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New Zealand: Selected Issues

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NEW ZEALAND

Selected Issues

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Approved by Asia and Pacific Department

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I. EXECUTIVE SUMMARY

1. This paper was prepared as background to the 2000 Article IV consultation with New Zealand.

2. Chapter II ("*New Zealand's Growth Experience in Comparative Perspective: Stylized Facts and Policy Lessons*") discusses issues related to reforms and growth in New Zealand. An issue that has preoccupied policy makers and observers alike is why, in spite of the wide-ranging macroeconomic and structural reforms implemented since the mid-1980s, growth in New Zealand has not been sufficiently high to narrow the income gap with its OECD counterparts. The paper reviews the record on growth and productivity outcomes in New Zealand in the period since the mid-1980s, explores reasons why the growth payoff has been smaller and slower than expected, and draws on the experiences of a group of comparator countries that have been successful in raising their growth rates to distill policy lessons that might be applicable and relevant for New Zealand. The main conclusions of the paper are: (a) the reforms have begun to pay-off, but the dividend has been slow to be realized for a number of reasons, including the expected lagged response to macroeconomic stabilization and reestablishment of credibility, relatively slow progress in enhancing human capital, and issues related to the sequencing of the reforms, including the introduction of labor market reforms relatively late in the reform process; (b) there remains an agenda of unfinished business especially in upgrading technical and management skills, and in completing the process of deregulating product markets. The urgency of addressing this unfinished agenda is heightened by the fact that the rest of the industrial world is, once again, on the move—driven by technology, entrepreneurship and innovation—so that the issue for New Zealand is now not only of "convergence" with other advanced economies, but of catching up with a moving target.

3. The Employment Relations Act (ERA) was passed into law in August 2000 following a contentious national debate. The new legislation is intended to level the playing field in the area of employment relations, which the newly-elected government feels had become unbalanced since the passage of the Employment Contracts Act (ECA) in May 1991. On the other hand, the ERA is seen—particularly by the business community—as a significant step backward in the trend toward labor market liberalization which culminated with the passage of the ECA. The ECA effectively ended nearly a century of centralized industrial relations in New Zealand, including by stripping unions of the legislated advantages they had enjoyed under previous labor market regimes. In light of these strongly held views and the uncertainty surrounding the effects of the ERA going forward, Chapter III ("*Toward Assessing the Impact of the Employment Relations Act*") takes a wider look at labor market reform efforts in New Zealand with a view to identifying areas to watch as the ramifications of the ERA unfold. The paper suggests that an assessment of the ERA would depend both on the evolution of employment growth, productivity, wage dispersion and contract structure—which can be observed relatively quickly—as well as on other effects, such as the evolution of case law in respect of the notion of "fair bargaining," which will take years to unfold.

Even with the passage of time, however, it will likely be difficult, as in the case of the ECA, to make a definitive judgement on the effects of the ERA.

4. The move to inflation targeting followed the approval of the Reserve Bank Act in 1989 and aimed at delivering price stability in an economy that had experienced double digit inflation for most of the period since the first oil shock, but New Zealand has managed to achieve and maintain low rates of inflation, monetary policy has been often blamed for contributing to the economic instability experienced during the 1990s. Partly in response to these concerns, the modus operandi of monetary policy has been altered over time to make it more flexible and to take greater account of the concern about economic instability. The most recent change comes with the latest Policy Target Agreement (PTA), the contract between the Treasurer and the governor of the RBNZ that defines the operational aspects of inflation targeting in New Zealand. The new PTA states that in pursuing its price stability objective the RBNZ "*shall seek to avoid unnecessary instability in output, interest rates and the exchange rate*". Further, a review of the conditions of monetary policy has been announced by the government. A decade after the Reserve Bank Act, this review raises the opportunity to look back and assess the experience with the monetary policy framework. Chapter IV ("*New Zealand: Monetary Policy Framework and Central Bank Decision Making Processes*") has three objectives. The first is to assess whether there is a problem of excessive economic volatility in New Zealand and how the RBNZ operational approach to inflation targeting deals with it. The second is to look at the recent change in the PTA and analyze its consistency with the current institutional monetary policy setup. The third is to focus on possible modification of the current monetary policy institutional framework, namely, the move toward a committee–based decision making process. This paper argues that inflation targeting is unlikely to be responsible for an excessive degree of output and instrument volatility in New Zealand. While acknowledging that the most recent change in PTA formalizes the existing modus operandi by making explicit the RBNZ's concern for economic stabilization, the paper argues that this explicit formalization may in principle expose monetary policy to tensions from which it was previously more protected. On the question of whether the responsibility for monetary policy decisions should be delegated to a committee, the paper concludes that there appears to be no compelling reason to change the current structure of monetary policy decision making.

5. Like most OECD countries, New Zealand faces an aging population over the coming century, which implies pressure on the public finances, including from pension–related expenditures. To address these pressures, the newly-elected government has announced that it will begin to allocate budgetary surpluses to and build up assets in a Crown entity (or similar arrangement) to "pre–fund" some future pension spending. Such a policy would be a significant departure from the present pure pay–as–you–go system. Chapter V ("*New Zealand Superannuation—Possible Extensions to Full-funding*") takes the view that the recent policy change can be seen as the first step in a sequence of actions to further improve the long-term financing of the public pension system, including through a move toward full funding, perhaps combined with further parametric benefit reforms. In this spirit, the paper looks at "costing out" the shift to a fully-funded pension system considering: (i) various objectives as to what proportion of future pension expenditures should be fully funded; (ii) to

what extent investments in equities could be used to bolster returns and achieve "politically feasible" transition paths to a fully–funded system over the long run; and (iii) to what extent further parametric benefit reforms would contribute to such paths. The results show that while fully funding all future *increases* in pension spending is likely to be feasible, fully funding all future pension expenditure would likely require some combination of further benefit reform, optimistic assumptions on asset returns and a long transition period. The paper also looks at the probable macroeconomic impacts of fully funding pension expenditures, including the effects on national saving, labor supply and the current account. Finally, operational issues likely to be important in defining and implementing a pre–funding strategy are explored.

II. New Zealand's Growth Experience in Comparative Perspective: Stylized Facts and Policy Lessons[1]

A. Introduction

6. Measured in terms of purchasing power parity (PPP) adjusted per capita income, New Zealand held a position slightly above the OECD average in the early 1970s—comparable to Australia, slightly below the U.S. and Canada, and far above currently high performing countries like Ireland and Finland. Around the late 1970s, New Zealand began to steadily lose ground, and by the mid–1980s, its PPP adjusted per capita income had fallen below the OECD average. A large part of the reason for the initial decline lies in the loss of preferential access for its exports, when the U.K. joined the European community in 1972 (Figure II.1).

7. Also, by the mid–1980s, in part because of the failed "think big" development strategy of the period 1976–84, the New Zealand economy was faced with severe macroeconomic problems—high and variable inflation, rising public debt (gross government debt peaked at 80 percent of GDP in 1986), rising unemployment (from close to zero in the early 1970s, to 5 percent in the late 1970s and further to 7 percent in 1983) and mounting external pressures (the current account deficit had widened from 2 percent of GDP in the first half of the 1970s to 6 percent of GDP in first half of 1980s). A loss in international confidence in the economy in 1984 triggered a foreign exchange crisis.

8. It was against this background that the economic reform program in New Zealand was launched. The first reforms were the floating of the exchange rate in March 1985, and liberalization of interest rates and financial markets and the capital account of the balance of payments. These were followed by successive steps of removing distortions in and deregulating goods markets, including through trade liberalization; tax reform, including the introduction of the GST, public expenditure cuts and budget management reforms; downsizing of the public sector through an aggressive privatization program; and path–breaking reforms of the accountability and incentive structures in all parts of the public sector. Key legislative reforms in the latter area were the introduction of the Reserve Bank Act of 1989 making the Reserve Bank of New Zealand (RBNZ) operationally independent and setting the stage for inflation targeting as the monetary policy framework; and the Public Finance and Fiscal Responsibility Acts of 1989 and 1994, that provided a clear and transparent framework for fiscal policy (Box II.1).

9. The reforms have been successful in improving overall macroeconomic performance by opening the economy up to competitive pressure and market forces both domestically and

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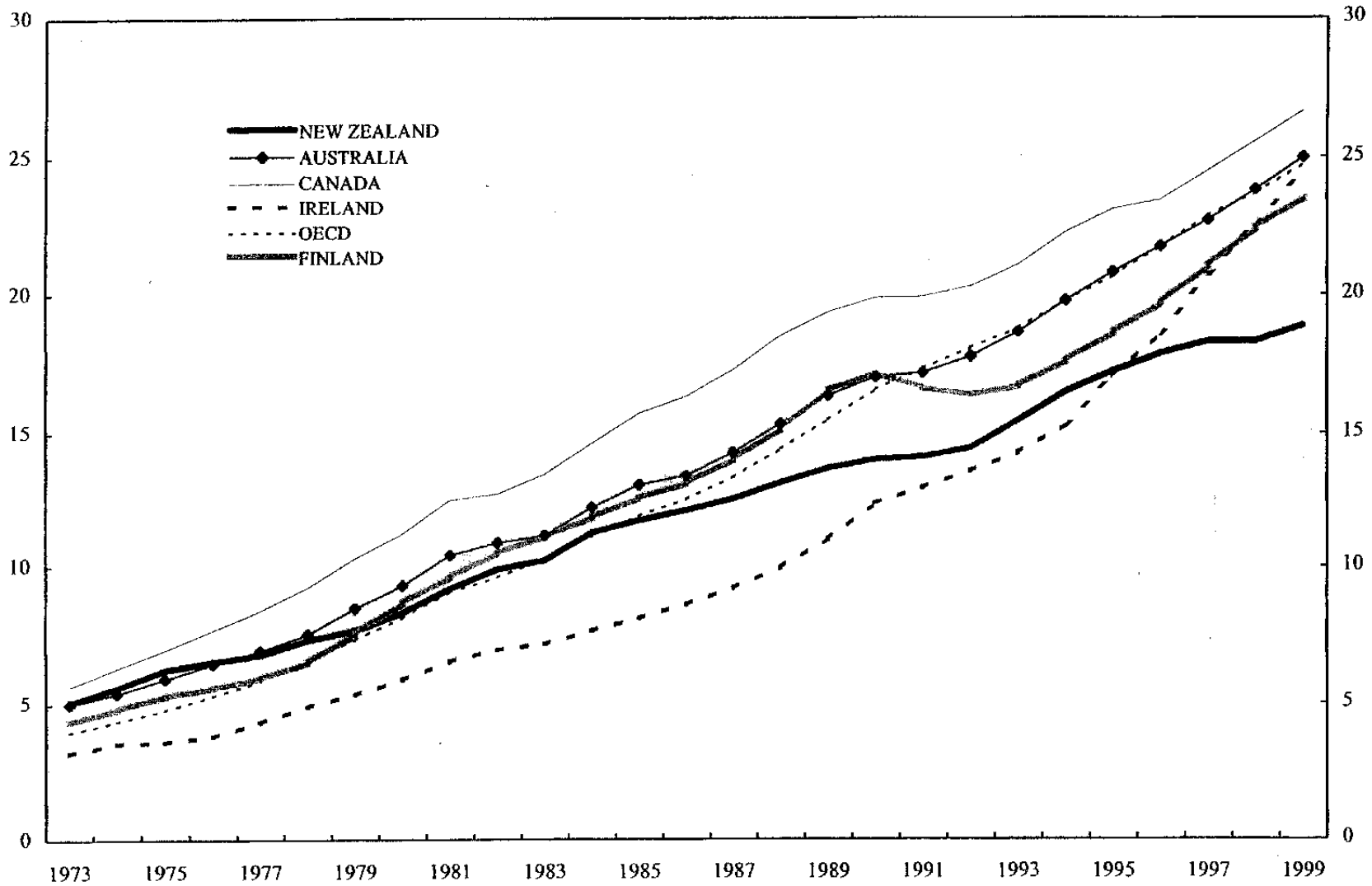
[1] Prepared by Kalpana Kochhar (ext. 38770) and Paul Wade (ext. 38994), who are available to answer questions.

Figure II. 1. New Zealand: Per Capita Income in PPP-adjusted U.S. dollars, 1973-99



Source: IMF, World Economic Outlook database.

Box II.1. New Zealand—A Snapshot of Key Reforms Since the mid-1980s

The first wave of reforms was implemented in 1984-87 and covered a wide range of measures:

- Removal of interest rate and foreign exchange controls, and the floating of exchange rate in 1985.
- Trade liberalization and a phased removal of external trade distortions. All export assistance was removed by 1987, import licensing by 1989 and import tariffs were steadily reduced through the 1980s and 1990s to the present low levels.
- Liberalization of the foreign direct invesment regime.
- Shift from the approach of multiple monetary policy targets to a single focus on containing inflation. The fiscal deficit was required to be fully financed through sales of government bonds to financial markets.
- Taxation reform (broadening the tax base, lowering marginal income tax rates and simplification of the tax system), including removal of tax concessions for saving to put it on a neutral footing. Introduction of the Goods and Services Tax (GST) in 1986.
- Implementation of the first major step in the process of public sector reforms—with the passing of the State-Owned Enterprise Act in 1986. Many government departments were transformed into state-owned enterprises (corporatization) and a multi-year process of privatization started.
- Product market deregulation and the termination of all state regulated monopoly rights in many industries.
- Passage of the Commerce Act and adoption of a light-handed regulatory regime, the main feature of which is the absence of industry-specific regulator.

Between 1988 and 1990, key reforms related to the monetary policy framework and public finance management:

- Approval in late 1989 of a new Reserve Bank Act making the Reserve Bank instrument independent, providing for a clear, single target (inflation), requiring specific targets in a Policy Targets Agreement between the Governor of the Reserve Bank and the Minister of Finance to be published, and requiring accountability to Parliament.
- Approval in 1989 of the Public Finance Act, providing the legal framework for all aspects of public financial management. It defined performance in public entities by outputs and outcomes; made the chief executive responsible for departmental financial management and subject to performance-based employment contracts; and introduced accrual accounting. These reforms enhanced accountability and the incentive structures for improved management in government departments and SOEs.

The next round of reforms came between 1991 and 1994:

- Introduction in 1991 of a major reform of the labor market, replacing centralized bargaining structures with decentralized enterprise bargaining, bringing the labor market institutions closer to the U.S. model than the previous European model, and making the labor market became one of the most flexible ones among OECD countries.
- Tightening of requirements and reductions of levels of unemployment benefits and other social transfers.
- Also in 1991, the new government started a process of cutting fiscal expenditure while continuing to implement the phased reforms set in motion by the previous government (tariff reductions, goods markets reforms and reforms in public sector management).
- Passage of the Fiscal Responsibility Act in 1994 to put fiscal policy on a clear contractual basis between principal and agent; to increase transparency of policy making and policy makers' accountability to the public; and to reduce uncertainty about fiscal management over the medium term.

internationally, and substantially improving the credibility of economic management. Inflation fell to low and stable levels—from around 8 percent in 1989 to 1½ percent by 1992—and low inflationary expectations are now entrenched; fiscal consolidation has taken the public sector's finances from a peak deficit of 6 percent of GDP in 1983/84 to sustained surpluses by 1993/94 and public debt has fallen sharply with gross debt now at 35 percent of GDP and net debt around 21 percent of GDP. After an initial increase from 4 percent in 1984–85 to over 10 percent in 1991–92, unemployment has shown what appears to be a trend decline to around 6½ percent at present.

10. However, a major disappointment to policy makers and observers alike is that although the reforms—by helping to get the "signals" right and improving the efficiency of resource use—have succeeded in slowing the decline of New Zealand's position vis–à–vis the OECD average, they have not yielded growth rates that are sufficient to significantly narrow the income gap with its OECD counterparts.[2]

11. This paper has three basic aims: the first is to review the record on growth and productivity outcomes in New Zealand since the period when the wide–ranging reforms were launched in the mid–1980s; second, to try to understand why the growth payoff has been smaller and slower than expected and to identify areas where New Zealand falls behind other successful countries; and, third, to draw on the experiences of countries that have been successful in raising their growth rates to distill policy lessons that might be applicable and relevant for New Zealand.

12. The main conclusions of the paper are: (a) the reforms have begun to pay–off, but the dividend has been slow to be realized for a number of reasons, including the expected lagged response to macroeconomic stabilization and reestablishment of credibility, relatively slow progress in enhancing human capital, as well as issues related to the sequencing of the reforms, including the introduction of labor market reforms relatively late in the reform process; (b) there remains an agenda of unfinished business especially in upgrading technical and management skills, and in completing the process of deregulating product markets. The urgency of addressing this unfinished agenda is heightened by the fact that the rest of the industrial world is, once again, on the move—driven by technology, entrepreneurship and innovation—so that the issue for New Zealand is now not only of "convergence" with the industrial countries, but of catching up with a moving target.

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[2] Although it is very difficult to pin down the starting date of reforms for different countries, many researchers have noted that New Zealand began its reform process somewhat later than others in the OECD (Gregory, 1999), but moved quickly to implement the reforms in a shorter period of time. Also, reforms were not as dramatic in Australia, for example, because imbalances were not as large and the impetus for radical reforms was not as obvious (Bray and Walsh, 1998).

13. The rest of the paper is organized as follows: Section B presents a broad brush picture of the evolution of growth, factor accumulation and total factor productivity through the reform period. Where relevant, this performance is also placed in comparative perspective with the OECD average, as well as with some high performing OECD countries—Finland and Ireland, and countries that are similar to New Zealand in their basic structure, i.e., with a relatively high proportion of economic activity in the primary sectors—Australia and Canada. Section C examines the record of macroeconomic and structural policies in an attempt to identify reasons why growth in New Zealand still lags the group of comparator countries and the OECD average, and draws on the experience of the high performing comparator countries to distill relevant lessons for New Zealand. Section D contains some concluding remarks.

B. The Record of Growth, Factor Accumulation and Productivity

14. By now, much has been written about New Zealand's economic reforms and their wide–ranging, and in some cases, unique nature, but much less seems to be known outside a small group of researchers about how measurable economic performance has evolved since the reforms. This section attempts to provide a broad brush picture of the facts about New Zealand's growth performance over time and across a small group of comparator countries.

The Growth Record

15. Table II.1 shows the evolution of average annual growth in real per capita income. The starting point is chosen as 1973, when the economy experienced a sharp structural break—the U.K. joined the European Community in 1972, which resulted in the loss of preferential access by New Zealand to its major export market. New Zealand's performance is shown relative to the OECD average, and that of a group of economies that are either structurally similar or that have performed very strongly in recent years, and from which there may be some policy lessons to learn. The year 1985 is treated as the first year of the reform period in New Zealand.

Table II.1. Annual Average Growth in Real Per Capita GDP
(In percent)

	Pre–Reform Period 1973–84	Post–Reform Period 1985–99	Post Reform Period		
			1985–89	1990–94	1995–99
New Zealand	0.9	1.0	0.8	1.0	1.3
Australia	1.7	2.3	2.8	1.0	3.1
Canada	2.2	1.6	2.6	0.0	2.2
Finland	2.7	2.2	3.7	–1.4	4.2
Ireland	1.5	5.6	4.3	3.8	8.6
OECD average	2.2	2.2	2.9	1.3	2.3

Source: WEO database.

Noteworthy points about this table include:

- Based on long period averages, there appears to be little difference in New Zealand's growth rate between 1973–84 ("pre–reform") and 1985–99 ("post–reform"). But such long averages tend to mask some important trends, especially in the post reform period.

- A division of the "reform period" into five–year subperiods reveals that, after a period of low growth in the late 1980s, real GDP growth has been accelerating.

- A comparison with OECD averages during the 1973–84 and 1985–99 periods suggests that the gap with the OECD average growth rate has not changed in the two subperiods.

- However, the comparative experience in the "post" reform period is more complex—New Zealand lost considerable ground vis–à–vis the OECD average in the late 1980s immediately after the reforms were launched, regained some in the early 1990s, but has begun once again to lose ground in the second half of the 1990s.

16. A decomposition of per capita GDP growth into output growth and population growth reveals that most of the divergence in per capita growth rates can be attributed to differences in population growth. The marked increase in New Zealand's GDP growth rates from the early 1990s coincided with a sharp increase in population growth rates—mostly from net inward migration—which was exceeded only by Australia and Canada.[3]

Table II.2. Annual Average Growth in Real GDP
(In percent)

	1973–99	1973–84	1985–99	1985–89	1990–94	1995–99
New Zealand	1.9	2.0	1.8	0.9	2.0	2.5
Australia	3.5	3.1	3.7	4.4	2.4	4.4
Canada	3.1	3.5	2.8	3.9	1.3	3.3
Finland	2.8	3.1	2.5	4.1	−1.1	4.5
Ireland	4.5	2.8	5.9	4.2	4.3	9.3
OECD	2.9	3.0	2.9	3.6	2.1	2.9

Source: WEO database.

[3] The relationship between population growth and economic performance is ambiguous as is the direction of causality. On the one hand, there is evidence of a weak negative relationship between population growth and changes in TFP. However, there is also evidence that the negative effects on per capita growth is partly mitigated through changes in labor force participation rates (discussed below). Overall, the popular belief that population growth is economically harmful is not yet well supported by statistical evidence (Temple, 1999).

Table II.3. Annual Average Population Growth

(In percent)

	1973–84	1985–99	1985–89	1990–94	1995–99
New Zealand	0.9	1.1	0.6	1.6	1.1
Australia	1.4	1.3	1.6	1.2	1.2
Canada	1.1	1.3	1.8	1.3	1.0
Finland	0.4	0.4	0.3	0.5	0.3
Ireland	1.3	0.4	–0.1	0.5	0.9

Source: WEO database.

17. An important element of the growth record relates to the extent to which **the structure of the economy** has become diversified. A more diversified structure tends not only to provide greater stability and resilience to variations in the terms of trade, but possibly also a more dynamic economy. The main conclusion from an examination of the data is that there has been diversification in the New Zealand economy, but that the process started much later than other industrial countries. A somewhat unusual feature about New Zealand, relative to the comparator group, is the small increase in the share of the primary sector in GDP, reflecting a continuing comparative advantage in this area, and strong productivity growth since the reforms (as discussed below). Although these figures mask the extent of diversification that has taken place within the agricultural sector—the movement from low value–added basic commodity production to higher value–added, more sophisticated products within the sector (e.g., the shift from frozen to superior quality chilled meats, etc.)—it is clear that New Zealand remains relatively concentrated in primary goods and their processing and thus remains vulnerable to volatility in international commodity prices.

Table II. 4. Sectoral Composition of GDP 1/
(In percent of total)

	Agriculture, Forestry, and Fishing		Mining, Manufacturing, and Construction		Services	
	1986	1999	1986	1999	1986	1999
New Zealand	6.9	7.3	30.1	25.1	62.9	67.6
Australia	4.0	3.6	26.9	26.4	67.2	70.0
Canada	2.9	2.5	27.9	27.1	69.4	70.1
Finland	6.8	4.1	34.3	34.7	58.9	61.2
Ireland 2/	9.2	4.2	34.8	38.4	54.7	57.3

Source: OECD Quarterly National Accounts; CEIC database.

1/ Numbers may not add to 100 percent due to the statistical discrepancy.
2/ Data are for 1990 and 1999.

Accounting for Growth

18. This section turns to an examination of the evolution of the "components" of growth—accumulation of physical and human capital and the efficiency with which resources are used to produce output, or total factor productivity—using the growth accounting framework.

Capital accumulation

Table II.5. Gross Fixed Capital Formation

(In percent of GDP)

	1973–99	1973–84	1985–99	1985–89	1990–94	1995–99
New Zealand	23.0	27.2	20.2	22.2	18.0	20.3
Australia	24.0	24.5	23.7	25.8	22.2	23.2
Canada	20.8	22.4	19.4	21.1	18.7	18.4
Finland	23.6	26.0	21.2	24.9	20.9	17.8
Ireland	21.0	24.9	18.0	16.6	16.9	20.7

Source: WEO database.

- New Zealand's investment rates have been broadly similar to investment rates in the comparator countries throughout the period. This suggests that the gap in growth performance must reflect more the quality rather than the quantity of investment. As noted by Galt (2000), "one point of near unanimity amongst New Zealand analysts is that while New Zealand has undertaken a reasonable amount of investment, it has suffered from poor investment quality in the past."

- There has been a marked decline in investment/GDP ratios in New Zealand between the 1973–84 and 1985–99 periods, with virtually no change in average growth, suggesting, prima facie, that, for a given size and quality of labor, the quality of investment has likely improved since the mid–1980s.

19. The most robust evidence on the improvement in investment quality since the economic reforms comes from a detailed and careful study conducted by Diewert and Lawrence (1999) on New Zealand's productivity growth. The key findings are:

- like other industrial countries, there has been a trend decline in capital productivity from the early 1970s reflecting an increase in the capital intensity of production;

- from around 1991, there has been a sharp pick–up in capital productivity in New Zealand;

- real after–tax returns on capital rose from 2.9 percent in the 1970s and 1980s to 5.3 percent in the 1990s.

20. Key factors that are likely to have contributed to the past low productivity of investment in New Zealand in the past include (1) the plethora of producer subsidies and other industry protection measures and financial market controls that are likely to have distorted price signals and resulted in higher investment in the protected sectors which were not always the most productive (e.g., some of the investment associated with the "think big" projects of the late 1970s and early 1980s); and (2) the relatively heavy investment in residential property could also be a determinant of the quality of investment as measured by the growth stimulus. During the 1970s, nominal interest controls coupled with rising property prices as well as the interaction of the tax system and high rates of inflation on real after–tax returns, tended to tilt investment toward real estate. [4] The removal of credit constraints after the financial market liberalization of the mid–1980s also boosted investments in real estate. The improvement in investment quality during the 1990s is likely to have been driven by the scrapping of capital stock that had been employed in previously protected and low–return sectors, and the improvement in resource allocation associated with the greater role for price signals and the market mechanism.

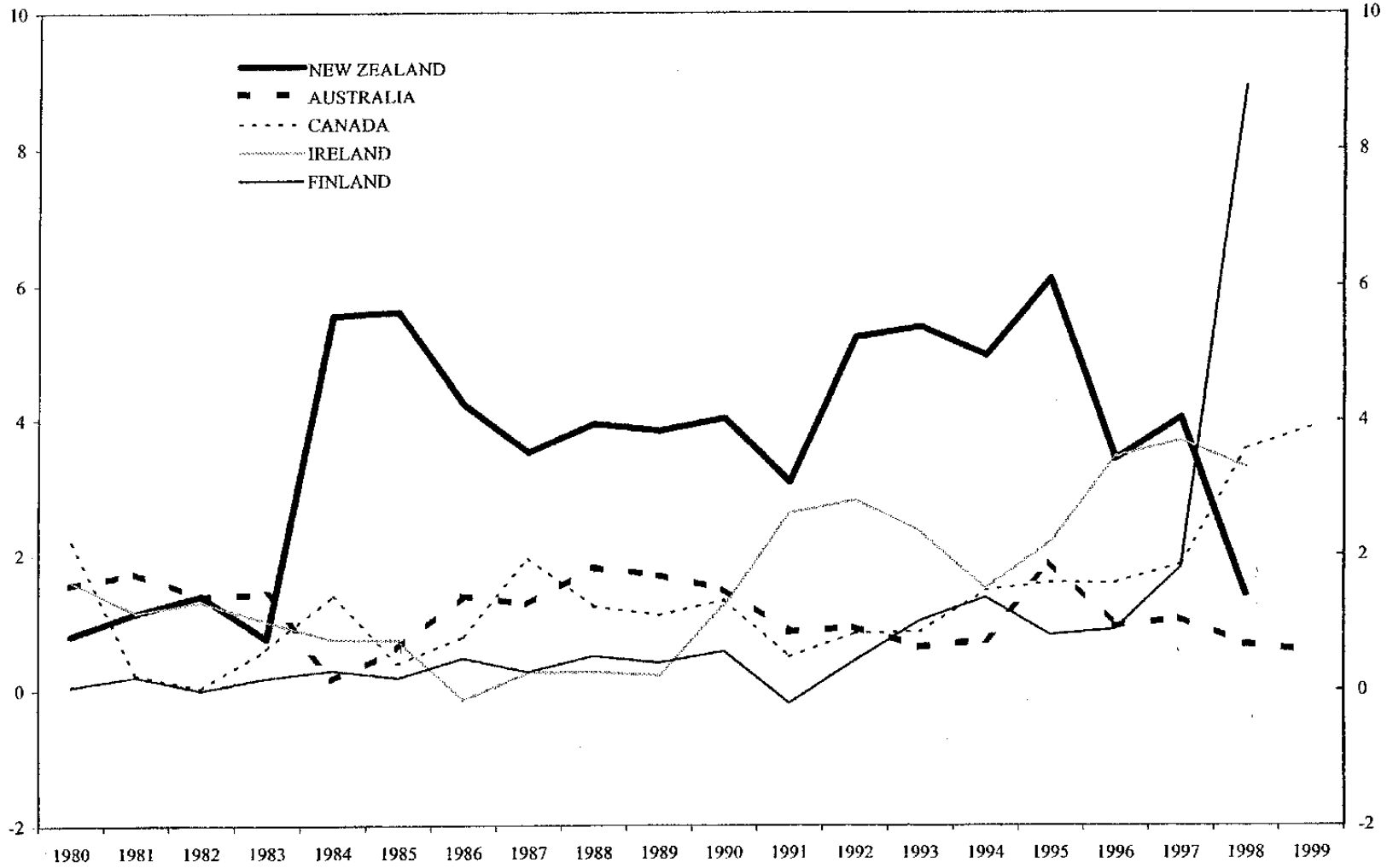
21. Other insights on the contribution of capital to growth can be obtained from examining the role of foreign investment in New Zealand. Foreign direct investment (FDI) into New Zealand has been sizable and has been amongst the highest in the group of comparator countries (Figure II.2). However, the growth stimulus appears to have been lower in comparison to other countries, especially Ireland, where FDI inflows and foreign owned firms are widely acknowledged to have played an important role in Ireland's rapid output and export growth (Box, 1998). In part, this is because FDI in New Zealand has been the result of considerable foreign involvement in the privatization program and as well as in mergers and acquisitions of existing private firms, rather than in so–called greenfield or start–up investments or expansion of capacity. Also, in contrast to Ireland where FDI is concentrated in the export–oriented sectors, FDI in New Zealand is relatively more focused in serving the local market (Cartwright, 1998). Where it is export–oriented, FDI in New Zealand tends to be concentrated in resource based industries, and has thus contributed little to diversifying the structure of the economy. In the recent past, there has been an increase in FDI in export–oriented high–tech activities in electronics, software development and other IT sectors, but the high–tech sector is still relatively small in New Zealand.

Human Capital Accumulation

22. The second major influence on growth is labor accumulation, which depends both on the number of workers as well as their "quality," the latter being broadly measured by educational attainment and skills. The table below shows that labor force growth (the

[4] See Conway and Orr (1999).

Figure II. 2. New Zealand: Foreign Direct Investment Inflows, 1980-99



Source: IMF, *Balance of Payment*.

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quantity measure) in New Zealand has been quite strong in the 1990s, both due to increases in both male and female labor force participation rates, and due to net migration inflows. Despite differences in female labor force participation rates and relatively sharp cyclical swings in net migration flows, New Zealand's labor force and employment growth record is not much different from that of other comparable countries, with the exception of Ireland.[5]

Table II.6. Average Annual Labor Force Growth
(In percent)

	1980–84	1985–89	1990–94	1995–99
New Zealand	1.1	–0.3	1.4	1.1
Australia	1.2	2.4	0.7	0.9
Canada	1.4	1.5	0.5	1.3
Finland	0.8	0.2	–1.0	0.6
Ireland	0.9	–0.2	1.8	3.1

Source: OECD Employment Outlook database.

Table II.7. Average Annual Employment Growth
(In percent)

	1980–84	1985–89	1990–94	1995–99
New Zealand	0.6	2.5	1.6	2.0
Australia	1.2	3.5	0.5	2.1
Canada	1.2	2.8	0.2	2.1
Finland	1.4	0.5	–3.6	2.3
Ireland	–0.7	0.2	1.9	5.9

Source: WEO database

23. However, of much greater relevance to the contribution of labor force growth to output growth is its quality. Human capital, particularly that attained through education, has been emphasized as a critical determinant of growth, in large part, because an abundance of well–educated human resources helps to facilitate the absorption of advanced technology. Despite this eminently appealing conclusion, the link between education and growth in cross–country growth regressions is tenuous, primarily because of serious measurement errors in the indicators that have traditionally been used in cross–country regressions—namely initial levels of education (Krueger and Lindahl, 2000). At the same time, however, there is strong microeconomic evidence of the positive effect of the stock of education on income growth. In general, there is little consensus about how best to measure

[5] The volatile nature of net migration flows is closely linked with the "brain drain" problem, which suggests that the effect of policies that are seen as unfavorable to growth can be intensified by a pick up in outward migration, especially of the higher skilled segments of the labor force.

human capital accumulation, with some researchers focusing on initial levels of education and others using years of schooling, and more detailed surveys of literacy and numeracy.

24. In the past, a consistent theme in the New Zealand growth literature was that the relatively slow progress in accumulating skills and educational achievement has been a contributor to New Zealand's modest growth performance. However, marked strides have been made in improving human capital in recent years. This paper looks at a number of measures of human capital accumulation—conventional measures such as rates of participation and attainment in tertiary education, as well as survey based data on a variety of aspects that describe labor force skills, broadly defined to include technological advancement and management proficiency in the economy. The broad conclusion of the examination of these data is that New Zealand has recently (since about the mid–1990s) made significant strides in raising educational achievement, although there is some question about the overall quality of skills in the labor force. Given the lags between measured attainment rates, human capital improvement and growth, the relatively recent gains in New Zealand suggest that the benefits in terms of higher productivity growth are likely to flow through gradually over the coming years.

25. Typical measures of human capital accumulation are educational attainment or school enrollment ratios. Conway and Orr (1999) present evidence that in 1966 almost three quarter of New Zealand's population aged 15 and over had no recognized educational qualifications—the latter defined as education levels of secondary school or above (Table II.8). In light of concentration in agricultural production, and generally low unemployment until the 1970s, there appeared to have been limited incentives for people to accumulate human capital. However, by the mid–1980s, educational attainment rates showed a marked improvement, with only 40 percent of people over the age of 15 having no formal qualifications. A further discernible improvement took place by the mid–1990s, when about

Table II.8. New Zealand: Educational Qualifications of the Population Aged 15 and Over
(In percent of total)

	1966	1986	1996
Secondary	9	26	26
Other school	3	1	7
University	2	6	9
Other post–school qualification	12	26	25
No formal qualification	74	41	33

Source: Conway and Orr (1999) from New Zealand Census data.

one third of the working age population were without formal educational qualifications, as defined above.[6]

26. A number of other indicators confirm that New Zealand has recently made significant gains in this area, including against the comparator countries. Tables II.9 through II.12 below suggest that the quality of human capital in New Zealand has improved over the past few years to reach the OECD average, and more generally, to narrow the gaps with other comparator countries.[7]

Table II. 9. Tertiary Education Attainment,1998 and Average Years of Schooling, 1995

	Tertiary Types A and B (in percent of population aged 25–64) 1/	Average Years of Schooling
New Zealand	40	11.3
Australia	42	10.3
Canada	58	11.2
Finland 2/	42	9.8
Ireland	33	8.8
OECD	34	...

Source: OECD (for Tertiary Education data), and Barro and Lee, 2000 (for years of schooling data).

1/ Includes advanced research programs, theoretically oriented programs, and practical, technical and occupation–specific education .
2/ Data refers to 1997.

27. Other measures from the International Adult Literacy Survey, which collected data on work–oriented literacy and numerical skills in the mid–1990s for 12 OECD countries are

[6] It should be noted that these aggregate data mask important differences across ethnic groups in New Zealand. In particular, a much larger proportion of the indigenous Maori and Pacific Islander population—who currently account for some 20 percent of the population—leave school without qualifications, work in low–skilled jobs or are wards of the welfare state.

[7] The data for Ireland in Tables II. 9 stand out as being low and appear somewhat inconsistent with priors about the instrumental role that the education system is believed to have played in Ireland's success. Box (1998) notes that although New Zealand has higher participation rates and a larger proportion of students attaining higher levels of education, there is a larger emphasis on business studies and technical and scientific disciplines in Ireland.

shown in Tables II.10 through II.12 and generally do not suggest a significant variation between the comparator group.

Table II.10. Scores of the Adult Literacy Test, 1995

	Prose (Rank)	Document (Rank)	Quantitative (Rank)
New Zealand	275.2 (5)	269.1 (8)	270.7 (9)
Australia	274.2 (6)	273.3 (7)	275.9 (7)
Canada	278.8 (3)	279.3 (4)	281.0 (5)
Ireland	265.7 (10)	259.3 (11)	264.6 (11)

Source: Literacy Skills for the Knowledge Society, OECD and Human Resources Development, Canada.

Table II.11. Participation in Adult Education and Training, 1994–95

(In percent of population aged 16–65)

Country	Percent
New Zealand	47.5
Australia	38.8
Canada	37.7
Ireland	24.3

Source: Literacy Skills for the Knowledge Society, OECD and Human Resources Development, Canada.

Table II.12. Share of Employer–Sponsored Education and Training

(In percent of employed population)

Country	Employer Sponsored	Nonemployer Sponsored
New Zealand	59.7	40.3
Australia	54.4	45.6
Canada	52.6	47.4
Ireland	51.5	48.5

Source: Literacy Skills for the Knowledge Society, OECD and Human Resources Development, Canada.

28. However, there is some question about the quality and relevance of the increase in literacy and skills in New Zealand. Information from Global Competitiveness surveys conducted by the World Economic Forum measure a range of dimensions such as management training and quality, technological advancement through R&D, and science and other technical education (Tables II.13 and II.14).[8] Other indicators that cast doubt about the quality of educational attainment in New Zealand include the data from a survey that measures the quality of secondary school education in mathematics and science which indicates that New Zealand consistently ranks the lowest in the comparator group.[9]

Total Factor Productivity

29. The final component of the growth accounting framework is total factor productivity (TFP), which measures the efficiency with which an economy combines its capital stock and its labor supply to produce final goods and services. In presenting their findings from the study of TFP in New Zealand, Diewert and Lawrence divide the period under study into four periods based on trends in TFP growth (Figure II.3).[10] From 1972 through 1982, TFP declined markedly. This was followed by a brief period of strong TFP growth between 1982 and 1984. Next came a period of flat TFP between 1984 and 1992, and finally, from 1993 onwards, TFP growth has again improved. Diewert and Lawrence were however unable to find conclusive evidence of a structural break in 1993, in part because of the small number of observations since that time.[11]

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[8] Survey data are necessarily subjective and especially in some areas, may be subject to large measurement errors which could, in turn, lead to a misleading picture of relativities across countries. However, they do provide information on a number of dimensions of human capital and technology accumulation that would be difficult to measure otherwise.

[9] Barro and Lee (2000). In terms of science scores, New Zealand ranked 23rd, behind all the comparator countries (Australia, 12, Canada, 13, and Ireland, 16). Finland was not included in the survey.

[10] There are numerous other studies of TFP in New Zealand—Smith and Grimes (1990), Sarel (1996), Janssen (1997) and Hall (1996)—but it is impossible to cover these in detail in this paper. See Diewert and Lawrence (1999) and Galt (2000) for a good discussion of these studies.

[11] However, when overall TFP is recalculated excluding the financial services and community services sectors (the ones with the most poorly measured inputs and outputs), Diewert and Lawrence are in fact able to find evidence of a statistically significant structural increase in New Zealand's TFP growth after 1993.

Table II.13. Global Competitiveness Survey Results on Labor Quality, 1989 and 1999 1/

	New Zealand	Australia	Canada	Finland	Ireland
1989 Survey					
Vocational training- adequacy for a competitive economy	16	14	11	9	4
Availability of skilled labor - quality	14	16	11	12	1
Worker motivation	20	17	14	12	5
Management education and training - adequacy for needs of business	14	15	6	10	1
Managerial adaptability - top managers using and understanding information technology	20	12	4	5	2
Managerial talent - managers' sense of drive, responsibility and entrepreneurship	20	11	10	9	5
Brain drain (0=to a large extent, to 100=to a very small extent)	21	10	11	7	22
Overall ranking on human resources and labor market	13	6	2	7	17
1999 Survey					
Math and science education (The school system excels in math and basic science)	35	29	15	12	10
Adequacy of the average number of years of schooling to support highly competitive industries	27	12	6	1	3
Staff training heavily emphasized	21	14	5	6	17
Overall management quality	26	21	3	8	11
Availability of first-class management education	17	5	2	7	11
Total quality management (quality control management)	23	14	9	6	18
Work ethic	23	25	16	9	15

Source: The World Competitiveness Report 1989 and the Global Competitiveness Report, 1999.

1/ For 1989, 22 are countries ranked from 1 (most competitive) to 22 (least competitive) for the specific factor, and for 1999, 59 countries are ranked from 1 (most competitive) to 59 (least competitive).

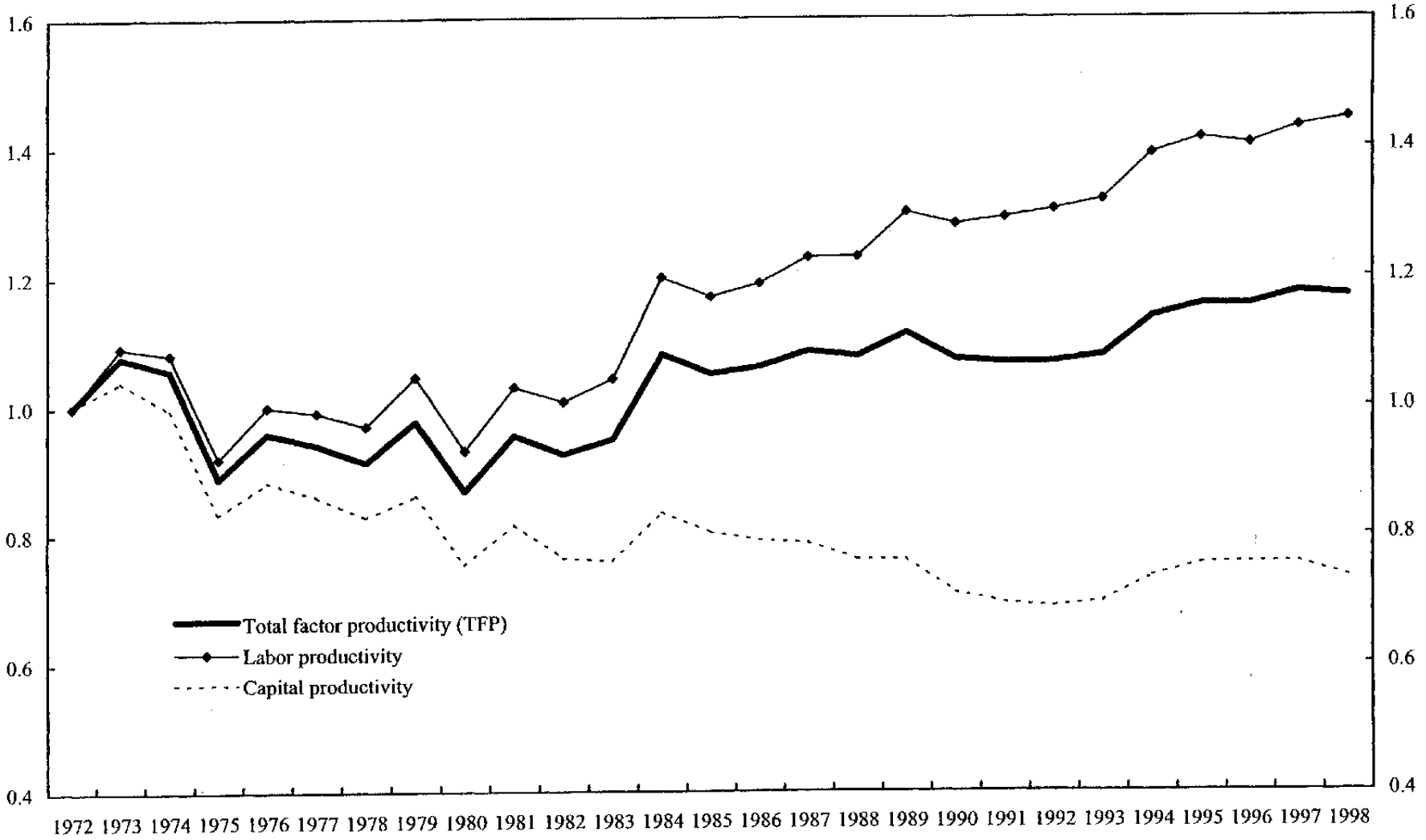
Table II.14. Global Competitiveness Survey on Technology, 1989 and 1999 1/

	New Zealand	Australia	Canada	Finland	Ireland
1989 Survey					
Total expenditure on R&D (percent of GDP)	17	15	12	10	18
Business enterprise expenditure on R&D (percent of total R&D expenditure), 1986	22	19	15	10	18
Expected increase in R&D spending over next 5 years	22	15	16	3	6
Linking state and private R&D efforts for synergies	20	10	7	5	6
R&D personnel in science, engineering and technology, percentage of total R&D personnel	15 1/	3	5	9	2
National creativity - patents/100,000 inhabitants, 1984-86	13	17	14	10	21
Trend in ability to create new products (annual compound percent change in patents 1979-86)	15	7	19	9	3
1999 Survey					
Number and quality of scientists and engineers	44	30	14	9	23
Strong commitment of public resources to R&D spending	27	15	13	1	25
Substantial private sector spending on R&D	23	19	17	6	21
Spending on R&D (ranking by share of GDP, 1997-98)	25	13	15	1	20
Close research collaboration between universities and industry	20	7	5	1	14
Companies are aggressive in absorbing new technology	16	15	10	2	14
FDI important source for technology transfer	16	18	11	55	1
Licensing of foreign technology is a common means to acquire new technology	19	5	2	47	8
Use of computers is highly sophisticated and widespread	13	6	3	2	21
Use of the internet by companies for customer service	26	7	11	5	15
Internet hosts per million of population	5	7	9	1	18
Exporters also involved in product development, distribution and marketing	20	24	18	13	21
Foreign distribution and marketing	17	18	16	2	20
Product designs are developed locally	18	24	20	1	25

Source: The World Competitiveness Report 1989 and the Global Competitiveness Report, 1999.

1/ For 1989, 22 are countries ranked from 1 (most competitive) to 22 (least competitive) for the specific factor, and for 1999, 59 countries are ranked from 1 (most competitive) to 59 (least competitive).

Figure II. 3. New Zealand: Productivity Indices, 1972-98
(Base year: 1972)



Source: Diewert-Lawrence, 1999.

30. Diewert and Lawrence also attempt to compare New Zealand's TFP performance with that of Australia.[12] They find that there was a sharp divergence between TFP growth in Australia and New Zealand in the 1970s, with Australia's TFP growth increasing steadily and New Zealand's TFP growth being much more volatile. Beginning in 1984, the differences in trend annual growth were considerably reduced. Excluding the poorly measured financial and community service sectors, New Zealand's TFP performance closely mirrored Australia's until 1993, but since then, Australia's TFP growth has been more rapid.

31. Another recent study (Conway and Hunt, 1998) examines New Zealand's productivity performance in relation to that of the U.S. economy using a cyclically adjusted measure of TFP through 1996. Their results indicate that the trend growth rate of TFP in New Zealand does shift upward around the end of 1991, and they interpret this as encouraging, if tentative evidence that some convergence has begun to take place between New Zealand and the technology leader, the United States.

32. **The main findings of this section can be summarized as follows:**

- *There has been a pick–up in per capita growth in New Zealand in the later part of the post–reform period suggesting "convergence" with the OECD.*

- *However, there is also tentative evidence to suggest that New Zealand may be chasing a moving target—in the last few years, this process of "convergence" may have slowed because growth in the rest of the OECD has once again accelerated.*

- *The quality of physical capital investment was low in the 1970s and 1980s, but there is some evidence of an improvement in the 1990s.*

- *There has recently been a substantial improvement in the quality of the labor force by some measures, suggesting that there is likely to be a productivity payoff in the future.*

- *However, the gap between New Zealand and other OECD countries in technical and management skills may still be large.*

- *There seems to be encouraging evidence of a pick–up in TFP growth, although, with the data available, as in the case of output, it is difficult to disentangle cyclical from structural shifts.*

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[12] Because of the wide variety of estimates of TFP growth in different countries, and lack of consensus on methodology and the resulting difficulties in cross–country comparisons, this paper does not attempt to go beyond comparison of Australia and New Zealand from the Diewert and Lawrence study.

- *Moreover, as with growth, data from recent years suggests that labor productivity and TFP growth in comparator countries has begun to again outpace that of New Zealand.*

C. Policies and Their Impact on Growth and Productivity Outcomes

33. Thus far, the paper has described trends in the components of growth as identified in the neoclassical growth accounting framework—an exercise which essentially depicts what happened to growth in output and productivity and factor accumulation but says nothing about why those developments took place. There is, by now, a vast body of empirical literature examining the links between policies and growth and whether these links operate by enhancing capital accumulation or TFP or both—as hypothesized in the endogenous growth literature. This section examines how New Zealand fares with respect to policies that have been identified to be correlated with growth with a view to identifying factors which could explain both its own growth record as well as the gap in growth rates with the comparator group.

34. The literature on factors that influence growth finds that sound and stable macroeconomic policies are the necessary foundation for growth, but there is growing recognition that an economy's competitiveness and productivity growth also depends on such "micro" factors as how rapidly it can upgrade itself and move to more sophisticated ways of competing. Success in upgrading the competitiveness of an economy in turn depends on a host of factors such as openness to international trade and investment, deregulated product markets, access to smoothly functioning financial and labor markets, infrastructure quality, availability of a highly skilled labor force (including both technological and management skills),[13] and well–functioning institutions and strong governance.

35. Where does New Zealand stand with respect to these policies? In several areas, New Zealand has made significant and impressive performance, and New Zealand has likely still not seen the full benefits of those reforms. However, in other areas, there remains an agenda of "unfinished business" that is likely to pay a significant growth dividend.

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[13] Some new work in identifying factors contributing to TFP growth points out that there is growing evidence that levels of per capita GDP, which had been converging for many years, may no longer be doing so (OECD, 2000). The main factors behind this slowing of convergence relate to differences in skills, technology and the culture of innovation—the so–called "digital divide." There is now growing evidence that productivity growth is increasingly being driven by upgrading human capital, especially through enhancing technical and management skills of the work force.

Areas in which New Zealand has achieved significant progress

Macroeconomic Stabilization

36. A major achievement of the reform process in New Zealand has been the attainment of a sustained period of macroeconomic stability—whether measured by the level and variability of inflation and interest rates, or by the level of fiscal deficits and public debt. As shown in Figures II. 4 and II. 5, New Zealand started the reform period with high and variable inflation rates, which put it in a substantially worse position than the group of comparator countries. Since the late 1980s, however, both the level and variability of inflation have been brought down dramatically, and low inflationary expectations have become entrenched.

37. Significant progress has also been made with previously persistent fiscal deficits, although the process has not been completely smooth, suggesting that the gain in fiscal policy credibility has been a relatively recent phenomenon. The initial progress in fiscal consolidation was driven by the privatization program. However, between 1988 and 1991, fiscal consolidation stalled.[14] Ideological differences emerged within the government about how far to push reforms in social policy and whether to subject social expenditures to cuts similar to other expenditures. These events coincided with a stock market crash which raised questions about the economy's growth prospects, and an adverse shock to the terms of trade in 1990s. Together they resulted in a sharp fall in business confidence, which weakened growth and set off a period of fiscal weakening. The resulting deterioration in public finances was arrested in 1991/92 and the stage was set for the major progress that has been made since then. The passage of the Fiscal Responsibility Act in 1994 was clearly instrumental in this progress as it provides for an open budgetary process and much greater transparency (and therefore accountability) in both the government's intentions and achievements with respect to near–and longer–term fiscal policy.

38. A comparison of the path of fiscal consolidation in New Zealand and in the comparator group suggests that New Zealand did at least as well or better than the other countries in moving its fiscal balances into surplus and making marked progress toward fiscal sustainability through a reduction in public debt (Figure II.6).

Openness to trade

39. New Zealand has also made considerable strides in other key structural areas such as opening up its economy to trade and competition and in improving its financial sector. Tariff barriers were brought down markedly and New Zealand has moved far ahead of the comparator group in many aspects of trade reform (Table II.15).

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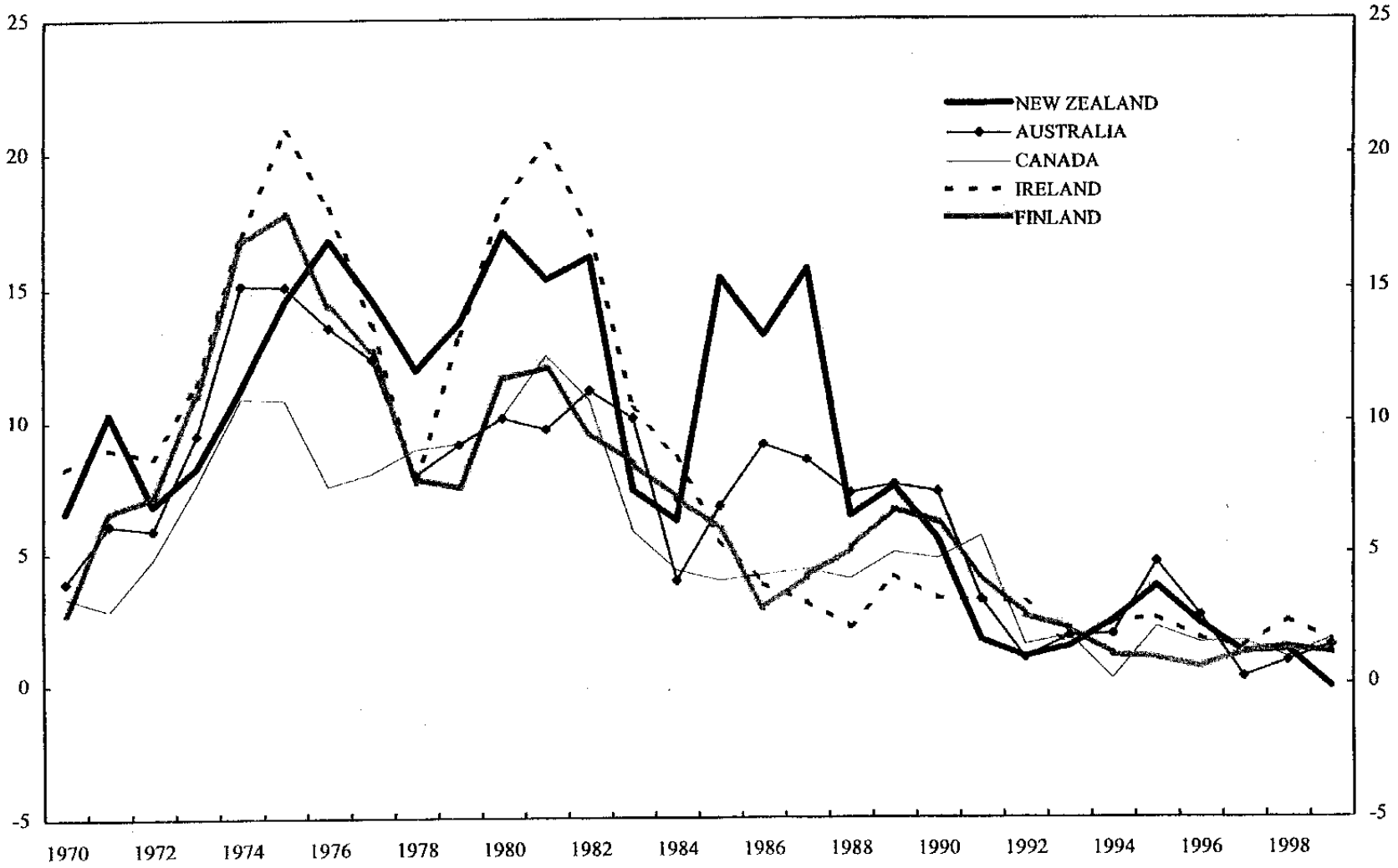
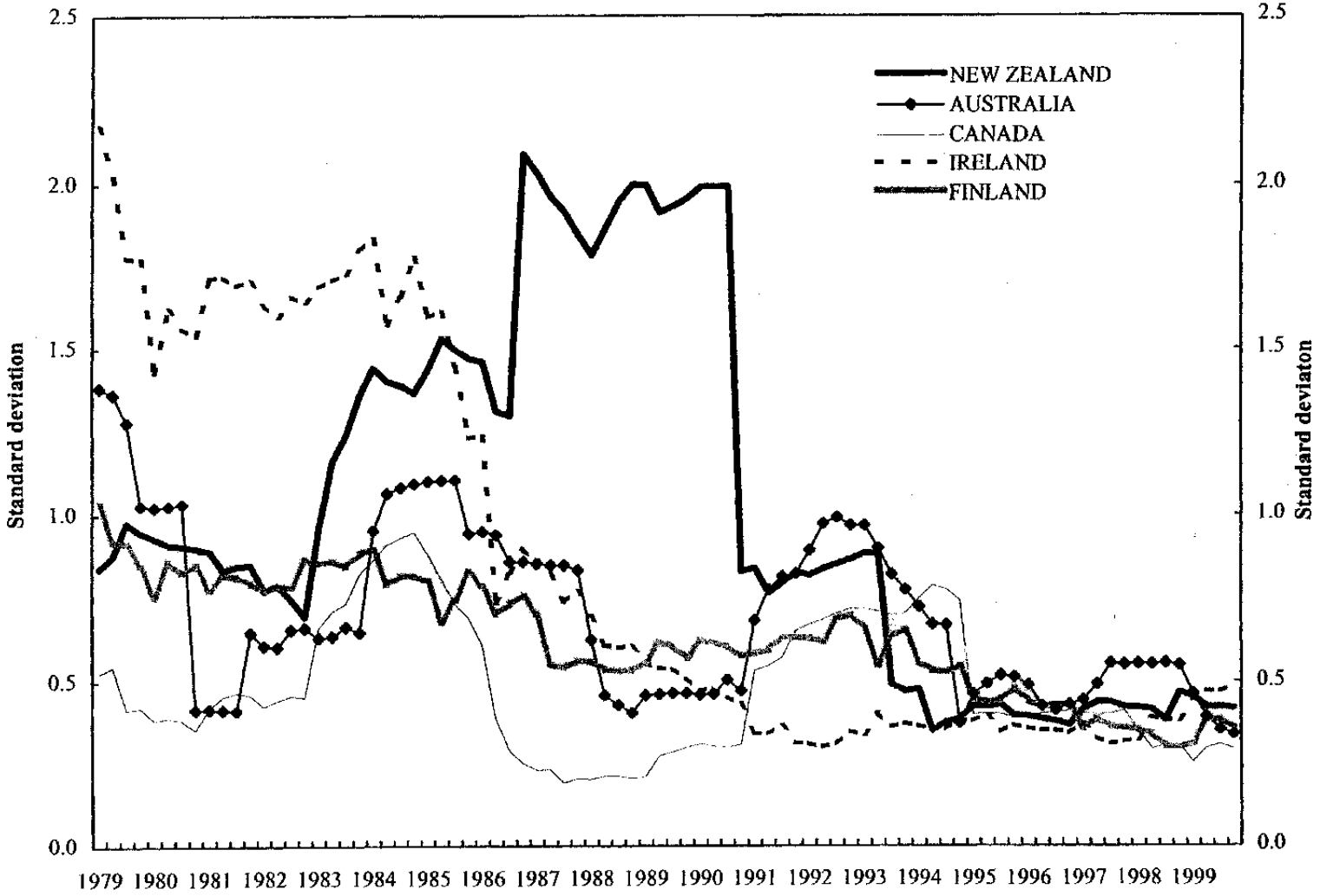
[14] See Scott (1996) for a detailed discussion of government reforms in New Zealand and their economic impact.

Figure II. 4. New Zealand: Inflation Rates, 1970-99
(Period average)



Source: IMF, *International Financial Statistics*.

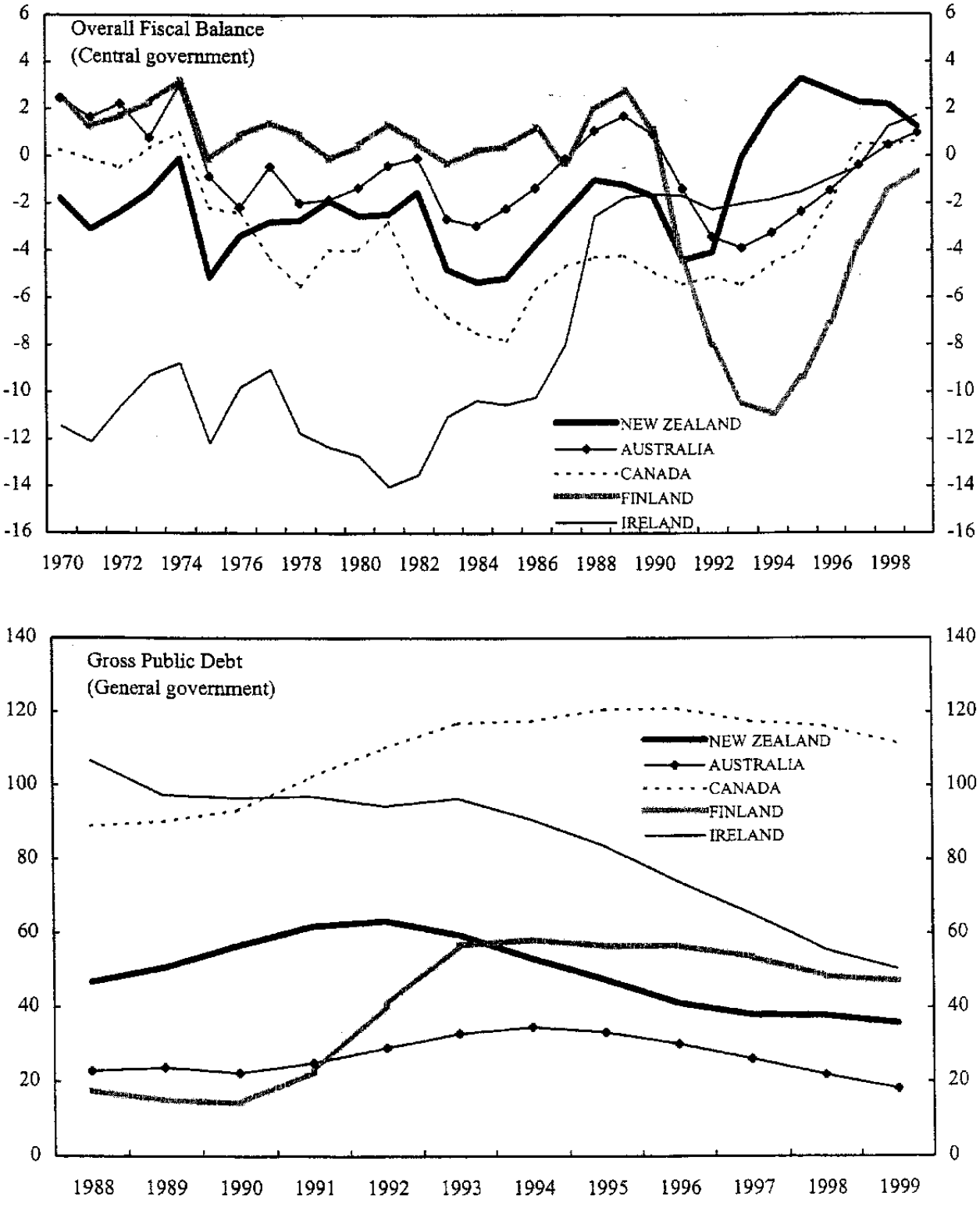
Figure II. 5. New Zealand: Variability in Inflation, 1979-99 1/



Source: IMF, International Financial Statistics; and Fund staff estimates.

1/ Defined as rolling 16-quarter standard deviation.

Figure II. 6. New Zealand: Fiscal Indicators, 1970-99
(In percent of GDP)



Source: IMF, *World Economic Outlook* database.

Table II.15. Indicators of Openness, 1988-1999

	New Zealand			Australia			Canada			Finland			Ireland		
	1988	1993	1999	1988	1993	1999	1988	1993	1999	1988	1993	1999	1988	1993	1999
Simple average tariffs	16.8	12.5	3.8	14.3	11.4	5.0	9.3	9.3	4.6	8.3	8.6	5.0	7.5	7.6	5.0
Pervasiveness of different types of nontariff barriers (import coverage ratio) 1/	11.5	0.2	0.2	8.9	0.4	0.6	11.1	11.0	10.4	11.7	10.3	...	26.6	23.7	19.1
Share of export and imports of goods and services (in percent of GDP)	49	60	64	33	37	40	53	60	83	50	60	67	106	120	160

Source: Indicators of Tariff and Nontariff Barriers, OECD 1997, and WEO database.

1/ Last observation is for 1996.

40. However, indicators of the impact of opening up such as the share of trade in GDP suggest that, notwithstanding the virtual elimination of external trade barriers, the increase in the share of trade to GDP was smaller than all the comparator countries, with the exception of Australia. However, even when compared to Australia, New Zealand's performance, by other measures, was less favorable. For example, since 1984, New Zealand's export to GDP ratio has increased by 2 percentage points, compared to an increase of 19 percentage points in Australia. Australia has also diversified its trade more with the proportion of exports purchased by its top three trading partners falling steadily, while New Zealand became more concentrated in its trade destinations (in large part due to the CER arrangement).

41. Potential causes for New Zealand's relatively poor external performance include the fact that New Zealand faces significant protectionist barriers in its trading partners for most of its agricultural exports, as well as movements in the real effective exchange rate in the late 1980s and early 1990s. In the late 1980s, reflecting the difficulty in bringing inflation under control, a nominal depreciation of the exchange rate was not translated into a real depreciation, while the opposite was true in Australia. Moreover, during most of the 1990s (until the onset of the Asian crisis), New Zealand experienced a real appreciation of the currency which could also have contributed to slow growth in trade.[15]

Financial sector development

42. New Zealand's financial sector is also quite well developed and sophisticated. Its rankings vis–à–vis other countries vary substantially depending on the indicator used, but taken together, it is difficult to argue that the level of financial sector development in New Zealand is likely to have been a significant explanatory factor in the gap in growth rates. One area where New Zealand appears to lag other countries is in the development of capital markets—venture capital, and equity and bond markets. In this context, a recent study commissioned by the New Zealand authorities (Infometrics, 2000) suggests that New Zealand's venture capital market is maturing. In particular, the study points out that the supply of capital has increased significantly over the past three years with the entry of new listed venture capitalists, large institutions, banks and corporate venture capital funds. The establishment of the Stock Exchange's New Capital Market has also increased potential funds available.

[15] Some observers contend that the variability in New Zealand's exchange rate (see Chapter IV of this volume) may also have had a negative impact on trade. However, there is inconclusive evidence in the literature about the impact of currency volatility on trade, with many studies finding no significant effect (Cote, 1994).

Table II.16. Indicators of Financial Sector Development, 1998

(Rank from 1=most competitive to 53=least competitive)

	New Zealand	Australia	Canada	Ireland	Finland
Sophistication of financial markets	15	8	4	7	16
Supply of venture capital	23	18	5	11	4
Participation of foreign banks	2	15	40	14	3
Ease of entry into banking industry	1	13	39	10	2
Banks' support for big and small business alike	13	29	16	3	5
Banks' financial condition	11	3	2	5	27
Adequacy of financial regulation for stability	13	10	4	3	20
Importance of stock markets as a source of capital	20	5	2	30	15
Bond market development	16	6	2	14	13
Banking sector assets (% of GDP)	25	24	27	35	37
Share of domestic credit to the private sector	5	11	22	16	24
Lower interest rate spreads than international norms	25	23	6	11	12

Source: Global Competitiveness Report, 1998.

43. **The main conclusions of the discussion above are:**

- *There can be no doubt that the institutional and policy reforms to restore stability, open up the economy and the financial system, and enhance the development of human capital have had positive results, but more time is needed to see the full effects of the reforms.*

- As already noted, compared to many OECD countries, New Zealand's reforms are relatively recent, and the economy has been subject fully to market forces for a relatively short period of time. There is, by now, ample evidence in the literature showing that, in the aftermath of a substantial restructuring of the economy, there could be a period during which firms and industries incur significant adjustment costs from scrapping redundant capital and gear up to new signals and incentives. During this period, there could be a decline in investment rates (a so–called investment pause) and a decline in output growth. For example, in the Australian context, Anderson and Gruen (1995) estimate that it could take between 5 and 16 years to recoup the initial output loss of reducing inflation. In the same context, Salgado

(1999) shows that there is a lag of around 10 years or more before trade and product market reforms have a positive impact on productivity growth.[16] The data on growth, investment and TFP discussed above suggest that the early years of the post–reform period in New Zealand were characterized by such a phenomenon. Also, as shown by Gregory (1999), a common feature of the U.K. and New Zealand post–reform experience is that both had weak employment outcomes in the 5–7 years after reforms began—1979–84 in the U.K. and 1985–92 in New Zealand. However, as the OECD Jobs Strategy Report shows, the U.K. and New Zealand have been successful in lowering structural unemployment since the mid–1980s and early 1990s, respectively.

- The relatively recent improvements in the quality of human capital as measured by education and training and the well–known lags between the accumulation of human capital and economic growth provides further support for the "it takes time" hypothesis.

- *Part of the reason for the slow growth response to the reforms could be their sequencing.*

- Some analysts of New Zealand's reform process have advanced the hypothesis that the initial response to the reforms was not as large as would be expected because they were undertaken in a less–than–optimal sequence. Bollard (1994), for example, states that there are several lessons that can be learned from New Zealand's experience about sequencing reforms, including that stabilization should be achieved before attempting structural reforms; product and labor markets should be deregulated before those for financial resources; and deregulation of domestic markets should precede opening up externally.

- Likewise, Joumard and Reisen (1992) suggest that opening New Zealand up to external trade and finance before stabilizing inflation, and undertaking labor market reform produced a classic Dornbusch–style "overshooting" of the real exchange rate (i.e., an exchange rate appreciation) and produced hysteresis effects in manufactured exports, and the extent of diversification, more generally.

- Others have contended that the positive impact of opening up of the economy to external trade, and the deregulation of domestic markets of the late 1980s was

[16] It is interesting to note the conclusions of a McKinsey report on Australia, published in less than 5 years ago in March 1996, entitled "What Ails Australia?", which states that despite wide–ranging reforms in the financial system, business regulation, industrial relations and trade protection, "the nation's relative economic prosperity has not altered since 1970. Its gross domestic product is still 30 percent behind that of the United States, the most prosperous country in the world." Studies of the Australian economy during the past 2–3 years take a distinctly more optimistic tone than this one and show clear evidence of "convergence" with other high performing industrial countries.

constrained by the fact that labor market reform did not take place until the early 1990s.

- *However, the point about inappropriate sequencing should not be overstated.*

- There is little consensus in the literature on the optimal sequence of reforms, with many arguing that without fundamental structural reforms, stabilization may not even be possible and others arguing that, given the difficulty in reaching political consensus about reforms, it makes sense (if only in a second–best sense) to proceed with reforms whenever possible. As noted by RBNZ Governor Brash in July1998, "As several of those most closely involved in the reform process have pointed out...reforms have to be undertaken when they are politically feasible which is not always the same as when they are economically optimal."

- Moreover, it is not clear that if the sequence had been different, there would have been no adjustment costs or that there would have been a larger growth dividend. Indeed, as argued above, no matter how they are sequenced, the results of structural reforms take time to materialize.

- *A final point about New Zealand's experience with reforms is that there remain important elements of the agenda to be completed.*

Elements of the unfinished agenda

44. In what follows, the paper focuses on two elements of the unfinished reform agenda: upgrading the quality of skills and technology, especially important now in light of evidence that there are new factors—broadly termed technology and innovation—driving countries' growth performance, and completing the process of deregulating domestic product markets.[17]

Technology, Innovation and R&D

45. Recent research has been focused on sharpening the understanding of the specific elements of skills and technology accumulation that are likely, in the present rapidly changing environment, to be the most effective in boosting productivity growth.[18] These studies typically find that TFP growth is highly correlated with technological development, managerial practices, and, more generally, improved ways of producing goods and services

[17] There are other areas including reforms of the welfare benefit system and the interaction between active and passive labor market policies—which may have strong links with incentives to work, save and invest, but a discussion of these is beyond the scope of this paper. Chapter II of this volume contains some discussion of these issues.

[18] Griliches (1998), Hall and Jones (1996 and 1999), Sachs, 2000, Porter (1998)

as important factors in countries' recent growth performance. These studies also find that the relationship between technology, innovation and growth appears to have changed in the 1990s. In this changing environment, innovation has become more market–driven, more rapid and intense, more closely linked to scientific progress, and more widely spread throughout the economy.

46. Broad conclusions of this work point to the following areas where policies can usefully be focused; the experiences of some of the high performing comparator countries—Finland and Ireland—as briefly outlined in Boxes II.2 and II.3 may also be instructive in this regard.

- Strong positive relationships exist between R&D and output and productivity growth especially at sectoral and firm levels. The correlations between TFP growth and R&D growth appears to have increased dramatically in recent years. Evidence also suggests that basic research has higher returns than applied R&D, and that process R&D has higher returns than product R&D. Also, the role of R&D differs between small and large countries—in large countries, R&D mainly helps to increase the rate of innovation, while in smaller countries, R&D serves to facilitate the transfer of technology from abroad. Finally, existing evidence indicates that the magnitude of R&D spillovers may be quite large, implying that social returns to R&D may be much higher than private returns and suggesting a role for government involvement.

- Facilitating close and synergistic links between industries, research facilities and universities to foster an emphasis on innovation and R&D. In the United States, the Bayh–Dole Act of 1980, which extended patent protection to publicly funded research, is credited with helping to strengthen the innovation process and facilitating industry–university collaboration.

- Public support for basic scientific research and for R&D to increase the stock of fundamental knowledge and to provide highly skilled labor, with the caveat that the appropriate amount of resources that are devoted to this will need to be chosen carefully, with particular emphasis on cost–sharing by the private sector. A recent study by the Ahn and Hemmings (2000) cites an OECD study of the relationship between public R&D and business R&D which finds (a) direct government support to business R&D has a positive impact on private sector R&D, (b) support through direct funding or tax relief appear to be fairly close substitutes; and (c) the impact of government funding appears to be nonlinear—funding too much or too little appears to be less effective than somewhere in the middle.

- Greater recognition that initial levels of education are no longer sufficient and that life–long learning is increasingly important. This has led to greater emphasis on industry–relevant vocational education, workforce training to constantly upgrade skills of all segments of the labor force, and greater emphasis on "active" labor market policies where the focus is on reducing the incentives to remain a ward of the welfare system and providing much greater incentives to rejoin the workforce.

Box II.2. Policies to Enable Technological Development

This box compares policies used by New Zealand and the other high growth countries in the group to encourage technology transfer (i.e., transfer either from abroad or from domestic research environments to industry). In relative terms, New Zealand has in general provided lower public support to private enterprises for R&D and product development. Research collaboration between universities and industry, the extent of public resources committed to non–military R&D activities, and private sector spending on R&D are all low relative to comparator countries; the latter probably reflecting that firms in New Zealand are predominantly small and medium–sized which generally have limited R&D resources.1/ As for its foreign direct investment regime, the authorities believe that economic growth, macroeconomic stability and a liberal investment regime will attract serious and committed foreign investors. Thus, special incentives for domestic or foreign investment into specific sectors are generally not provided.

The review of policies in high performing countries such as Ireland and Finland may provide useful lessons for New Zealand:

- **Public/private cost sharing of R&D has been successful in promoting technological capacity building in industries but because there are likely to be diminishing returns to such investments, governments need to carefully consider the level of their involvement.** The governments of Finland and Ireland see a role for subsidies or government grants for private R&D and believe that without some government support for these activities the country would lose valuable spill–over effects. Finland gives subsidies for building a broad range of intangible, knowledge–based assets including R&D, product development, education, training and acquisition of entrepreneurial and marketing skills. Private sector spending on R&D has risen rapidly in Finland, possibly as a result of these policies. Ireland provides grants for R&D in certain industries, in general of a high–tech nature. New Zealand has recently established a small fund (about $NZ 12 million) to provide grant support for private sector R&D.

- **An integrated set of policies is needed to strengthen the technological capacity and foster innovation by improving and reorienting the educational system to meet businesses' needs.** Finland's innovation strategy integrates industrial, education, R&D, tax and employment policies. Ireland's industrial and technology policy has been complemented by early implementation of a focused education policy with increasing emphasis on tertiary education over time. The experience from these countries suggests the importance of improving and reorienting the educational system to meet businesses' needs as well as establishing close links between universities, technical research centers and industry.

- **Close links between universities, technical research centers and industry have been very useful in promoting innovation.** In Finland the university system is well integrated into the wider research environment, and many of the state–funded research projects are carried out through the universities. Both aspects of higher education—teaching and research—are being positioned to deal with the needs of employers. The strategy promotes close links between corporations, research centers and universities aiming at innovation and product development. These links were important factors behind the Finnish telecommunications industry's success internationally. Ireland also has developed close links between universities, technical research centers and industry.2/

- **Use of fiscal incentives to attract FDI has not generally been successful with the possible exception of Ireland.** Ireland has been successful in attracting export–oriented FDI, especially in high–tech products, with a positive impact on growth, exports and employment. While the fiscal incentives certainly increased profitability, it is not clear whether Ireland's strong fundamentals and its favorable location and duty–free access to the major Single Market in the EU would not have been sufficient to attract FDI without the incentives. Moreover, Ireland's policy can not easily be replicated by other countries—an important factor contributing to Ireland's attractiveness as an investment destination is its low corporate tax rate (10 percent until 1999 and 12.5 percent since).

- **Notwithstanding Ireland's particular success in attracting FDI and basing its development strategy largely on this factor, evidence from a broader group of countries does not support the use of fiscal incentives and other selective intervention** (Ostry, 1993). For example, in the case of Taiwan, Jenkins and Kuo (1997) find that fiscal incentives had less of an impact on investment decisions than trade and macroeconomic policies.

1/ It is possible that New Zealand's tax treatment of R&D may encourage underreporting. Research spending is expensed in the year that it is incurred whereas development expenditure is amortized over the appropriate length of time from when the product or process begins to generate income. This tax treatment is amongst the least favorable in the OECD.

2/ In New Zealand, the following, albeit limited, links between universities and industry are in place. A tripartite system exists for scholarships involving industry, government (funding) and doctorate students. Some post–doc positions are funded through the New Economy Research Fund with links to industry, and the Crown Research Institutes now provides some industry funding.

Box II.3. Policies to Develop Skills in the Labor Force

Policies in New Zealand

Education reform in New Zealand started in the late 1980s when concerns about the adequacy of education and training became more pressing as New Zealand was exposed to greater domestic and international competition.

- Greater self-management for public tertiary educational institutions and schools as well as enhanced school-level accountability and incentives to perform were introduced through a variety of mechanisms including "bulk funding", the latter aminly to tertiary institutions.
- Curriculum, assessment and certification were reformed in order to improve educational standards by specifying key learning areas and groupings of essential skills.
- A system of national monitoring of schools to assess their performance was established.
- The pay structure for principals and teachers was linked to performance.
- Other major education reforms comprised: (a) in the compulsory school sector: abolition of zoning and increased grants to private schools to enhance competition; raising the compulsory school age to 16 in 1993; merging of schools; and individual employment contracts for teachers and voluntary bulk funding of teacher salaries; an d (b) at the tertiary level: extending subsidization to students at private tertiary institutions to increase competition; sharply reducing subsidies for tertiary education closer in line with the perceived net public benefits of further education; and introducing student loans to pay for the increased tuition costs.
- Beginning in 2000, the new government has announced an increased focus on raising the educational attainment of the Maori and Pacific Islander population.

New Zealand has also reformed industry training and is currently modernizing and expanding its system for apprenticeships.

- Prior to the early 1990s, government support for employee training was mainly offered through the apprenticeship system, both through administrative support and off-job training in polytechnics. The passing of the Industry Training Act delinked subsidies from apprenticeship per se; subsidies were provided to help industry training organizations to develop training arrangements linked to a new qualifications framework. The sponsored training is in general arranged by approved Industry Training Organizations leading to national qualifications.

- From early 2000, the government has launched the Modern Apprenticeship Program, new workbased education initiative aimed at training younger workers in the labor force.

Main policy lessons from high growth countries in the comparator group are:

- **The importance of early reform or strengthening of the educational system:** Ireland undertook an education reform in the 1960s and increasingly devoted more resources to tertiary education. This raised secondary and tertiary education attainment considerably and the availability of higher-skilled labor in the following decades. In Finland, the university system (state-run) has been expanded significantly in the last 30 years and has been subject to considerable reform in the last decade. New Zealand's late start on education reform postponed its catch up with comparator countries with regard to higher education attainment which was lagging until the mid-1990s.

- **Reorientation of the educational system towards producing output that meets the needs of an increasingly knowledge-based economy.** In the case of Finland and Ireland this has involved strengthening the technology basis of the future labor force, and they are ranked by the IMD Competitiveness Report (1999) as having the two most relevant education systems in the world for a competitive economy whereas New Zealand is ranked lowest of the comparator countries. Finland has been reorienting its educational system by putting more emphasis on science related subjects, educating more engineers and strengthening business and administration skills. Ireland has emphasized math and basic science education and is ranked first in this area in the comparator group (GCR 1998, 1999).

- **Improve training promotion of the labor force, including by support for enterprise specific training.** Most comparator countries, including New Zealand, believe raising the general skill level through training of firms' employees provides valuable spill-over effects that the country would lose without some government support for these activities. Ireland promotes training of employees through several government grants schemes and provides fiscal incentives to investors for employee training in certain priority sectors. Finland subsidizes training and other human capital development activities by firms. Australia had a levy scheme in place from 1990 to 1994 which required firms to spend a minimum level on staff training; any unspent amount became a tax paid to consolidated revenue. Reviews of such schemes find that they increased average hours of training per employee and training expenditure per employee. While the New Zealand government promotes staff training through subsidies—and certain forms of such training have increased markedly in recent years—expanding the cost sharing to cover enterprise specific training would likely increase more rapidly the skill level of the labor force. The current subsidized training is required to follow industry standards which are perceived by employers as not sufficiently specific to meet the needs of individual firms.

- The use of skilled human resources from abroad (which appears to have played a beneficial role in Australia, the United States and Ireland).

47. New Zealand has made important progress in many of these areas in recent years. For instance, investment in ICT (including IT hardware and software and telecommunications) can make an important contribution to labor productivity growth and, in this area, New Zealand has made rapid progress in recent years with amongst the highest ICT expenditures as a share of GDP in the OECD. This process has been helped by low–cost and open access to the internet and high quality telecommunications services. However, making the most effective use of the opportunities offered by ICT depends on the availability of the right set of skills.

48. New Zealand's efforts in the area of raising skill and technology levels are relatively recent. In the early 1990s, industry training was strengthened through the establishment of the National Qualifications Framework, the Industry Training Framework, and, in 2000, the Modern Apprenticeship Program. However, there are areas where these frameworks can be strengthened to make them more relevant to the needs of employers, to raise the technological competence of those with low and intermediate skills and to overcome the disadvantage to higher investments in training and R&D that come from the typical small–size of most New Zealand firms.

Completing the process of product market deregulation

49. New Zealand has implemented far–reaching reforms of the regulatory and competition regime to give much greater play to market forces and price signals in most sectors of the economy, with the notable exception of the agricultural sector. Most of New Zealand's agricultural output is exported, either as unprocessed commodities or after further processing, which makes the export marketing structure of this sector potentially important for the national economy. For example, dairy exports account for some 15–20 percent of New Zealand's exports. A key feature of the important agricultural subsectors has been the existence of Producer Boards. Typical statutory powers given to producer boards include monopsonistic acquisition and marketing of all produce intended for export; determination of quality standards and payments to producers; decisions on the amount of marketing revenues to be used for industry–wide activities such as promotion and R&D; and other industry wide commercial functions. According to OECD (1999), almost one–fifth of New Zealand's total merchandise exports comes from industries that were controlled by three large producer boards with statutory export monopolies (the Apple/Pear, Kiwi and Dairy Boards).

50. Of these characteristics of producer boards, the one that has most often been criticized on the grounds of efficiency is the monopsonistic buyer/single seller characteristic of the relationship between the Boards and producers. Advocates of reform have therefore focused on removing this barrier to contestability in agricultural export marketing. In contrast, proponents of the single–buyer boards argue that, in the context of distorted world markets for agricultural products, these arrangements serve to maximize export returns for the benefit of domestic producers. A strong case can be made for the latter argument only if New

Zealand can exercise market power in world markets; however, the notion that New Zealand can exercise sufficient market power to increase returns to New Zealand has been challenged by many observers. As noted in Sinclair (1999), on balance, the findings of recent studies of this issue do not provide substantial evidence that New Zealand can exercise market power in its export markets.

51. The study of deregulating producer boards by Sinclair (1999) addresses two basic issues: first, "if New Zealand can exercise market power, is a statutory single–buyer the best way of doing so?," and second; what are the sources of dynamic efficiency gains from deregulating producer boards? Based on the experiences of deregulation in South Africa, Chile, Israel, and Australia, Sinclair makes the following points: (a) producer boards have limited incentives to be efficient because they do not have to compete for supply; (b) producers operating in deregulated markets tend to receive higher returns for comparable quality products than those in New Zealand; e.g., Australian dairy farmers—who operate in contestable export markets—receive significantly higher returns than do New Zealand dairy farmers.

52. Sinclair thus concludes that there are significant potential dynamic benefits to producer board deregulation, both from changes to the single–seller aspects as well as to the corporate structure of these entities. In the main, these derive from:

- greater opportunities and incentives for innovation and to add value—deregulation will reduce restrictions on innovation in products, market development, and marketing techniques;

- greater responsiveness to market signals—the unbundling of prices for dairy products will provide greater incentives for producers to adjust quickly to changing market conditions;

- more investment and technological development—the experiences of South Africa and Israel indicate that there can be considerable new investment, including from foreign investors in the case of South Africa—in production and downstream processing technology in a deregulated environment;

- more efficient capital utilization, arising from greater incentives to focus on value creation, which could, in turn, have wider economy–wide benefits. In addition, a change to the compulsory cooperative structure could release producers' capital, lead to the formation of companies that are traded on the stock exchange, and thus boost the performance of equity capital markets in New Zealand.

D. Conclusions

53. This paper has presented evidence to show that New Zealand's reforms have indeed paid a dividend in terms of macroeconomic stability and an increase in productivity and output growth, and lower structural unemployment. There is little or no evidence that the

reforms have not "worked" or that the model was wrong, suggesting the need for a change in course.[19]

54. The challenge for the future is to continue the process, that appears to have been underway since the early 1990s, of recovering the ground lost during the 1970s and 1980s vis–à–vis New Zealand's OECD counterparts. Some of this recovery of lost ground is likely to be still coming through the pipeline as a result of the earlier reforms. But there are other areas of unfinished business where New Zealand could usefully focus its future policy efforts, especially as there seems to be a new set of forces—broadly termed technology and innovativeness—that could be once again causing a divergence between the "haves" and the "have–nots." Indeed, these new developments have added some urgency to addressing this agenda.

55. A key message is, however, that there is no "silver bullet" which would guarantee that New Zealand would rapidly close the gap with the ranks of the technologically advanced countries. Indeed there are many factors over which New Zealand has little control which are likely to continue to act as a restraint on growth. Distance and size and their implications for exploiting economies of scale are two important factors. As noted recently by RBNZ Governor Don Brash in a speech in January 2000, "drawing a circle centred on Christchurch with a radius of 2100 kilometers will always encompass only a few million New Zealanders and a lot of seagulls. Similar circles centered on Dublin, Helsinki or Singapore encompass hundreds of millions of people."

56. However, technology is making the world a much smaller place and the strategy for New Zealand must be not only to continue to more effectively leverage its traditional and continuing comparative advantage as a primary goods producer and manufacturer, but also to rapidly put itself in a position to take advantage of technological advancement in areas where distance and geography are becoming increasingly irrelevant. Also, the experience of

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[19] Some observers have recently gained some attention by contending that New Zealand's reforms have not worked and that it was a "failed experiment" (Hazledine, 1998 and 2000, Kay, 2000). A careful evaluation of this hypothesis would require a discussion of the elusive "counterfactual". What would have been the outcome if New Zealand had not embarked on these reforms when it did? Wide–ranging experience from countries at all income levels and in all regions of the world suggest that severe macroeconomic imbalances of the type that had developed in New Zealand in the mid–1980s were not sustainable and adjustment would have been needed sooner or later. Another important lesson from these countries' experiences is that delayed adjustment is costly, because stabilization policies undertaken in the context of a macroeconomic crisis will generally have deeper contractionary effects than otherwise, and because credibility, once lost, is very difficult to regain (Goldsbrough et al., 1996). Finally, even if one were to find evidence that the reforms in New Zealand were "wrong", the major weakness in the arguments of those who espouse this hypothesis is that no advice is offered on an alternative path that is more likely to guarantee success.

Australia, which suffers many of the same geographical and location disadvantages as New Zealand, suggests that it is not unreasonable to expect to move back into the league of above average performers in the industrial group.[20]

[20] Some observers have questioned whether it makes sense for a country like New Zealand to aspire to become a technology leader, in terms of research and innovation, as in the U.S., or whether the focus should be on technology adoption. Clearly, for most countries, it would make sense to focus efforts on the best and most innovative use of technology that has been developed by the "leaders". Nevertheless, it is worth noting that "technology adopters" of the past such as Israel, South Korea and Taiwan Province of China are rapidly moving up to the status of innovators and technology "leaders."

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III. Toward Assessing the Impact of the Employment Relations Act[21]

A. Introduction and Summary

57. The Employment Relations Act (ERA) was passed into law in August 2000 following a contentious national debate. The new legislation is intended to level the playing field in the area of employment relations, which the newly elected Labor–Alliance Coalition Government felt had become unbalanced since the passage of the Employment Contracts Act (ECA) in May 1991. On the other hand, the ERA is seen—particularly by the business community—as a reversal of the trend toward labor market liberalization which culminated with the passage of the ECA. The ECA effectively ended nearly a century of centralized industrial relations in New Zealand, including by stripping unions of the legislated advantages they had enjoyed under previous labor market regimes.

58. Given these strongly held views and the uncertainty surrounding the effects of the ERA going forward, it seems to be an appropriate time to take a wider look at labor market reform efforts in New Zealand with a view to identifying areas to watch as the ramifications of the ERA unfold. This paper suggests that an assessment of the ERA would depend both on the evolution of employment growth, productivity, wage dispersion and contract structure—which can be observed relatively quickly—as well as on other effects, such as the evolution of case law in respect of the notion of "fair bargaining," which will take years to unfold. Even with the passage of time, however, it will likely be difficult, as in the case of the ECA, to make a definitive judgement on the effects of the ERA since: (i) the effects of the legislation can never be fully separated from events elsewhere in the labor market and the macroeconomy and (ii) the objectives of the two pieces of legislation differ, so that any comparison of the extent to which the objectives are achieved may not be comparable.

59. The remainder of the paper is structured as follows. Section B provides a brief history of industrial relations in New Zealand leading up the passage of the ECA in 1991. Section C looks at the ECA and attempts to evaluate the success of that legislation in terms of achieving its stated goals. Section D presents the main features of the ERA and its probable implications for industrial relations and macroeconomic outcomes in New Zealand, which suggests areas to watch as its effects unfold. Section E concludes.

B. A Brief History of Industrial Relations in New Zealand

60. Centralized industrial relations have a long history in New Zealand, beginning with the Industrial Conciliation and Arbitration Act of 1894, which was enacted following a period of major industrial disputes. The main features of the resulting system were the requirement that registered unions and employers negotiate with each other, and that compulsory arbitration by the state was required if these negotiations failed. State arbitration

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[21] Prepared by Paul Gruenwald (ext. 38430) who is available to answer questions.

resulted in an "award" that prescribed employment conditions for all workers in an occupation group whether or not they were union members. Underlying this system was the supposition that employer–worker relations were adversarial, and that heavy state involvement in the labor market was necessary to minimize industrial disruption.

61. In general, this framework benefited important constituencies in both labor and capital (Bray and Walsh, 1998). Unions benefited greatly from the system in light of the statutory requirement on employers to negotiate, compulsory arbitration, the application of awards to all workers and equity considerations flowing from centralized bargaining. In return, however, unions were constrained in their activities, the most important of these being a prohibition on strikes, under threat of losing their registration. A minority of unions—particularly those that were ideologically radical and/or in particularly powerful bargaining positions (especially those in capital–intensive industries)—were generally opposed to this system. Over time, many employers began to favor the system as well, as it served to control militant unions and limit wage growth, and competition.

62. In the post–war period, the industrial relations system described above co–existed with a full employment boom, buttressed by import protection (inter alia, through tariffs and licensing requirements) and suppressed domestic product market competition. In this period, New Zealand enjoyed one of the world's highest standards of living, based largely on pastoral farming and resource exploitation. Technological innovation—spurred by recurring labor shortages—underlay this prosperity. Importantly, this period was characterized by high world demand for foodstuffs and natural resources, and New Zealand enjoyed preferential access to the lucrative British market.

63. The system came under increasing strain beginning in the late 1960s. First, concurrent with unsettled industrial relations elsewhere in the OECD, unions began to make aggressive wage demands, which were at first rejected by the government's Arbitration Council. Unions then began to find direct bargaining with employers to be more effective in achieving their wage aims. A period of spiraling, double–digit wage increases followed. In 1971, the government unilaterally imposed wage controls through the Stabilization of Remuneration Act, and shortened the award period, which had averaged 2–3 years, to no more than twelve months. Under successive governments, numerous attempts were made at both wage controls and free bargaining, including through the 1973 Industrial Relations Act, which attempted to shift emphasis away from collective bargaining. Between March 1971 and November 1984, wage controls of one form or another were in force for nine years (Beaumont, 1993).

64. Unsettled industrial relations in the 1970s were exacerbated by a loss of privileged access to the British market and falling prices for New Zealand's exports, resulting in increasing macroeconomic imbalances. The loss of access to the British market—especially for agricultural products—followed Britain's joining the European Economic Community (EEC) in 1973. Moreover, New Zealand suffered from the EEC's dumping of agricultural surpluses in third markets. The terms of trade deteriorated by 30 percent from the mid–1960s to the mid–1970s (Kasper, 1996), and the balance of payments was put under further stress

by the two OPEC oil price hikes. Government debt rose seven–fold from the mid–1970s to the mid–1980s, and New Zealand's sovereign credit rating was downgraded.

65. Labor market reforms in the "first wave" (1984–1991) had a relatively minor contemporaenous impact on labor market outcomes. The Industrial Relations Act put in place by the Labour Party in 1984 sought to reduce relative wage rigidities. Recourse to arbitration was made voluntary for both parties, and the Arbitration Court was instructed that it was not to be bound by past precedent when settling a wage dispute. However, wage relativities remained largely unchanged. The Labour Relations Act of 1987 sought to achieve greater flexibility in the labor market through outlawing multi–tiered bargaining (i.e., it aimed to facilitate enterprise and industry based agreements). Nevertheless, centralization remained the norm in the labor market as most unions choose to keep members on awards during this period.

66. In the end, the reforms to the industrial relations system in the 1980s—while not to be minimized—did not have the intended effect of reducing labor market rigidities. The number of workers under enterprise agreements actually fell during this time. The growing demands of employers that the labor market needed to be reformed along with other areas on the economy (especially product markets), combined with the conversion of the National Party to a free–market (from a corporatist, "think big") agenda, set the stage for the passage of the Employment Contracts Act in 1991.

C. The Employment Contracts Act

67. Pressures for labor market deregulation culminated under the newly–elected National government with the passage of the Employment Contracts Act in May 1991, which is widely seen as the most radical labor market reform in the OECD. The underlying rationale of the ECA was to make employment contracts similar to those in all other areas of economic activity, while its aim was to increase efficiency in the labor market. In a broader sense, the aim was to bring labor market reforms "up to speed" with the reforms in product markets and macroeconomic management undertaken in the mid– and late–1980s.

68. With the fundamental shift in focus under the ECA from, multi–enterprise, collective awards to single enterprise and individual employment contracts, a century of legislative protections for unions disappeared. The main elements of the ECA were:

- All bargaining was towards an employment contract. Both employers and employees had the freedom to choose with whom and within what structures they negotiated.[22] Collective contracts could cover one or more employers and any agreed group of employees as long as the contract was ratified by all parties involved.

[22] Similar provisions had been in place briefly in the mid–1980s.

- Giving preference to union members in contracts, or unduly pressuring an employee to join (or not join) a union was made illegal.

- The right to strike and lockout were maintained (from the 1980s reforms), but were permitted only after the expiry of a contract.

Also, union registration was terminated, and the withdrawal of the government from the award negotiation process took the taxpayer out of direct funding of labor market outcomes.

69. Nevertheless, the government continued to be involved in the labor market in two areas. First, statutory employment conditions relating to a minimum wage, annual leave, holidays and sick leave, domestic and parental leave entitlements, and prohibition of discrimination, to name a few, were maintained.[23] Second, the government remained involved in mediation and arbitration of disputes—although such arbitration was no longer mandatory—through a restructured specialized court system comprising an Employment Tribunal (for quick resolution of disputes) and an Employment Court (for appeals from the Tribunal relating to any action founded in an employment contract). Private arbitration was also permitted.

Industrial Relations Outcomes

70. The effect of the ECA on industrial relations is for the most part not controversial: union density dropped; the proportion of both individual and single employer based contracts rose; and measures of labor unrest (number of disputes and days lost) fell sharply. However, as is often the case with this type of analysis, caution is needed when attributing the changes listed below to solely the ECA. In particular, some of the outcomes observed in the 1990s may reflect the increased product market competition resulting from reforms begun in the 1980s, which reduced rents and, by extension, the gains from bargaining.

71. While **union density** exhibited a trend decline in New Zealand dating back to at the 1980s, there was a marked acceleration following the passage of the ECA (Table III.1). In the second half of the 1980s, there was some concentration of union membership as the number of unions fell by more than half, but total membership rose slightly. The period immediately following the passage of the ECA—i.e., the second half of 1991 and 1992—saw a noticeable spike in the annualized decline of union membership (by 20 percent over these 1½ years), while the annual rate of decline has fallen to an average of about 5 percent since. Interestingly, the number of unions has risen by almost half since end–1992. Also, at least some unions have shifted their focus from traditional negotiation and organization roles to innovative providers of services, such as training.

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[23] Discrimination provisions were included in the ECA; other provisions were covered under other legislation.

72. There was a strong—and almost immediate—shift from **multi–employer/awards based contract coverage to individual and single employers contacts** (Table III.2). Data through 1996 show that the proportion of multi–employer/award contracts fell from about 60 percent in May 1991 to less than 10 percent by end–1992, and remained constant thereafter. Conversely, individual contracts rose from 28 percent in May 1991 to around one–half of all contracts thereafter, while single employer contracts rose from 13 percent in May 1991 to around 35 percent thereafter.

73. Key indicators of **labor unrest** fell sharply—and, again, almost immediately—in the period following the passage of the ECA (Table III.3). Unlike union density and contract coverage, there were differing views on what would happen to strike activity under the ECA, with some commentators predicting widespread unrest (see Kasper, op. cit.). In the event, the number of annual industrial disputes fell from an average of 234 over the "first wave" of reform period spanning 1984–90 to 66 (with very little variation) over 1991–96, a drop of around 70 percent. In terms of (thousands of) working days lost, the decline was more pronounced, falling from an average of 541 during 1984–90 to 67 over 1991–96, a drop of almost 90 percent. However, this series has been relatively volatile over in the post–ECA era.

Macroeconomic Outcomes

74. Isolating the impact of the ECA on macroeconomic variables is difficult given the other structural reforms ongoing at the time of its implementation as well as the influences of the economic cycle. With these provisos, however, this section will attempt to distill the available information as it relates to the effects of the ECA on macroeconomic performance.

75. An assessment of the effect of the ECA on **productivity** is particularly thorny and there is no agreement in the literature as to the success or failure of the ECA in this regard. First, the impact of a successful labor market reform has countervailing effects on *labor* productivity. If the reform is successful in, say, better aligning pay with skills, and thereby results in increased effort by workers, then labor productivity would rise. On the other hand, a more efficient labor market could spur the demand for labor, raising employment and hence lower labor productivity.[24] The available data suggest that labor productivity post–ECA was

[24] An analogous argument is made by Calmfors and Driffill (1987 and 1988). Theoretically, it could be that enterprise–level bargaining is likely to be more employment–sensitive than industry–level bargaining because the trade–off between wages and employment is much larger at the enterprise level. On the other hand, wage bargains may give rise to negative externalities from highly differentiated pay packages, when bargaining structures are highly decentralized. Calmfors and Driffill have argued that the interaction between the competitive effects and the externality effects is a hump shaped relationship between the degree of centralization and real wages/unemployment, with the best performing economies being those with either highly centralized or highly decentralized systems. Evidence suggests that after the ECA, New Zealand clearly moved toward greater decentralization and thus is likely to have experienced an improvement in labor market outcomes.

unchanged from the 1980s (Table III.4). Some authors (e.g., Easton, 1996) cite this as evidence that the ECA was unsuccessful, while others (e.g., Savage, 1997) note that rapid employment growth may have dampened any productivity gains. Perhaps less contentious is the predicted effect on capital productivity, which would increase regardless which of the two effects noted above dominates. Hall (1996) showed that while labor productivity was broadly unchanged across the 1979–87 and 1992–95 expansions, annual capital productivity growth increased from an average of zero in the first of these expansions to 2.7 percent per annum in the second. This served to raise total factor productivity growth from 1.3 percent in the 1979–87 expansion to 2.3 percent in over 1992–95.

76. Recent OECD studies show that New Zealand's **structural unemployment rate and NAIRU** dropped relatively sharply in the 1990s (OECD, 1997 and Richardson et al., 2000) (Table III.5). While the (weighted) OECD average structural unemployment rate increased slightly from 1990 to 1996, New Zealand's dropped by 1.3 percent of GDP (following a steep rise in the late 1980s), among the largest drops in the OECD membership. Perhaps more relevant, New Zealand was near the top of the English–speaking group over the first part of the 1990s in terms of the fall in the structural unemployment rate—only the UK registered a larger decline. However, as with changes in labor productivity, it is not possible to establish a casual link between labor market reform and drops in NAIRU–like concepts.

77. **Real wage growth** moderated substantially in the first half of the 1990s compared with the last half of the 1980s, falling from double digit rates[25] to around 1½ percent. (Table III.6) (Savage, op. cit.). This is in contrast to the performance of the Australian labor market over this period, which was characterized by relatively slow employment growth and increase growth of labor productivity. Under those conditions, the move away from centralized bargaining resulted in higher real wage growth in the 1990s as workers were able to cash in on higher labor productivity growth (Dawkins, 2000).

78. The ECA had a marked effect on the **seasonal pattern of wages and earnings** (OECD, 1996). This is a clear result of wage negotiations becoming more staggered throughout the year rather than being concentrated in a single wage round. Another empirical regularity that appears to have broken down is the relation between changes in generalized real wages and local skill shortages. This would suggest that the incidence of collective wage formation had lessened. More formally, econometric work by the OECD (1996, op. cit.) on the labor market suggested that employment in the post–ECA period responded more quickly to changes in output than in the pre–ECA period. Finally, there is evidence that "penal" overtime wage rates of up to triple ordinary time rates had disappeared following the introduction of the ECA, and were replaced in most instances by time–and–a–half rates (Beaumont, op. cit.).

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[25] This reflects the average of the real product and real consumption wages.

79. **Household income inequality** in New Zealand increased unambiguously over the period 1993–86 to 1995–98 (O'Dea, 2000). Moreover, the increase in inequality in New Zealand appears to have exceeded that of other English–speaking countries, leaving it with one of the highest levels of inequality in the OECD. Several caveats are in order, however: (i) cross country comparisons of this type should be treated with caution due to measurement inconsistencies; (ii) these studies show that most of New Zealand's increase in income inequality occurred in the 1980s, and can therefore not readily be linked to the ECA and (iii) most of the increase in income inequality in the comparator countries occurred in the 1970s, which are not included in this sample. Ongoing work has identified household composition (e.g., growth of sole parent and older households) and age–mix/qualifications as contributing to one–half of the deterioration in income equality. The remaining half has yet to be identified statistically, but variables such as wage dispersion are candidates.[26]

80. **Labor force participation** in the 15–64 age cohort rose strongly in New Zealand over 1990–97 (Table III.7). ILO (1999) data show that the participation rate for this group increased by 2½ percentage points over this period, with the bulk of the increase reflecting female participation. Most of the industrial countries had falling or flat participation profiles over this period, including the English–speaking group, where only the US had a (1 percentage point) rise its participation rate. New Zealand was the only country in this group to have a rise in male labor force participation.

81. The **rate of unemployment**, which now stands at 6.1 percent, fell from a peak of 11 percent early 1992 to 5.7 percent in the second half of 1995 before rising to 7.6 percent in the recession of 1998. As with other macroeconomic variables, one needs to separate the effects of other influences (in this case the relatively robust expansion for most of the 1990s) to isolate the effect of labor market reform. Econometric work by Maloney (1994), based on industry data in the two years following the implementation of the ECA, shows that while there is no direct link between the ECA and employment growth, there is an indirect link in that lower union density is associated with increased employment. He estimated that 22 percent of the employment growth between the second quarter of 1991 and the third quarter of 1993 was indirectly a result of the ECA.

82. Overall, there is no consensus view on the outcome of labor market reforms in New Zealand. Indeed, given the depth of the reform and the wide–range of other reforms implemented, the answer to why New Zealand has not closed the gap in terms of output and productivity growth with the comparator group consisting of the United Kingdom (which did undertake a significant labor market reform) and the US and Australia (which did not) remains a puzzle (Gregory, 1999). There are several proffered (non–mutually exclusive) explanations:

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[26] Interestingly, job losses in the 1980s had little effect on most measures of inequality since they were felt across the income distribution.

- *Labor market outcomes were dwarfed by other outcomes.* This line of thinking would argue that given the high income level of New Zealand and the existence of well–developed factor markets, the impact of the type of reforms undertaken in the labor market would be relatively small, and that GDP growth is more sensitive to more basic variables such as technological change and/or savings. Adherents of this view would note that the US did not undertake any meaningful labor market reform and that Australia did not undertaken any fundamental labor market reform, but that both countries outperformed New Zealand in the 1990s.

- *The reforms need more time to take effect.* While the reforms in the labor market were undertaken rapidly, there is hysterisis in labor market behavior, even though bargaining structures seem to have changed rather quickly. Relatedly, in the period following the implementation of the ECA, monetary policy credibility was paramount, meaning that the relatively weak macroeconomic performance in New Zealand was the cost of ridding the system of inflation.

- *Social benefit systems continue to act as a deterrent.* This hypothesis would acknowledge the disincentive problems in the labor market (and the associated macroeconomic costs) of high effective marginal tax rates of low income families (resulting from generous public benefits) and "passive" labor market measures.[27] A recent OECD study (Martin, 1998) shows that, despite narrowing the gap, New Zealand continues to have the highest summary measure of entitlement benefits among the English–speaking group. Also, the same study shows that the share of active labor market policy expenditure to total labor market policy expenditure has fallen by 20 percentage points over 1985–96 to close to the OECD average. Perhaps a more general reading of this view would be that while the product and factor markets underwent fundamental reform in the 1980s and early 1990s, the social sectors did not. By extension, only when the social sectors are reformed will the optimal "interface" with the labor market be achieved.

- *The ECA did not achieve its aims, or was somehow flawed.* This view states that since the relative economic performance of New Zealand—in particular labor productivity—has not improved, the ECA did not deliver on its promise of a more efficient labor market. Alternatively, some observers are implicitly arguing that the objective function used to formulate the ECA was flawed in that it put too much weight on efficiency (i.e., purely contractual) concerns.

While it is beyond the scope of this paper to provide a resolution as to which (combination) of these hypotheses is most accurate, the discussion above does suggest that the first three

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[27] Passive measures cover spending on unemployment and related social benefits, while active measures comprise a wide range of policies aimed at improving access to jobs and the necessary skills, and the functioning of the labor market.

have merit. However, such a resolution may ultimately be impossible owing to the lack of a counterfactual.

83. While it is difficult to pinpoint the effects of the ECA on industrial relations and, more broadly, macroeconomic outcomes—although these would appear to be positive on balance—the ERA has been framed in terms of a broader social objective function. That is, the government has signaled a shift in emphasis from purely efficiency terms in evaluating performance to include considerations of equity and fairness. Although the presence of differing objective functions would make a straightforward comparison of the two Acts impossible, the next section tries to look at how the central elements of the ERA could effect the efficiency gains achieved under the ECA.

D. The Employment Relations Act

84. Following the election of November 1999, the coalition Labour–Alliance government came to power (replacing the National Party, which had been in power for nine years), and moved quickly on its campaign promise to replace the ECA with more union–friendly legislation. In March 2000, the Employment Relations Bill was introduced in to Parliament with the intent to "provide for balance in the conduct of employment relationships [by] aiming to improve mutual trust and confidence between employers and employees" (New Zealand Labour Party, 2000)

85. There was considerable turmoil surrounding the Employment Relations Bill, with the opposition charging that: (i) the Bill was a backward–looking departure from the status quo; (ii) the Government had not made the case that the ECA was defective in achieving good labor market outcomes; and (iii) only one measurable outcome (productivity, see below) was provided for the Bill, leaving the public with no way to measure the legislation's success or failure (NZ National Party, 2000). In response to these concerns and those of business community, some changes were made—the definition of employee was clarified to exclude independent contractors and others from the coverage of the ERA, as were the conditions of union access to the workplace and the application of "good faith" bargaining—but the thrust of the legislation remained unchanged. The ERB was passed into law in August 2000.

86. The remainder of this section will be devoted to identifying areas where the ERA could be assessed regarding its impact on industrial relations and macroeconomic outcomes, acknowledging that many of these will not be observed for some time. To begin, we note that the main features of the ERA are as follows:

- Acknowledging the inherent inequality of bargaining power in employment relationships, the Act specifies that such relationships must be built on "good faith."

- All collective bargaining must be undertaken through unions (which will be a signatory to any resulting employment contact) and only union members may be covered by a collective bargaining agreement.

- Collective bargaining is promoted by the Act through the requirements to bargain in good faith over a collective agreement, and the additional guidance over the process by which orderly collectively bargaining should be conducted. The Act also provides that industrial action can be taken in pursuit of single or multi–party collective agreements, and provides for mediation services which will be able to be utilized by the parties to collective bargaining (see below).

- Individual choice is protected—union membership is voluntary and "freedom of association" is maintained.

- New institutions—a Mediation Service (staffed by the Department of Labor) and the Employment Relations authority (an independent statutory body)—will be set up to promote informal and low–level resolution of problems.

- The legislation establishes an entitlement for those covered by a collective agreement to take leave for training in employment relations, at the employer's expense. The union allocates the use of this right to eligible employees who must be union members covered by the relevant collective agreement.

87. The effects of most of these items on labor market performance are not directly measurable although inferences as to their effects will be possible over time. In fact, the only macroeconomic claim made by proponents of the ERA is that productivity will be increased owing to improved mutual trust and confidence in the workplace. However, as discussed earlier, particularly in the case of labor productivity, the effect of labor market reforms can go either way.[28]

88. It is worth noting that even after the passage of the ERA, employment arrangements in New Zealand will remain closer to those in North America than to those in many European countries. In fact, one could argue that at least in some respects the labor market in New Zealand will remain more "liberal" than those in the US and Canada.[29] First, although there was much debate over the "good faith" bargaining requirement in the ERA, such a requirement has always existed in North America. Second, while the ERA effectively specifies that only union members can be covered by collective agreements, this is also permitted in North America. Finally, the ERA (like the ECA) lacks statutory job protections such as a minimum notice period or severance pay, which have a significant body of case law in North American jurisdictions.

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[28] To the extent that the ERA and the way it is interpreted and implemented moves New Zealand toward the middle of the Calmfors–Driffill hump, it could result in a weakening of economic performance.

[29] The arguments in this paragraph are based on OECD, 1996, p. 54.

89. Another indirect piece of evidence suggesting that the ERA may be less of a throwback to the pre–ECA days than suggested by some commentators, is the electoral reforms that went into effect in New Zealand in 1993. Following what were perceived as sub–optimal, violent swings in policies under successive governments occupying differing poles of the political spectrum, the electoral system was changed from one of pure representation to a "mixed" system based on the German model comprising elements of both pure and proportional representation. The ensuing period has been characterized for the most part by a string of coalition governments, which has ostensibly lessened the amplitude of policy changes. In addition, some observers note that the political system in New Zealand since 1993 is likely to prevent large swings in policies, and to the extent that legislation must reflect the views of the coalition, it is likely to stay short of a radical change.

90. That said, the ERA does appear to have the potential to impart some rigidities—as well as uncertainties—into the New Zealand labor market. Below are the main areas to watch as the effects of the ERA unfold, divided into those that are likely to be readily observable in the short–term and those that may only be realized after a long time. It is worth emphasizing that the effects of uncertainty regarding both the changes in substantive legislation and in the institutions enforcing these changes, underlay many of these considerations.

Short–term

- *Employment growth*. Any changes in the cost of hiring and firing workers could show up as a change in the rate of employment growth, independent of cyclical factors, ongoing changes in the composition of the labor force and the ongoing shift in employment from the primary sector to tertiary sector. Lower employment growth could also reflect longer hours worked by the existing work force.

- *Productivity*. As argued above, the effects of labor market reforms on labor productivity can go in both directions. If firms found it appropriate to shed labor resulting from the labor market reforms, then, everything else constant, (average) labor productivity would rise (as well as unemployment). Labor productivity would also rise to the extent that the labor market reforms produce more effort on the part of the existing workforce. However, were effort to decrease, say, due to a relative de–linking of pay and skills, then labor productivity would drop. As noted earlier, capital productivity would not be subject to these countervailing influences.

- *Union membership*. Under the ERA, collective agreements will only apply to union members. To the extent that these agreements can produce better results than individual workers, union membership would increase. The change in union membership could thus be used as a proxy of the change in union strength owing to the ERA.

- *Structure of contacts*. Increased union power resulting from the ERA may lead to an increase in inter–industry bargaining and a return to a more synchronized bargaining pattern. This could reduce general labor market flexibility, and lessen the ability of the economy to respond to shocks.

- *Wage dispersion—increased skills mismatch.* Less wage dispersion could come about from a lowering of the percentage of individual–based contracts, and could lead to a relative increase in the mismatch between skills and wages. This could effect both effort (as noted above) and labor force participation.

- *Incidents of labor unrest.* While not a stated objective of the ERA, incidents of labor unrest would be an important variable to watch, and are readily measurable. Were they to become more frequent owing to an increase in union power, this could have an impact on the flexibility of the wage setting process.

Longer–term

- *Case law for "good faith bargaining"* The absence of a good faith bargaining provision in the ECA means that a body of case law will need to be built up to address this issue under the ERA. In the interim period, it is not clear how employers would react (although it is possible that surveys could shed some light on this). One possible response would be to aim for longer contacts, which would tend to reduce wage flexibility, while another would be to gravitate toward more overtime rather than hire new workers. A sharper response would be a generalized substitution away from labor as a factor of production.

- *NAIRU.* Any change in the NAIRU stemming from the ERA (to the extent that it could be identified statistically) would serve as a summary statistic of any change in labor market policies on flexibility. However, it would take a relatively long period before this could be established.

- *Policy shifting/investor sentiment.* Although the electoral reform of 1993 sought to smooth out the policy vicissitudes resulting from single–party governments, the position of the National Party to "repeal and replace the ERA with more balanced labour legislation" (National Party, op. cit.), raises the prospect of policy oscillations in the labor market. This could run the risk of damaging foreign investor interest in doing business in New Zealand over the long–term.

- *Monetary policy formation.* A decrease in the flexibility of the New Zealand labor market would have implications for monetary policy. Specifically, to the extent that the labor market becomes less flexible, a larger increase in interest rates will be needed (ceteris paribus) to achieve a given reduction in wage inflation, implying relatively more volatility in output and employment. This takes on particular relevance in light of the new government's changes to the Policy Targets Agreement, which now explicitly directs the Reserve Bank of New Zealand to minimize output and employment volatility in achieving the inflation target.

E. Conclusion

91. The months leading up to the passage of the Employment Relations Act have been a contentious period in New Zealand characterized, inter alia, by acrimonious political

exchanges regarding the effects of the legislation and a sharp drop in business and investor confidence. At issue is the extent to which the new legislation represents a necessary correction in policies that will have modest, positive results or whether it represents a reversal in labor market policies that would lead New Zealand back to the pre–ECA era of relatively high labor unrest and relatively inflexible labor markets.

92. In the end, this is an empirical question, although coming to a definitive answer is fraught with difficulties. First, the objective function underlying the new labor market policy has not been clearly spelled out. While the Employment Contracts Act was designed solely to improve labor market efficiency, the Employment Relations Act includes equity concerns, which are arguably more difficult to measure. (Moreover, the relative weights between efficiency and equity have not been spelled out.) Second, although many of the data needed to come to a judgement on labor market outcomes are available, it will be a challenge—as it has been in assessing the impact of the ECA—to separate the effects of labor market reforms from the cyclical and structural trends in the economy. Third, some of the information needed to assess the ERA is either unobservable (like the effects of the build up of case law) or will only be available with very long lags (e.g., NAIRU). Overall, barring a return to 1980s–style labor market outcomes, it seems realistic to say that a consensus on the effects of the ERA on New Zealand's labor market and macroeconomic performance will not be reached in the near future.

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Table III.1. New Zealand: Trade Unions, Membership and Union Density, 1985-98 (Selected Years)

	Number of Unions	Total Membership	Annualized Decline	Union Density
			(in percent)	
December 1985	259	683,006	--	43.5
September 1989	112	648,825	1.3	44.7
May 1991	80	603,118	4.2	41.5
December 1991	66	514,325	25.2	35.4
December 1992	58	428,160	16.8	28.8
December 1993	67	409,112	4.4	26.8
December 1994	82	375,906	8.1	23.4
December 1995	82	362,200	3.6	21.7
December 1996	83	338,967	6.4	19.9
December 1997	80	327,800	3.3	18.8
December 1998	83	306,687	6.4	17.7

Source: New Zealand Treasury.

Table III.2. New Zealand: Coverage of Individual and Collective Employment Contract (IEC and CEC)

	IEC	Multi Employer (and awards)	Single Employer	Combined IEC/CEC	Total CEC
		(as a percentage of total contracts)			
May 1991	28	59	13	--	72
August 1992	52	8	35	5	48
August 1993	40	9	37	8	54
August 1996	49	11	34	4	49

Source: New Zealand Treasury.

Table III.3. New Zealand: Indicators of Labor Unrest

	Number of Industrial Disputes	Total Working Days Lost ('000)
1984	364	425
1985	384	759
1986	215	1329
1987	193	366
1988	172	382
1989	171	193
1990	137	331
1991	71	99
1992	54	114
1993	58	24
1994	69	38
1995	69	53
1996	74	73
1984-90 (average)	234	541
1991-96 (average)	66	67

Source: Bray and Walsh (1998), p. 387.

Table III.4. New Zealand: Business Cycle Analysis of Productivity Growth

(In percentage growth rates)

	1979-87 Expansion	1987-92 Contraction	1992-95 Expansion
Labor inputs	0.4	-1.8	2.7
Capital inputs	2.5	2.3	2.1
Labor productivity	2.0	1.9	2.0
Capital productivity	0.0	-2.2	2.7
Total factor productivity	1.3	0.3	2.3
Gross domestic product	2.5	0.0	4.8

Sources: Savage (1997), Table 6.4.

Table III.5. OECD Structural Unemployment Rates/NAIRU for Selected Countries 1/

(In percent)

	1986	1990	1996	1999 2/
Australia	8.1	8.2	8.5	7.6
Canada	8.3	9.0	8.5	8.1
New Zealand	4.7	7.3	6.0	5.8
United States	6.2	5.8	5.6	5.2
United Kingdom	10.2	8.4	7.0	7.2
OECD average (weighted)	7.0	6.8	7.1	...

Sources: OECD (1997) and Ricardson et al. (2000).

1/ Data in the first three columns are structural balance estimates from OECD (1997), based on the non-accelerating wage rate of unemployment made by the OECD Secretariat. The last column contains estimates of the NAIRU made by OECD.
2/ First quarter.

Table III.6. New Zealand: Wage and Labor Market Trends before and after the ECA

(In percentage growth rates)

	1981 (1) - 1986 (1) -	1986 (1) - 1991 (1) -	1991 (1) - 1996 (1) -
Nominal wages	61.7	53.6	11.1
Real product wages	-1.1	15.4	1.7
Real consumption wages	-9.4	8.5	1.3
Employment	8.0	-4.7	13.0
Unemployment rate	57.1	13.5	-39.4

Sources: Savage (1997), Table 6.3.

Table III.7. New Zealand: Labor Force Participation in Selected Countries 1/

(In percent)

	1980			1990			1997		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Australia	69.2	86.2	51.9	73.0	84.4	61.5	72.5	81.9	63.0
Canada	71.8	85.9	57.8	76.8	84.9	68.6	74.9	81.8	68.0
New Zealand	66.1	85.8	46.1	73.0	83.0	63.2	75.5	84.1	67.1
United States	72.5	85.8	59.9	76.5	85.6	67.8	77.4	84.2	70.7
United Kingdom	73.1	89.2	57.0	77.8	88.3	67.2	76.2	84.4	68.0

Sources: ILO (1999).

1/ For the 15-64 age group.

IV. New Zealand: Monetary Policy Framework and Central Bank Decision-Making Processes

A. Introduction

93. As is well known, New Zealand was a pioneer in the adoption of inflation targeting as an approach to monetary policy. During the 1990s several other countries followed along this path and chose to conduct monetary policy around a publicly announced quantitative target for inflation. In the words of Lars Svensson (1999), therefore, "it is no surprise that Windy Wellington has become something of a Mecca for monetary economists."

94. The move to formal inflation targeting followed the approval of the Reserve Bank Act in 1989 and aimed at delivering price stability in an economy that had experienced double digit inflation for most of the period since the first oil shock. Although the Reserve Bank of New Zealand (RBNZ) had succeeded in bringing inflation down to around 5 percent in 1990 from almost 17 percent in 1985, inflationary expectations were still deep-rooted in New Zealand and an institutional arrangement that would improve monetary policy credibility was perceived as essential (Archer and Nicholl, 1992).

95. While under inflation targeting New Zealand has managed to achieve and maintain low rates of inflation, monetary policy has sometimes been blamed for contributing to the economic instability experienced during the 1990s. Partly in response to these concerns, the modus operandi of monetary policy has been modified over time to make it more flexible. The latest Policy Target Agreement (PTA)—the contract between the Treasurer and the governor of the RBNZ that defines the operational aspects of inflation targeting in New Zealand—now explicitly states that in pursuing its price stability objective the RBNZ "shall seek to avoid unnecessary instability in output, interest rates and the exchange rate."

96. Further, a review of the operations of monetary policy has been announced by the government with the aim of investigating "ways of enhancing the Reserve Bank's ability to implement the PTA with minimal disruption to the economy."[30] A decade after the Reserve Bank Act, this review raises the opportunity to look back and assess New Zealand's monetary policy, especially in view of the experience of the countries that adopted inflation targeting. As none of them has reproduced the New Zealand institutional monetary policy framework, it may be worthwhile to explore both the arguments in favor and against some possible changes in the current institutional settings. At the same time, it should be noted that the government remains strongly committed to maintaining the objective of price stability and the operational independence of the RBNZ, as these areas have been fenced off from the review (see box below).

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[30] See Finance Minister Cullen's speech announcing the monetary policy review, May 9, 2000.

Terms of Reference for the Review of the Operation of Monetary Policy

The review will consider:

1. The way in which monetary policy is managed in pursuit of the inflation target. The review will examine the way the Reserve Bank interprets and applies the inflation target set out in the Policy Targets Agreement, with a view to ensuring that this approach to achieving medium–term price stability is consistent with avoiding undesirable instability in output, interest rates and the exchange rate.

2. The instruments of monetary policy. The review will assess whether the Reserve Bank has an adequate range of instruments and is using its current instruments effectively in altering monetary conditions in the desired direction.

3. The information used by the Reserve Bank in its decision making. The review will consider the range of sources, availability, type and timeliness of data, and the impact of these variables on forecasting and decision making.

4. The monetary policy decision making process. The review will consider whether the decision making process and accountability structures promote the best outcomes possible.

5. The co–ordination of monetary policy with other elements of the economic policy framework, including an evaluation of the relationship between monetary policy operations and other Reserve Bank functions such as prudential oversight of financial institutions.

6. The communication of monetary policy. The Reserve Bank's communication of monetary policy decisions will be reviewed to ensure that these decisions are explained to the public and financial markets in the simplest, clearest and most effective way possible.

97. This paper has three objectives. The first is to assess whether there is a problem of excessive economic volatility in New Zealand and, if so, how the RBNZ's operational approach to inflation targeting deals with economic volatility. The second is to examine the recent change in the PTA and analyze its implications for the conduct of monetary policy and for the accountability and transparency of the current institutional monetary policy setup. The third is to focus on an element of the forthcoming review of monetary policy conditions, namely the decision making process and the accountability structure underlying monetary policy decisions. In particular, the paper looks at the following issue: should the responsibility for monetary policy in New Zealand be shared by a committee, as in most other countries?

98. The structure of the paper is as follows: the next section briefly discusses the current institutional monetary policy framework in New Zealand and presents some data on the

volatility of output, inflation, real interest rates and the real exchange rate, before and after the adoption of inflation targeting. Section C analyzes the evolution of the inflation targeting in New Zealand toward a more flexible regime. Section D discusses a number of issues associated with the recent change in the PTA. Section E focuses on the choice between collective and individual responsibility for monetary policy. Section F contains concluding remarks.

B. Inflation Targeting in New Zealand: The Institutional Setup and an Assessment of Recent Experience

99. Although several other countries have followed New Zealand in adopting an inflation targeting framework for the conduct of monetary policy, the RBNZ differs from other central banks in two key respects:

- the exclusive objective of the RBNZ is to maintain price stability. Of all the other inflation targeters, Sweden (from 1999) is the only other case where the legislation setting out the constitutional and legal basis for the central bank make no mention of secondary objectives such as employment, growth or output (Table IV.1).[31]

- while several other countries share the same type of instrument–independence (e.g., England, Canada, and the US), in no other country does the formal responsibility of monetary policy rest solely in the hands of the governor, who can be dismissed for inadequate performance, including if the target is missed or for other breaches of the PTA.

100. Both of these aspects reflect the "managerialist" approach that inspired the comprehensive reform of the public sector that has taken place in New Zealand since the mid–1980s. They establish an employment contract between a principal (the government) and an agent (the governor of the RBNZ), with the inflation rate as the single performance measure and where incentives are shaped by the threat of dismissal of the agent if the inflation target is missed.[32]

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[31] In Brazil (where an inflation targeting regime was adopted in 1999), the legislation charges the Central Bank with the main task of promoting the stability of the purchasing power of the currency but also refer to secondary objectives, such as providing the economy with adequate liquidity, maintaining the international reserves of the country at adequate levels and promoting savings mobilization at adequate levels to finance domestic investment.

[32] As noted above, the contract is embodied in the PTA, which both the governor and Minister have to sign. It should be stressed that the institutional framework established by the Reserve Bank Act commit the Minister as much as the Governor to the target fixed by the PTA. Should the governor regard the proposed PTA as inconsistent with price stability he or

(continued...)

101. This approach prevailed over the more "orthodox" ones that emphasized the advantages of giving the central bank complete autonomy from politicians.[33] New Zealand's path to price stability was rather to recognize the inherently political nature of the goal of monetary policy and, once the objective was chosen, to give the central bank total discretion on how to attain it. Both the adoption of a freely floating exchange rate since 1985 and the reform of government finance (through the decision in 1984 to fund the government's borrowing requirement directly from the market, at market–determined interest rates) contributed to give the central bank effective independence over the conduct of monetary policy.

102. Under the inflation targeting regime New Zealand has managed to achieve and maintain low rates of inflation. More importantly, in an era of generalized inflation reduction in OECD countries, New Zealand has moved from the bottom to the middle of the inflation ranking among these countries (Table IV.2). Although the achievement of a rapid reduction in inflation could well be the consequence of a different political attitude toward macroeconomic instability (as reflected in the wide–ranging macro and micro changes implemented in New Zealand since the mid 1980s), there can be little doubt that monetary arrangement introduced by the 1989 Act has served its main objective well, namely, to lower inflation and to eradicate inflationary expectations.

Table IV.2. Average Inflation in New Zealand and Other Selected Countries

	1980-89		1990-99	
	Average	Rank	Average	Rank
New Zealand	12.7	(2/20)	2.5	(10/20)
United States	6.2	(14/20)	3.2	(6/20)
Canada	6.9	(13/20)	2.5	(12/20)
Australia	8.6	(6/20)	3.0	(7/20)
Japan	2.7	(20/20)	1.3	(20/20)
United Kingdom	6.2	(14/20)	3.2	(6/20)
Euro area	7.5		2.8	
OECD	7.7		3.0	

Source: International Financial Statistics, IMF. Inflation is the annual percentage in the CPI. The ranking is against the following 20 OECD countries: Australia, Austria Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, and the United States. 1/20 means that a country has the highest average inflation of the 20 countries considered.

103. However, ever since the adoption of an inflation targeting doubts have been periodically raised on whether the current monetary framework achieves price stability only

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she can decline to sign it, requiring the government to use the override facility and thus signaling to the market the existence of such inconsistency.

[33] According to Fischer (1995), given the difficulty in finding a mechanism that makes sure that central bankers behave optimally from a welfare point of view, it is accountability (and thus instrument–independence) rather than goal–independence that really matters for inflation performance.

through an excessive output, exchange rate and interest rate volatility.[34] In particular, the large appreciation (29 percent from trough to peak) of the real exchange rate and the high real interest rates experienced in the 1990s have sometimes been blamed for putting both the export and the household sector under pressure (Sarel, 1999).

104. A first point to note is that the Policy Targets Agreement (PTA) explicitly recognizes that there are conditions under which keeping inflation within the target may lead to excessive economic instability. In order to lower the probability of such an outcome, the PTA has included a list of "caveats," that is, of circumstances where inflation could legitimately be allowed to fall outside the target.[35]

105. The PTA has also undergone some major changes over time as inflation has been brought under control, partly in response to the concern about output and exchange rate volatility. In 1990, based on the perception that the rapid disinflation had already proven too costly in real terms as well as on concerns for future real costs, the newly signed PTA extended the date by which the inflation target (0–2 percent) was to be achieved by one year, from 1992 to 1993. In 1996, the new PTA widened the target band to 0–3 percent, in part as a reaction to the experience of the recent past, when the target was breached twice (in the second quarter of 1995 and during three quarters of 1996) despite the sharp increase in interest rates. The latest version of the PTA, signed in December 1999, while maintaining the 0–3 percent inflation target now states that in pursuing its price stability objective the bank "shall seek to avoid unnecessary instability in output, interest rates and the exchange rate."[36]

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[34] To quote the Governor of the Reserve Bank of New Zealand, Don Brash: "*even those who concede that New Zealand's performance in keeping inflation low and stable has been good often argue that the cost of achieving this, in terms of economic growth and employment foregone, has been too high and that perhaps something more moderate, or "less obsessive" in the words of our critics, would have been desirable*" (Brash, 2000).

[35] These include large swings in the terms of trade, significant changes in indirect taxes and in other government policies that directly affect prices, and natural disasters. Initially, these caveats were taken into account through the estimation of "underlying" inflation, which excluded the impact of the shocks. Estimates of underlying inflation were reported alongside headline inflation until 1997. Since then, the RBNZ no longer estimates underlying inflation, and has started following a more qualitative approach to taking account of shocks.

[36] The initiative for these changes came from the newly–elected government. It is interesting to note that in commenting the possibility of a change in the PTA after the 1999 election, the Governor of the RBNZ drew attention to the risk of excessively frequent changes in the operational aspects of inflation targeting, by noting that "*consistency and continuity are attractive in monetary policy as elsewhere, and I shall certainly not be promoting a change*" (Brash, 2000).

Has inflation targeting come with excessive output and instrument volatility? A quick look at the data

106. Isolating the impact of monetary policy on the economy from that of shocks and other influences is always a very difficult exercise. This is even more so in a small, open economy like New Zealand which is heavily exposed to terms of trade variability, undertook fundamental structural reforms in the second half of the 1990s and was hit by a sequence of shocks in the 1990s. In particular, the lagged effect on domestic demand of both the structural reforms of the mid 1980s and the net immigration flows lead the RBNZ to underestimate the strength of the inflationary pressures in the early to mid 1990s, while the Asian crises and the drought of 1997/98 exacerbated the downward phase of the cycle.

107. With these qualifications, the evidence in Table IV.3 is used to assess the evolution of output, interest and exchange rate volatility in New Zealand since the adoption of inflation targeting. In particular, Table IV.3 presents a cross–OECD comparison of variability (measured by the standard deviation) in real output growth, inflation, real short term interest rates and the real exchange rate before and after the introduction of the inflation targeting regime. All in all, these data seems to suggest that the shift to inflation targeting did not exact a major price in terms of increased economic volatility.[37]

Table IV.3. Relative and Absolute Variability of GDP Growth, Inflation, Real Exchange Rate, and Real Short-Term Interest Rate 1/

	GDP Growth 2/		Inflation 3/		Real Short-Term Interest Rate 4/		Real Exchange Rate 5/	
	Relative Variability (rank among OECD countries)	Absolute Variability (standard deviation)	Relative Variability (rank among OECD countries)	Absolute Variability (standard deviation)	Relative Variability (rank among OECD countries)	Absolute Variability (standard deviation)	Relative Variability (rank among OECD countries)	Absolute Variability (standard deviation)
1979-89	2/20	2.7	6/20	4.3	9/20	3.0	9/20	7.9
1990-99	4/20	2.6	10/20	1.6	17/20	1.4	8/20	7.9

Sources: OECD and International Financial Statistics, IMF.

1/ The rank is against the OECD countries listed in the footnote to Table 2. As in Table 2, 1/20 means that the country has the highest variability of the 20 considered.
2/ Annual growth of gross domestic product, volume, at 1995 PPP (US$PPP 1995).
3/ Changes in quarterly CPI.
4/ Percent per annum money market interest rate (90 days commercial bill rate) minus CPI inflation (quarterly data).
5/ Real effective exchange rate based on relative CPI (quarterly data).

108. Turning first to output variability, New Zealand's position in the ranking (based on the variability of real GDP growth) has not changed much in the 1990s as compared to the 1980s. The same is true for the absolute standard deviation. This suggests that output volatility is, to a large degree, the unavoidable result of the structure of New Zealand's economy and has little to do with the change in monetary policy regime.

[37] These results are roughly consistent with those presented by Drew and Orr (1999). Drew and Orr, however, use overlapping periods (e.g., 1979–1999 compared to 1989–1999), which do not clearly distinguish between the pre– and post–inflation targeting periods.

109. Likewise, New Zealand's position in the ranking based on the variability of the real exchange rate has not changed much in the last 10 years as compared to the previous decade. Moreover, the relative and absolute volatility in the real exchange rate have remained broadly unchanged and high.[38]

110. Finally, the data show that in the last decade New Zealand has significantly improved its relative position in the volatility ranking of the real short–term interest rate. Under inflation targeting, the real short–term interest rate has shown a marked decline in absolute variability and has been among the least volatile in the OECD sample (its level, however, was the highest on average for the 1990s).

C. Inflation Targeting and Economic Stabilization

111. The findings discussed above—that there has been little change in the economic instability since the adoption of inflation targeting—do not mean that there exists no trade–off between the variability of inflation and of output. Indeed, a criticism of monetary policy in New Zealand seems to be that the inflation targeting as practiced by the RBNZ has tended to give excessive weight to the inflation stabilization objective.[39]

112. A first point to make in this respect is that even if output stabilization is not an argument of the central bank loss function there are several channels through which a concern for output stability may affect the actual implementation of monetary policy under inflation targeting. Batini and Haldane (1999) illustrates this point by focusing on a relatively general class of policy reaction functions in an inflation targeting regime such as the following:

$$[1] \qquad r_t = \gamma\, r_{t-1} + (1-\gamma) r_t^* + \theta [E_t\, \pi_{t+j} - \pi^*]$$

where r_t is the short term real interest rate ($r_t = i_t - E_t\, \pi_{t+1}$) where i_t is the nominal interest rate, r_t^* is the equilibrium real interest rate, E_t is the information set at time t, π_t is the inflation rate and π^* is the inflation target. According to this rule, monetary authorities control the nominal interest rate so as to hit a path for the short–term real interest rate relative

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[38] On the other hand, if the European countries that were previously in the European Monetary System and are now in the European Monetary Union were excluded (basically all European countries in the list, with the exception of Norway and Switzerland), New Zealand would be in middle of the ranking (4 out of 7 in the first period and 3 out of 7 in the second one).

[39] For example, Bean (1999) compares monetary policy in New Zealand, U.K., and Australia and argues that the sole concentration on price stability in the 1989 Reserve Bank Act may result in excessive volatility in activity.

to a weighted average of the lagged and equilibrium real interest rates. The last term shows that a deviation of expected inflation from the target triggers a policy action.

113. According to this policy reaction function, monetary authorities have three parameters to choose in formulating monetary policy, namely, γ, θ and j. The first, γ, determines the degree of interest rate smoothing. The second, θ, is the policy feedback parameter and defines the aggressiveness of the policy response to a given deviation of the inflation forecasts from target: an increase of the value of θ means a more aggressive policy response to a given deviation of the inflation forecast from the target and thus amounts to shortening the policy horizon (the date at which the target is approximately hit). The third parameter, j, identifies the forecast horizon (the future date at which policy makers react to deviations of inflation from target).

114. Every combination of these parameters identifies a certain speed at which inflation is brought back to target after an inflationary shock, and thus defines the output dynamics associated with the transition path of inflation. In the words of Batini and Haldane (1999): *"any degree of output smoothing can be synthetically recreated by judicious choice of the parameters entering an inflation forecast based rule...That is evidence of the output encompassing nature of inflation targeting based around inflation forecasts."*[40]

115. According to Goodhart (2000), the difficulty in defining an appropriate specification for a loss function with both inflation and output stabilization as objectives is the reason why some countries restrict themselves to give primacy to price stability, while specifying explicitly that there are conditions in which monetary authorities should not aim to return inflation to the target excessively quickly, as this could cause excessive output volatility.[41]

116. The trade–off between variability of inflation and of output can be illustrated diagrammatically as in Figure IV.1. Increasing the weight that a central bank places on the stability of inflation implies giving up some degree of output stabilization, while the position of the frontier depends on the degree of credibility of monetary policy (gaining monetary

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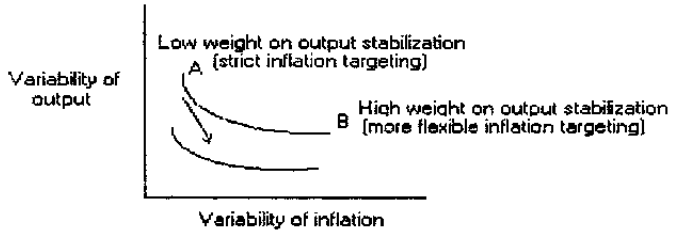
[40] Svensson (1997) also shows that inflation targeting is completely consistent with a conventional quadratic central bank loss function that places arbitrary weights on the output gap and inflation.

[41] In the UK, the letter of intent sent by the Chancellor to the Governor of the Bank of England and specifying the inflation target contains a similar clause, which states that: "*The framework is based on the recognition that the actual inflation rate will on occasions depart from its target as a result of shocks and disturbances. Attempts to keep inflation at the target in these circumstances may cause undesirable volatility in output.*" In the case of New Zealand, these conditions are explicitly identified in the "caveats" in the PTA.

stability of inflation implies giving up some degree of output stabilization, while the position of the frontier depends on the degree of credibility of monetary policy (gaining monetary policy credibility and eradicating inflationary expectations amounts to a downward shift of the frontier)[42].

Figure IV.1. Trade Off Between Output and Inflation Variability



117. Following Svensson's terminology, a central bank aiming at the top left hand end of the curve (point A) is following a "strict" inflation targeting, under which a central bank tries to correct the divergence of inflation from the target at the shortest horizon possible. Such a policy minimizes the variance of inflation around its target but only at the expense of significant fluctuations in output. The adoption of a more "flexible" inflation targeting regime corresponds to a movement along the curve to the south–east, as the central bank accepts a more gradual return to the target, thereby avoiding sharp fluctuations in activity.

118. New Zealand's initial approach to inflation target was influenced in large part by the imperative of persuading New Zealanders of the anti–inflation commitment of the RBNZ.[43] Over time, the approach has became less strict. Having established the credibility of this commitment (and slashed inflationary expectations) the RBNZ has been able to benefit from a downward shift of the volatility frontier and can now afford more policy flexibility. Simulations run by the RBNZ show that the optimal forecast horizon is now around a period

[42] It is useful to think to these curves as if they were obtained by subjecting to random shocks a model of the economy that incorporates a monetary policy reaction function like [1]. Using the same battery of shocks but alternative values of the parameters of choice in [1] gives the combination of output variability and inflation variability shown in the figure (for example, for given values of γ and θ, point A would be obtained by fixing a relatively short policy horizon, that is, a relatively low value of j).

[43] To quote Murray Sherwin, Deputy Director of the RBNZ, "*the target was sometimes described as being bounded by electric fences—approach if you want, but not touch!*" (Sherwin, 1999).

of 6–8 quarters (Drew and Orr, 1999), a much larger time span than the one initially applied (around 4 quarters).[44]

119. The extension of the forecast horizon (*j* in the previous policy reaction function) reflected a shift in emphasis from the direct to the indirect inflationary effects of movements in the exchange rate.[45] Together with the widening of the target band in 1996 the longer forecast horizon imply that, compared to the initial approach, the RBNZ is likely to react less vigorously once the edges of the band are threatened, and to tolerate some additional short–term inflation variability while focusing on the persistent element of inflation.[46]

120. The move (in 1999) from a quantity–based (official settlement balances) to an interest rate–based (the Official Cash Rate) implementation regime also goes in the direction of delivering more instrument stability. Under the old regime the main monetary policy instrument was represented by periodic statements from the RBNZ trying to maintain the exchange rate and interest rates consistent with the desired monetary stance (from 1997 this stance was identified with a desired level of the Monetary Condition Index). This created a tendency for interest rates to respond immediately to exchange rate developments, and resulted in high short–term interest rate instability. Under the new regime, the RBNZ no longer attempts to respond to day–to–day fluctuations in the exchange rate and these fluctuations have a smaller impact on short–term interest rate variability (Brookes and Hampton, 2000).

121. To sum up the discussion thus far, there is no convincing empirical evidence that the adoption of price stability as the sole objective of monetary policy and of an inflation targeting regime have exacerbated economic instability in New Zealand. To a certain extent,

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[44]It should be noted that the forecast horizon of 6–8 quarters is optimal not because it is the result of a loss function minimization problem, but rather because it efficiently exploits the convexity of the trade–off ("*it is evident that as the policy horizon is extended much beyond the 6–8 quarters not much is to be gained in terms of reduced output and instrument volatility, while inflation volatility increases quite markedly*," Drew and Orr, 1999). This is the same result obtained by Batini and Haldane in the context of the UK (1999).

[45] The higher emphasis on the indirect inflationary impact (via the aggregate demand) of movements in the exchange rate partly reveals the intention of smoothing interest rates responses to these movements, and partly reflects recent evidence that the direct impact of changes of the exchange rates on tradable prices has become more muted (Orr, Scott and White, 1998).

[46] To quote the Deputy governor Sherwin again, "*the upshot has been a shift in emphasis away from avoiding a breach of the target at all costs and toward a firmer focus on having inflation always reverting to somewhere near the mid point of the target range in the medium term*" (Sherwin, 1999).

economic volatility is the unavoidable consequence of the small, open nature of New Zealand's economy. Moreover, consistent with the view that inflation targeting does not preclude significant attention to conventional stabilization objectives, the RBNZ has progressively changed its approach to inflation targeting in a way that should imply less output and instrument instability.

D. The New PTA

122. As noted above, the new PTA directs the RBNZ to seek to avoid unnecessary instability in output, interest rate and the exchange rate in the pursuit of its price stability objective. This section asks a series of questions in relation to this change, such as: does the new PTA really help in improving the conduct of monetary policy? The answer to this question depends on the existence of a trade–off between the short run variability of interest rates and of output. In case such a trade–off exists, is there an inherent inconsistency in the PTA? Does the new PTA have any implications for accountability and transparency of monetary policy?

Is short term interest rate smoothing consistent with low economic variability?

123. One way of looking at the new PTA is that it merely formalizes what the RBNZ is already doing in terms of the choice of the parameters of the policy reaction function [1] that is, the feedback and policy horizons (the parameters θ and j, respectively) and the degree of interest rate smoothing (γ).[47]

124. However, even if they allow a better understanding of central banks behavior, policy reaction functions are unlikely to drive day–to–day monetary policy making. The identification of the optimal values of the parameters is too sensitive to the model of the economy and to the nature of shocks to ease the task of policy makers. In other words, the uncertainty surrounding monetary policy is such that it is often difficult to exploit the volatility frontier, as it is unclear where the economy is located at the time of decision and how it will evolve in the future.

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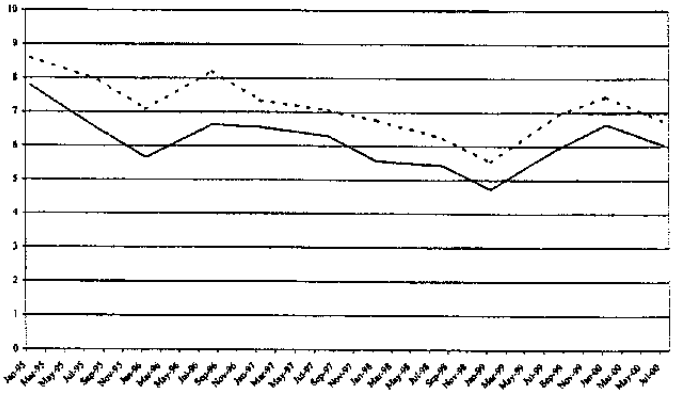
[47] The reference to "*unnecessary instability*" may not appear that unusual, prima facie. For example, the letter of intent between the Chancellor and the Bank of England (footnote 41) mentions the possibility of "*undesirable volatility in output*" in the context of shocks and disturbances. In this sense, it plays the same role of the caveats identified in the "Unusual Events" subsection of the PTA. The latest PTA, however, includes the clause concerning the unnecessary instability in output, interest rates and the exchange rate in the subsection entitled "Implementation and Accountability". The need to make explicit the concern for such volatility not only in the context of the caveats suggests that the new clause goes somewhat further than what may already have been implicit in the conduct of monetary policy.

125. One implication of this uncertainty is that it is not clear to what extent a gradual adjustments of interest rate is consistent with smaller output and inflation variability over the cycle, as suggested by Woodford (1999). In his model (that aims to describe the behavior of the US Federal Reserve Bank) a central bank achieves stabilization only by affecting long–term interest rates. As these are determined by market expectations of future short–term rates, a central bank is effective only in so far as it communicates a credible commitment to a future path of short rates. A straightforward way of establishing this credibility is to maintain interest rates at a higher level for a period of time after they are raised, or to follow initial small changes with further changes in the same direction (in a word, to smooth interest rates adjustments).

126. The relevance for New Zealand of the transmission mechanism between short and long–term interest rates is weakened by two factors. First, long–term interest rates may be less relevant for economic agents in New Zealand than in the States, as most debt contracts in New Zealand are linked to short–term rates. Second, given that long–term interest rates in New Zealand are influenced by US long–term rates, there is some doubt on the actual ability of the RBNZ to affect long–term interest rates by changing the OCR (Figure IV.2). Overall, it could be that in order to reduce short–term interest rate volatility the RBNZ may have to accept more variability in output and inflation over the cycle.

Figure IV.2.



127. The upshot of this discussion is that, even if the central bank has a rough idea of the optimal degree of instrument smoothing, it may not always be possible to operate monetary policy accordingly. Some times a sharper than planned change in interest rates is necessary in order to hit the inflation target within the desired policy horizon and to avoid a more severe adjustment down the road. Indeed, in the recent history of New Zealand's monetary policy there have been cases in which the RBNZ realized that had it moved earlier and/or faster it

would have probably reduced the amplitude of the economic cycle (thereby avoiding a "too little, too late" type of mistake).

Implications of the new PTA on accountability and transparency

128. The new PTA may have some implications on both the accountability structure and the clarity and effectiveness of the RBNZ's communication of monetary policy decisions to the public. The main argument for delegating monetary policy to a single individual is that this arrangement is the strongest and, at the same time, simplest (in terms of operational complexity and enforceability) way to enforce monetary policy accountability.[48] The new PTA parts with this simplicity, as the governor's performance will not only be judged on whether he did enough to maintain the inflation rate within the target, but also on whether he did enough to avoid unnecessary output and instrument volatility. This may have at least three drawbacks.

129. First, in cases where the desired degree of instrument smoothing is precluded by the risk of increasing inflation and output variability over the cycle, it is possible that the governor may be called to justify his behavior and persuade both the principal (the government) and the public that his "aggressive" move was justified by the need to restrain inflationary pressures and prevent further economic volatility. This may once again increase the attention paid to discussing the implementation of monetary policy, a feature that was seen as one of the major drawbacks of the MCI–based implementation regime (Brookes and Hampton, 2000).

130. Second, it is very difficult to determine what "unnecessary volatility" really means. A typical measure of volatility is the standard deviation of economic variables over a certain period of time, but this can be only calculated *ex post*. Any assessment of the appropriateness of monetary policy should rather be conducted *ex ante*, taking into account both the information set available and the uncertainty prevailing at the time of the decision. Even if such a careful (and costly) review is carried out, it is quite unlikely to produce any compelling evidence about the specific responsibility of monetary policy during the cycle.

131. Third, although the objective difficulty in evaluating whether the RBNZ has delivered an adequate performance as defined by the new clause may weaken the threat posed by the dismissal procedure by blurring monetary policy accountability, the same difficulty is a double–edged sword that can be used to put more pressure on the operation and implementation of monetary policy, in order to influence its implicit degree of output stabilization.

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[48] Referring to the governance arrangement of the RBNZ, Minot and Stephens (2000) state that: "*none of the other central banks surveyed had any comparable accountability measure in their legislation. This could be because designing such clearly defined consequences for poor performance is more difficult when a committee formulates monetary policy.*"

132. The system of "checks and balances" set up by the Reserve Bank Act and, especially, the high degree of transparency that must be given to any conflict between the RBNZ and the political principal, strongly mitigates the risk that the new clause will be used to unduly politicize the implementation of monetary policy. At the same time, even if the costs (in terms of loss of monetary policy credibility, higher inflation, larger risk premium on foreign debt etc.) implied by such a conflict are so high to make it unlikely to occur, any perceived attempt to affect the instrument–independence of the RBNZ may damage the credibility of its policy and, therefore, its ability to influence inflation expectations.

133. All in all, while the new clause in the PTA is not expected to alter the current RBNZ *modus operandi*, it is difficult to consider it as a completely neutral and irrelevant addition. As discussed above, it is not impossible to envisage scenarios in which the introduction of the new clause might end up exposing monetary policy to tensions from which it was previously immune. In order to contain these risks the RBNZ needs, first, an additional investment in clarity of the communication of monetary policy decisions and, second, to make sure that the system of "checks and balances" is internally consistent and effective.

134. As for the transparency of monetary policy, the RBNZ is known to be one of the most transparent central banks of the world (Table IV.1). However, as shown by the debate over the degree of economic stabilization that is implicit in its approach to inflation targeting, the main communication challenge for the RBNZ is to make monetary policy "clear" in the sense specified by Winkler (2000). This amounts to establish a coherent frame of reasoning through which every individual can interpret the subset of relevant information in the same way as everybody else, an objective that is not automatically achieved by making the maximum amount of information available (Issing, 1999).[49]

135. As for the system of "checks and balances" a possible step in the direction of efficiency and internal consistency would be to remove the governor from the membership to the Board of Directors (the body which assesses his performance). Indeed, the governor himself has signaled in the past that there is some "awkwardness" because he is both the chief executive and the chairman of the board that reviews his performance.[50]

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[49] It should be stressed here that the objective difficulty in making monetary policy "clear" should not be used as an alibi to maintain a larger degree of secrecy. As pointed out by Winkler (2000), recognizing the "limits" of transparency makes the task of being transparent not less desirable, only much harder.

[50] In practice, although the governor chairs the Board's meetings, the Board has delegated the responsibility for the formal monitoring and evaluation of the governor's performance to the non executive directors committee of the Board. Thus, the proposed change would bring the *de jure* framework to assess the governor in line with the *de facto* institutional setup.

E. Accountability: Collective or Individual?

136. This section turns to what is likely to be a key element in the forthcoming review of monetary policy operations, namely the issue of decision making process and the accountability structure. In particular, the following question is addressed: if consideration has to be given to moving to a collective decision–making structure, what are the issues at stake in the formal delegation of monetary policy to a committee?[51]

137. Under the "managerialist" approach, the main arguments for centering monetary policy accountability on the sole figure of the governor are:

- the operational complexity associated with any attempt to maintain such individual accountability within a committee. If one admits that individual accountability cannot be reduced to the mere act of voting, distinguishing individual responsibilities would require very detailed minutes and, in principle, individual forecasts (Issing, 1999).[52]

- the risk that providing individual incentives within a committee may jeopardize the effectiveness of collective decision–making, because free–riding and, in general, strategic behaviors can dilute individual incentives within a committee.[53]

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[51] According to the JPMorgan's "*Guide to Central Bank Watching*," out of the 39 countries considered, only in New Zealand and Norway is monetary policy decision–making formally in the sole hands of the governor. In the case of Norway, however, the central bank is not even instrument–independent as it has to consult with the government on interest rate changes (the Reserve Bank follows an implicit inflation targeting), so the governor is responsible for the day–to–day management of monetary policy. His performance in this task is monitored by an independent body, the Supervisory Council, whose 15 members are elected by the Parliament.

[52] This point is also raised by a member of the Bank of England Monetary Policy Committee (MPC), John Vickers, who entertains the possibility of a tension between individual accountability of MPC members and the apparently collective nature of the published forecasts by asking "*how is individual freedom in voting consistent with collective ownership of the means of projections?*" (Vickers, 1999).

[53] As RBNZ governor Don Brash puts it: "*I think you may get people who are very aware of their reputation, either currently or historically, who start playing to the gallery*". However, comparing monetary policy made by a committee and by a single individual within a reputation–building model, Sibert (1999) shows that the strategic interaction among the members of a committee could ultimately work both ways and the inflation outcome ultimately depends on the degree of patience of policy–makers.

- the negative effect of decision–making by a committee on transparency and clarity, insofar as it makes the communication problem (and the public perception of the central bank decision–making process) more difficult.

- the need to solve a series of practical issues, such as how to choose the number of its members, whether to select some of them outside the central bank, how to employ them so as to avoid any potential conflict of interests, etc. While some suggestions can be derived from the arrangements adopted in other countries (as showed in Table IV.1.) these problems are probably more difficult to solve in a country with a low population density as New Zealand.

138. The desire to save on the organizational costs deriving from a committee–based decision making process (i.e., the lengthening of the decision making process which may result in an increase in the likelihood of failure to make decisions on time) is also an argument for a centralized structure. However, one should not overstate this argument because, although the governor of the RBNZ is personally responsible for the formulation of monetary policy, in practice he makes decisions with the advice of an internal body, the monetary policy committee. However, the fact that there is no imperative to achieve consensus may speed up the whole decision making process.

139. On the other hand, key arguments in favor of collective responsibility are:

- concentration of responsibility can lead to great pressure being exerted on the governor when the government or the public believe that the policy is inappropriate. As this conflict could affect monetary policy credibility, it may be preferable to take the spotlight off the governor and delegate decision–making to a group of people that may better be able to resist external pressures (Siklos, 1996).

- a committee could allow a candid exchange of information between the committee members prior to voting, thereby leading to a better informed decision–making process (Cukierman, 1999). Such an argument could be based on an intuitive reluctance to delegate decision making authority to any single individual ("*there is an implicit belief that the wisdom of a committee might be greater than that of any single member, that collective decision making avoid some of the worst errors that might otherwise occur*," Sah and Stiglitz, 1988), but also on an application of the Condorcet (1785) "jury theorem," stating that majorities are more likely than any single individual to select the best of two alternatives when there exist uncertainty about which of the two alternatives is in fact the best.[54] Along the same lines, Nitzan and Parush (1985) show that in the

[54] This result, however, depends on each member of the committee behaving in exactly the same manner as when he alone selects the outcome (that is, it depends on individuals voting "sincerely"). If "sincerity voting" is not rational (it does not lead to a Nash equilibrium) and strategic behavior is introduced (with the opportunity for the members of a committee to

(continued...)

presence of uncertainty appropriate aggregation of information possessed by different experts leads to a better decision.

140. These arguments suggest that having the members of the committee sign different contracts (so that only one, or some of them, could be fired in case of inappropriate policy) would probably lead to a suboptimal institutional framework. Such an arrangement would, in fact, boost the costs associated with both the identification of individual responsibilities and the strategic interaction among the members of the committee.

141. This leaves two possibilities. The first one is to have a single employment contract signed by more than one person. If monetary policy was considered to be inconsistent with the principles set by the PTA, all members of the committee would be fired (independently of the individual responsibilities). This framework would benefit from the advantages of a committee–based decision making process and, at the same time, could avoid the costs associated with enforcing multiple contracts, but would amplify the difficulty in finding a number of potential Board members.

142. The second possible arrangement would be to delegate decision making to a committee and to abandon the employment contract. A weaker form of individual accountability could be still maintained by having monetary policy decisions taken through a majority–rule and revealing how members voted through the publication of minutes (like in the UK).

143. Abandoning the employment contract would amount to recognizing that the RBNZ is accountable to the market and the general public, rather than to the political principal.[55] In a way, this is already the case for the current framework: the first line of defense against a "wrong" monetary policy is the reaction of markets, and the exercise of the dismissal clause is conceivable only in the context of extreme scenarios. However, the need to preserve uniformity of treatment between the central bank and the public sector accountability frameworks may make it politically infeasible to pursue this option.

144. To conclude, adopting a committee–based decision making process presents both gains and drawbacks. In principle, it is possible to carefully weight all of them so as to identify the optimal institutional design for monetary policy in New Zealand, that could well

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manipulate the collective decision to their particular advantage) the result may change (Austen–Smith and Banks, 1996).

[55] Briault, Haldane and King (1996) distinguish between accountability de jure and accountability de facto (or transparency). Accountability de jure is based on a formal, "legal" mandate to carry out a duty, i.e. through a fully specified contract between the government and the central bank. But making the central bank's actions, intentions and analysis transparent exposes central bank's reputation to an external check, for which it will suffer loss or failure if it is found wanting.

be different from the actual one. Such an exercise, on the other hand, should take into account that every institutional change in monetary policy involves a transitional period in which credibility must be re–established by the new institution. To the extent that the volatility frontier in Figure IV.1 shifts upward, this may imply some temporary additional costs in terms of economic instability. In the absence of a compelling reason to change, it may thus be worthwhile to remain with the current decision–making process.

F. Conclusions

145. After the adoption of an inflation targeting regime New Zealand has experienced a decade of low and stable inflation. Although it is difficult to assess the specific contribution of inflation targeting to this result, the new monetary framework appears to have served well the main objective of the reform, namely to communicate a credible change in attitude toward inflation and eradicate inflationary expectations. During the last decade, however, monetary policy in New Zealand has been occasionally blamed for amplifying output, exchange rate and instrument rate volatility.

146. In part as a result of these concerns, a number of changes have been implemented in the PTA in the second half of the 1990s, with the latest change being a new clause added to the last Policy Target Agreement, stating that in pursuing price stability the RBNZ should avoid unnecessary economic instability. Also, with 10 years of experience with inflation targeting in place, the new government has launched a review of the operation of monetary policy. This review has been designed so as not to question the exclusive focus on price stability, but will "*examine the way the Reserve Bank interprets and applies the inflation target set out in the Policy Targets Agreement, with a view to ensuring that this approach to achieving medium–term price stability is consistent with avoiding undesirable instability in output, interest rates and the exchange rate.*"

147. This paper argues that there are two reasons why inflation targeting might not be responsible for an excessive degree of output and instrument volatility in New Zealand. First, New Zealand's relative economic instability has not worsened in the last decade compared to the pre–Reserve Bank Act period. Second, even if the only goal of monetary policy is price stability, this does not imply that inflation targeting is inconsistent with other conventional stabilization objectives.

148. In the implementation of inflation targeting a central bank has several ways to "factor in" a concern for output and instrument stability. After the initial relatively "strict" approach to inflation targeting, the RBNZ has been moving in the direction of a more flexible approach to inflation targeting by extending its forecast and policy horizon and widening the target band. Abandoning the MCI–based implementation regime has also reduced the volatility of short–term nominal interest rates.

149. It can therefore be said that the change in PTA formalizes the existing modus operandi by making explicit the RBNZ's concern for economic stabilization. However, this

explicit formalization may in principle expose monetary policy to tensions from which it was previously safe. First, in order for the governor of the RBNZ not to be exposed to undue criticisms, it is important that everyone understand the framework, objectives and transmission mechanism for monetary policy. This requires an additional effort in making monetary policy clear about how it is avoiding unnecessary volatility in output, interest rates and the exchange rate without elevating this discussion to the same level as that of the price stability objective. In this way, it risks directing excessive market and public attention towards implementation issues. Second, given the objective difficulty in assessing ex post the appropriateness of monetary policy, there is scope for more political pressure on the RBNZ and this may damage monetary policy credibility, even if the system of "checks and balances" set up by the 1989 Reserve Bank Act is sufficient to ensure that the RBNZ's instrument independence is maintained in principle.

150. The paper next focuses on a possible modification of the current monetary policy institutional framework, namely the move towards a committee–based decision making process. This idea has some advantages, especially as it moves the spotlight in the discussion of the conduct of monetary policy off a single individual. But it also raises a series of additional problems, not least its consistency with the principal–agent framework underlying public sector management in New Zealand. Considering that at least part of the credibility so far established risks being lost following such an important institutional change, it may be worthwhile following the principle "*if it is not broken don't fix it.*"

Table IV.1. Institutional Monetary Policy Framework for Selected Inflation Targeting Countries

	Bank of England	Reserve Bank of Australia	Reserve Bank of New Zealand	European Central Bank[1/]	Sveriges Riskbank	Bank of Chile	Swiss National Bank	Bank of Canada
Objectives according to legislation	Price stability and, subject to that, economic activity	Stability of currency, full employment, economic prosperity and welfare	Price stability	Price stability, and without prejudice to this support to the general economic policies in the Community	Price stability	Stability of the currency and the normal execution of domestic and external payments	Price stability, but in the general interest of the country	Price stability, stability in the general level of production, prices, trade and employment, economic and financial welfare
Who fix the objectives	Government (each year through the budget)	Bank-Government (through a letter of agreement)	Government[2/] (through the Policy Target Agreement)	Bank	Bank	Bank	Bank	Government (informal agreement between the bank and the Finance Minister)

Table IV.1. Institutional Monetary Policy Framework for Selected Inflation Targeting Countries (Continued)

	Bank of England	Reserve Bank of Australia	Reserve Bank of New Zealand	European Central Bank[1]	Sveriges Riskbank	Bank of Chile	Swiss National Bank	Bank of Canada
Accountability	Collective and individual (a 9 member Monetary Policy Committee, with individual voting publicly announced). The governor holds the deciding vote	Collective (a 9 member Board)	Individual (governor)	Collective (Governing Council). The President holds the deciding vote.	Collective and individual (a six-member Executive Board, with individual voting publicly announced). The governor holds the deciding vote	Collective (a five-member Board of Directors). The President holds the deciding vote	Collective (a three-member Governing Board)	Collective (seven members Governing Council)
	The Committee meets monthly	The Board meets monthly	-	The Council meets every two weeks	The Board meets 8-10 times a year	The Board meets monthly	The Board meets at least quarterly	The Council meets daily
	The Committee has 4 outside experts	The Board has 6 outsiders	-	The Council has no outsiders	The Board has no outsiders	The Board has no outsiders	The Board has no outsiders	The Council has no outsiders
	Monitoring is performed by the BoE Court (including the governor and the two Deputy governors)	There is no independent monitoring body	Monitoring is performed by the Board	Monitoring is performed by the European Parliament	Monitoring is performed by the Governing Council (no member of the Executive Board is also a member of the Council)	There is no independent monitoring body	Monitoring is performed by the Bank's Council (no member of the Governing Board is also a member of the Council)	Monitoring is performed by the Board of Directors (including the governor and the Senior Deputy governor)

Table IV.1. Institutional Monetary Policy Framework for Selected Inflation Targeting Countries (Concluded)

Transparency	Bank of England	Reserve Bank of Australia	Reserve Bank of New Zealand	European Central Bank[1]	Sveriges Riskbank	Bank of Chile	Swiss National Bank	Bank of Canada
Publication of minutes of the MPC meetings	Yes (within two weeks)	No	No	No	Yes (with two weeks delay)	Yes (with a three months delay)	No	No
Publication of numerical inflation forecasts	Yes (probability distribution of unconditional forecasts)	No	Yes (conditional forecasts)	No	Yes (unconditional forecasts)	No	No	No
Main regular reports	Quarterly Inflation Report	Semiannual Statement on the Conduct of Monetary Policy	Quarterly Monetary Policy Statement Quarterly Official Cash Rate review	Monthly Bulletin	Quarterly Inflation Report	Monetary Policy Report (three times a year)	There are no within year reports	Semiannual Monetary Policy Report
Release of a press report on the day of policy changes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

1/ The ECB does not follow an explicit inflation target at any given horizon, but tries to keep the year on year increase in the area-wide CPI below 2 percent.
2/ The RBNZ target is fixed also trough a formal agreement between the governor and the Finance Minister but this has a less of a cooperative feel than, for example, in Australia (Bean, 1999) where the Treasury subsequently endorsed the RBA decision of adopting an inflation targeting.

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V. New Zealand Superannuation—Possible Extensions to Full Funding[56]

A. Introduction

151. New Zealand, like most OECD countries, faces an aging population over the coming century, which carries the implication of future strains on the public finances arising from both pension– and health–related costs. Particularly in the area of pensions, the policy challenge has long been recognized, but has been politically divisive. Indeed, the recent history of reforms of New Zealand Superannuation has been contentious and characterized by rather significant changes in policy, including some reversals (Box V.1).[57]

152. In its March 2000 Budget Policy Statement, the newly elected Labour–Alliance Government announced that it will raise the benefit ratio (for couples) from 60 percent to 65 percent of average national wages and that it will begin to allocate budgetary surpluses and build up assets in a Crown entity (or similar arrangement) beginning in 2001/02 with a view to "pre–funding" future superannuation expenses. Further details were released in June 2000 at the time of the announcement of the 2000/01 Budget. The approach to be adopted would aim to smooth the costs of the transition to a higher level (of GDP) of public pension payments. Such a policy would be a significant departure from the present system, which is funded on a purely pay–as–you–go (PAYG) basis.

153. Arguably, the decision to pre–fund superannuation expenses can be seen as the first step in a sequence of policy moves to reform the New Zealand's pension system. That is, under the assumption that political momentum for further pension reform builds with the accumulation of funds in a public investment account of the type envisaged under the proposed pre–funding scheme, one can envisage additional policy actions aimed at further improving the long–term financing of the public pension system, including through a move to permanent (i.e., full) funding, perhaps combined with further parametric reforms aimed at enhancing incentives for private saving and further reduction in pension costs.

154. In this spirit, the present paper looks at ways to extend the pre–funding proposal with a view to "costing out" such possibilities.[58] In particular, this paper looks at alternative ways of moving to a fully–funded superannuation system for considering: (i) various objectives as to what proportion of future pension expenditures should be fully funded; (ii) to what extent investments in equities could be used to bolster returns and achieve "politically feasible" (defined below) transition paths to a fully–funded system over the long run; and (iii) to what

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[56] Prepared by Paul Gruenwald (ext. 38430), who is available to answer questions.

[57] For a useful chronology, see Preston (1999).

[58] For simplicity, the simulations below use 2000 as the base year. This does not imply a suggested timetable for any of the changes discussed.

Box V.1. New Zealand—A Recent Chronology of Key Public Pension Policy Developments

New Zealand Superannuation (NZS) is a universal, pay-as-you-go public pension system funded from general tax revenues—there is no payroll tax. All pensioners receive the same pension depending on their marital status, and the pension is based on the level of nationwide average wages.

- In 1977, the Government established New Zealand's first "pure" universal public pension. Benefits began at age 60, and were set at 80 percent of the average wage for couples (48 percent for singles). Qualifications were liberal: only 10 years of residence were required, and there were no income or asset tests. Government pension costs quickly doubled to 7 percent of GDP.

- To rein in costs, various Governments in the 1980s reduced the generosity of the system. In 1985, a surcharge was placed on other retirement income (effectively introducing means testing). In 1989, the 80 percent "replacement ratio" was suspended.

- Further reforms followed in the early 1990s: it was agreed to raise the retirement age to 61 immediately, and to 65 by 2001; pensions were indexed to prices alone; and the surcharge was increased and its base broadened. Pension expenditure fell to 5 percent of GDP by mid-decade.

- In 1993, an Accord on Retirement Income Policies was reached, which included: a transitional benefit to partially offset the effects of the increase in the retirement age; bounding a couple's combined pension in a band of 65-72½ percent of average wages; and commissioning of a six-yearly Periodic Group Report (from 1997) to look broadly at the effects of demographic changes on pension spending. Also, the Office of the Retirement Commission was established to publicize the need to increase private retirement savings, and the public pension system was renamed NZS.

- The National-New Zealand First coalition government posed a national referendum on superannuation in September 1997. A fully-funded, privately managed, defined contribution scheme with a government "top-up" was rejected by 92 percent of voters. Also, in April 1998, the surcharge on other retirement income was eliminated, returning New Zealand to a pure universal pension scheme.

- In December 1998, the minority National Government set up a Superannuation 2000 Task Force, charged with developing a pension policy consistent with long-term fiscal sustainability (and to report its findings in 2000). The floor on the pension benefit rate was reduced to 60 percent.

- In November 1999, a Labour-Alliance coalition government came into power and disbanded the Superannuation 2000 Task Force. In March 2000, the government announced the immediate restoration of the floor of the pension benefit rate to 65 percent, as well its plans to "pre-fund" future superannuation payments out of projected operating surpluses beginning in 2001/02. Cumulative contributions would be about 3 percent of GDP over the first three years.

- The 2000 Budget spelled out further details of the pre-funding scheme. Annual contributions would be determined using a rolling, 40-year tax smoothing model, which implies the existence of an investment fund into the 22nd century. Also, the fund would be run on a commercial basis through a Crown entity, and be subject to income taxes. The precise investment objectives and instruments (and the extent to which assets could be invested abroad) have yet to be finalized.

extent further parametric benefit reforms would contribute to such paths. This analysis is undertaken using long–term simulations for various combinations of objectives, instruments and rates of return.

155. The results of the simulations indicate that while fully–funding *pension spending over and above current levels (in terms of GDP) going forward* would be manageable, given the likely political constraints on the diversion of fiscal surpluses to a public investment fund, moving to a system where *all pension spending is fully–funded* is likely to face some political problems. Specifically, a desire to fulfill the latter objective would require additional parametric benefit reforms beyond those already undertaken, most likely some combination of raising the retirement age and lowering the benefit ratio. Moreover, attaining this objective would require a long transition period in order to bring the annual financing costs down to politically feasible levels.

156. It should also be noted that for the purposes of this paper the sole objective of funding superannuation expenses is to finance the transition costs to a fully–funded pension system over the long term. All other possible future demands on the public finances—e.g., from future health liabilities which are assumed to be of a similar order of magnitude as pensions—are not considered here. Also, some authors (Carran, 2000; and Grant, 2000) have stipulated other possible objectives, including, but not limited to, improving savings performance and the current account, deepening local capital markets, and forming an investment pool for small business. While those goals may be defensible on both economic and public policy grounds, they are not considered here, except as they are affected by different policies for attaining a specific full–funding objective.[59]

157. The rest of the paper is structured as follows. Section B provides background and an international context to pension–related expenditure in New Zealand. Section C briefly outlines the new government's approach to pre–funding superannuation expenses. Section D lays out the analytic framework used in this paper for assessing the issue of fully funding superannuation expenses in New Zealand, and specifies several interpretations of that goal as well as specific policy objectives to be evaluated. Section E describes the simulations and gives the results, which are then narrowed down to include only those that are likely to be politically feasible. Section F looks at the probable macroeconomic impact of fully funding superannuation expenses, including the effects on national savings, labor supply and the current account. Section G considers operational issues likely to be important in defining and implementing a full–funding strategy. Section H concludes.

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[59] At a more fundamental level, some observers have questioned the rationale for pre–funding as against using surpluses to reduce net debt, and, over time, lower taxes. This paper does not consider the effects of such alternative policy options.

B. Background

158. Projections of New Zealand's pension expenditures point to increasing pressures on the public purse from roughly the 2010s onward. Data from Sarel (1998), which are presented in Table V.1, show that superannuation expenditures (net of recollected taxes, allowances for singles, and other costs) begin at an estimated 3.6 percent of GDP at present and remain roughly constant through the 2010s before rising to 5.0 percent of GDP in 2020, 7.3 percent of GDP in 2050 and 8.5 percent of GDP by 2100. That is, public pension expenditures on current policies in New Zealand are expected to rise by 5 percent of GDP this century. Underlying this increase is a jump in the old–age dependency ratio from 17½ percent at present to 36 percent in 2050 and 42 percent in 2100.

159. The pressures on New Zealand's pension system going forward appear to be less than for the rest of the OECD, particularly in the first part of the 21st century. This reflects both the population structure as well as the reforms to the pension system undertaken by various governments over the past two decades. Table V.2 shows that for the OECD as a whole, baseline (gross) pension expenditure rises from 7 percent of GDP at present to over 12 percent of GDP by mid–century before dropping to 11½ percent of GDP in 2070. The non–G7 countries have a more favorable profile early in the century. New Zealand starts from a much lower base (4.8 percent of GDP) than the OECD average, and remains so through mid–century; however, this gap then closes.

160. Policy makers in New Zealand had already begun to address the pension issue prior to the current government's pre–funding proposal. Most notably, an attempt at fundamental pension reform was made in 1997 by the coalition (National–New Zealand First) government, which presented a referendum on a new pension system to voters in September of that year. The initiative accorded a primary role to the private sector in superannuation policy; specifically, a Compulsory Retirement and Savings Scheme was proposed, which featured: (i) a pure defined–contribution, compulsory component with privately–funded and managed accounts; and (ii) a public "top–up" component to guarantee a minimum pension. The proposal was rejected by 92 percent of voters, implying that New Zealand would need to rely on its publicly–run pension system for the foreseeable future. In some ways, the proposal of the current government can be seen as an outgrowth of that referendum.

C. Pre–Funding New Zealand Superannuation—the Current Government's Approach

161. The coalition Labour–Alliance Government that came to power in late 1999 announced in its March 2000 Budget Policy Statement (which preceeds the budget) that, in order to address the effects of an aging population on pension expenditures, it intends to run surpluses over the economic cycle to allow it to begin to pre–fund superannuation spending.[60] Contributions would be made to a Crown entity or similar arrangement beginning

[60] The previous government's policy was to achieve budgetary balance over the cycle until its debt objectives were achieved. After that, it would run surpluses on average over the cycle,

(continued...)

in 2001/02. The working assumptions for the amounts of these contributions were specified as $NZ 0.6 billion in 2001/02, $NZ 1.2 billion in 2002/03, and $NZ 1.8 billion in 2003/04.

162. The 2000/01 Budget announced in June revealed further information on the proposed pre–funding strategy. Essentially, the objective is to smooth the transition of the projected 5 percentage point of GDP increase in net pension expenditures identified above. This smoothing will be achieved by using a rolling 40–year time horizon to determine the annual pre–funding requirement. In every year (beginning in 2004/05), a constant level of pension expenditure in terms of GDP will be chosen that fully funds superannuation outlays over the following 40 years. For the first 40–year period, the required pension expenditure would be around 6 percent of GDP (or 2 percent of GDP above current pension obligation), implying that a 2 percent of GDP surplus would be the pre–funding requirement. This amount would be placed into the Crown entity, where it would be invested on a commercial basis. The constraints—if any—on the portfolio manager in terms of instrument and investment location (domestic or foreign) have yet to be determined. Going forward, this process would be repeated every year until smoothing is no longer required. Specifically, when the pension expenditure to GDP profile flattens out, the required pension expenditure to GDP over the following 40 years would be (roughly) the same as the initial year pension expenditure to GDP ratio, implying that the investment fund would no longer be needed. That, in turn, would imply that at the end of the smoothing period, and in the absence of further policy actions, New Zealand would revert to a pure PAYG system with public pension expenditures on the order of 9 percent of GDP.

163. Before presenting the simulation model, it is worth emphasizing that the objective of the present paper is to anticipate possible future debate on moving to a fully funded system in New Zealand under the assumption that political momentum builds for such reform stemming from the implementation of the currently proposed pre–funding scheme.[61]

D. Permanently Funding Superannuation—Analytical Framework

164. The methodology used for the simulations in this paper will be that of Feldstein and Samwick (1996) (hereafter FS), who studied the transition path from a largely PAYG government–run pension system to a private, fully–funded plan for the case of the United States. In their model, mandatory individual retirement accounts are set up for each working individual and the assets of these accounts are invested solely in equities. FS note that these

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with the size of these surpluses being influenced, inter alia, by the expected fiscal pressures resulting from population aging.

[61] Analytically, the proposed pre–funded scheme could be converted to a fully funded scheme along the lines discussed below by specifying an appropriate asset stock target at the end of the smoothing period. Under the current proposal the end–period asset stock target is zero.

funds could in principle be collected and invested by the government, although they prefer a decentralized system. This sentiment has been echoed by a US expert panel on social insurance (Diamond (ed.) 1999) who argue that such a system would: (i) instill ownership in the retirement system on the part of citizens; (ii) offer individuals more choice regarding their investments, thereby better aligning their portfolios with individual preferences; (iii) reduce the influence of the government over both the investment of the funds and the workings of corporations whose stocks were held; and (iv) lessen the temptation to the government to spend the accumulated funds. However, unless additional assumptions are specified that would alter government behavior given the existence of such accounts, whether they are privately or publicly held and invested is immaterial. For the purposes of this paper, no such assumptions are made.

165. The thrust of the FS approach is to use the private investment accounts to exploit the difference between the historical returns to equity and the implicit return on a PAYG system to generate politically feasible transition paths to a fully–funded pension system. They assume that benefits are constrained to be the same as those that would be received from the existing US Social Security system. With benefits fixed, each individual's pension is financed using: (i) the returns from their private investment account and (ii) the existing payroll tax. As time passes, pension benefits, given the assumed difference in the rate of return between equities and the PAYG return, are increasingly financed out of the returns from private investment accounts and the required contribution from the Social Security system (the residual) goes to zero. In the long run, all pensions would be fully funded from the individual investment accounts. Using US data, FS calculate that an additional 2 percent payroll tax invested in equities at historical rates of return would over the long run replace the existing 12.4 percent payroll tax used to finance Social Security. Importantly, they assumed a 9 percent real return to equities for the entire simulation period, 100 percent allocation of the portfolio to equities, and no expenses required to manage the funds.

166. The FS framework is equivalent to a government collecting an amount over and above that needed to fund current PAYG pension outlays and depositing it into a public entity, with this entity investing such funds on behalf of individuals to partially or fully finance future pension outlays. In the context of New Zealand, the FS approach would be appropriate for studying a case where the government used operating surpluses to contribute to Crown entity fund over time, had the proceeds invested, and utilized the returns (and perhaps some of the capital) to finance some portion of superannuation expenditures going forward. Thus, it would be compatible with an extension of the current pre–funding proposal to a fully–funded framework. The remainder of this section looks at possible objectives for fully funding superannuation expenditures over the long term, which sets the stage for the simulations.

167. The choice of objectives is critical for the exercise—there are two key issues. The first relates to the time–horizon of the increase in superannuation expenses to be funded. A *temporary* horizon would imply the need to finance a "bulge" in pension outlays. Under this objective, a fund would be built up in the period preceding the bulge, and run down during the peak expenditure years. Thereafter, pension funding would revert to the manner

prevailing before the funding began. A *permanent* horizon would imply the need to finance a long–lasting increase in pension outlays. Under this objective, a fund would be built up over time so that returns from its assets plus any new contributions less any payouts would be sufficient to finance the relevant pension outlays indefinitely.

168. The second issue is: what portion of pension expenditures to fully fund? This paper considers two alternatives: (i) funding future net superannuation expenditures *over and above* those currently prevailing; and (ii) funding all future net superannuation expenditures. The second of these raises a further issue; namely, the transition period over which the move to full funding takes place. Three cases are considered: immediate transition (largely for illustrative purposes); transition over one generation (taken to be 25 years); and transition over the entire 100 year projection period. Therefore, all told, there are four different funding objectives.

169. In addition to the choice of objectives, another central question concerns what future parametric reforms to benefits, if any, would be undertaken during the simulation period. Under the baseline options listed in the previous paragraph, it is assumed that no future parametric reforms are undertaken other than the ongoing transition to a retirement age of 65, which is scheduled to be completed in 2001. For illustrative purposes, this paper will consider two more scenarios: in the first, the retirement age will be increased gradually from age 65 to age 68; in the second, the retirement age will be increased *and* the benefit ratio will be reduced gradually from 65 percent of the average national wage to 50 percent.

170. As there are a number of scenarios that are considered, for the convenience of the reader the table below lays out the notation for the labels as well as the scenario to which each label corresponds.

Notation Used for Scenarios

	Pension Expenditures to be Funded	Future Pension System Reforms Undertaken	Transition Period
Option I(no)	Future increases only	None	n.a.
Option I(age)	Future increases only	Increase retirement age to 68 over 2015-27	n.a.
Option I(both)	Future increases only	Increase retirement age to 68 over 2015-27 and reduce benefit ratio to 50 percent over 2015-50	n.a.
Option II(no)-A	All expenditures	None	Immediate
Option II(no)-B	All expenditures	None	25 years
Option II(no)-C	All expenditures	None	100 years
Option II(age)-A	All expenditures	Increase retirement age to 68 over 2015-27	Immediate
Option II(age)-B	All expenditures	Increase retirement age to 68 over 2015-27	25 years
Option II(age)-C	All expenditures	Increase retirement age to 68 over 2015-27	100 years
Option II(both)-A	All expenditures	Increase retirement age to 68 over 2015-27 and reduce benefit ratio to 50 percent over 2015-50	Immediate
Option II(both)-B	All expenditures	Increase retirement age to 68 over 2015-27 and reduce benefit ratio to 50 percent over 2015-50	25 years
Option II(both)-C	All expenditures	Increase retirement age to 68 over 2015-27 and reduce benefit ratio to 50 percent over 2015-50	100 years

E. Simulations of Fully Funding Pension Expenditures

171. This section will look at the resource requirements (i.e., fiscal surpluses) necessary for attaining the objectives of each of the options laid out above using simulations with reasonable parameter values for real returns and equity allocations in the portfolio. In contrast to FS, these scenarios use a variety of assumed rates of return and portfolio allocations to illustrate the extent to which the results are sensitive to the underlying parameters. Also, unlike, FS, the simulations include costs for managing the portfolios, taken to be ¼ of 1 percent, equivalent to major US–based international index funds (e.g., Vanguard).

172. The simulations will cover the period through 2100, and the contribution to the investment fund for 2001/02–2003/04 will be as in the 2000/01 Budget. The following parameter values will be adopted.

- *Initial real equity returns: 9 percent; 7 percent; and 5 percent.* Real equity returns—historical and projected—should be seen in relation to real GDP growth. FS note that over the period 1960–94, the real marginal rate of return on capital in the US averaged 9.4 percent (Rippe, 1995), which is the basis for their assumed real rate of return of 9 percent. Over the same period, US real GDP growth averaged 3.4 percent, implying a "premium" of 5.4 percent over the real growth rate. The simulations in the present paper are generated by assuming that this premium over the real GDP growth rate remains constant over the projection period. Since US data were used for the assumed real equity returns, projected US GDP data are used to generate the future real equity returns in the simulations.[62] This can be seen as a proxy for the "rest of the world" for the case of New Zealand. Therefore, while the real equity returns are set at 9, 7 and 5 percent at the beginning of the projections, they are in actuality premia over the US real GDP growth rate of 5.4, 3.4 and 1.4 percent respectively. These real returns then fall throughout the projections period to maintain the "premium" over the US real growth rate assumption.

- *Real debt returns: 5 percent.* The assumption of 5 percent real debt return could be interpreted as an approximation for the real rate of return on either: (i) New Zealand government bonds (the Treasury's Long–term Model assumes a 7 percent nominal rate of return, as against the 1½ percent mid–point of the RBNZ's inflation target range); or (ii) "rest of the world" yields on corporate bonds of general investment

[62] The real US GDP growth projection assumes 2 percent annual productivity growth and the "low cost" (i.e., high birthrate) labor force scenario from the US Social Security Administration (2000). The latter assumes that the labor force growth rate falls from over 1.0 percent this decade to 0.6 percent by 2075, and is taken to be constant thereafter.

grade quality, which would be assumed to trade at an average of 100 basis points over US Treasuries, which have a 3½–4 percent historical real return.

- *Portfolio allocations (equity/total): 90 percent; 70 percent; and 50 percent.* FS assume a portfolio allocation to equity of 100 percent, which could be seen as compromising their results since (i) the liquidity needs of the portfolio would argue against holding all of the fund's assets in relatively volatile instruments; and (ii) the simulations are extremely sensitive to variations in this parameter. The present exercise seeks to highlight this issue by looking at the above three portfolio allocations to equity. While somewhat arbitrary, this approach does give a flavor of the sensitivity of the funding requirement to non–trivial changes in this parameter.

Model

173. In essence, the (recursive) simulation model operates as follows. First, for a given portfolio allocation and rate of return assumption, the year 2100 asset stock in the investment fund was chosen so that its yield was equal, as a percentage of GDP, to the level necessary to finance the requisite superannuation expenditures for that year. Then, the constant (in percent of GDP over the period 2004–2100) annual contribution to the investment fund was derived to generate, over the simulation period, the stock of assets consistent with the year 2100 payout subject to model's equation of motion (i.e., the beginning of period asset stock plus interest thereon, plus new contributions, less payouts). The implication of this construction is that the stock of assets in 2100 would be commensurate with a permanent funding of pension expenditures with no further additional annual contributions from the Government or tax increases beyond the projection period. That is, the assumed rates of return would hold up, and that the pension expenditures as a percentage of GDP would stabilize.

174. In all, a total of 108 simulations were run, corresponding to nine return–portfolio allocation possibilities (using the parameters listed above) for twelve policy options (four each under the no reform, age only reform and both reform assumptions). Tables V.3 and V.4 show the results of these simulations in terms of the required fiscal surplus and the end–period investment fund stock for the "diagonal" of the matrix for these cases; i.e., the low–low case (50 percent allocation to equity and 5 percent real equity return), the middle–middle case (70 percent allocation to equity and 7 percent real equity return) and the high–high case (90 percent allocation to equity and 9 percent real equity return).

Funding requirements with no parametric benefit reforms

175. Simulations for Option I(no) show that under the most optimistic parameter constellation (9 percent initial real return, 90 percent portfolio allocation to equities), the funding requirement—1.4 percent of GDP—lies in the range of the average planned contribution contained in the BPS over the coming three fiscal years. The underlying stock of assets would be just under 100 percent of GDP in 2100. In contrast, in the most pessimistic scenarios (a 5 percent real initial return on equities and a 50 percent allocation to equities),

the annual funding requirement would be 3¾ percent of GDP and the underlying stock of assets would be nearly 300 percent of GDP in 2100.

176. Options II(no), which include three variants of fully funding of all future superannuation outlays, present a more problematic outlook in terms of their feasibility. Under the first variant, Option II(no)–A, which features an immediate transition to full financing, the annual funding requirement ranges from over 5½ percent of GDP in the most optimistic parameter constellation to 8½ percent in the scenario with no equity premium and a 50 percent allocation to equities. Clearly, generating fiscal surpluses of this magnitude over any time horizon would be very difficult to envisage. While Option II(no)–A simulations reflect the strong (and arguably implausible) assumption that all current net expenditure on superannuation is shifted to and financed immediately by the investment fund, Option II(no)–B assumes that this process takes a generation (25 years) to complete, which smooths the transition, and allows the fund to build up resources and benefit from the effect of compounding the equity premium. Nevertheless, the financing requirement for this variant remains onerous, as annual budgetary surpluses ranging from 4¼ percent of GDP to over 8 percent of GDP would be required. Allowing for a long–term transition path (100 years) improves the outlook dramatically, but the financing requirement is still very high, except perhaps under the most aggressive portfolio allocation and the highest returns. Simulations for Option II(no)–C show that a financing requirement ranging from 2¼ percent of GDP to over 6 percent of GDP would be needed to eliminate direct budgetary financing of superannuation expenditures by end–century in the absence of additional benefit reforms. Given that the end–period annual pension expenditure in terms of GDP is the same in all Options II(no), the end–period stocks would be the same: these range from 167 percent of GDP to over 500 percent of GDP.

177. The tentative conclusion of this set of simulations is that the establishment of a hybrid system (Option I)—in which only the future projected increases in superannuation expenses would be funded—could be seen to be consistent with reasonable operating surpluses diverted annually over the long–term into a public investment fund. However, the transition to a system where all pension outlays are financed by an investment fund, even over a very long period, would be very large except in one optimistic case. Of note, the simulations in this section did not assume any future parametric benefit adjustments to the superannuation system. To the extent that additional reforms could be taken, they would alleviate some of the pressure on the system and, ceteris paribus, bring down the funding requirements to more acceptable levels.

Full funding requirements with an increase in the retirement age

178. The previous section looked at the financing requirements for New Zealand Superannuation expenses under the assumption that no additional parametric reforms were undertaken during the simulation period. Given the aging population profile and the identified (and publicly discussed) pressures on pension funding in the future, it is arguably very unlikely that the solution to pension financing would exclude some type of parametric reforms (e.g. Periodic Report (1997)). This section considers raising the retirement age from

65 to 68 years over the period 2015–27, which would lower pension expenditures by 0.5 percent of GDP in 2020, and about 1½ percent of GDP from 2030 and thereafter (see Table V.1).

179. For Option I(age), the required surplus in the most favorable scenario drops by over ½ percent of GDP to 0.8 percent of GDP, while for the least favorable case the drop is from 3¾ percent of GDP without reforms to under 2½ percent. The end–period asset stock falls to 69 percent of GDP in the optimistic case (from 96 percent of GDP) and 207 percent of GDP (from 290 percent of GDP) in the lease favorable case. For Options II(age)–A, B and C, the decline in the funding requirement is of the same order of magnitude as for Option I(age); i.e., just over ½ percent of GDP for the optimistic case and around 1¼ percent for the least favorable one. The end–period asset stock falls by a range of 30–90 percent of GDP. Of interest is Option II(age)–C, where the funding requirement falls to 1⅔ percent of GDP under the optimistic assumptions, not out of line with the working assumptions for pre–funding allocations spelled out in the most recent Budget.

Funding requirements with both reforms

180. This section presents the effects of an additional reform to New Zealand Superannuation; namely, a gradual reduction in the benefit ratio from 65 percent to 50 percent of average national wages. While perhaps more contentious than the increase in the retirement age, the combined effects of both reforms are powerful. Reducing benefits by 23 percent over 2015–50 (i.e., by reducing the pension–average national wage ratio from 65 percent to 50 percent) would lower pension expenditure by 0.2 percent of GDP in 2020, 1.7 percent of GDP in 2050 and almost 2 percent of GDP by the end of the projection period. Together, the two reforms result in a reduction in pension expenditure of 0.7 percent of GDP in 2020, 1.7 percent of GDP in 2050 and 3.0 percent of GDP in 2100.

181. Under Option I(both), the contributions to the investment fund are lowered to a range of around 0.4 percent of GDP for the most optimistic parameters to 1⅓ percent of GDP for the least favorable ones, down about 1 percent of GDP and 2½ percent of GDP, respectively, over the non–reform Option I(no). The end–period stock of assets for this group ranges from 37 percent of GDP to 113 percent of GDP. In contrast to the results for Options I(no) and I(age), it would appear that even under the least favorable parameter assumptions the transition to a system where all future increases in superannuation expenses are fully funded would be politically feasible.

182. Regarding the cases where all future pension expenditures are financed by returns from the investment fund, under Options II(both)–A and B the simulations show that the annual contributions necessary to fully fund the entire amount of pension expenditures still fall in a range that is clearly not feasible (from 3¼ percent of GDP to 6 percent of GDP). For Option II(no)–C, which has a 100 year transition period to the funding of all pension outlays, the funding requirement ranges from 1¼ percent of GDP under the most favorable assumptions to 3⅔ percent of GDP under the least favorable one. Option II(both)–C would therefore appear to be politically feasible only if something close to historical real returns

holds up. The end–period asset stocks for these options range from just over 100 percent of GDP to 325 percent of GDP.

183. In sum, the addition of parametric benefit reforms—gradually raising the retirement age and gradually lowering pension benefits—decreases significantly the annual funding requirement in terms of GDP necessary to fully fund superannuation expenses, and takes the Option I scenarios to a range that appears feasible for all assumed parameter values. In contrast, parametric reforms do not have an impact on Option II scenarios large enough to take them to a feasible range ,with the exception of Option II(age) and II(both)–C, with a long–term transition period, where benefit reforms reduce the required surplus to 1¼–1⅔ percent of GDP for the most favorable parameters.

F. Macroeconomic Effects of Permanently Funding NZ Superannuation

184. This section looks at the macroeconomic effects of fully funding New Zealand Superannuation expenses, focussing on savings, labor supply and current account. The intent is to obtain a broad direction of the effects of full funding on these variables. A more precise estimation of these effects would require a specified set of behavioral equations which allows for dynamic interaction between tax changes, labor supply, saving behavior and growth.[63] Of note, the results hinge critically on what assumption is made regarding the counterfactual or "passive" scenario. A naïve approach is adopted regarding this issue—that taxes are raised to finance pension expenditures by the amount necessary to continue the PAYG system under the current benefit structure.[64]

Saving

185. Two issues complicate the analysis of the response in national savings to the changes in superannuation funding detailed above. First, the effect of an increase in public saving on private saving is difficult to pin down. While international experience (Chand and Jaeger,1996) suggests that there is some Ricardian offset, specifying a precise value for such an offset is problematic. In this particular exercise, the Ricardian offset could be smaller in the cases which include parametric reform, as lower benefit ratios could act as an incentive for higher private saving. By the same token, the offset could be larger, if the greater "certainty" associated with a dedicated pension fund reduces incentives for private saving. Second, under the assumed counterfactual there is no change in savings ratios from the Ricardian perspective since there is no shift in public or private savings—this assumption is

[63] Such an exercise is beyond the scope of this paper.

[64] While the higher expenditure on pensions required to financing an increase in pension costs could also be financed by Crown borrowing, agents would perceive these as equivalent to future tax increases to the extent that Ricardian equivalence holds, and the results would be the same as those presented here.

adopted for convenience, and it is not clear that this would be the case even without prefunding of superannuation expenses. That is, other changes affecting public or private saving behavior are not considered.

186. Regarding the effect of increased public saving on private saving, an offset of 50 percent is used as an approximation, although given the increase in saving along the simulation path, the calculation of effects of other offsets is straightforward—this is done in Table V.5. Rather than discuss all of the options studied above, the exposition here is limited to those in the range of feasible surpluses (i.e., those with an annual funding requirement of less than 2 percent of GDP) in the most favorable parameter case. This limits the analysis to Options I(no), I(age), I(both), II(age)–C and II(both)–C.

187. For Option I(no), the average increase in public savings over the simulation period (contributions from surpluses, plus return on assets, less the payout for superannuation) is just under 1 percent of GDP, implying that national savings would increase by about ½ percent per year on average. For Option I(age) and I(both), net public savings would rise on average by 0.7 percent of GDP and 0.4 percent of GDP, respectively, over the simulation period, implying an increase in national savings of 0.4 percent of GDP and 0.2 percent of GDP. Finally, Options II(age)–C and II(both)–C imply increases in net public savings of just over 1.7 percent of GDP and 1.4 percent of GDP on average, respectively, implying an increase in national savings of 0.8 percent of GDP and 0.7 percent of GDP on average over the simulation period.

Labor Supply

188. The effects on labor supply from changes in the tax regime between the full funding options (including, where relevant, parametric reforms) and the counterfactual will only be sketched out here. A summary of the results appears in Table V.6. Assuming a tax ratio to GDP of one–third (the 2000/01 Budget figure is 32.1 percent), a three percentage point increase (decrease) in tax rates would be required to fund a one percent of GDP increase (decrease) in superannuation expenditure. Under current projections, pension expenditures as a percentage of GDP under both the no reform and the two reform scenarios will be roughly constant through the 2010s. Thereafter, under the no reform scenario pension costs will rise by some 3 percent of GDP by 2030, and by 5 percent of GDP by 2100. Under the "age–only" scenario pension costs will rise by 1½ percent of GDP by 2030, and 3½ percent by 2100, while under the "both" reform scenario, pension costs will rise by 1 percent of GDP by 2030 and by an additional 1 percent of GDP by 2100 (see Table V.1). As above, the focus will limited to those cases where the annual funding requirement is less than 2 percent of GDP under the most favorable parameters; i.e., Options I (all cases) and Options II(age)–C and II(both)–C.

189. Compared with Option I(no) (which has a full funding surplus requirement of 1.4 percent of GDP), taxes in the counterfactual would be some 3½ percentage points lower in 2010, 4½ percentage points higher in 2030 and 10½ percentage points higher by 2100. Relative to Option I(age) (which has a full funding surplus requirement of 0.8 percent of

GDP), taxes in the counterfactual would be 2 percentage points lower in 2010, 2 percentage points higher in 2030 and 8 percentage points higher in 2100, while compared with Option I(both) (which has a full funding surplus requirement of about 0.4 percent of GDP), taxes under the counterfactual would be ¾ percentage points lower in 2010, 1¾ percentage points higher in 2030, and 4½ percentage points higher in 2100. For the cases where all pension expenditures going forward would be fully funded, in Option II(age)–C (which has a full funding surplus requirement of 1⅔ percent of GDP), taxes in the counterfactual would be 4½ percentage points lower in 2010, ½ percentage point lower in 2030, and 5½ percentage points higher in 2100, while for Option II (both)–C (which has a funding requirement of 1.3 percent of GDP), taxes in the counterfactual would be 3 percentage points lower in 2010, 1 percentage points lower in 2030 and 1¾ percentage points higher in 2100.

190. These implied tax changes can now be used to estimate the effect of fully funding superannuation expenses on labor supply. This exercise will be undertaken using the average labor supply elasticity figure from Chiao and Walker (1992) for New Zealand of 0.38 (with respect to gross wages in their study—the present exercise uses net wages). It will also be assumed that there is a uniform 30 percent tax rate at present and that the only tax changes going forward relate to superannuation. The outcome of this exercise appears in the final column of Table V.6. In all five case, the labor supply response in the first decades of the century is positive (in the range of ½ percent to 2½ percent) as taxes under the passive scenario taxes are raised by less than under the full funding plans owing to the slow rise in projected pension expenditures. By 2030, the labor supply has turned negative for the Option I cases reflecting the relatively low tax increase for full funding compared to the passive scenario as actual pension costs start to rise; in the cases where all pension expenditures are to be fully funded, the labor supply response remains positive owing to the higher taxes need to fully fund the entirety of future pension expenditure. By 2100 (and, implicitly, onward), the labor supply response is negative for all cases. Over the entire century, simple interpolation yields that labor supply would be some 3.3 percent higher than the counterfactual in Option I(no), 2.2 percent higher in Option I(age) and 1.3 percent higher in Option I(both). The labor supply response in the Option II(age)–C and Option II(both)–C is much more muted owing to the higher taxes relative to the counterfactual. The average labor supply response is ¾ percent for the former and zero for the latter.

191. Holding all else constant, the above suggests that, on average over the simulation period, labor supply, and hence output, would be lower under the counterfactual than under the full funding scenarios for the three Option I cases, and broadly unchanged relative to the two Option II–C cases. (Moreover, given that labor supply is higher under all full funding cases in the year 2100, this would carry through beyond the projection period.) Using a Cobb–Douglas aggregate production function with a labor coefficient two–thirds would result in an output increase of some 2.2 percent per year for Option I(no) relative to the counterfactual, and increases in 1½ percent and almost 1 percent per year for Option I(age) and Option I(both), respectively, relative to the counterfactual.

Effects on the current account

192. The *composition* of the current account could change significantly depending on whether the fund's assets are invested abroad or not. In particular, the returns from the fund would have a significant effect on income receipts if invested abroad. Using the extreme assumption that all assets are invested abroad as an illustration, and taking all else as constant, Option I(no) would imply income inflows of 4.9 percent of GDP by the end of the projection period, while the corresponding figures for Options I(age) and I(both) are 3.5 percent of GDP and 1.9 percent of GDP. In the cases where all pension expenditures are (eventually) financed from the investment fund, for Option II(age)–C the income flows by end–period would be 7.1 percent of GDP, while for Option II(both)–C, the corresponding flows would be 5.5 percent of GDP.[65]

193. Also, the current account would improve, although by relatively small amounts, given the changes in national savings estimated above under the assumption of an unchanged investment to GDP ratio. From the discussion above, and using the data from Table V.5 and assuming a 50 percent Ricardian off–set, the current account would improve by 0.2–0.7 percent of GDP for the politically feasible options. Given these modest effects on savings, the relatively large improvement in income receipts would be offset by a significant deterioration elsewhere in the current account relative to the counterfactual.

G. Operational Issues

194. The previous two sections have attempted to gauge the amount of fiscal resources necessary to move toward a fully–funded public pension system in New Zealand—should that objective receive the requisite political support at some time in the future—and the probable macroeconomic implications of such a transition. Underlying the change in policy toward any form of advance funding of New Zealand Superannuation, whether pre–funding or fully–funding, are a host of operational issues—institutional, instrument–based, and political—which this section seeks to discuss. While the proposed pre–funding scenario is used as the basis for this discussion, the points apply to a fully funded scheme of the type outline above as well.

195. The first issue concerns the creation of an institution to undertake advanced funding, its mandate and degree of independence. The March 2000 Budget Policy Statement notes that for the case of pre–funding this would be a Crown entity or similar institution. It would seem important that this entity have a legal mandate to undertake its role as well as the necessary independence to do so. Most importantly, the political environment in which it operates would have a major effect on market confidence regarding New Zealand, which hinges—at

[65] The reader will note that these are simply the end–period annual funding requirements under the various funding objectives.

least in the foreseeable future; i.e., as long as there remain large current account deficits and net foreign liability positions—on fiscal policy performance.

196. One possibility would be to run the entity along the lines often stipulated for central banks, with separated goal and instrument independence. In the context of a Crown entity charged with undertaking the pre–funding of superannuation, the goals of pre–funding policy (say, returns relative to a benchmark adjusted for the duration of the liabilities) could be spelled out by the Treasury, and the independence to use the instruments necessary to attain those goals could be left to the managers of the entity. The entity could then report to the Treasury on a regular basis, and the fund's management could be evaluated on its performance relative to the benchmarks laid out in its contract (say, as against market–wide performance). This could be characterized as an "activist" approach.

197. Another alternative is a less activist approach based on an indexing model of investing. Here, it would implicitly be assumed, over a long time horizon, that the market is efficient and that it would not be possible to outperform, systemically, the relevant benchmark. Operationally, a portfolio allocation could be chosen ex ante, and the entity would undertake a passive strategy; i.e., invest in way (as in index funds) so as to mirror the returns of a broadly–defined market aggregate without attempting to actively manage the portfolio in a way that would seek to outperform the market. This approach would have the advantage of minimizing turnover, and thus fund expenses. Indeed, the administrative costs assumed above conform broadly to those of international equity index funds. Also, an index approach could serve as an additional firewall to protect the fund from political influence, thereby strengthening the credibility of the fiscal regime.

198. An additional consideration would be the allocation of the portfolio between debt–equity and domestic–foreign instruments, both of which involve political as well as financial elements. The Government has signaled in the BPS that it envisaged investing some portion of the portfolio invested in equities. The long duration of the pension liability structure would suggest, from an optimal portfolio perspective, that it is appropriate to invest a relatively large proportion of the portfolio in equities, particularly early in the projection period before pension costs start to rise, and when payouts would be minimal. A second issue involves the mix of domestic versus foreign instruments. While arguments have been advanced that pre–funded balances could help stimulate and deepen local capital markets (Grant, 2000; and Carran, 2000) , from a diversification point of view, a relatively small portion of the assets of the fund would be invested domestically. Given New Zealand's weight in global capital markets of 0.2 percent (WEO, 2000), from a portfolio theory point of view a large proportion of assets invested domestically would not only negatively affect diversification through a "home country bias" (which would be much more serious for New Zealand than, say, for the US), but also compromise either the instrument independence or passive strategy laid out in the preceding paragraph. If there is a sizable foreign currency component in the portfolio, consideration would also need to be given to ways to hedge foreign currency exposure.

Political considerations

199. As noted above, perhaps the most important elements of any advance pension funding scheme would be the perception of political independence and of the will to carry on maintaining the required fiscal surpluses over a long time horizon. On the former, it would seem important to ensure that there were sufficient firewalls around the operation of the fund, particularly given that its size could approach 50 percent of GDP in the next generation and over 100 percent of GDP in the longer run. This would apply as well to the destination of investment of the fund's resources. On the latter, while in the current environment of strong growth and rising surpluses would seem an opportune time to formulate a policy on the advance funding of superannuation expenses, the problem of time inconsistency may be severely tested if there were to be a major contraction in economic activity. This points to the need to consider a commitment technology to mitigate this problem.

H. Conclusion

200. This paper has looked at issues surrounding the possibility of fully funding part or all of New Zealand's future superannuation expenditures as a possible subsequent step to the pre–funding proposal of the current government. In particular, it utilized the approach adopted by Feldstein and Samwick, whereby an assumed equity premium is exploited during the transition period (and beyond) to help finance the move to a fully–funded pension scheme. The following points are noteworthy:

- While New Zealand, like most OECD countries, faces demographic pressure on its pubic pension scheme in the coming century, the size of these projected payouts in terms of GDP is somewhat smaller than average, particularly in the early part of this century. This in part reflects the pension reform efforts of the past 20 years.

- While estimates of New Zealand's future health liabilities are of a similar order of magnitude to those of pensions, they are not considered here.

- A question arises as to what exactly should be fully funded if a political decision were made to go down that policy path: increases (in terms of GDP) in superannuation expenses going forward, or all superannuation expenses, phased in over an appropriate time horizon. The paper looks at both possibilities.

- Using historical real returns on equities and bonds as a basis for simulations, fully funding the projected *increases* in superannuation costs looks plausible, even in the absence of reforms (on the order of 1.4 percent of GDP) if historical premia hold up.

- With reforms involving gradually raising the retirement age and gradually reducing benefits (both of which are in the public domain), fully funding all superannuation expenses over an appropriately long time horizon would appear to be politically feasible.

- The size of any public investment fund would be large by the end of the 100–year projection period used in this paper regardless of which option were chosen, ranging from about 40 percent of GDP under very favorable return assumptions (and including future benefit reforms) to over 100 percent of GDP under other politically feasible paths.

- Assessing the macroeconomic implications of full funding is complicated by the counterfactual. Assuming that all superannuation costs were paid out as promised, maintaining the PAYG nature of the current system, full funding could increase the national saving ratio by around ½ percent of GDP per year. Depending on whether the assets were invested abroad, the composition of the current account could change dramatically.

- The average annual labor supply response relative to the counterfactual case appears to be rather strongly positive for the cases in Option I—fully funding all future increases in pension expenditures. The interpretation is that the magnitude of the funding problem in terms of GDP may be larger than estimated. The average annual effect on output could be in the range of 1.0–2.2 percent of GDP per year for these cases.

- A key issue is how to structure a public investment fund. Would it be actively or passively managed? How would firewalls be put up to prevent political pressures to spend resources of the fund? How would a credible, time–consistent policy be communicated to markets?

- Consideration also needs to be given to what kind of independence, if any, the fund should have? Goal and/or instrument independence? Would the objective be solely to smooth the transition to a fully–funded system? Or would there be other goals?

Table V.1. New Zealand: Selected Data on Projected Public Pension Expenditures

(As a percent of GDP)

	2000	2010	2020	2030	2040	2050	2100
Current scheme							
Total gross expenditure	4.9	5.1	6.8	8.8	9.7	9.9	11.5
Total net expenditure	3.6	3.8	5.0	6.5	7.2	7.3	8.5
Additional reforms							
Increase ret. age 65 to 68 over 2015-27	3.6	3.8	4.5	5.1	5.8	6.0	7.1
Reduce benefits 23 percent over 2015-50	3.6	3.8	4.8	5.9	6.0	5.6	6.6
Combined effect of additional reforms	3.6	3.8	4.3	4.6	4.8	4.6	5.5
Dependency ratio	17.4	18.5	24.3	31.9	35.3	35.8	41.9
Memorandum items (percent per annum):							
Productivity growth	1.8	1.4	1.2	1.1	1.1	1.0	0.8
Real GDP potential growth	2.9	2.1	1.2	1.1	1.2	1.0	0.8

Source: Sarel (1998).

Table V.2. New Zealand: Gross Pension Expenditure of OECD Countries--Baseline Scenarios

(In percent of GDP)

	2000	2020	2050	2070
G-7 countries				
United States	4.2	5.2	7.0	7.4
Japan	7.5	12.4	16.5	14.4
Germany	11.5	12.3	17.5	15.5
France	9.8	11.6	14.4	14.0
Italy	12.6	15.3	20.3	17.0
United Kingdom	4.5	5.1	4.1	3.1
Canada	5.0	6.9	8.7	8.1
Non-G7 countries				
Australia	2.3	2.9	4.5	4.6
Austria	8.6	12.1	14.9	13.5
Belgium	9.7	10.7	15.1	14.3
Denmark	6.4	9.3	11.5	11.7
Finland	9.5	15.2	17.7	17.8
Iceland	2.4	3.1	5.2	5.5
Ireland	2.9	2.7	3.0	2.2
Netherlands	5.7	8.4	11.4	11.0
New Zealand	4.8	6.7	9.8	10.7
Norway	4.9	8.6	11.5	11.1
Portugal	6.9	9.6	16.5	14.8
Spain	9.8	11.3	19.1	16.0
Sweden	11.1	13.9	14.5	15.1
Averages (unweighted)				
G-7 countries	7.9	9.8	12.6	11.4
Non-G7 countries	6.5	8.8	11.9	11.4
All countries	7.0	9.2	12.2	11.4

Source: Roseveare et al. (1996), Table 3.

Table V.3. New Zealand: Pre-Funding Superannuation, Required Fiscal Surpluses

(As a percent of GDP)

	Assumptions Regarding Equity		
	50% Allocation 5% Real Return	70% Allocation 7% Real Return	90% Allocation 9% Real Return
No reform 1/			
I(no) increments only	3.78	2.33	1.41
II(no)-A immediate transition	8.50	6.49	5.59
II(no)-B 25 year transition	8.15	5.75	4.21
II(no)-C 100 year transition	6.09	3.66	2.26
Increase retirement age 2/			
I(age) increments only	2.48	1.45	0.82
II(age)-A immediate transition	7.20	5.61	4.98
II(age)-B 25 year transition	6.85	4.87	3.61
II(age)-C 100 year transition	4.79	2.79	1.67
Implement both reforms 3/			
I(both) increments only	1.34	0.79	0.44
II(both)-A immediate transition	6.06	4.95	4.59
II(both)-B 25 year transition	5.71	4.21	3.24
II(both)-C 100 year transition	3.64	2.13	1.30

Source: Staff estimates.

1/ Assumes that no new reform efforts are undertaken.
2/ Assumes increasing the retirement age from 65 to 68 years over 2015-27.
3/ Assumes increasing the retirement age from 65 to 68 years over 2015-27, and reducing benefits by 23 percent (from 65 to 50 percent of the average wage) over 2015-50.

Table V.4. New Zealand: Pre-Funding Superannuation, Investment Fund Balances in 2100

(As a percent of GDP)

	Assumptions Regarding Equity		
	50% Allocation 5% Real Return	70% Allocation 7% Real Return	90% Allocation 9% Real Return
No reform 1/			
I(no) increments only	290	162	96
II(no)-A immediate transition	507	282	167
II(no)-B 25 year transition	507	282	167
II(no)-C 100 year transition	507	282	167
Increase retirement Age 2/			
I(age) increments only	207	116	69
II(age)-A immediate transition	420	233	138
II(age)-B 25 year transition	420	233	138
II(age)-C 100 year transition	420	233	138
Implement both reforms 3/			
I(both) increments only	113	63	37
II(both)-A immediate transition	325	181	106
II(both)-B 25 year transition	325	181	106
II(both)-C 100 year transition	325	181	106

Source: Staff estimates.

1/ Assumes that no new reform efforts are undertaken.
2/ Assumes increasing the retirement age from 65 to 68 years over 2015-27.
3/ Assumes increasing the retirement age from 65 to 68 years over 2015-27, and reducing benefits by 23 percent (from 65 to 50 percent of the average wage) over 2015-50.

Table V.5. New Zealand--Effects of Pre-funding Superannuation on National Saving

(In percent of GDP)

	Increase in Public Sector Saving	Increase in National Saving If				
		No Private Sector Offset	25% Private Sector Offset	50% Private Sector Offset	75% Private Sector Offset	Full Private Sector Offset
Option I (no)	0.98	0.98	0.73	0.49	0.24	0.00
Option I (age)	0.70	0.70	0.52	0.35	0.17	0.00
Option I (both)	0.38	0.38	0.28	0.19	0.09	0.00
Option II (age)-C	1.41	1.41	1.06	0.71	0.35	0.00
Option II (both)-C	1.09	1.09	0.82	0.55	0.27	0.00

Source: Staff estimates.

Table V.6. New Zealand: Estimated Labor Supply Response to Pre-funding Superannuation Expenses

Year	(1) Pre-funding Requirement (% of GDP)	(2) Counter-factual (% of GDP)	(3) Wage net of taxes 1/ Current	(4) Wage net of taxes 1/ Pre-Funding	(5) Wage net of taxes 1/ Counter-factual	(6) Pct. Change in Net Wage (5)/(4)	(7) Labor Supply Elasticity 2/	(8) Pct. Change in Labor Supply
Option I(no)								
2010	1.41	0.20	70.0	65.8	69.4	5.5	0.38	2.1
2030	1.41	2.90	70.0	65.8	61.3	-6.8	0.38	-2.6
2100	1.41	4.90	70.0	65.8	55.3	-15.9	0.38	-6.1
Option I(age)								
2010	0.82	0.20	70.0	67.6	69.4	2.7	0.38	1.0
2030	0.82	1.50	70.0	67.6	65.5	-3.0	0.38	-1.2
2100	0.82	3.50	70.0	67.6	59.5	-11.9	0.38	-4.5
Option I(both)								
2010	0.44	0.20	70.0	68.7	69.4	1.1	0.38	0.4
2030	0.44	1.00	70.0	68.7	67.0	-2.4	0.38	-0.9
2100	0.44	1.90	70.0	68.7	64.3	-6.4	0.38	-2.4
Option II(age)-C								
2010	1.67	0.20	70.0	65.0	69.4	6.8	0.38	2.6
2030	1.67	1.50	70.0	65.0	65.5	0.8	0.38	0.3
2100	1.67	3.50	70.0	65.0	59.5	-8.5	0.38	-3.2
Option II(both)-C								
2010	1.30	0.20	70.0	66.1	69.4	5.0	0.38	1.9
2030	1.30	1.00	70.0	66.1	67.0	1.3	0.38	0.5
2100	1.30	1.90	70.0	66.1	64.3	-2.7	0.38	-1.0

Source: Staff estimates.

1/ Assumes a uniform current tax rate of 30 percent and no other policy changes going forward.
2/ From Chaio and Walker [1992], p. 165.

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