Agency Theory Meets Social Capital: The Failure of the 1984-91 New Zealand Economic Revolution

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ABSTRACT

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The failure of the New Zealand Economic Revolution of 1984-91 to generate improved economic performance is puzzling and important, since the reforms enacted then have often been cited as a 'textbook' example of how to liberalise an economy, and since the preconditions for success (such as good government, secure property rights and stable capitalist institutions) were all in place, in contrast to the economies of the former Soviet bloc.

This paper first documents the extent of failure, and then attempts to explain it theoretically. This is the story: The reform program can be seen as a massive application (or mis-application) of Principal/Agent Theory. The Principal is the small group of economic revolutionaries. The Agents are the people of NZ. The Principal's sole object is economic efficiency. The Agents enjoy the fruits of efficiency, but also emjoy other things ('slack'), which conflict with efficient behaviour. The Principal introduces policies (deregulation, liberalisation, commercialisation) which raise the opportunity cost of non-efficient behaviour in both private and public sectors.

Unfortunately, the Principal has the 'wrong model' of how the economy functions. Slack does not just enter Agents' utility functions, it is also an input into production, where it appears as 'Forbearance' – the flow variable associated with the stock concept known as Social Capital (the ability of agents to achieve mutually beneficial outcomes through trusting and trustworthy behaviour).

Thus, the Reforms actually reduced economic efficiency, for two reasons (1) they forced non-cooperative behaviour on agents, and (2) they incurred direct costs of monitoring and enforcement to bring agents' behaviour into line with the principal's objectives. And the total welfare costs exceed the loss of economic efficiency (GDP), since disproportionately more utility-enhancing slack, or forbearance is wiped out.

The prediction of increased resources devoted to transaction cost activities, in particular management, is tested in a comparison of New Zealand and Australia (which did not go through such a radical reform process). The data do indeed show a substantial increase in the number of managers in NZ, relative to Australia.

1. Introduction

The failure of the New Zealand more-market economic revolution[1] of 1984-91 to, literally, 'deliver the goods' (increase economic growth and raise living standards) is by now manifest. Macroeconomic performance in nearly all measurable dimensions – GDP and productivity growth,

unemployment, income distribution, balance of payments – has been worse than in the previous period in NZ and than in Australia since 1984. After five years of continuously declining real GDP growth, the economy slipped into negative growth in 1999, dragged down by a stagnant export sector, despite a low and falling exchange rate. Inflation performance has been good, but so it has too in most other OECD economies which did not reform their monetary policy. The government has had striking success in paying off public sector debt and moving the fiscal position into surplus, but this would have been much less painfully achieved had there been a tax dividend from a higher rate of economic growth.

All this is puzzling to the point of paradox. How could a revolution made in the name of efficiency end up apparently reducing aggregate efficiency, as measured by economic growth? How could labour market reforms aimed at increasing flexibility result in higher unemployment and lower productivity?[2] How could opening up financial markets result in less investment and a stagnant share market? How could deregulation result in less competition? How could liberalising the trading environment apparently constrain the growth of the tradeables sector? How could the share of government expenditure in GDP increase under an anti-public sector regime? How could 'more markets' come to mean, more than anything, more managers?

The one hundred-plus major reforms were supposedly a 'textbook' example of liberalization, and undoubtedly transformed what had been perhaps the most regulated country in the OECD to one of the most open and deregulated.[3] The efficiency gains should have been large and obvious, given that the reforms took place (unlike those of Eastern Europe and Russia) in a setting of honest and competent public administration and secure property rights. A small and dwindling band of enthusiasts contest this, attempting to rationalise poor economic performance (the fact of which is just about generally recognised) as a failure to go far enough! Perhaps they are right, though there really isn't a lot left in the New Zealand economy still to privatise, liberalise or commercialise. In any case, the line of enquiry followed in this paper will accept the puzzle as genuine, meaning that there really is a discord between theory and results.

Failure is explained as a basic flaw in the model underpinning the reforms. In essence, it is argued that the revolutionaries did not understand how a successful market economy actually functions. Fundamental to all the policy changes – micro and macro; public and private sector – was the principle of 'commercialisation', meaning the rigorous application of quite narrow commercial goals to almost all forms of market and non-market activities.

Commercialisation on this scale can generate agency problems, if the 'agents' – in this case the participants in the NZ economy - have broader objectives than the 'principals' (the reformers). Dealing with such problems requires additional resources devoted to monitoring activities, which subtracts from the resources available for directly productive work. It is shown theoretically that, if these agency problems are sufficiently extreme, they can result in the paradox of poorer performance even in the narrow economic dimension of economic growth that is the principal's sole objective. The problem is exacerbated by the role -- unacknowledged by the revolutionaries -- that apparently non-economic factors, in particular, 'social capital', actually play in economic prosperity

The model predicts a substantial increase in transaction costs; specifically, in the resources devoted to monitoring activities. This prediction is tested against data for New Zealand and Australia, for the census years 1961 through 1996.. In both economies the share of transaction (ie, monitoring; measuring; managing) workers in total employment has risen, but it has done so much more slowly and smoothly in Australia. In particular, the ratio of managers to 'front-line' workers changed little in

Australia, but has more than doubled in New Zealand.

The paper is set out as follows. The next section gives a quick tour of the history of NZ up to 1984. Section 3 introduces the reforms and their underpinning of Agency Theory. Section 4 documents the failure of post-1984 New Zealand. Sections 5 and 6 build models to explain that failure - first in words and pictures, then a formal model that is solved quantitatively. Section 7 concludes the paper.

2. Some History

New Zealand is a country of about 3.8 million people – about the same as Ireland. New Zealanders are great travellers and emigrators, and there are probably rather more than this number of them in the world, though of course not nearly as many as there are Irish. New Zealand is a long way away, both from the rest of the world (Auckland is the antipode of Cadiz, on the south coast of Spain) and from itself – the two major university cities, for example – Auckland and Dunedin – are a thousand miles and a sea voyage apart. Even the country's larger neighbour and free trade partner Australia is more than two thousand kilometres away.

Distance and isolation have been important factors in the cultural and economic development of New Zealand. One early and (until 1984) enduring consequence was a willingness to work things out for oneself, to solve local problems locally rather than import foreign ideas from far away. The first manifestations of this were rather splendid. New Zealand can claim to be the world's first modern social democracy – indeed, the world's first democracy of any sort (universal suffrage was achieved when women won the vote in 1891, thirty years before Britain, and about three quarters of a century before the final success of the civil rights movement in the United States). Bollard *et al* write:

> 'As early as 1860, the state became involved heavily in diverse industries, including transport, insurance, banking and general infrastructure. By 1890, the state also financed, operated or controlled, important education and health programmes and social welfare safety nets. These were innovative developments in their time, and constituted what [has been called] New Zealand's "first policy revolution".' (1996, p3)

The labour movement had hit its straps even earlier. At about the time (1837) when the leading English economist Nassau Senior was arguing that a reduction in the length of the working day from twelve to ten hours would bankrupt industry, which supposedly depended on the last (twelfth) hour for its profit, a Wellington carpenter named Samuel Parnell was refusing to build a house for a merchant unless his working day was restricted to eight hours. This matter being settled amicably, Parnell went on to found the 'eight hour day' movement, and trade unions and minimum wage laws followed in due course.

By the turn of the century, visitors from Britain and America were hailing New Zealand as 'the birthplace of the twentieth century.' What is perhaps particularly interesting about these early radicals is their lack of 'theory' – in sharp contrast to the revolutionaries of a century later. These pioneering progressives had to find their own way. Here is how one of their leaders, W Pember

Reeves, described their process:

> 'What one had to do was to form a view of what was wanted and desirable in New Zealand. Then one looked round to see whether there were any schemes or suggestions that would be useful...What you took you pieced together, modified and endeavoured to improve on...The amount of adapting, revising, adding and taking away was very great; over and over again one changed one's mind.'[1]

This cautious, open-minded ecumenicism makes a sharp and perhaps instructive contrast with the intellectual arrogance of the ideological blitzkrieg that would sweep through New Zealand nearly a century later!

New Zealand suffered heavily in the Slump of the 1930s, and this provoked a 'second policy revolution' following the election of the first Labour (socialist) government under Michael Joseph Savage (an Irish immigrant from Australia) in 1935. Savage and his ministers extended the welfare system and introduced import and foreign exchange restrictions to what had previously been a quite open trading regime, with the aim of conserving foreign exchange and fostering industrial development by building up an import-substituting manufacturing sector, to supplement the rural and rural-based industries on which the country had been built.

To put it mildly, opinions differ on the merits of the highly regulated and restricted domestic economy that developed over the next four decades. It is hard, with our post-socialism cynicism, not to smile now at the early (1939) promise from the Department of Industries and Commerce of licensing based on 'scientific selection of imports in order to provide for... balanced development' (Lattimore and Wooding, p318), but then, with late-1999 hindsight, the contempt shown by the 1978 commentator quoted by Bollard *et al* (p3) who described New Zealand as:

> 'A market economy where markets are seldom permitted to operate efficiently, together with a centrally planned economy without a central plan. The allocation of resources is to a large extent determined neither by market mechanisms nor government decision, but by historical patterns fossilised in institutional procedures.' (1996, p3),

seems excessive. A substantial manufacturing sector, reaching 23% of GDP by 1984, was built up, goods were produced, profits earned, jobs provided, good wages paid.

The quarter century ending in 1973 seems now to have been something of a golden age for prosperity and growth right across the developed world, but it was perhaps especially so for New Zealand. The country was rich, with perhaps the third highest living standards in the world in 1950. The labour market was extraordinary, delivering almost literally zero rates of unemployment year after year. It is ironic that the New Zealander Bill Phillips had to leave the country to discover his famous eponymous curve linking unemployment with inflation -- in his home country, all the data were scattered up and down the vertical (inflation) axis, with no 'trade-off' to be seen. There appeared to be a semi-formal 'social contract' between employers and the trade unions, whereby the latter agreed to not take advantage of the very tight labour market to push up wages unduly, so long as the employers, in essence, agreed to give a job to any man who wanted employment (and they all did), and furthermore to pay them all a decent wage despite the lack of formal skills and training of much of the workforce. After the notorious 195x Waterfront workers lock-out, industrial relations were very calm, with the lack of strikes described as a 'miracle' by overseas commentators.

But '1973' -- the year of the first oil-price shock -- came early for New Zealand: on the first day of that year the United Kingdom joined the European Community, and NZ exporters of meat and dairy products lost their 'preferential' (ie, not unfair) access to the British market which had taken as much as 70% of total shipments overseas. While over the next decade an impressive amount of diversification of export products and markets was achieved -- with a particularly strong performance (albeit from a small base) from the protected manufacturing sector (Lattimore and Wooding, p.344) -- these were difficult years, with declining terms of trade, high inflation, increasing unemployment and balance of payments problems, not helped by the wilful and eventually erratic behaviour of the Prime Minister (and Minister of Finance) for most of this time, (Sir) Robert Muldoon.

Muldoon, who might most politely be called a populist, eventually decided to solve all the country's problems by himself, through a handful of government sponsored industrial mega-projects, which were dubbed 'Think Big'. These hopelessly misconceived enterprises were promised to increase economic growth, generate more than 300,000 new jobs, relieve the balance of payments constraint and reduce dependency on imported oil. In the event, and predictably[2], they were catastrophic failures, losing the billions of dollars that the government had borrowed from overseas to finance them, though the private sector partners escaped without serious loss, thanks to the highly advantageous terms for the division of profits and losses that they had been able to negotiate from an over-eager state.[3] This episode demonstrates the deep truth of Sylvia Ostry's dictum, that 'governments aren't very good at picking winners, but losers sure are good at picking governments.'

The macroeconomic difficulties partly generated by Think Big, and other 'micro' mistakes, such as an open-ended subsidy system for farmers, a wage/price freeze, and a huge pension increase, provided perhaps the need and certainly the opportunity for the very radical change in economic direction that followed the election in July 1984 of the Third Labour Government under David Lange and his vigorous Minister of Finance (Sir) Roger Douglas.

3. Enter Agency

New Zealand's post-1984 reforms are often described as 'textbook', but they are in fact rather more interesting than that. Even very up-to-date texts in microeconomics and industrial organisation lack an integrated treatment of the post-neoclassical concepts that guided the NZ reformers. Practice has gone ahead of 'normal science', and in this respect the New Zealand experience can be read as an unusual experiment, testing a theory before it has in fact been fully worked out.

The goal of the reform program was not novel – indeed, it can be seen as rather old fashioned – and is well summarised by the title of what is probably the most widely known analysis of recent events in New Zealand: 'The pursuit of efficiency' (Evans, Grimes and Wilkinson (1996)). This is efficiency in its orthodox welfare economics sense of the aligning of marginal costs and benefits of activities

But it was in their perception of what would be required to achieve efficiency that the reformers moved well beyond the neoclassical orthodoxy based on assumptions of perfect information and benevolent, costless government, towards a more modernist vision of self-seeking individual agents operating with relentless opportunism in an environment fogged by uncertainty and private information –

to the world of Agency Theory, Transaction Cost Economics and pervasive rent-seeking.

In the public sector reforms, Agency Theory was in the forefront, and provided a simple yet powerful analytical framework without which it would hardly have been possible for a tiny band of revolutionaries to implement such a speedy and ferocious program. Agency Theory builds from the concept of the principal-agent problem, which arises when someone (the principal, P) tries to get someone else (the agent, A) to do the principal's bidding. The 'problem' occurs when three conditions are met: (1) P and A have differing objectives; (2) A is prepared to be opportunistic (pursue their own objectives); (3) because of costly (private) information, P cannot easily verify A's actions (or type).

In the case of the NZ public sector, which was run on civil service departmental lines before 1985, the first job was to establish the primacy of the principal (the revolutionaries), and then to set up the incentive and governance systems to bring the agents' behaviour into line with the principal's efficiency objective. The underlying assumptions were that public administration had been basically captured by the agents – the civil servants – who would wish to follow goals other than (or at least supplementary to) narrow efficiency, and who would have the power to do this as a result of their private information. As reported by Duncan (1996) in his lucid and informative account of the public sector reforms, these assumptions led to the adoption of the following working principles:

> 'First, the state should not be involved in any activities that would be more efficiently and effectively performed by the community or by private business. Secondly, trading enterprises would operate most efficiently... if structured along the lines of private sector businesses. Thirdly, departments would operate most efficiently... with clearly specified and unambiguous functions. Fourthly, departmental managers would perform most effectively if made fully accountable for the efficient running of their organisations, without central [political] control.' (p397)

That is, if the market can exercise the efficiency control function, then privatise (eg, telecoms, rail and air transport, forests, banking, etc, etc). If ownership of a basically commercial function is to remain with the state, then 'corporatise' it, meaning instruct the managers to operate on commercial criteria (post, broadcasting). If the duties of the department are inherently uncommercial (in whole or in part), then specify quantifiable 'outputs' as targets and establish systems of accountability to give managers the incentives to achieve these goals (health, education, research, etc).

These principles of Agency Theory were applied at the very highest level, to the politicians themselves. The Minister of Finance is enjoined by the Fiscal Responsibility Act of 1994 to refrain from running persistent operating deficits (or surpluses), to publish various updates and forecasts to demonstrate consistency of budget and underlying economic conditions, and to follow generally accepted private sector accounting practices in the Crown's financial reporting.[4] But perhaps the most striking example of the application of agency theory is to monetary policy, reformed under the 1989 Reserve Bank Act. The 'output' of the central bank is defined simply and narrowly as maintaining price stability (CPI inflation within a narrow band) and a substantial proportion of the potential remuneration of the Governor of the Reserve Bank apparently depends on his success in achieving this goal, such that in one year in the 1990s his pay exceeded that of the Governor of the US Federal Reserve Board, Mr Greenspan.

It is fair to say that the Fiscal Responsibility Act is generally seen as a great success, but that monetary policy remains controversial. The latter can indeed be taken as a 'textbook' illustration of the dangers of simple-minded application of agency theory: (a) it is not that the output goal will not be achieved, but that it will, at the expense of other worthy goals (such as employment and profitability) not

specified in the contract; (b) the agent's private information enables him to distort the performance signals received by the principal[5]; (c) there were doubts about the credibility of the whole arrangement, which turned out to be justified when inflation went above the agreed target band of zero-to-two percent. Rather than fire the Governor (or require him to pay back some of his performance bonuses from previous years), the Minister of Finance meekly extended the upper limit to three percent.

As for the private sector (including, as noted, the privatised elements of the old public sector), the revolutionaries here placed great faith in the power of governance by market forces, given full play to operate by the determined opening up or liberalisation of market institutions.

Where was the problem? We know that in a neoclassical world there is no necessary difficulty with dissonance between the efficiency objectives of the Principal and with Agents' opportunism – the two theorems of general equilibrium theory tell us that global efficiency in the Pareto sense is consistent with self seeking behaviour under competitive market conditions.[6] The problem comes with the third condition listed above – the presence of pervasive private information. Under the veil of privacy, agents can get on with pursuing goals which do not necessary add up to globally efficient outcomes. In essence, private information confers private market power which can drive wedges between marginal social benefits and costs.

In the old New Zealand, the agents' self-seeking had gone as far as capturing the nominal principal – the government – and turning it to the granting of protection of private market power. Many of the reforms implemented by the new regime after 1984 involved dismantling institutions of publicly provided protection: virtual abolition of concessions and grants to farming, continued deregulation of transportation, opening up capital and financial markets, phase out of import licensing and export incentives, reduction of tariffs ahead of GATT obligations; removal of most state-granted monopoly rights.

In this regulatory void it was expected that market price signals would shine clearly. The basic proposition of Agency Theory's close cousin Transaction Cost Economics was invoked:

> 'In the absence of government imposed distortions, the form of private sector economic organisation which survives in the marketplace is likely to be that which delivers the goods and services demanded by consumers at the lowest combination of production and transaction costs, including agency costs.' (Jennings and Cameron, (1987, p131))

This position represented a paradigm shift from the old New Zealand 'market failure' model, in which pervasive government intervention was justified by the failure of unregulated markets to perform well due to market power, externalities, and short time horizons, to a 'government failure' model, in which inefficiencies were due to those 'government imposed distortions'-- rent-seeking, impediments to free competition, crowding-out of private sector investments, and so on.

The fear of government failure was taken to extremes not seen in other market economies. The newly privatised network industries -- incumbent monopolies and all -- were allowed to make their new way without public administrative interference, under a regime known officially as light-handed regulation, though perhaps more accurately to be dubbed 'no hands'. The international trend in competition policy towards cost-benefit assessment of likely outcomes (with a presumption towards permissiveness), in place of the traditional concern with competitive process was also taken further here

(Hazledine (1998a)).

Superficially, there may seem to be a dichotomy between the highly intrusive control systems imposed on the surviving public sector and the laissez-faire attitude to private sector activities. But from an agency perspective there is indeed a unity in approach. The common idea is to induce agents to achieve narrowly specified performance targets (these being commercial or profit targets where possible). This can be effected directly through the design of agents' (public sector managers) remuneration contracts, or it can be done indirectly through market forces – basically by establishing a 'contestable' market environment in which non-commercial behaviour becomes costly (because it will attract competition).

In the latter case, the actual mechanisms for achieving the targets are left to the private sector to discover for themselves, but – if Agency Theory holds generally – these mechanisms will be basically the same: incentive/penalty schemes to give the agents who operate the private sector organisations the motivation to align their own behaviour with the objective of (commercial) success. If so, then we would expect to observe a shift in resources towards monitoring activities, or 'managerialism' in general, across both public and private sectors. We will show data in the next section which quite vividly support this prediction: more markets has meant, more than anything, more managers.

This leads us to several cautionary observations. First, the revolutionaries were not at all concerned (probably, in many cases, were simply unaware) that the proposition expressed above that organisational forms supported by the marketplace minimize total transaction plus production costs is not a theorem or result of Transaction Costs Economics, but a postulate or assumption. TCE case studies have been quite successful at 'predicting' (explaining ex post) forms of vertical organisation adopted in production situations involving specific assets (typically the choice between purchasing on the market and vertically integrating to produce in-house)[7], but they have not, to my knowledge, produced cases or theories to demonstrate the efficiency of the *horizontal* industrial structures that emerge under laissez-faire, under the conditions -- which they make so much of in the vertical integration context -- of pervasive private knowledge (ie market power in information). Such faith may seem particularly naive in the setting of a very small economy like New Zealand, with its natural tendency to monopolistic industrial structures due to the size of markets relative to scale economies of production. The difficulties would-be entrants in telephone services have had in dealing with the incumbent privatised monopolist, Telecom NZ, under the regime of light-handed regulation are -- many observers and industry participants believe -- quite costly demonstrations of the fallacy of assuming that laissez-faire will guarantee efficient market structures.

Second, we – or they – must face the inconsistency that undermines all theories of public action based narrowly on the assumption of pervasive self-seeking opportunism. *Quis custodiet custodes ipsos?* Why should the revolutionaries be exempted from their own presumptions about the irredeemable incompetence and venality of politicians and civil servants? It may be noteworthy that many of the revolutionaries jumped ship, to seek their fortunes in the very industries (finance, consultancy, privatisation) which they themselves had played a major hand in setting up, just a few years before.

Third, just whose interests are we interested in? It is characteristic of the Agency Theory literature that it always looks at things from the principal's point of view. But what about the utility of the agents? In the New Zealand case, we have a relatively tiny set of principals (the band of perhaps a few hundreds of revolutionaries) obsessed with efficiency and nothing else; and close to four million agents whose goals are broader than this (if they weren't, then there wouldn't have been an agency problem in the first place – no revolution needed!). There is an answer to this – that the agents had got themselves

tangled up in a Pareto-inferior web of interest group-motivated protections and regulations – but the question of whose interests should be dominant in the social welfare function remains a serious issue, especially given that real (and, we shall see, substantial) resources are used up in the process of forcing or inducing agents to align their behaviour with the principal's goals.

Agency problems are never solved. They are just contained, at a cost. The possible magnitude of that cost is examined next.

4. The Facts and Counterfactuals of Failure

Use of the word 'failure' still tends to surprise overseas observers, who are more used to seeing and hearing antonyms such as 'success' and even 'miracle economy' attached to descriptions of the performance of modern New Zealand. A recent twist is to qualify unstinted praise with a note on some recent difficulties due to the 1997 Asian Crisis. Yet the facts are quite different. After a welcome little flurry of growth in 1993 and 1994, real GDP growth declined monotonically every year to the end of the millennium. The 1993-94 spurt now seems to have been no more than a brief and belated recovery from the prolonged and deep recession which clouded most of the period of most active economic reform. Taken as a whole, the fifteen years since the first onslaught of 'Rogernomics' make (Sir) Roger Douglas's promise in his 1986 budget speech that the country was by then 'firmly on the path of sustainable supply side growth' look rather foolish.

In this section we first document the dimensions of economic performance in New Zealand, with comparisons made to other economies and other times. Then we assess whether the word 'failure' is appropriate, by considering the possible reasons for poor performance. Finally, we introduce what may be the 'smoking gun' of evidence for extreme structural change at the microeconomic level.
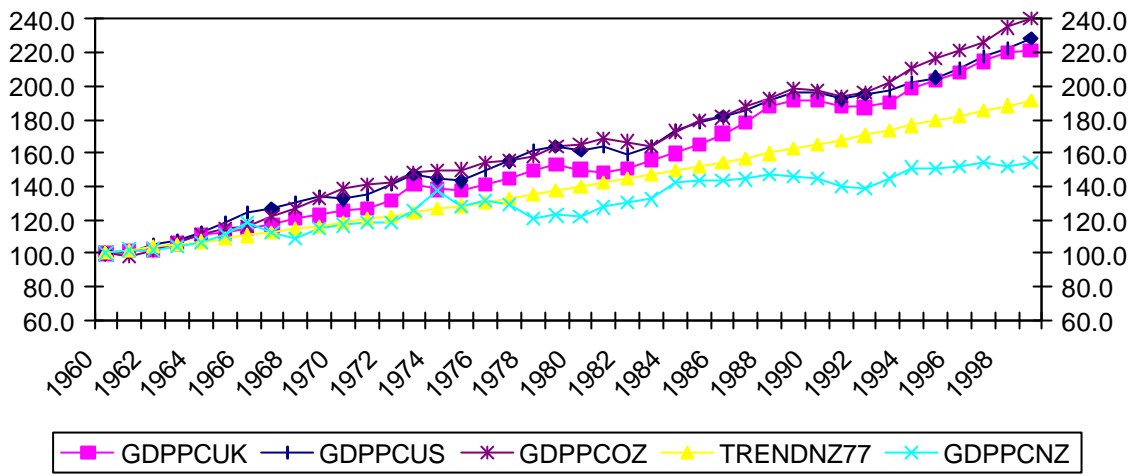
4.1 The dimensions of economic performance

Figure 1, which is based on OECD Economic Outlook data, following Gregory (1999), tells much of the story. It shows time series of real GDP per capita for New Zealand and three other economies that are especially relevant to it: Australia, because it is NZ's closest neighbour and largest bilateral trading partner; the United Kingdom because it dominated New Zealand's trade for more than a century up to the 1970s, and the United States because it is the United States.[8]

In order to focus on growth performance, all series are scaled to 1960 = 100. To put this into perspective, the PENN World Tables tell us that in 1960 per capita GDP was 81.5%, 79% and 67% of US levels in New Zealand, Australia and the UK, respectively. Clearly, those relativities no longer hold. Figure 1 shows that the post-1960 growth performance of Australia was slightly better than the United States, and the UK slightly worse, whereas New Zealand has fallen far behind.

The lagging relative performance began a long time ago. It is may be discernible in these data from 1967 onwards, and certainly shows up after 1974. Such was of course the justification given, first for the interventionist policies of the Muldoon administrations of the late 1970s and early 1980s, and then for the radical more-market program begun with 'rogernomics'. But what Figure 1 also makes

sadly clear is that the growth gap was not narrowed after 1984 – indeed, it appears to have widened somewhat. And an exponential trend line fitted to the 1960-77 annual data extrapolates to a 1999 index value of 191.7 — to be compared with the actual figure, which is 154.8.

The internal historical comparison is extended in Table 1, which is modified from Hazledine (1998), and divides forty four years of New Zealand history into two periods, the 1956-76 'years of external shocks' and the 1977-99 'years of internal shocks'. The idea here is that, before the late 1970s, the big things that happened to NZ tended to come from outside (wool and other commodity price swings and the UK's entry into the European Community), whereas in the last two decades the big shocks have come from within – first Muldoon and his 'Think Big' interventions; then the more-market revolution. The first two rows of the table do give some support to this split. They show that New Zealand was rather unlucky over the 1956-76 decades, with terms of trade trending downwards, and with volatility measured by an (annual) standard error twice as large as over the second period, over which the terms of trade, finally fighting free of the effects of losing preferential access to the British market in 1973, actually enjoyed a quite substantial positive trend.

The rest of the table compares some key measures of economic performance across the two periods. As well, since it is rather provocative to lump together Muldoonism and Rogernomics on the basis of their political similarities (ie, dirigiste; non-consultative), despite their manifest differences in economic ideology[9], Table 1 also gives averages for the 1985-99 period. The data reveal apparent paradoxes – results that actually run counter to those predicted or promised by the reformers.

The first of these is provided by the unemployment rate. This was virtually zero for all the first twenty years — an extraordinary achievement given the unfavourable external environment. Unemployment is, sadly, one variable in which NZ's performance has become truly world-class — in the recession of 1988-92 unemployment rates actually exceeded the OECD average, for the first time, and they are currently, at above 7%, nearly twice as high as fifteen years ago. The irony or paradox here is that the labour market reforms – in particular the anti-union 1991 Employment Contracts Act – have resulted in what may be the most 'flexible' labour market in the developed world; yet withal, the imbalance between supply and demand in the labour market has increased.

The change in unemployment is largely responsible for the next surprise on the table – government spending   We see that, despite the strong anti-government ideology of recent times, and despite the near eradication of direct public aid to farming and business, the size of government, in terms of the share it spends of the GDP, has actually risen. Why? The old New Zealand was a welfare state, but it was what has been called a 'wage earners' welfare state' — with every household having at least one person in a decent job, people were able to cope by themselves with many of the social problems that increasingly now fall upon the state welfare sector to deal with

Table 1: The New Zealand Economy, 1956-9				
	The Years of External Shocks	The Years of Internal Shocks		
	1956-76	1977-99	1985-99	
Trend in Terms of Trade	-0.6%	0.8%	0.7%	annual percentage exponential trend in terms of trade index (export prices/import prices)
Standard Error of Terms of Trade	0.121	0.060	0.059	standard error of terms of trade exponential trend
Unemployment Rate	0.2%	7.3%	9.5%	number of registered unemployed divided by total labour force, annual average
Government Expenditure Ratio	0.31	0.37	0.37	government expenditure divided by GDP, annual average
Economic Growth	2.0%	1.2%	1.5%	average annual percentage rate of change of real per capita gross domestic product
Trend in Real Wages	1.4%	-1.4%	-0.7%	annual percentage exponential trend in real wages (nominal wage index/CPI)
Inflation	5.7%	8.1%	5.5%	average annual percentage rate of change in consumer price index
Source: Dalziel and Lattimore, *The New Zealand Macroeconomy: A briefing on the reforms*, 2nd edition, Melbourne, Oxford University Press, 1996, for 1960-95 data. Other years from Statistics New Zealand databases.				

As noted above, economic growth in the first period did not seem very spectacular at the time, at about 2% per year, but it is well above the 1.2% growth per year achieved on average since 1977, and higher than over the market reform period. The irony here, of course, is that improvement in growth performance has been the central goal of economic policy for the past two decades. Underpinning lower GDP growth has been poor productivity performance – another Employment Contracts Act irony, since there is evidence (Maloney, 1999) that low productivity growth in the 1990s is directly related to the

impact this Act had on union membership – industries with the biggest falls in unionisation tended to have the worst productivity growth, *ceteris paribus*.

Related directly to GDP and productivity growth performance are real wages, the average growth of which fell three percentage points between periods, and which has apparently been negative over the past twenty-plus years. This quite shocking statistic may be too bad to be true -- perhaps the Consumer Price Index really does fail to pick up all of the improvements in product variety and quality that have come with liberalisation of imports and deregulation of many services. Whether poor real wage performance is ironical is debatable – it may have been intentional as part of a redistribution of income. The elites who have most vigorously supported the market reforms have tended to gain financially – Dalziel's (1999) figures show quite large increases in the real incomes of the highest decile of income earners. There is also the argument that New Zealand's income distribution had been too compressed to give adequate incentives for accumulation of human capital and entrepreneurial effort.

The last row on Table 1 shows average annual rates of consumer price index inflation. These averages conceal a good deal of inter-temporal variability. For the first eleven years, 1956-66, CPI inflation averaged 2.8%. Then it began to creep up, and over the fourteen years from 1974 to 1987 the consumer price index annual inflation rate increased by less than 10% only once. Since 1992 inflation in New Zealand has been very low, as it has elsewhere in the OECD – possibly too low, in our case, as the single-minded focus on stable prices followed by NZ's central bank under the 1989 Reserve Bank Act may in several periods have resulted in unnecessary squeezing of output and employment (effected through high interest and exchange rates).

The situation at time of writing (June 2000) is mixed. The new Labour government under Helen Clark that was elected in November 1999 was lucky enough to take over an economy which quite suddenly appeared to be growing relatively quickly. But the current account is seriously in deficit – at 8% of GDP, despite a more than 10% depreciation of the real exchange rate over the past year. It seems possible that the legacy of two decades of policy mistakes is a productive sector by now too small and demoralised to respond to growth in domestic demand and attractive international prices..[10] The share of the manufacturing sector in total full-time equivalent employment fell from 24.3% in March 1987 to 17.6% in December 1998 – very low by OECD standards.[11] This may be the final irony – reforms designed to make the economy more flexible have apparently instead reduced the elasticities of supply.

4.2 The Counterfactuals

After reviewing his numbers comparing New Zealand's economic performance with that of the other economies, Bob Gregory (1999) concludes, rather mildly

'It is perhaps difficult to believe that the outcomes could have been worse if there were no reforms at all.'

But not everyone agrees with this. Here I list the counterarguments and qualifications that have or could be made to the 'failed revolution' proposition. The analysis will be informal – for more technical analyses of these issues, refer to Dalziel (1998; 1999) and Philpott (1999); for a non-technical narrative,

see Hazledine (1998b, chapters one and two).

(a) *It would have been even worse.* The implied counterfactual here is continuation of the old 'Albania of the South Pacific' regime, to eventually founder under its inherent rigidities and contradictions, *a la* Cuba, North Korea or indeed the real Albania. But this is a straw man: it exaggerates the extent of planning and controls before 1984, and ignores the quite considerable program of gradual reform and liberalisation that was well underway by that time. The sensible counterfactual to Rogernomics is continuation of gradualism. The would-have-been-worse hypothesis must also have difficulty in explaining why the old New Zealand in fact performed relatively better than the new.

(b) *The 1984 crisis required a radical response.* The incoming government did indeed face something of a short-term crisis, inherited from the Muldoon mismanagements. Action was required, but not necessarily revolution. The emerging historical evidence strongly suggests that the crisis was used as a political *excuse* for the revolutionaries to do what they wanted to do, rather than being dictated by the economic logic of the situation in 1984 (Hazledine, 1998b, pp 28-9).

(c) *We had bad luck.* New Zealand is a sufficiently small, open and undiversified economy for exogenous events – luck – to play a potentially significant role. Output in parts of the agricultural sector was affected by drought in the late 1990s. But so too did Australian farmers suffer droughts, and the other external auguries, as summarised in the terms of trade, do not appear particularly unfavourable, as noted above.

(d) *Blame monetary policy.* One of the most important NZ reforms was the 1989 Reserve Bank Act, which paved the way for a monetary policy focussed solely on price stability and administered without political interference by the governor of the central bank. Though both these characteristics had and still have their strong supporters, some critics argue that the means used to achieve zero inflation – high interest rates and exchange rates – harmed output and employment in the tradables sector, especially in the second half of the 1990s. One other economy that pursued single-goal monetary policy was Canada, and there has been debate as to the extent to which the 'Great Canadian Slump' of 1990-96 can be blamed on this (Fortin, 1999).

(e) *Be patient.* The New Zealand reforms added up to a massive policy regime shift, and it would be natural if the economy was slow to adjust to the changes. In particular, it could take some time – perhaps even a generation shift – to replace the old non-entrepreneurial, non-commercial, protected business mind set with the attitudes needed for success in the new open, unregulated environment.

There might be something in this suggestion, but it lacks any direct corroboration, as far as I know. It must be remembered that New Zealand has always been a capitalist economy, with a large private business sector (unlike the former Soviet Union and its satellites, where the culture of capitalism is obviously impoverished). The analysis by Hazledine and Siegfried (1998) of the origins of the fortunes on the New Zealand 'Rich List' does not support the notion of sluggishness to take advantage of the new regime.

(f) *The sequencing of reform was wrong.* A variation on the 'be patient' argument is the proposition that, for reasons of political and/or technical expediency, the reforms were carried out in the wrong order, with the financial and exchange rate liberalisations done first (in some cases, overnight), then liberalisation of goods markets and trade, and then last of all the labour market reforms of the Employment Contracts Act. The argument (sometimes associated with *The Economist*) is that it is economically better to give industry a chance to sort out its production systems and industrial relations before it is exposed to open competition on goods markets, and to allow it to adjust to this before opening up the capital accounts to their potentially destabilising influences.

The sequencing argument can call on the experiences of the late-1980s for support, including the frantic share market boom and bust, and the rapid contraction of the tradable manufacturing sector. These shocks were indeed substantial, and their repercussions might be quite persistent. But for how long? It might have been plausible for Evans *et al* (1996) to invoke mis-sequencing, or adjustment costs in general, when they were observing two years of good growth around 1994-5 (which they hoped and expected to continue, of course), as a good reason why the economy had taken until then to find its feet. But with our extended hindsight of declining growth performance for five years since 1995, this argument cannot bear so much weight.

(g) Not gone far enough. A dwindling band of enthusiasts willingly admits failure (poor economic performance), but attributes this to not enough reform – noting that the last of the major changes (the Employment Contracts Act) took place in 1991. But it surely lacks inherent plausibility to claim that, if the massive program of 100+ reforms implemented between 1984 and 1991 hasn't worked, then an even bigger dose will do the job. This leads to the last of our possible explanations:

(h) *Wrong model.* That is, the reform package failed because it was, fundamentally, misconceived.

It is the 'wrong model' option that will be pursued here, with further motivation from some striking microeconomic evidence on the manifestations of managerialism

4.3 Managers in Australia and NZ: The 'smoking gun'?

Research on the New Zealand Economic Revolution has focussed on the 'output' or performance effects of radical market liberalisation. But what about the effects on the technology itself; in particular, the 'transaction technology' – the processes whereby goods and services are exchanged? Given that the liberalisation/commercialisation model was really all about changing the conditions of exchange through shaking up governance structures, it seems likely that these changes have left their tracks in the data.

But in what data? Empirical research on transaction technologies has lagged well behind research on production functions. This is probably unfortunate, as the pioneering US research by Wallis and North (1986) suggests that in a mature capitalist economy as much as one half of the labour force is actually involved with what could be classified as transaction activities (the other half being occupied with 'transformation' or direct production of goods and services).

What would we expect to find in New Zealand? A superficial response to this question might be that 'more market' should mean less 'bureaucracy' and so fewer resources tied up in transaction activities such as management and bookkeeping. But in reality 'markets' are not the dimensionless fictions of the Walrasian auctioneer parable, and, in particular, surviving in the more tightly constrained market or quasi-market environment imposed on both public and private sector organisations after 1984 could well be quite demanding in terms of the computational and control resources required.

Hazledine (1999) uses a modification of the Wallis/North method to generate estimates of transaction employment in New Zealand and Australia, at five yearly intervals from 1956 to 1996 (from 1961, in Australia). This is what I found. In New Zealand, the ratio of transaction to transformation or (production) employees increased quite steadily and slowly for the first twenty years from 1956, when it was 0.36. Then, from the late 1970s onwards, the ratio increases at an increasing rate until 1991, when it appears to peak at 0.89; subsequently falling back to 0.86 in 1996. Increases in transaction employment are observed in the 'market making' sectors — legal services, accountancy, data processing, finance, insurance and real estate. But the most striking increase occurs in the internal organisation of firms and other organisations — the ratio of managers to subordinate workers more than doubled over the forty years between 1956 and 1996, and grew particularly quickly from 1981 to 1991.
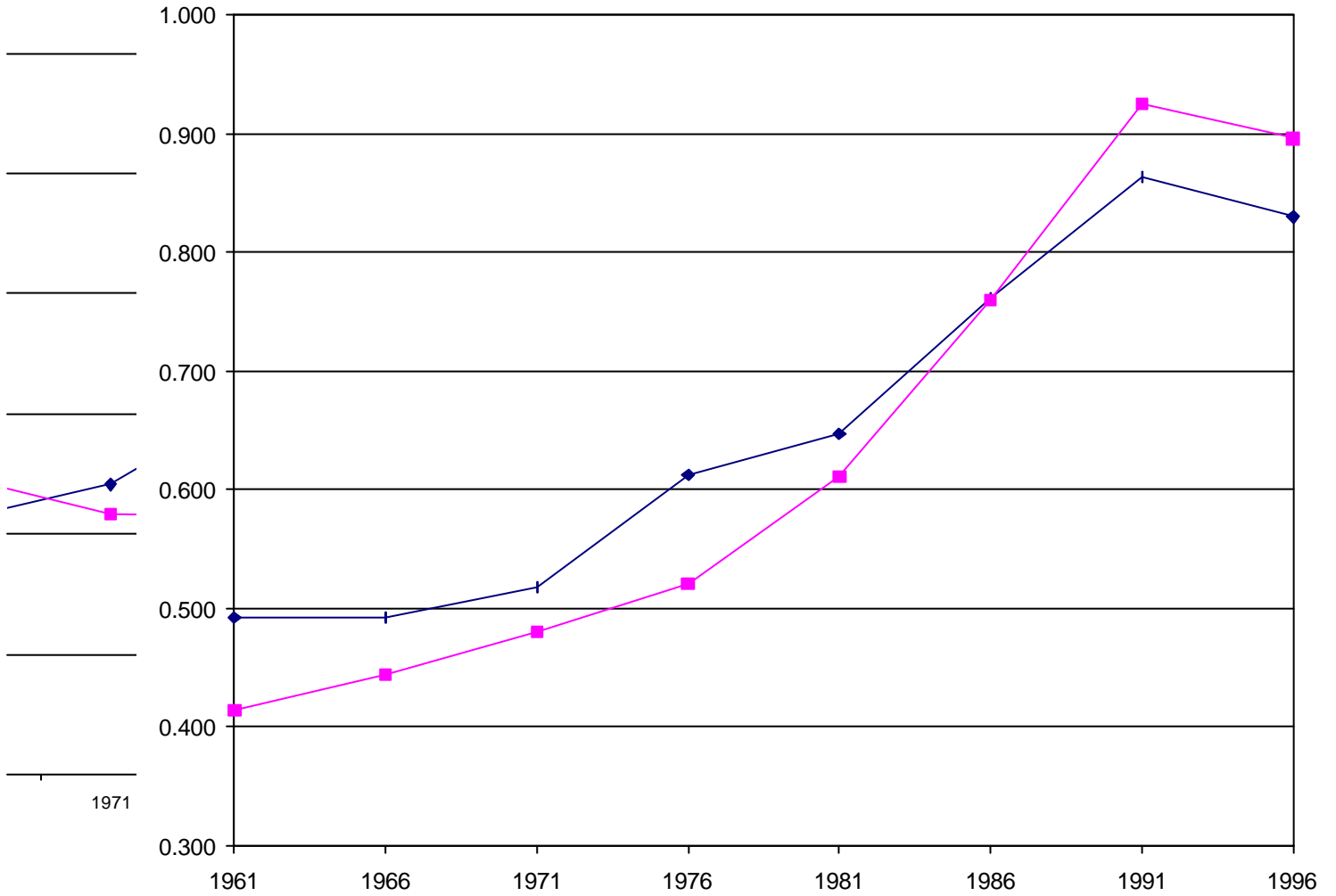
The comparison with Australia is of course very interesting. The total transaction/transformation ratio starts higher in Australia, but after 1986 is lower than New Zealand. The market-making sectors actually grow at about the same rate in the two economies – just about all the difference is due to the manager/non-clerical subordinate ratio. As Figure 2 shows, this ratio has very little trend to it in Australia, and is much lower than New Zealand by 1996. What the numbers mean is that about one worker in every twenty who would be a manager in New Zealand is in Australia directly employed in producing goods and services

This is the most striking manifestation of the reforms in the governance structure of New Zealand. The explosion in managers is not in itself evidence of failure, because the additional managers could have more than paid for themselves in more productive transformation workers, but the evident fact of weak aggregate productivity growth in New Zealand strongly suggests that, on the whole, the managers were not successful. The question then raised must be: 'why

Figure 2: Transaction costs in Australia and New Zealand, 1961-96

Chart 2: NZ and Australia Management Ratios

CHART 1: RATIO TRANSACTION/TRANSFORMATION WORKERS; AUSTRALIA &

Source: Hazledine (1999)

not?' (and how could such a thing have happened). These questions will be addressed in the next sections.

5. Narratives of Revolution

The Australian economist Robert Gregory is surely on track when he concludes:

'The need to understand what has happened in New Zealand is fundamental. After all, the reforms there were consistent with the advice emanating from the World Bank, the IMF, the OECD and most economists.' (1999, no page numbers)

The Great New Zealand Paradox is this: *How could a program based firmly on getting all the 'little numbers' right (microeconomic efficiency), in a setting of rigorously pure public sector governance add up to such dismal 'big number' macroeconomic performance?*

Here we begin with the orthodox neoclassical model (which clearly cannot cope), and explore the changes needed to make analytical sense of New Zealand's recent history. In essence, the model developed adds a new variable to the neoclassical/agency framework. This variable is called 'Forbearance', and it appears on both consumption and production sides of the story: people enjoy being forbearing and living in a forbearing society, and exercising forbearance increases their work-site productivity, basically because it enables agents to cooperate to escape prisoners' dilemmas (Nash equilibria). In the production setting forbearance appears in the literature as 'social capital'; on the consumption side it is perhaps best (but not well) represented in standard models as 'leisure'.

The NZ revolutionaries did not comprehend the importance of forbearance, and indeed mistook it for waste, and their program can be seen as an attempt to stamp out forbearing behaviour, in the interests of focussing agents' actions on narrowly 'rational' or opportunistic goals. Since the 'agents' -- the people of New Zealand -- don't want to give up forbearance, and since they cannot be forced -- only, induced -- to do so, we find ourselves in a principal/agent story writ very large, with the essential ingredients of misaligned incentives and private information (or other source of autonomous behaviour).

The result is that output of goods and services (here to be called 'Cargo') actually falls, because of lower productivity with less social capital and because of the resources diverted to governance activities to change the agents' behaviour. And all this makes everyone thoroughly miserable -- social welfare falls by a lot more than the fall in material GDP. The revolutionaries were indeed 'rational fools'.

5.1 The Neoclassical Model

Figure 3 shows the standard story for a two-sector economy. One sector receives protection from competition; the other doesn't. Given competitive ('world') prices, GDP would be maximised at point A, but protection distorts domestic prices and the economy finds its way to C, implying a loss of income equal to AB, known as the allocative efficiency loss, or the welfare triangle loss (when derived from microeconomic demand and supply curves). As is well, known, under normal circumstances such

allocative inefficiencies are rather disappointingly small. For example, if the protected sector accounted for about one half of GDP, and the tariff-equivalent of the rate of protection were 10%, then with the usual 'back-of-the-envelope' partial equilibrium computation, we would predict a welfare loss equal to no more than one quarter of one per cent of GDP.[1]

Such numbers would be a feeble basis for a revolution, but there was good reason to believe, given the extent and depth of protection in New Zealand (including all the various restrictive regulations as well as trade barriers), that the zero-protection efficiency dividend would be significantly larger. So, if we were to assign tariff and tariff-equivalent values of a bit more than 30% to the protected sector in New Zealand in 1984, and maintaining the assumption that about one half of the economy is protected[2], then we would, using the same procedure, arrive at a welfare loss estimate ten times larger -- about 2.5% of GDP.

It may be that one could crank up the allocative inefficiencies further than this -- Hazledine and Murphy (1996), for example, find evidence of quite substantial welfare losses just from the tragically misconceived 'Think Big' energy mega-projects of the early 1980s. But, apart from the consideration that the larger the gains from microeconomic liberalisation the more disappointing is the actual macroeconomic growth performance since 1984, it seems fairly clear that the revolutionaries were after bigger booty. The prevailing view is probably well expressed in the assertion of Fare *et al* (1996, p75):

> 'The objective of the reforms was to create a modern market economy free of price distortions, bureaucratic management and the widespread government protection of the post War era. Tax incentives, subsidies and import controls enabled manufacturers to secure the domestic market with inflated prices. The manufacturing sector was highly diversified with a wide range of small scale ventures operated at high costs. The agricultural sector was supported by an expensive system of subsidies which discouraged greater efficiency...The state-owned enterprise environment was non-competitive, with subsidised equity finance and exemption from tax liability.'

That is, there was a strong feeling that the New Zealand of protective regulations and over-full employment was an economy with substantial 'slack' in it -- what is known in economics as X-inefficiency -- so that the economy was at a point such as D on Figure 3, well within the production possibility frontier. The reforms were to shake out the slack, most basically by eliminating the opportunities for agents to procure protection for themselves that would be negative-sum for the economy as a whole. And, though the theory is pretty vague about just how it would happen, an economy with less slack was expected to have greater 'dynamic' efficiency, too -- that is, a higher total factor productivity growth rate.[3]

Of course, bringing in the potential for X-efficiency gains just moves the counterfactual even further above the growth path actually observed, deepening the mystery. But there is also a puzzle within the X-inefficiency hypothesis. When the economy is at point C rather than A, the agents are doing the best they can, given constraints that are exogenous to them. But at point D they are not -- they could do better by realising the gains from moving towards the frontier. Why do they not choose to do so? Rationalisations in terms of inertia or myopia don't fit well with the under-lying postulates of sharp-penciled opportunistic behaviour (at the very least, they blur the concept of a production possibility frontier). [4]

Political economy explanations in terms of dissipation of resources in rent-seeking behaviour have some plausibility, though they still need to at least tell a reasonable story about the actual mechanism of dissipation. In industries with no daunting scale economy or other barriers to entry, we

can observe rent dissipation occurring as excessive entry (as suggested to be the case in the manufacturing sector in the quotation above), so that although price exceeds marginal cost it is not above average cost, but we also know that these rents are not all wasted, since the additional firms supply valuable variety -- indeed, the net social welfare implications are, in general, indeterminate.[5] When there are privately erected barriers to entry price will exceed average cost in the long-run, and rents are not all dissipated (Hazledine (1990)), unless at an earlier stage of competition for the monopoly, as suggested by Cowling and Mueller (1978).

As for political rent-seeking, although there is remarkable little evidence of any corruption in the legislation and administration of New Zealand's vast panoply of controls[6], there are certainly plenty of anecdotes, which may become more lurid in the retelling as the years pass, of the time senior private sector managers had to spend in Wellington (the capital), lobbying civil servants for increases in their allocations of foreign exchange or import licences or whatever.[7] But, without denying the very genuine frustration and even fury that entrepreneurs and managers must often have experienced in their dealings with the public sector bureaucracy, it is very hard to find evidence that of this adding up to a significant tranche of dissipated resources. A lobbyist must have someone to lobby, so we should see about one half of the rent-seeking resources showing up in the statistics on public sector employment. Yet, despite having many fewer regulations to run as well as fewer rent-seekers to deal with, the number of central government administration employees has dropped very little since 1984.[8]

5.2 Valuing Forbearance for its own sake

The neoclassical model summarised on Figure 3 is clearly inadequate. It cannot plausibly tell us within its own terms of reference how so much inefficiency could be generated, and of course its prediction of substantial post-reform improvements in efficiency are robustly contradicted by the data. We need to try another tack.

We will proceed by taking 'slack' seriously: specifically, people value slack, or as it will henceforth be termed, forbearance (from full-on 'rational' optimising behaviour), and that in a free and mature society, the citizens evolve a set of institutions, including but not restricted to formal institutions sanctioned by law and government, which enable them to make a satisfactory trade-off between forbearance and output of material goods and services.

The list of such forbearing institutions is very long. It includes taxation (particularly progressive taxation), 'safety nets', pensions, trade unions and collective bargaining, statutory holidays, minimum wage and labour standards, many regulations governing business, comprehensive state schools (in New Zealand, anyway), import tariffs, 'government' in general, promotion by seniority, respect for the elderly, even the British class system, and so on and so on. All of these institutions and customs can be and have been singled out and criticised by neoclassical economists and reforming politicians as 'inefficient' (possibly excepting respect for the elderly), in that they drive a wedge between costs and benefits at the margin. My thesis is that societies purposively create these institutions and customs, by processes which I will not attempt to model but which include the election of social democratic governments and the evolution of informal norms and focal points for behaviour. Good people choose to forbear, because that is a big part of what being a Good Person is all about -- acting with honour, charity and restraint --

and, because we are mere mortals and subject to temptation and confusion, we deliberately foster forbearance-supportive institutions which range from easy-to-follow norms and focal points to deliberately 'hand-tying' restrictions on the freedom of action of ourselves and others.

The thesis, perhaps ironically, can be seen as essentially 'Chicago', in the economist's sense, but Chicago with an added dimension, which has a rather radical impact on ones predictions. Whereas Chicago economists believe that the natural state for an economy is a 'free' market, onto which meddling governments graft distortionary protective institutions, to the general harm, I am suggesting that the natural state of the political economy is a balance of forbearing and narrowly efficient practices -- a mix which a few radical governments, notably in New Zealand and the England of Margaret Thatcher, have disturbed with systematic attacks on forbearance, to the general harm.

Let us examine the analytical implications of this idea. First, in this section, we restrict forbearance to be a consumption good, to be traded off with the usual diminishing returns in consumption and in production against material goods and services -- normally proxied by GDP -- which I will call 'Cargo'. Figure 4 demonstrates this, with a consumption possibility frontier delineating the best possible trade-offs, and with social indifference curves. The point C1 corresponds now to the point A on figure 3, at which the value of cargo output is maximised at competitive world prices which place no value on forbearance. But this is not optimal -- our free and competent society would most prefer to be at point A, with a good mix of material output and forbearance. This point may correspond to the point D on figure 1, mistakenly criticised as X-inefficient in the neoclassical framework.

Now I do not believe that New Zealand in 1984 had found its way to point D, despite its uniquely long history as a social democracy. As the economy had modernised and developed its productive capabilities many of the most protective institutions had already been liberalised, such as import licencing, compulsory unionism and restrictions on competition in transportation and other industries, but I expect that the mood was for further reforms in this direction (which no doubt would have occurred). We might have been, say, at point E on figure 4. Or, more likely, we were in 1984 inside the frontier, as a result of the clumsy and disruptive interventions of the 'populist' Prime Minister Robert Muldoon.

(New Zealand's small population and centralised, unicameral system of two-party parliamentary government made it particularly vulnerable to 'capture' by strong-minded politicians, a feature which was of course exploited by Muldoon's successor (as Finance Minister) Roger Douglas to ram through his 'reform' program with fine disregard for any form of democratic or even narrowly political process. The people have, belatedly, shown their displeasure at these shenanagins by voting in referenda for a proportional representation system, which was first used in the 1996 election.)

In any case, the substantive point is that if forbearance is valued the social welfare function will not be maximised by maximising cargo or GDP, and that policies aimed at stamping out forbearance could do considerable harm. But clearly figure 4 cannot be the end of the story, because it fits what happened in New Zealand no better than the neoclassical figure 3. The problem is that forbearance-reducing policies (which there were in plenty) should at least have increased cargo consumption, but we have already noted that the most striking outcome of the NZ liberalisation was what appears to be a sizeable *reduction* in GDP. To explain this we will have to take forbearance the rest of the way, over to the production side of the economy.

5.3 Social capital in production.

Could forbearance be an input to as well as an output of the political-social-economic system? Here it will be argued that forbearance is productive, basically through its role in fostering cooperative outcomes (escaping from Nash equilibria or prisoners' dilemmas). Further, I will suggest that we can naturally see forbearance as the flow corresponding to the stock variable known as 'social capital.' Now, social capital is by no means a new or unknown concept. I believe that an article on social capital by the political scientist Robert Putnam was the most cited piece in all social sciences over the 1990s. But despite -- or perhaps because of -- the widespread popularity of the term social capital, its meaning remains somewhat inchoate. Glaeser *et al* (1999) cite Putnam's (1995) definition: 'social capital represents "features of social life -- networks, norms and trust -- that enable participants to act together more effectively to pursue shared objectives."'

I think that this is a quite good definition, though I would wish to drop the qualifier 'shared' from the noun 'objectives'. To an economist, the really interesting idea is of a public good which enables participants to act together more effectively to pursue *individual* objectives. Thus, to take the case of central importance here, consider two agents contemplating a cooperative business venture which is very likely to yield total surplus greater than either could achieve on their own, but which is also likely to produce situations when one agent will be in a position to 'hold up' the other (act opportunistically), so as to snare an even larger amount than would be yielded by a 'fair' (often, 50/50) distribution of the surplus when neither cheats on the other.

Although the agents may feel some sort of vague goodwill or altruism to each other, their objectives are primarily their own individual satisfaction. The agents may not even know each other, as when someone purchases something off the Internet or from a supplier listed in the Yellow Pages. If they trust each other, the deal will go through, to their mutual benefit. If they don't, it won't, and they will both be worse off. It is when people can generally trust strangers that the full productive power of specialisation and the gains from exchange can be realised, because all possible trades are feasible.

There are other ways of doing it. Agents can build up reputations for fair dealing and/or generate plausible threats of retaliation for opportunistic behaviour, *if they restrict themselves to dealing with people they 'know' or likely might know or meet again*. There will certainly be situations in any social setting when this is the smart thing to do -- would you marry someone you didn't know (or who wasn't vouched for by your parents, in the case of arranged marriages)? But the general problem with this approach -- which approximates what is known in the social sciences as the doctrine of 'communitarianism' -- is that it limits the value of output achievable because it sharply limits the domain of possible exchanges.

Alternatively, the future behaviour of agents can be circumscribed by the use of formal contracts and their underpinning legal sanctions. Again, this strategy will at times dominate -- for example in the transaction of a unique and valuable item such as a house -- and it is always nice to live in a society in which the rule of law dominates corruption and violence as means of enforcing agreements. But the use of formal contracts has two general disadvantages over informal trust. First, it incurs direct costs of negotiation, registration and enforcement -- transaction costs. We will see that such costs can be considerable, and so are well worth economising on.

Second, and more insidiously, formal contracts can undermine informal trust or social capital. A contract can be just a way of setting down on paper an agreed outcome to a complicated situation, so

that all parties have a useful record of what they are supposed to do. But to a lesser or greater extent the recourse to formal contracts implies a statement by one agent that they do not trust the other, and the danger with this is that assuming untrustworthy behaviour can be self-fulfilling -- to be trustworthy, people need to be trusted. I believe that this problem may be quite serious in economies such as New Zealand which have suffered the widespread application of Agency Theory and its pervasive postulate of opportunism.

Thus the ability of individuals to draw on social capital can be seen as an attractively cheap and effective means of achieving prosperity through the division of labour. Indeed, a moment's reflection (or casual observation of the states of the former Soviet Union) will satisfy us that without some degree of trust and trustworthiness, social and commercial life as we know it simply could not exist. And, unlike the other capitals, social capital is a public good -- using (but not abusing) it does not reduce the total available to others. Indeed, it could be termed a super-public good, because it is increased by private use. Every time two agents complete successfully a relationship involving non-trivial trust (ie, when opportunism was possible but did not occur), they not only receive the private benefits, but they make it more likely that they and others will behave trustingly in the future -- they reinforce the norm of trust/trustiworthiness.[9]

Other definitions and usages of the term social capital are possible. Glaeser *et al* actually are interested in 'social capital' as an individual-level attribute. In interesting experiments with Harvard economics undergraduates, they find, for example, that subjects of higher social status and 'coolness' get given relatively more money by other subjects. No doubt had they included a measure of physical attractiveness in their dataset, they would have found that better lookers get given more, too.[10]

These findings are fascinating but are not what we need here. I will classify all 'name-tagged' attributes, including 'social' success in its everyday sense, as *private* social capital. Included in this category will be reputation effects and deterrent effects based on significant probabilities of two agents meeting in the future. Such private capital is analytically (at least in the present setting) not to be distinguished from other privately held assets, such as human capital and financial assets. It is the social capital that does not come with name tags -- *public* social capital -- that is relevant to this story.

Figure 5 shows what the consumption possibility frontier could look like if forbearance – the flow from public social capital – is an input to the production of Cargo. We need to bring scarcity into the story, and do this by postulating that acting in a forbearing way (refraining from opportunistic behaviour) must be traded off against single-minded 'effort' – getting on with the job, such that the sum of effort and forbearance is a given constant, constrained by the total time available for productive activity. In this formulation forbearance is a sort of socially useful leisure activity.

To motivate this, consider the example of driving to work in a queue of rush-hour traffic. You come across someone trying to join the queue from a side street. If you show forbearance -- slow down to let them in – you and all the people behind you in the queue will arrive at work later and lose time top spend on effort. However (according to transport economics orthodoxy) the total value of all these little pieces of lost time is less than the value of the larger piece of time saved by the newcomer not having to wait until all the cars in the queue pass by. In the absence of transaction costs, of course, the person wishing to enter the traffic could and would wish to pay all the incumbents a few cents each to compensate them for pausing, but such a transaction is not in fact feasible. So forbearance can be efficient. Forbearance is also fair in a repeated game setting, since we can all expect to find ourselves in situations where it is our turn to look for a path into the traffic.

We can expect the returns from forbearing in the production of Cargo to be very high at low levels, such that the consumption possibility frontier is positive sloping as it leaves the horizontal axis (the

non-cooperative Nash Equilibrium) – the productivity of effort is enhanced by more than enough to compensate for the loss of effort time as forbearance increases. However, forbearance will be subject to diminishing returns like everything else in life, and, at the other extreme, a society that just lolls about saying 'after you' and being nice to each other, never actually gets any work done.

These assumptions imply a consumption possibility frontier of the form shown on figure 5. Coming off the Nash equilibrium we are for a while in a win-win situation, with more of both Cargo and Forbearance, but diminishing returns inexorably bend back the curve until it changes direction, where after further increases in Forbearance come at a cost in Cargo, as the marginal productivity of Effort increases. Utility is maximised not where Cargo is maximised, but at point A. Cargo-obsessed policies to push the economy to Cmax instead of C^* will reduce utility, but not, probably, by a lot. But, of course, we have to explain why, although their intent was to maximise Cargo, the revolutionaries somehow managed to reduce it, so that, if we were still on the frontier, it would be somewhere like the point (F^1, C^1), yielding utility OB – well below the optimal OA. We are left needing to explain *why* rational agents would *choose* such a point.

5.4 The return of Agency

We can find a mechanism to deliver a reduction in Cargo production in the elaboration of the Principal/Agent model. The principal's objective is to maximise GDP or Cargo, but they have no direct way of achieving this. Instead, they work on the agents' behaviour, trying to induce them to give up forbearing behaviour in the interests of supplying more 'effort', in the (mistaken) belief that single-minded opportunism is the means of maximising output. Since the agents like forbearance, both for its own sake and (probably) because they appreciate its value in production (though we do not model this appreciation directly), they will not lightly give it up. That means that real resources -- governance resources -- will need to be devoted to monitoring agents' behaviour to make it costly for them to divert their attention away from effort. These resources must themselves be subtracted from the total available for forbearance and cargo, so that the consumption possibility frontier will shrink.

Figure 6 illustrates the results. In the new high-governance regime, the best the agents can manage is point E. Note that the family of indifference maps will need to be redrawn for each level of governance activity, assuming that this enters directly into agents' utility.

6. A Quantitative Model

6.1 Formal analysis

We have the three variables:

C = 'CARGO' (commodities, chattels, goods.....)

F = 'FORBEARANCE' (acting decently rather than opportunistically), the flow variable corresponding to the stock variable known as 'social capital'

E = 'EFFORT' (put into getting on with the job)

C is an output, and will be proxied by GDP. E is an input. F is both input and output: it enhances productivity by enabling agents (especially agents who don't know each other) to escape prisoners' dilemmas and do productive business with each other; and people value forbearance in its own right.

We are in a world of 'principals' and 'agents' The agents are the people of New Zealand. Agents allocate their fixed total available work time (set = 100) between forbearance, effort and governance activities:

(1) $100 = F + E + G$

The production of 'cargo', C, depends positively on both F and E:

(2) $C = C(F, E)$,

with:

(3) $d(\partial C / \partial E)/dF > 0$

These equations imply that there is a trade-off: more Forbearance makes effort more productive in the output of Cargo, but it also reduces the 'time' available for E. (The 'wrong model' held in mind by the principal has production of cargo solely dependent on E.) We will write down a functional form that generates such a trade-off:

(4) $C = [1 + aF^b] E$

The utility of all the agents in the economy is determined as:

(5) $U = \chi F - \alpha F^2 + C - \boxtimes FG^{\square}$

Here we are assuming constant marginal utility of money (or the things money can buy, C), which is reasonable, at least in the relevant range, for a no longer very rich country like New Zealand (where average annual earnings are less than $US20,000). Effort is neither pleasing nor displeasing. Forbearance is enjoyed with diminishing marginal returns — our appetite for being nice to each other can be sated.

Governance enters the utility function negatively. This reflects the assumption that, for most normal people, governance activities aimed at aligning agents' behaviour with principals' objectives — form-filling, clock-punching, superveilling others and being supervised, administering and receiving sanctions for departures from the principal's procedures, etc — are intrinsically unpleasant.

We expect the exponent $\square$ on G to be smaller than one, as diminishing returns from control loss

and other factors dilute the impact of higher levels of G. For example, more G will mean more agents pressed into supervisory duties. The first people selected or volunteering for such duties will be those who are quite keen on bossing other people around and do it with some vigour, but latter recruits to the administrative cadres will be less sympathetic to the anti-forbearance goal of the principals and less pressing in their efforts to impose it on their fellow agents.

We assume too that for a given level of Governance, the degree of unpleasantness will increase with the amount of Forbearance chosen by the agents — the larger the dissonance between agents' behaviour and principals' objectives, the more fraught with conflict will be the agents' work lives (both for supervisor and supervised) and the nastier the sanctions and disciplines imposed in efforts to 'correct' the agents' behaviour.

To analyse the model we follow the standard method of adding 'information' to the system in the form of first order conditions derived from optimising behaviour. We will have the agents choosing F (and thus E) to maximise their utility for a given level of governance, G, which in turn will be chosen 'optimally' by the Principal. First, though, we will calculate the level of F which maximises cargo (C) production. Since governance contributes nothing directly to C in (2) or (4), C-maximisation will require G=0 in the resource constraint (1). Substituting this into (4):

(6) $C = [1 + aF^b](100 - F)$

Differentiating:

(7) $dC/dF = 100abF^{b-1} - a(b+1)F^b - 1 = 0$,   at C-max.

To solve this analytically we need to assume

(8) $b = 1$,

meaning that, for a given E in (4), the marginal productivity of F is constant. This gives us a one-parameter production function and a C-maximising level of F:

(9) $F = [100a - 1]/2a = 50 - 1/2a$

Substituting (9) into (4), with b =1:

(10) $C_{max} = (1 + 50a - 0.5)(100 - 50 - 1/2a)$

            $= (0.5 + 50a)(50 + 1/2a)$

We will use C_{max} as a parameter when solving the model quantitatively. Larger values mean that forbearance is more important to production, with the zero-F (purely opportunistic) level of Cargo production given at 100 in (4), for the G=0 case.

Now we find out what the agents will be up to. Substituting the resource constraint (1) into cargo production function (4) with b=1, and this into the utility function (5):

$$(11) \quad U = \gamma F - \delta F^2 + (1 + aF)(100 - F - G) - \theta FG^\beta$$

$$(12) \quad dU/dF = \gamma - 2\delta F + 100a - aG - 1 - 2aF - \theta G^\beta$$

The F that equates (12) to zero is:

$$(13) \quad F = [\gamma + 100a - aG - 1 - \theta G^\beta]/[2(\delta + a)]$$

We will propose that agents collectively are able to perceive and choose this level of F. Among other things, this implies that they are able and willing to fully internalize the external benefits of Forbearance for Cargo production, for example, those that are generated by teamwork.

Now write:

$$(14) \quad A = [\gamma + 100a - 1]/[2(\delta + a)]$$

$$(15) \quad B = -a/[2(\delta + a)]$$

$$(16) \quad D = -\theta/[2(\delta + a)]$$

So we can simplify (13) to:

$$(17) \quad F = A + BG + DG^\beta$$

Now we examine the choice made by the Principal. We have to explain the great paradox thrown up by the New Zealand revolution — why a program designed solely to increase GDP would in fact appear to end up reducing it (below the plausible counterfactual). The key propositions we use to resolve this paradox are, first, that the Principal has the 'wrong model', and secondly that he[11] doesn't control GDP (Cargo production) directly. Even Stalin was not powerful enough to 'command' the economy to deliver his wishes — he could only use the tools of governance available to him to influence agents' behaviour in ways that he believed would contribute to meeting his goals.

In the New Zealand case, although he (like Stalin) doesn't know how the economy really functions, and he doesn't know (or care) what the people want, one thing our Principal does know a lot about is governance — or the particular form of governance aimed at stamping out forbearing behaviour — and we will assume he is aware of (17), and chooses G optimally by his lights.

However, this does not imply setting G so that F=0. Why not? Because there is a trade-off: more G means less resources available for effort, E, which is all that the principal believes to matter to Cargo production. Now, the Principal is a fool, but he is a 'rational fool' (in Amartya Sen's phrase). So, the 'rational' thing for the Principal to do is to apply G so long as each additional unit eliminates more than one unit of F, meaning that there is something left over to add to the level of E.

We have:

$$(18) \quad dF/dG = B + \text{▤}DG^{\text{▤}-1}$$

$$= -1, \text{ at the 'rational' level of G. This gives:}$$

$$(19) \quad G^{\text{▤}-1} = -(B+1)/\text{▤}D$$

We can see from this how the Principal could reduce GDP. In maximising (the quantity of) E subject to the constraints of agents's response to governance, he will be suppressing forbearance such that the quality (productivity) of effort is reduced sufficiently to result in a reduction in the output of Cargo.

6.2 Calibration

Now we calibrate the model numerically to ascertain the quantitative dimensions of the Principal's acts. We will have 'information' from two periods: pre- and post-rationalist revolution. Before the revolutionaries came to power in 1984 we will set G=0. This obviously is not literally true — resources have always been devoted to governance activities of various types — but we wish to focus on what the revolutionaries added to the system in their efforts to implement their radical program of commercialisation and liberalisation. Thus we will have the information from the solutions to three first order conditions to help calibrate the model: two solutions of equation (13) — pre- and post-revolution — and the post-revolution solution to the Principal's decision rule (19). We have already reduced the complexity of the system by imposing certain functional forms on production and utility functions, and by setting the parameter b = 1. We will provide 'guesstimates' of the ratio of Cargo production after to before the revolution, and the 'after' value of Governance, G.
\But we will need to do more. The unknown parameters and unobserved variables in (13) and (19) are: a, ✂, ↶, ⊠, ▤, F^0 and F^1 (using superscripts 0 and 1 for the before and after solutions). We will make some assumptions which are hopefully of second-order importance about the curvature of the terms in the utility function (5):

$$(20) \quad \text{✂} = 200\text{↶}$$

$$(21) \quad \text{▤} = 0.5$$

The first of these conditions means that the direct marginal utility from F becomes zero at F=100, which is its maximum possible value given the resource constraint (1). That is, we are assuming that Forbearance is always a 'good', within the feasible range. The second condition, on the extent that additional Governance becomes marginally less irksome (with control loss, 'capture' and related factors) is purely a guess, given my (and the Economics profession's) vast ignorance about the quantitative dimensions of governance technology in the economy. But the use of the number 0.5, as the midpoint between the binary extremes zero and one, has a long heuristic and even theoretical tradition (eg, the

Nash Bargaining Solution) in Economics, and its setting here should not be controversial.

The variable we will not solve for is C_{max}, which is where, given the resource constraint, F and E are such as to maximise Cargo production. We will try different values of C_{max}, to find out how much differences in the importance to production of Social Capital (or its flow variable, Forbearance) matter to our interpretation of the rationalist revolution. We know that the zero-Forbearance level of C is 100, and will show results for values for C_{max} from 150 to 300.

Given a value for C_{max} we can solve (10) for the production function parameter a.[12] Then, we solve (13) for the agents' utility maximising value of Forbearance, F^0, in the pre-revolutionary era of G=0. This plugs in to (6) to give us a value for Cargo production, C^0. Then, given our estimate of how much the revolution reduced Cargo production between 1984 and 1998 (below its counterfactual level) — ten percent — we also have a number for C^1.

We now have as many unused equations as remaining unknowns, but the system cannot be solved analytically. We proceed as follows. Start with an arbitrary value for F^0. From (17) with G=0 we have A, and then, from (14), given (20), we get $\times$ and $\smallsmile$, and thus B. Given (19) and our estimate for G^1, we have D and thus, from (16), $\boxtimes$. We can now solve (17) for F^1, and then (6) for C^1. Then we can compute the ratio C^1/C^0 and see how it compares to the 'actual' value. We keep changing F^0 until the ratio is correct (to a couple of decimal places). We then have our system solved, and can go on and calculate values for Cargo production and Agents' utility in the two periods. This procedure takes just some intuition on where to start F^0 and a few seconds of time honing in on the solution.

6.3 Results

We show results for a range of C_{max} values from 150 to 350, corresponding to increasing importance of social capital (or its flow variable, Forbearance) to production. Recall from (4) that output of Cargo in a purely opportunistic economy is calibrated to be 100, so that C_{max} reveals how much cooperation and trust can improve on opportunism. First, in Table 2, we see how the revolution affected input resource allocation — the division of 'time' between Forbearing and Effort. In period 0 — before the revolution — F and E sum to 100; in period 1 they sum to 90, because 10 units of input are now diverted into governance activities.

Table 2: Impact of NZ's Rationalist Revolution on Resource Allocation

Value of C_{max}	150	200	250	300	350
F^1	36.3	41.5	43.7	45.1	46.0
F^0	52.6	57.9	60.2	61.6	62.5
E^1	53.7	48.5	46.3	44.9	44.0
E^0	47.4	42.1	39.8	38.4	37.5
With -10% change in C; $G^0 = 0$, $G^1 = 10$					

Note first that the amount of input devoted to Forbearance increases with the importance of this factor to the production of Cargo. This reflects the specification of the Cargo production function (4), which has the property that the value of F which maximises C increases as C^{max} does — that is, the trade-off between more F meaning more productive E but less of it turns at a higher value of F as social capital becomes more important. It is possible to imagine other specifications of the production function

with the general properties specified by equations (2) and (3) for which the turning point occurs at smaller values of F as social capital's importance to Cargo production increases.

Left to their own devices, the people choose to devote rather more than half of their time to forbearing activities. The Revolutionaries managed to stamp out quite a lot of Forbearance, but only about two fifths of this is transferred to additional Effort, with the rest being soaked up by the requirements of the governance process.

We 'know' that the net effect of the additional E and lost F was a 10% drop in Cargo Production. Table 3 shows this, along with the effects of the Revolution on agents' utility levels. The absolute values of the numbers in this table should not be compared across columns — they come from representations of the economy anchored to levels of F and C set to 100 if the other is zero, but differing in how much Cargo is delivered by interior combinations of Forbearance and Effort.

Table 3: Impact of NZ's Rationalist Revolution on Welfare and Production					
Value of C_{max}	150	200	250	300	350
U^1	156	230	303	379	453
U^0	238	372	503	639	772
C^1	126	166	205	245	285
C^0	140	184	228	273	316
With -10% change in C; $G^0 = 0$, $G^1 = 10$					

Table 3 tells us that much or even most of agents' utility in the pre-pre-revolution period was contributed by 'consumption' of Forbearance, rather than of material Cargo. It seems that many or most of the best things in life do indeed come 'free' — or are, at least, not subject to the constraints of material scarcity. And we can also see from inspecting Table 3 that, in each scenario, the percentage fall in total utility or welfare exceeds the -10% fall in Cargo production, which is one of its components.

Table 4: Impact of NZ's Rationalist Revolution on Welfare by Cause					
Value of C_{max}	150	200	250	300	350

%Change Welfare:	-34.5	-38.3	-39.8	-40.7	-41.3
— due to change C	-5.9	-4.9	-4.5	-4.3	-4.1
— due to change F	-9.6	-10.1	-10.3	-10.4	-10.4
— due to change G	-19.1	-23.2	-25.0	-26.1	-26.8
With -10% change in C; $G^0 = 0$, $G^1 = 10$					

Table 4 decomposes the contributions to the fall in welfare. We see from the first row just how large it was: up to more than 40%. (The harm done by the revolutionaries' efforts to stamp out Forbearance is naturally greater the more important forbearance is to production.)

The contribution made by loss of Cargo production (relative to the counterfactual growth rate) lies between ten and twenty percent of the total. Of greater importance is the squeezing out of Forbearance, which causes a considerable loss in personal happiness. But most of the loss in agents' welfare comes from the unpleasantness of the governance activities which they are forced to participate in. Why is this so unpleasant? Well, it has to be, to explain what happened. Agents place a high value on Forbearance, both for its own sake and because they know its importance to Cargo production. They will not lightly give up their Forbearance — to induce them to do so, the unpleasantness of the sanctions of Governance must be considerable.

6.3 Sensitivity Analysis

What if either of our two pieces of 'data' were wrong (as they easily could be)? First, what if the GDP fall was indeed 10% but the shift of resources to Governance was only 6%? Then the total welfare loss in the middle-of-the-road scenario ($C^{max} = 250$) falls from 40% to 25%, of which just 2.2 percentage points represent utility lost directly from lower levels of F. What is happening is that the lower level of G^1 implies that agents were not so attached to F after all, and so needed less nasty governance to get them to give some up.[13]   If $G^1 = 10$ but the fall in GDP was just 5%, then total fall in utility hardly alters at all. This is because the relative gain from losing less Cargo is counterbalanced by the larger fall in Forbearance needed to make sense of so much Governance having so little effect on C.

And if both Governance and the drop in GDP were over-estimated in our scenarios, say by double their true values? With $G^1 = 5$, and fall in C = 5%, then of course things are not so bad on the welfare front — total utility drops by 'only' 22.5% instead of nearly 40%.

7. Conclusion

The figures reported in this paper for the cost of New Zealand's rationalist revolution seem too bad to be true. Perhaps they are. I hope so.[14] But there is an economic logic underpinning these numbers which is quite inexorable. By 1998 New Zealand GDP was probably at least 10% below what it would have been had we, say, approximately matched Australia in the years from 1984, which was when the Revolution began. If this is a reasonable counterfactual for a non-revolutionary path, then we have to identify a process whereby ten percent of GDP could get wasted. And this is very hard to do.

As neoclassical policy economists have frustratingly discovered, in a well-functioning market economy even quite large policy mistakes — at least at the microeconomic level — have only rather small effects on total welfare and GDP.

So these impediments have to be grotesquely massive and misconceived if they are to have the observed effect. It has been here suggested that Agency Theory, writ very large, can generate non-marginal misallocations of resources, if there is sufficient dissonance between goals of principal and agents, and if the principal is sufficiently determined to re-align agents' behaviour.[15]

We have found a 'smoking gun' of evidence: a striking increase in the number of managers in the New Zealand workforce (compared to Australia). These numbers, along with inferences on the 'below the line' costs incurred by non-managers as a result of the work generated by managers, seem consistent with the proposition that around ten per cent of productive (labour) resources have been redirected into governance activities aimed at aligning the behaviour of the agents – the people of New Zealand - with the narrow 'efficiency' objective of the principal (the more-market revolutionaries).

Our model demonstrates that, when the agents' objectives include what is here called 'forbearance' (the flow variable associated with social capital), and when forbearance is (unbeknownst to the principal) actually very useful in production – basically in enabling agents to cooperate to escape from prisoners' dilemmas – then it is quite possible to wipe out 10% of GDP. Worse, the total welfare costs of all this are predicted to be truly enormous — as much as 40% wiped off total utility.

Evans *et al* summarised (1996, p1867) the principal features of the reforms as: (a) coherent policies on a broad front, (b) credibility and time consistency, (c) a comparative institutional approach, and (d) efficient contracting arrangements. All these sound 'good', but they do not seem to have done us much good. Could the faith in coherency, credibility, consistency and contracting have been misplaced in a social capital context? We are left with Robert Gibbons' (1998) suggestion of: '[the] troubling possibility that management practices based on economic models may dampen (or even destroy) non-economic realities such as intrinsic motivation and social relations. Field experiments on this issue would be especially useful.'

Has New Zealand been, for fifteen years, a gigantic field experiment?

References

Bassett, Michael (1998), *The State in New Zealand 1840-1984: Socialism without doctrines?*, Auckland, Auckland University Press.

Blyth, Conrad (1987) , 'The Economist's Perspective of Economic Liberalisation', in Bollard and Buckle.

Bollard, Alan and Robert Buckle, editors (1987), *Economic Liberalisation in New Zealand*, Wellington, Allen & Unwin.

Bollard, Alan, Ralph Lattimore and Brian Silverstone (1996), "Introduction", to Silverstone *et al.*

Cowling, Keith and Dennis Mueller (1978), ' The Social Costs of Monopoly Power,' *Economic Journal*, 91 (September), 724-748.

Dalziel, Paul (1998), 'New Zealand's Economic Reforms, 1984-95: Comment', *Victoria Economic Commentaries* 15(1): 1-6.

Dalziel, Paul (1999), 'New Zealand's Economic Reform Programme Was A Failure', Lincoln University, Department of Economics and Marketing, April.

Duncan, Ian (1996), 'Public Enterprises', in Silverstone *et al*.

Evans, L., A. Grimes and B Wilkinson with D. Teece (1996), 'Economic Reform in New Zealand 1984-95: The Pursuit of Efficiency', *Journal of Economic Literature*, 34(4), 1856-1902.

Fare, Rolf, Shawna Grosskopf and Dimitri Margaritis (1996), 'Productivity Growth', in Silverstone *et al.*

Fortin, Pierre (1999), 'The Great Canadian Slump: a rejoinder to Freedman and Macklem', *Canadian Journal of Economics*, 32(4), 1082-92.

Glaeser, Edward L., David Laibson, Jose A. Scheinkman and Christine L. Soutter (1999), 'What is Social Capital? The Determinants of Trust and Trustworthiness', NBER Working Paper 7216.

Gregory, R.G. (1999), 'Labour Market Outcomes in the UK, NZ, Australia and the US: Observations on the Impact of Labour Market and Economic Reforms', Australian National University, Research School of Social Sciences, Discussion Paper No. 401, May.

Hazledine, Tim (1990). "Why do the Free Trade Gain Numbers differ so much? The role of industrial organization in general equilibrium", *Canadian Journal of Economics*,

491-506 (November).

Hazledine, Tim (1998a), 'Rationalism Rebuffed? Lessons from Modern Canadian and New Zealand Competition Policy,' *The Review of Industrial Organisation*, 13., 243-64.

Hazledine, Tim (1998b), *Taking New Zealand Seriously: The Economics of Decency* (Auckland HarperCollins)

Hazledine, Tim (1999), 'Measuring the Transaction Sector of the New Zealand and Australian Economies, 1956-96', mimeograph.

Hazledine, Tim and Andrew Murphy (1996), 'Manufacturing Industries', in Silverstone *et al.*

Hazledine Tim and John J. Siegfried, 'How Did the Wealthiest New Zealanders Get So Rich?', *New Zealand Economic Papers*, 31(1), June 1997, 35-47

Horn, H., H. Lang and S. Lundgren (1995), 'Managerial effort incentives, X-inefficiency and international trade', *European Economic Review* 39, 117-138.

Jennings, Stephen and Rob Cameron (1987), 'State-Owned Enterprise Reform in New Zealand', in Bollard and Buckle.

Lattimore, Ralph and Paul Wooding (1996), 'International Trade', in Silverstone *et al*.

Maloney, Tim (1998), *Five Years After: The New Zealand Labour Market and the Employment Contracts Act*, (Wellington, Institute of Policy Studies).

Martin, J.P. (1978), 'X-inefficiency, managerial effort and protection', *Economica* 45, 273-286.

Philpott, Bryan (1999), 'New Zealand Structural Policies: Outcomes for the last fifteen years and new directions for the next', Victoria University of Wellington, Research Project on Economic Planning, RPEP Paper 295.

Putnam, Robert (1995), 'The Case of the Missing Social Capital', mimeographed.

Russell Marcia (1996), *Revolution: New Zealand from Fortress to Free Market*, Auckland, Hodder Moa Beckett.

Shelanski, Howard A, and Peter G. Klein (1995), 'Empirical Research in Transaction Cost Economics: A Review and Assessment', *Journal of Law, Economics & Organization,* 11/2.

Silverstone, Brian, Alan Bollard and Ralph Lattimore (eds), (1996) *A Study of Economic Reform: The Case of New Zealand* (North-Holland, contributions to economic analysis No. 236).

Wallis John Joseph and Douglass C North (1986), 'Measuring the Transaction Sector in the American Economy 1870-90', chapter 3 in Stanley L. Engerman and Robert Z. Gallman (eds), *Long-Term Factors in American Economic Growth*, Volume 51, NBER Studies in Income and Wealth, University of Chicago Press.

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[1] The term 'revolution' is used (with the precedence of Blyth (1987)) in recognition of the scale, speed and impact of the program of changes, and 'revolutionaries' for the small and highly cohesive band of politicians and civil servants who drove the program through. I will allow the term 'reforms' for the actual elements of the program, though noting that the COD definition of this word – 'correction of [political] abuses' does imply a strong presumption that the changes were good.

[2] See Maloney (1998).

[3] Though it is often neglected that New Zealand had been 'reforming' gently for at least two decades before 1984, and major liberalisations of industrial relations, transportation and trade (including free trade with Australia) were implemented by the Muldoon administration of 1977-84.

[1] Quoted by Michael Bassett (1998, p97).

[2] Some apologists for Think Big blame the unforeseen fall in the price of oil for their unprofitability. This is not a valid defence of the investments, because (a) the *risk* of oil price falls should have been considered *ex ante*, and (b) relative to their *opportunity cost* -- eg, other means of producing and/or conserving energy -- they remain very poor decisions.

[3] For a more restrained account of Think Big, see Duncan (1996, pp393-4).

[4] So that, for example, the government can no longer slip the proceeds of asset sales into their current revenues so as to appear to reduce an operating deficit.

[5] The Bank was allowed to define its own output measure, which it called 'underlying inflation' (excluding, notably, interest rates), rather than be judged on actual inflation, which it pejoratively termed 'headline' inflation, and which sometimes moved outside the target band.

[6] Pareto efficiency is only spoiled by the presence of externalities. However, the NZ model is not very concerned with externalities, tending to see them as manifestations of inadequately defined property rights rather than as a fundamental problem for a market economy.

[7] For a survey, see Shelanski and Klein (1995).

[8] Per capita real GDP is the ratio of series GDPV and series POP. For some reason these numbers are quite different from those used in Gregory's Figure 1.

[9] Though (Sir) Robert Muldoon's ideology was that he didn't have an ideology (theory; model).

[10] According to the NZ Export Institute (reported in *The Independent*, 16 February 2000, page 15), in the early to mid-1980s 20,000 firms were engaged in exporting; now there are about 8,500. Perhaps half the firms have closed or moved their operations offshore.

[11] These are the first and last months for which Statistics New Zealand offers these data series.

[1] Calculated assuming unit demand elasticity as: $0.5 \times (0.10 \times 0.10)/2 = 0.0025$

[2] Coverage of about one half for the protected sector is probably near 'optimal' if one wants to crank-up the welfare loss as high as possible. If a larger proportion of GDP is protected, we will start to run into '2nd best' considerations, of protection cancelling out. If *all* the economy is uniformly protected, there may be no resource misallocation at all!

[3] Horn *et al* (1995) provide an interesting discussion and formal analysis of the mechanisms whereby increased international competition might (and might not) reduce slack and increase efficiency.

[4] Martin (1978) was one of the first to point this out.

[5] Ironically, the most spectacular instances of 'excess' entry have occurred, with *de*-regulation, in the taxi industry, where previously regulation limited the number of operators.

[6] Though note that an efficient corruption system can avoid dissipating most of the rents.

[7] For an unbalanced but amusing selection of anecdotes about the bad old days, see chapter one of Russell (1996).

[8] Hazledine (1999, Table 2) reports that full-time equivalent employment in government administration was 61983 in 1986 and 56303 in 1998.

[9] There may be other super-public goods -- for example, literacy. A more literate population is likely to encourage a greater supply of things to read, and the consumption of these will in turn increase further the level of literacy. A possible exception is the consumption of the London tabloid newspapers, whose readers I have heard described as 'post-literate hedonists'. We could also classify safe streets as super-public goods. As analysed in Jane Jacob's classic book, *The Death and Life of Great American Cities*, which Robert Putnam has cited as the source of the social capital concept, street safety depends, *inter alia*, on how many people use the street. Thus a pedestrian 'consuming' safety by deciding to use a street, is thereby adding to its safety for others.

[10] Biddle and Hamermesh (*Journal of Labour Economics, 16/1, January 1998*) find that more attractive lawyers -- judged by their official law school photograph -- earn significantly more than average. (They also find that women are significantly more likely to be judged 'handsome or beautiful' than men.)

[11] The use of the masculine pronoun is approximately correct. With the notable exception of Finance Minister (1990-93) Ruth Richardson, all the important rationalist revolutionaries were men, as they seem to have been in revolutions throughout history.

[12] Actually, we don't try to solve (10) analytically, but use the spreadsheet to quickly iterate in on the value for a that gives the desired C_{max} within a couple of decimal places.

[13] For G= 5 or less, the model will solve mathematically, but it assigns parameter values for the utility function which imply that forbearance is a 'bad', not a 'good'.

[14] More research is needed on the more mainstream, but still non-orthodox, hypothesis that poor performance is due to weak productivity growth from conventional sources (new investments; adoption of n ew production technology), with this having been discouraged by excessive liberalisation and bouts of unfavourable macroeconomic conditions.

[15] We have throughout this paper politely refrained from querying the principal's motives. But could , after all, the whole episode have been just a successful 'grab' - a redistribution of income from the many to the few? It is perhaps easier to explain what happened on the basis of this, cynical, starting assumption.