openness (figure 4). On this measure New Zealand export volume growth since the early 1990s looks to have been surprisingly weak. More recently, as noted in supporting paper A2, the level of output in the tradables sector of the New Zealand economy has barely changed in recent years.

Figure 4
Gross trade-to-GDP ratios
Increase from 1992 to 2005 (in percentage points)



Source: OECD.

However, note that over the period since the early 1990s several relatively high income and high growth countries also had "poor" trade performances. These include Australia and the United States. Indeed, Australia's low rate of export volume growth is one of the puzzles of its own economic story. In general terms, the relationship between gross trade performances and GDP growth is not overly strong. In some countries, such as Ireland and the Eastern European transition economies, increases in international trade volumes have been an important part of their rapid growth. In other countries, it is less clear that the large observed increase in trade openness has enhanced (relative) economic performances.

OECD countries showing the largest increases in trade volumes over the past decade or so have typically been

Table 1

Real exchange rate volatility, 1986-2005

	New Zealand	Australia	Canada	Chile	Norway	Sweden
Annual percent change						
Standard deviation	8.4	8.3	5.4	7.1	4.6	6.8
Peak-to-trough (exchange rate is depreciating)						
Mean duration (quarters)	7.5	6.0	6.5	4.2	8.3	5.0
Mean annual change (%)	-7.5	-5.2	-4.0	-4.6	-2.7	-4.9
Cumulative change (%)	-29.0	-18.6	-16.3	-10.9	-12.8	-14.1
Trough-to-peak (exchange rate is appreciating)						
Mean duration (quarters)	6.8	6.0	5.5	6.7	9.0	5.9
Mean annual change (%)	6.3	6.5	4.4	5.3	6.6	3.4
Cumulative change (%)	33.0	24.4	21.0	31.9	30.1	10.3

Source: Schmidt-Hebbel (2006), p. 94.

either countries that have newly opened up borders to international trade and investment (eg former centrally-planned economies) and/or countries that have seen a rapid increase in re-exporting activities, exploiting growing cross-border production and service delivery chains. These latter activities often involve a much lower local value-added component than trade in final goods.[6] Moreover, they are not the sort of activities that New Zealand (or Australia) has a natural advantage in given our distance from markets and lack of international land borders.

A more meaningful measure of trade performance for New Zealand would be to look at the growth in the value-added component of trade. On this measure, there are some indications that in the 1990s at least New Zealand's trade performance was broadly comparable to other relatively advanced small open economies.[7] Overall, and abstracting from the current cycle, there is some reason to think that the performance of the New Zealand export sector may not have been as poor as is often thought. Further work will no doubt continue to shed additional light on this issue.

Nonetheless, a widely-held goal has been to improve the overall level of New Zealanders' incomes, closing the gap on the more advanced OECD countries. Without a very large and permanent increase in the terms of trade, it is difficult to envisage New Zealand achieving that goal without increasing the share of its gross output sold on international markets (all the more so given our ever-growing taste for the best of the imports the world has to offer).

As noted earlier in this paper, New Zealand's share of GDP devoted to investment has not been high by international standards and is probably being held back by the high cost of capital facing many firms looking at developing business operations here. We would expect the cost of capital to be holding back investment in the export sector as well, even though export sector firms are better able to cope with the foreign exchange risk inherent in financing their operations in foreign currency, at the lower world interest rates.

What of the exchange rate? In thinking about the macroeconomic consequences of New Zealand's exchange

[6] Gross exports for countries that specialise in manufactured goods can increase markedly if there is more cross-border trade in the intermediate inputs used in the production of final manufactured products. There are real gains from such trade, but the level of value-added will normally be much less than suggested by the increase in gross exports alone. Countries that concentrate more heavily on exports of agricultural or industrial commodities are less likely to show increases in total trade simply as a result of increasing use of internationally-traded intermediate inputs. In these countries, increases in gross exports are more likely to be reflecting an increase in value-added. Value-added, not gross exports, is what ultimately matters for economic performance and living standards.

[7] See Black et al (2003).

rate volatility it is first useful to benchmark ourselves against a relevant group of countries. Table 1 opposite shows measures of real exchange rate volatility for the set of advanced economies that have (largely) freely floating exchange rates, inflation targeting monetary policy frameworks, and (in most cases) a substantial commodity exporting sector.

This table shows that the year-to-year fluctuations in New Zealand's real trade-weighted exchange rate are the highest among this sample, although only a little higher than Australia's. Perhaps a more important measure of exchange rate volatility in this context are the swings in the currency over a complete business cycle. New Zealand firms can and do hedge short-term currency movements, but it is increasingly difficult to hedge effectively against movements over a horizon much beyond two years forward. Over the period since 1986, New Zealand's exchange rate cycles have been larger than those of any of the countries in the table. All these countries, and other OECD countries and currency regions, have experienced large exchange rate cycles.

Our exchange rate is clearly one of the most volatile in the OECD. But we need to dig deeper before reaching a conclusion on whether the fluctuations are negatively affecting New Zealand's long-term economic performance. In principle, if the exchange rate generally buffered "real shocks" to the economy, such as those arising from changes in international commodity prices or increases in domestic demand pressures, it could be a useful mechanism to dampen volatility in the economy, potentially enhancing long-run performance.

In broad terms, our exchange rate tends to be above long-term average levels when the economy is fairly robust and/or New Zealand's commodity prices are strong, and vice-versa. But although the real exchange rate tends to move in generally the "right" direction, there is little doubt – either here or abroad – that floating exchange rates often overshoot (moving by much more than any changes in the medium-term fundamentals would warrant). As we note throughout these papers, the current period is clearly one of those. Cyclical and structural factors all suggest that the exchange rate should now be higher than its long-term average, but equally there is no reason to think that the economy can live sustainably for any prolonged period with the exchange rate at current levels.

Formal macroeconomic evidence on the impact of New Zealand's exchange rate volatility on long-term macroeconomic performance is scarce (as, indeed, is compelling evidence from the international literature). One study last year compared New Zealand's exchange rate cycles with those in a range of other countries. It found that the New Zealand exchange rate had not in the past shown cyclical fluctuations as large as those which appeared to have resulted in significant damage in other countries.[8]

Given the difficulties in identifying the impact of exchange rate volatility on aggregate productivity, there have been a couple of recent attempts to examine the impact of exchange rate volatility on firm or industry-level productivity. Ongoing work by the New Zealand Treasury suggests that firms engaging in exporting are more productive, on average, than firms that do not export.

This work suggests that neither the level nor the volatility of the exchange rate has much affect on the labour productivity of firms in general. There is very weak evidence that exchange rate pressures negatively affect the productivity of exporting firms and the survival rate of firms in general (presumably because some firms that do not export are still reliant on the business of exporting firms). The work also suggests that the higher the level of the exchange rate, the greater the likelihood a firm will go out of business, and that the effect is even stronger for exporting firms.

There are, however, serious limitations to what can be drawn from this work. In particular, the data do not allow researchers to investigate whether and how exchange rate volatility affects a firm's decision to enter into exporting activities in the first place. Hence, this work does not shed much light on whether we have fewer exporting firms, and producers of goods and services for export, than we might if the exchange rate was less variable.

The Reserve Bank is open to the possibility that the magnitude of the exchange rate cycle may have impaired long-run performance. The empirical work to date is not exhaustive and the Reserve Bank would certainly support further work in this area which might uncover more significant effects.

International studies generally find that reducing

[8] See Schmidt-Hebbel (2006).

exchange rate volatility boosts bilateral trade flows. However, much of the increase in trade seems to be in manufacturing activities, drawing increasingly on imported intermediate inputs, with less value-added content.

Because our geography may be a serious constraint on the ability of New Zealand firms to engage in trade in intermediate goods (in a way commonly seen, for example, in EU countries), the trade gains from reducing currency volatility might be smaller in New Zealand than in other countries. Perhaps the main exception to this assessment would be a reduction in the volatility of the currency against the Australian dollar. Physical distance is not as profound between the two nations and, perhaps as a consequence, Australia takes a relatively large share of New Zealand's manufactured exports. But the cyclical fluctuations against the Australian dollar are already much smaller than those against other currencies.

In some respects, it would be surprising if the magnitude of the exchange rate swings that New Zealand experiences was not causing some damage, and acting as a drag on the internationalisation of the economy. The exchange rate is clearly more variable than the medium-term fundamentals would warrant, and that makes the pricing signals facing firms hard to read reliably. Moreover, the New Zealand domestic market is very small, providing a limited buffer for firms if they experience difficulties in export markets.

The New Zealand export sector is also probably more reliant than those in most OECD countries on small producers (farmers and individual tourism operators) with limited international diversification. For large international industrial or resources companies one way of coping with international exchange rate cycles is to have interests in a wide range of countries and markets, relying on diversification to keep overall exchange rate risks to a minimum. That is much less the case for most New Zealand export producers. It may be that, in the absence of good diversification options, some of those considering moving into exporting, or even into the production of tradable goods for domestic consumption, conclude that it is all "too hard" and hold back from investing in the sector to the extent they might otherwise choose to do.

However, even if big exchange rate cycles are adversely affecting the internationalisation of our economy, it is not obvious that the design or conduct of monetary policy are important independent causes of the exchange rate cycles: independent that is of the underlying economic pressures and shocks monetary policy faces. As we have highlighted elsewhere in this submission, our inflation targeting approach is set firmly within the international mainstream, including for smaller commodity-exporting developed countries. That regime has been copied, in its essentials, by numerous other countries over the last decade or so.

Moreover, supporting paper A3 suggests that our responses to shocks and new information have been much the same as the way the US Federal Reserve and the Reserve Bank of Australia would have operated faced with similar pressures in their own economies. As supporting paper A2 notes, in setting monetary policy throughout this decade we have been consistently aware of the need to seek to avoid unnecessary instability in the exchange rate. At this stage, the size of the exchange rate cycles appears to be one of those features of the economy not amenable to an easy solution. However, if overall demand for credit eased markedly, and the rate of savings increased, which would enable New Zealand interest rates to be permanently lower, it is possible that future exchange rate cycles might be less marked.

Conclusion

The relatively high exchange rate volatility New Zealand experiences may have slowed the entry of firms into exporting, and thereby hampered productivity performance. The high interest rates New Zealand faces as a result of persistently strong household demand for credit (and weak savings propensities) are probably constraining the process of capital deepening that is likely to be vital if New Zealand incomes are to catch up with those in other OECD countries. All of these areas warrant continuing research. However, we do not believe that the evidence at this stage warrants a conclusion that the way monetary policy is run in New Zealand is an important part of the explanation. These are important issues, and future research may shed fresh light on the appropriate conclusion, but at this stage we believe that the search for remedies should be directed primarily

towards other areas of public policy.

As discussed in other papers, a permanently fixed exchange rate, or the still more radical option of forming a currency union with a country that has persistently lower nominal interest rates, would offer one direct way of lowering the cost of capital facing New Zealand firms. Currency union is ultimately a political choice, because of the far-reaching ramifications of any choice to give up national control over monetary policy. We do not explore the option in depth in this set of papers, but any decision to abandon the New Zealand dollar would also involve material costs and substantial longer-term risks, which must be offset against the possible gains. In particular, we would lose an important instrument to cope with rare but severe major adverse economic shocks, and would be likely to experience higher inflation and even higher levels of household indebtedness than we have at present.

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