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KIWIRAIL: strategic asset or strategic blunder?



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Sir John Templeton famously warned that the four most expensive words in the English language are 'this time it's different'. As Dave Heatley explains, if only the government had heeded Templeton's warning, it might have foreseen the gloomy future for rail foretold in the sector's past.¹

In 1999, one of the first major research projects undertaken by ISCR was a study of the long-term economic performance of New Zealand railways.² Public rail ownership was characterised by declining performance, beginning in the 1920s and culminating in a very poor prognosis in the 1990s. There were signs that since 1993, privatisation had led to improved productivity and profitability; however, the business was still far from achieving financial sustainability. The ISCR report predicted that private-sector ownership would result in better incentives for productivity-enhancing

decision making, but in the long run it was unlikely that in its current form the business would be able to generate returns sufficient to cover the costs of the very large sums of capital employed. Given these facts, a rational private owner would likely rationalise services and reduce the scale of the network to the point where it constituted a sustainable long-run business. Revenues freed up from repeated cycles of historic government-funded capital injections and operating subsidies could then be applied to more productive uses, to the wider benefit of the New Zealand economy.

A decade later, rail is again in government hands, trading as KiwiRail. The repurchase positioned rail as a 'strategic asset', in order to secure government economic, environmental and regional development policy objectives. Repurchase implies that government ownership will result in better decisionmaking and greater likelihood of achieving the strategic goals than the private counterfactual. It is therefore timely to re-examine and extend ISCR's 1999 analysis, to test both the efficacy of the policy objectives and the validity of the assumption that

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government ownership will deliver superior long-term outcomes for its new taxpayer-owners.

Examining the economic evidence

The 2009 analysis reveals little evidence to suggest that overall the economic outlook for rail has improved since 1999. Despite gains in operational productivity, rail's share of the land freight task has declined over the period examined. Profitability has remained poor, suggesting an ongoing lack of competitiveness vis-à-vis other freight modes. Return on equity languishes at around 0.1%, a fraction of the 5.3% achieved by the other state-owned enterprises.

Rail networks offer benefits from economies of density (increasing use of existing tracks), but not necessarily from economies of size (increasing size of the network).³ In a rail network with uneven patterns of use, such as New Zealand's, the economics of density means that the closure of lightly used lines will, in general, improve the overall economic performance of the network. The New Zealand rail network contracted while under public ownership from a peak length of 5695 km in 1952 to 4000 km by 1992, however closures have stalled under private ownership (see Figure 1).

It proved difficult for private owners to rationalise the size of the network efficiently, due to poorly aligned incentives and political intervention in operational decisions such as exiting from the provision of certain long-distance passenger services.

The retention of land ownership by the Crown at the time of privatisation muted private incentives to rationalise the network as the private operator was unable to access the potential land-sale benefits from closing unprofitable lines. Private-sector owners have been incentivised to persevere with a strategy (originating under public ownership) of retaining otherwise uneconomic lines for their

current income-generating potential, but refraining from investing in replacement infrastructure such as sleepers, tracks and bridges.

A return to integrated land, infrastructure and operational ownership resolves the incentive misalignment, enabling its new owners to rationalise network infrastructure efficiently. Yet perversely, extensive recapitalisation has followed re-nationalisation. The government has invested \$2.9 billion in rail since 2002, and has committed a further \$0.9 billion through to 2013. It is unlikely that the government will earn a reasonable financial return on this investment, as the strong incentives of private owners for ongoing productivity improvements will likely be muted under government ownership, and the scope for political intervention in strategic and operational activities has increased.

The consequences of political intervention are evidenced in the targets set for a modal shift from road to rail freight in the New Zealand Transport Strategy.⁴ Any increases in rail freight's share must ultimately come from substitution at the margins away from competing transport modes. Extensive competition from both road and sea freight restrains the ability of rail to set prices. Rail exhibits few apparent cost advantages, even with subsidies from the written-off opportunity cost of capital. So modal shift can only be driven by increasing the level of subsidies in order to lower prices artificially and therefore induce movement of marginal freight away from more efficient road and sea freight. Such shifts will be to the detriment of the overall economic performance of the transport sector and the wider New Zealand economy.

There is little evidence that the real costs of the current government ownership and investment strategy have been adequately assessed in terms of foregone benefits in other taxpayer-funded areas, such as health and education.

Environmental externalities and energy issues

Externalities are the components of total social benefits and costs that are not accounted for by private markets. Economic losses in the rail network may be justifiable if there are compensating benefits from positive externalities created (or negative ones avoided). The 1999 report found externalities from air pollution, congestion and accidents were too small to justify the retention of rail. A decade later, this conclusion is still applicable.

The 1999 report did not attempt to quantify externalities due to greenhouse gas emissions, which have become an increasing concern in the interim. There is strong evidence that, on average, rail produces less greenhouse emissions per tonne-kilometre of freight moved than does road transport. Coastal shipping has even lower emissions than rail when compared on the same basis. While a simplistic analysis suggests that moving freight tasks from road to rail, and from rail to coastal shipping, would reduce overall emissions, in reality the situation is much more complex. Each transport mode has tasks for which it is naturally efficient, and the average measures for each mode are dominated by those tasks. While there are contestable tasks at the margins, for any mode to gain substantial share from a competing mode it will need to take on tasks for which it is less efficient than its competitor – at the risk of increasing overall emissions.

An emissions trading system that accurately priced environmental externalities would enable the evolution of optimal transport mode allocation at least overall cost and create incentives for appropriate infrastructure investments – regardless of ownership. Indeed, the presence of subsidies and government-imposed modal share targets threatens to create distortions in emission trading markets that would undermine their chances of success.

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A further justification for the re-nationalisation was that the country will face significantly higher energy prices in future, and that rail's intrinsically higher energy efficiency will improve its profitability relative to road transport as fuel prices rise. However, the evidence for a significant cost advantage for rail in New Zealand based on fuel efficiency is weak. Over the past ten years, fuel costs have accounted for only between 12% and 18% of road transport operating costs, and rail's fuel share of costs has never been more than 3% less than road's (Figure 2). This cost-advantage gap has narrowed as fuel prices have increased, suggesting that road transport is more responsive to fuel price signals than rail.

The case for regional development

This leaves regional development as perhaps the last remaining justification for the government's repurchase. In the US, railways have been found to have had a significant impact on urban growth and regional economic development in the second half of the 1800s. This association was also found for highways between 1960 and 1990, and airports in the 1990s. While these effects (and their timing) are likely to have been similar in New Zealand, it is unlikely that the national rail network offers any net positive economic development externalities in the 21st century.

From a region's perspective, the *option value* of lightly used lines may exceed the cost of their retention. The option value in this instance is the value of having the railway line around just in case (unpredicted) demand increases in future.

While any benefits of retention are most likely to be realised regionally, costs will be borne centrally. A source of concern is that the retention of such lines will divert resources from the parts of the network where demand might increase in response to infrastructure investments.

This suggests that in situations where such options are highly valued, regional interests should be offered the opportunity to subsidise the line, or to purchase and operate it. If they decline the opportunity, then the option is clearly of little value and closure is the appropriate action.

Light at the end of the tunnel

The 2009 analysis confirms that the issues

identified in 1999 still remain, and are unlikely to be addressed by recent changes in governance, ownership and policy direction. Yet rail still remains a viable transport medium for those segments to which it is intrinsically well-suited – long-haul carriage of heavy, bulky freight (coal, logs, manufactured goods, etc.) and high-volume urban commuter services. The challenge for rail's new owners is to find a viable subset of the current rail network. Given current and projected freight and passenger types and volumes, it appears a viable subset exists at around 1500–2000 kilometres in length – less than half the present size. Line closures and land sales could fund upgrading of the core network to 21st-century standards. The potential economic and environmental benefits of rail are most likely to be realised in this scenario.

Ironically, both history and economic incentives suggest that efficiency-raising network rationalisation is more likely to occur under the current integrated public ownership form than under the arrangements previously prevailing under privatisation. However, it will require significant changes to existing government policy and public perceptions to deliver this outcome and positive results for New Zealand's economy.

- 1 This article and the figures in it are based on D Heatley (2009) 'The History and Future of Rail in New Zealand'. ISCR research report (available from www.iscr.org.nz).
- 2 ISCR (1999) 'The Privatization of New Zealand Rail' (available from www.iscr.org.nz).
- 3 WG Waters II (2007) 'Evolution of Railroad Economics'. *Research in Transportation Economics* 20 pp11-67.
- 4 Ministry of Transport (2008) *The New Zealand Transport Strategy 2008* (available from <http://www.transport.govt.nz>).

Figure 1: Length of the New Zealand rail network

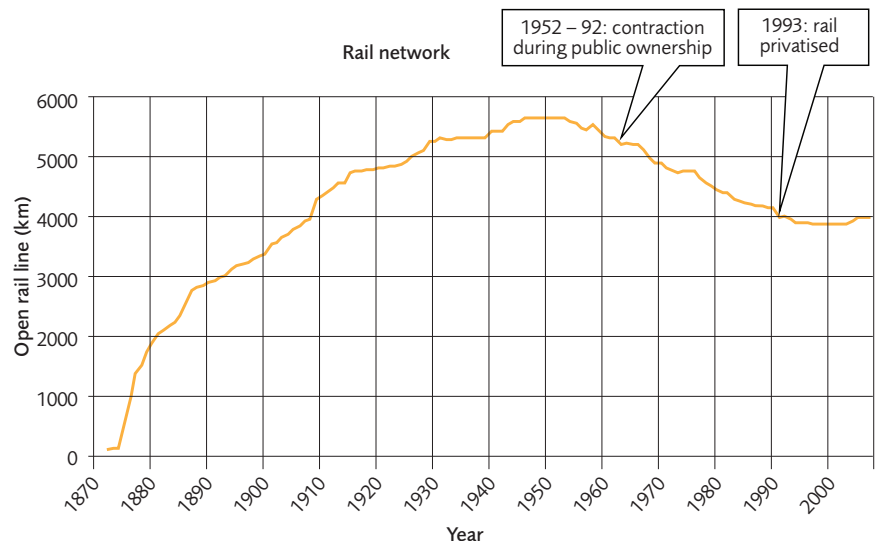
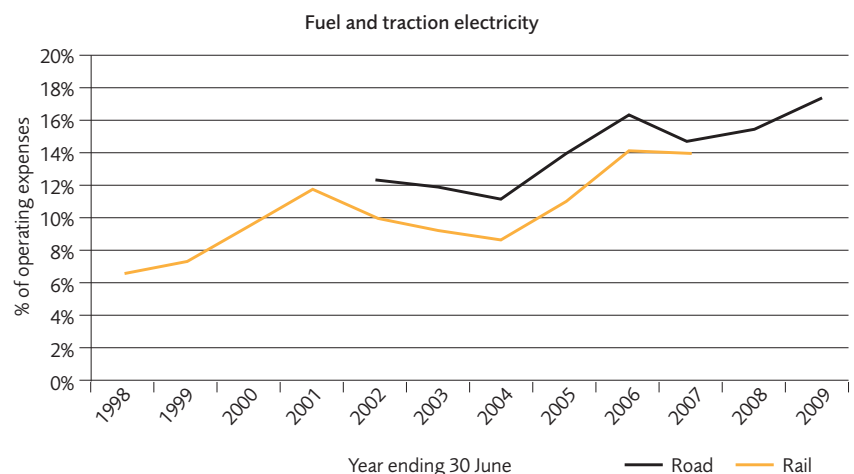


Figure 2: Proportion of operating expenses spent on fuel and traction electricity



Why has New Zealand's equity market lost ground?



New Zealand's capital markets are smaller than those in similarly sized OECD countries, and do not appear to have grown. Why? Laura Hubbard and Lewis Evans ask if the structure of the New Zealand economy provides an answer.¹

New Zealand's market for listed equity shrank relative to the domestic economy between 1996 and 2007, while in other comparable countries, equity markets grew. Over the same period, the number of listed companies per capita in New Zealand fell slightly, the average size of registered companies (already small by international standards) decreased, and market capitalisation as a percentage of GDP fell by a third. Liquidity is low in New Zealand, and little growth occurred from 1996 to 2007 when compared to GDP growth (Table 1).

Greater liquidity leads to better risk management

Liquidity is determined by the number of listed stocks and the frequency of their trading. The higher the frequency, the higher liquidity is, and the better the prices of the shares reflect contemporary information and more accurate valuations of companies. Less appreciated is the fact that having a range of stocks that are frequently traded permits the purchase and sale of stock 'as required', and enables improved

management of risk by allowing adjustments in portfolios to be made quickly as information arrives and risky scenarios unfold. Healthy equity markets are also a source of funds for investment in innovation and productivity.

The reasons for the low liquidity of the New Zealand equities market are difficult to

isolate. While liquidity will be affected by the predominance of 'pure-form' state-owned enterprises and cooperatives in New Zealand that have no listed equity, establishing whether New Zealand is special in this regard is a real challenge. If New Zealand is special, the question remains as to whether it is

Table 1: The number of domestic and foreign companies listed on the NZSE, and the market capitalisation of domestic companies, between 1996 and 2007

Year	Domestic companies listed	Foreign companies listed	Market capitalisation domestic companies (NZ\$ million)	Year	Domestic companies listed	Foreign companies listed	Market capitalisation domestic companies (NZ\$ million)
1996	132	43	54,684.70	2002	146	50	41,482.30
1997	120	60	52,543.30	2003	141	43	50,338.00
1998	124	58	47,222.50	2004	158	42	60,546.00
1999	124	65	54,364.40	2005	153	32	59,601.90
2000	147	56	42,063.60	2006	151	31	63,558.80
2001	145	50	42,799.40	2007	152	26	61,707.50

Source: World Federation of Exchanges and NZSE

New Zealand's economic activity, as with most modern economies, is dominated by services. However, New Zealand is distinctive in its low level of manufacturing relative to industry based on primary produce, and the high importance of the latter for its exports.

reflective of other New Zealand characteristics or of aberrant policy.

The challenge arises because cross-country organisational-form comparisons are fraught with the potential for mismeasurement. Most countries have state-owned enterprises and cooperatives, and these have organisational forms that range from pure to investor-hybrid forms (which have a proportion of their equity listed) but the legal definitions of organisational form often do not distinguish between these. Each country has its own definitions. For example, in many countries other than New Zealand there are specific cooperative company legal forms which themselves vary, meaning cross-country comparisons of organisational structures based on reported statistics are not definitive.

Some guide may be provided by New Zealand stylised facts, but even here it is hard to draw a line between policy and the effects of the characteristics of the New Zealand economy. Two such facts in which New Zealand stands out among OECD countries are its relatively weak legal protection of rights to property² and its high real interest rates.³ Both these factors can be expected to inhibit investment and the expansion of publicly traded stock. Together with extensive state

and cooperative ownership, they may well represent an interacting nexus of complementary influences.

Size does matter – but so does distance

A common place to look for New Zealand explanations is the nature of the domestic economy, where high on the list of relevant characteristics are size, isolation, and the nature of economic activity. While there are many countries that are not dissimilar in size to New Zealand, almost no other countries combine such small size and isolation. According to gravity models, which index distance and market size to trading partners, New Zealand is the most isolated country in the OECD.⁴ In some respects, the importance of distance is diminishing as real transport and communication costs fall and electronically based goods and services evolve. However, the distance problem hasn't completely disappeared. Arguably, electronic communication technologies complement, as well as substitute for, face-to-face meetings – in which case the trading distances for New Zealand may not be coming down relative to those of other countries. This may be a source of New Zealand's relatively low level of international trade. The range of goods imported into New Zealand reached a plateau in the 1990s following a dramatic increase in the 1980s. Because goods and services transactions utilise capital-market services, this may have some association with stagnancy in equity markets (Figure 1).

New Zealand's economic activity, as with most modern economies, is dominated by services. However, New Zealand is distinctive

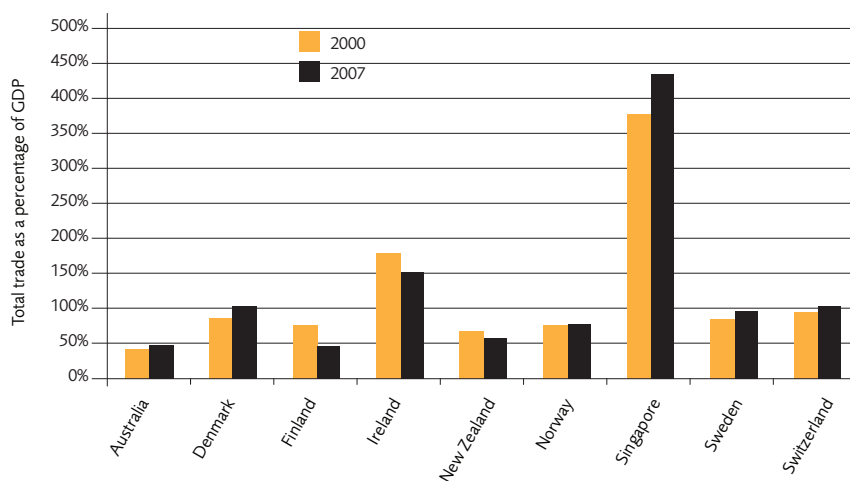
in its low level of manufacturing relative to industry based on primary produce, and the high importance of the latter for its exports. These characteristics will have been influenced by a combination of geography, resource characteristics, international valuations of economic activity, and New Zealand policies. They will in turn influence the structure of organisations. Thus, it is not surprising that New Zealand has relatively small private-sector firms and a significant fraction of cooperative firms in the export sector. However, this is not an adequate explanation for the lack of growth in New Zealand's listed-equity market for the decade to 2007.

The New Zealand equity market is a product of all the factors mentioned in this commentary, and in turn it affects some of them.⁵ Therefore, it should not be considered in isolation from New Zealand economic policies and other New Zealand institutions.

- 1 A New Zealand Government Capital Markets Taskforce is examining this question.
- 2 For discussion of New Zealand's legal stance on property rights see L Evans, N Quigley and K Counsell (2009) 'Protection of Private Property Rights and Just Compensation: An Economic Analysis of the Most Fundamental Human Right Not Provided in New Zealand' (available at www.iscr.org.nz), *ISCR Monograph 3* 2009
- 3 For discussion of New Zealand's high real interest rates see 'Investment, Productivity and the Cost of Capital: Understanding New Zealand's Capital Shallowness'. NZ Treasury Productivity Paper 03/08.
- 4 L Evans and P Hughes (2003) *Competition in Small Distant Open Economies: Some Lessons from the Economics Literature*. New Zealand Treasury.
- 5 Among other factors is the fact of improved access to foreign equity markets by investors and companies in modern economies.

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Figure 1: The value of total trade (imports plus exports of goods and services) relative to GDP, 2000 and 2007



Source: The World Bank, World Development Indicators

Why is CORPORATION TAX revenue so hard to FORECAST?

Are variations in corporation tax revenues an inherent property of the tax structure? John Creedy and Norman Gemmill investigate the not-always-straightforward relationship between tax revenue and profits, and discuss how 'revenue elasticity' could be used to improve the accuracy of tax forecasts.¹

In the last year or so, with the global economic downturn, tax revenue authorities in industrialised countries have found that corporation tax revenues have declined much faster than profits. Over a sustained period of growth, tax revenues may be expected to move more or less in line with profits, but with declining profits the percentage reduction in tax revenue has been substantially greater than the percentage reduction in profits. This raises the question of whether such variations are an inherent, or automatic, property of the corporation tax structure. Over the same period there have been few discretionary changes in the tax structure, and changes in avoidance and evasion seem unlikely to be sufficiently volatile to explain the rapid fall in taxation relative to profits. If large but variable changes in tax revenues, relative to profit changes, are indeed an inherent characteristic of the corporation tax system, substantial challenges are raised for tax forecasting.

Economic modelling of the relationship between corporate profits and corporate tax revenues collected by government is illuminating. The key variable is 'revenue elasticity' – the percentage change in corporate tax revenue divided by the percentage change in profits (holding other potential sources of revenue change constant). Knowing how revenue elasticity can be expected to vary across an economic cycle will improve the accuracy of tax forecasts.

Modelling elasticity

Corporation taxes typically have two features which could be expected to affect the size of the revenue elasticity. Firstly, various deductions, allowable against profits or in the form of tax credits, mean that a large proportion of gross profit declared for tax purposes is tax-free. Thus for a typical company, the marginal tax rate on profit is higher than its average tax rate. This feature tends to generate a revenue elasticity bigger than 1. Secondly, profits either before or after deductions can be negative, but negative

profits (losses) are not eligible for a tax refund. Of course, various deductions provide a form of tax refund on some losses. However, typically this is not sufficient to ensure that the effective refund on a given loss is equal to the effective tax on an equivalent amount of profit; for example where some losses have to be carried forward before becoming deductible. This treatment of losses is an important asymmetry in the tax structure.

Over the long-run, if a firm's profits and deductions grow at similar rates, this implies a revenue elasticity around 1. However, within an economic cycle these conditions cannot be expected to hold, as losses and investment (giving rise to depreciation deductions) vary in response to economic conditions. When faster profit growth returns after a recession, the growth of tax revenue is likely to be lower than that of profits since loss pools – accumulated during the previous low point of the cycle – can be deducted against profits. Conversely, during recessions, those loss pools will typically have been exhausted in the previous high point, so taxation is not expected to fall as fast as profits. Hence, it is likely that aggregate tax revenue follows a smoother cycle than that of profits.

The variation can most conveniently be illustrated using diagrams. A hypothetical cyclical pattern is shown in Figure 1. As the figure shows, profit growth above the long-run trend (the 'boom' part of the cycle) is likely associated with a lower level of growth in corporate tax (CT) revenue, implying revenue elasticity values less than 1. Conversely, profit growth below trend (the 'recession' part of the cycle) implies higher tax revenue growth and revenue elasticities greater than 1. That is, the corporation tax revenue elasticity would appear to be counter-cyclical.

But what happens when the recession part of the cycle is especially severe? In Figure 2, profit growth becomes negative at the bottom of the cycle, while tax growth remains positive. This has a dramatic effect on the cyclical pattern of the revenue elasticity (represented by $\eta_{T,P}$). Following a standard

beginning to the cycle, where revenue elasticity is less than 1, the elasticity now exceeds 1 when profit growth is below trend but still positive, but becomes negative at the bottom of the cycle when profit growth not only slows but becomes negative. Revenue elasticity is more volatile than in Figure 1 (ranging successively from less than 1, greater than 1, less than 0, greater than 1 and then less than 1). Such volatility makes tax revenue forecasting more difficult than in the case where revenue growth falls, but remains positive (Figure 1). Finally, Figure 3 shows that if the cyclical downturn is sufficiently severe that both profit and tax growth become negative, there is even more volatility in the revenue elasticity over short timeframes. Tax revenue forecasting is thus subject to even greater uncertainty the greater the extent of the economic downturn.

If such extensive volatility in revenue elasticity can occur under stylised, smooth cycles for profits and taxes, then under the more erratic profit growth rates observed in practice, revenue elasticities are likely to be even more volatile, and tax revenue forecasts correspondingly substantially more problematic. To illustrate this, the authors developed a corporation tax microsimulation model to examine the UK system. This model captures details of the UK corporate tax rules and structures and can model the dynamics of firms' profits.²

Figure 4 shows the effect on the revenue elasticity of simulating 'medium' circumstances (in which profit growth rates range from a high of +4.3% to -0.2% around a +2% trend) over two complete (ten-year) cycles. This is similar to the profit cycle in Figure 2 and produces a similar elasticity profile to the stylised case in Figure 3. Two cases are examined: one where all firms are 'single' and one where firms have been randomly allocated to groups of two. The 'group' case gives firms the option to share some losses within the group instead of, or as well as, carrying losses forward. In both cases the elasticity remains close to a value of 1 when profit growth is at or above trend, but rises and falls dramatically during recession years. The

elasticity drops close to, or below, zero at the bottom of the recession, but has higher values going into and coming out of the recession. As would be expected, allowing group sharing of losses reduces volatility during the more volatile recession periods but otherwise has little effect.

When a slightly higher cycle is simulated (profit growth in a range of +5.5% to -1.4% with a +2% trend), the pattern in Figure 4 becomes even more pronounced. Revenue elasticities as low as -4 occur at the bottom of the recession. This reflects the fact that in more severe recessions many more corporations and groups go into loss and hence become non-taxpayers, with zero revenue elasticities. Hence tax revenues can fall suddenly even if profit growth remains positive. The above results are obtained where all firms follow the same regular profit growth pattern, yet it can be seen that this nevertheless produces quite volatile revenue elasticities, moving quickly between positive and negative values in a similar manner to that observed for UK corporate tax. These variations are found to be even greater when allowance is made for different cyclical profit growth rates across firms (arising from 'random' variations from year to year).

Thus, the growth of aggregate corporate tax revenues appears to be highly volatile in relation to the growth of profits, with volatility in revenue elasticities generally less when groups of firms can share losses. Relatively high volatility in revenue elasticities is especially associated with economic downturns, otherwise elasticities tend to hover around a value of 1. In mild economic downturns, tax revenue elasticities may rise, because tax growth falls less than profit growth, and therefore appear to be counter-cyclical, but in more severe downturns, large but temporary decreases in the revenue elasticity (and even negative elasticities) can be expected.

These results suggest that going into, and coming out of, the current global economic downturn, corporate tax regimes might be expected to display a high degree of volatility in their elasticity values rather than displaying simple declines in revenues in line with reductions in profits. Such patterns are likely to be extremely hard to forecast without fairly precise knowledge of the size of expected profits and losses, and their distribution across firms, making prediction and management of government cashflows substantially more difficult during severe recessions.

Figure 1: Profit and revenue growth and elasticity values (moderate cycle)

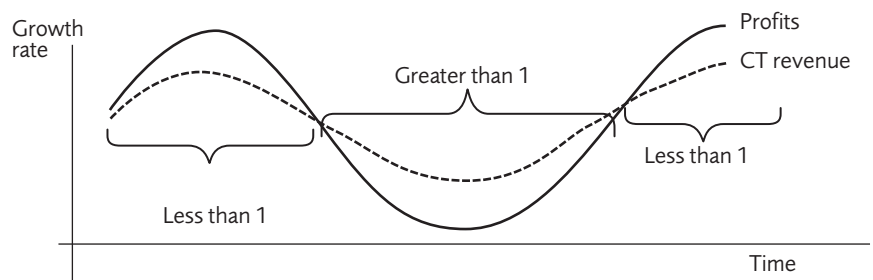


Figure 2: A cycle with negative profit growth

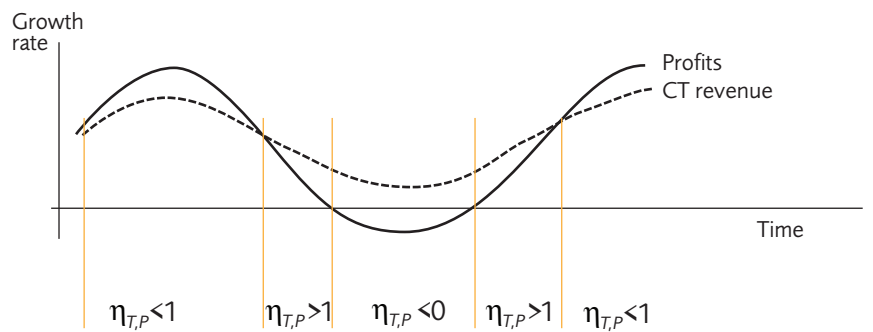


Figure 3: A cycle with negative profit and tax growth

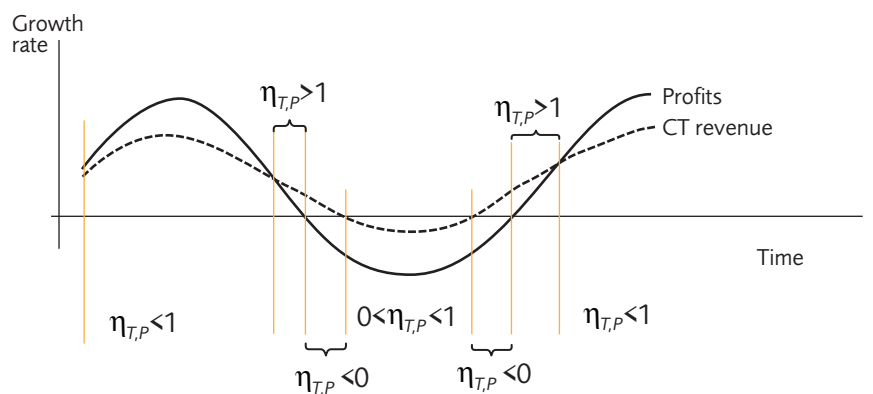
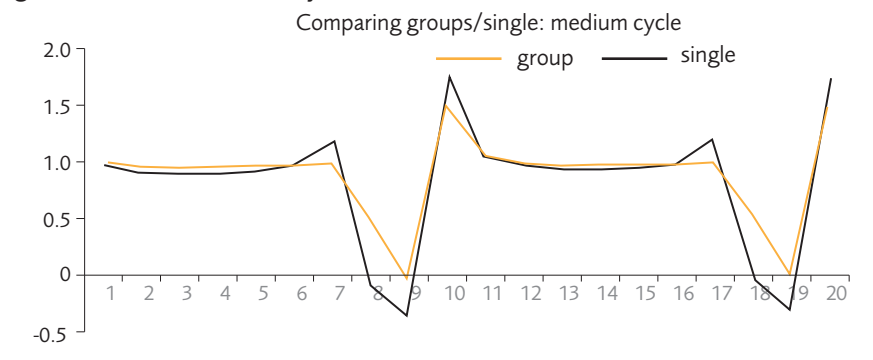


Figure 4: Elasticities: medium cycle



1 This article draws on work reported in J Creedy and N Gemmill (2008) 'Corporation tax buoyancy and revenue elasticity in the UK' *Economic Modelling* 25, pp24-37, and J Creedy and N Gemmill (2009) 'Corporation tax revenue growth in the UK: A microsimulation analysis' *Economic Modelling* 26, pp614-625.

2 An important component of the model is an optimisation procedure which is designed to derive the tax-minimising use of losses and depreciation deductions for each firm.

John Creedy is the Truby Williams Professor of Economics at the University of Melbourne and a visiting scholar at ISCR in 2009. **Norman Gemmill** is a professorial research fellow in the School of Economics at the University of Nottingham and principal advisor at the New Zealand Treasury.

PUSHING PILLS TO CONSUMERS



Don Kenkel compares prescription-drug advertising in New Zealand and the US, and asks if the private profits of drug companies can be combined with public health gains.

'Advertisements contain the only truth to be relied on in a newspaper.' – Thomas Jefferson

'Advertising is a racket ... its contribution to humanity is exactly minus zero.' – F Scott Fitzgerald

The prescription-drug industry is heavily regulated at every stage. Drug companies can't sell a new product until it passes a lengthy review process to establish its safety and efficacy. Even then, consumers can't buy the product without a physician's prescription. In almost every country, drug companies can never advertise their prescription products directly to consumers. In fact, New Zealand and the United States are the only developed countries that currently allow direct-to-consumer advertisements of prescription drugs.

Like advertising in general, direct-to-consumer drug advertising is controversial in both countries. Proponents argue that the advertisements are a useful source of consumer information that can prompt discussion with physicians and improve compliance with treatment plans. Opponents are concerned that the advertisements may encourage inappropriate prescription-drug use and interfere with the physician-patient relationship. An additional concern is that the

advertisements misrepresent the benefits of a product and downplay the risks. After safety concerns caused the withdrawal of some heavily advertised products, like the pain-reliever Vioxx, there were new calls to ban or at least restrict direct-to-consumer advertising.

In New Zealand, direct-to-consumer advertising might also threaten Pharmac budgets. Pharmac, the Pharmaceutical Management Agency, manages the schedule of over 2000 government-subsidised pharmaceuticals. In the fiscal year that ended 30 June 2008, Pharmac subsidised 33.9 million prescriptions. The Agency's analysis of data from 2002 suggested that direct-to-consumer advertising of just four drugs may have led to nearly 500,000 extra subsidised dispensings. Pharmac warned that the extra demand for advertised products 'can put pressure on the pharmaceutical budget and may mean that funds are not available to subsidize other pharmaceuticals'.¹ The US may face similar pressures, now that Medicare insurance provides retirees with subsidised prescription drug coverage. New Zealand's

experience may become even more relevant for the US, depending upon how (and if) the US healthcare system is reformed under President Obama.

The New Zealand experience vs the US

In both New Zealand and the US, direct-to-consumer advertising of prescription drugs began to grow rapidly in the late 1990s. From 1996 to 2005, direct-to-consumer advertising expenditure in New Zealand more than doubled, from NZ\$15 million to over NZ\$36 million. Over this same period, US advertising expenditure more than quadrupled, from US\$985 million to US\$4.24 billion.² Adjusted for population, in 2005 in New Zealand prescription drug manufacturers spent about NZ\$9 per capita on direct-to-consumer advertising, compared to about US\$14 per capita in the US.

Economists often use the advertising-to-sales ratio to measure the importance of advertising in an industry. By 2005, direct-to-consumer advertising expenditure was 5.5% of

prescription drug sales in New Zealand and 2.6% in the US. In the US, per capita drug sales are almost three times higher than in New Zealand. So even though the US also has higher advertising expenditure per capita, the advertising-to-sales ratio is actually higher in New Zealand. In the US, prescription-drug companies spent much more to promote their products to physicians and other healthcare professionals than they spent on direct-to-consumer advertising. Total spending on advertising and promotion to consumers and healthcare professionals accounted for 18% of US prescription drug sales. Unfortunately, comparable data are lacking for New Zealand.

The most heavily advertised prescription drugs are different in New Zealand and the US. In 2005, only four drugs made both countries' 'Top 20' lists of most heavily advertised products. Many of the most heavily advertised products in the US were not advertised at all in New Zealand. A striking feature of the US 'Top 20' list is the number of competing products for the same medical condition. Its 'Top 20' included two anti-ulcer drugs, two sleeping pills, three cholesterol-lowering drugs, three asthma drugs, and two drugs for erectile dysfunction. The only example of this phenomenon in New Zealand's 'Top 20' is that the two drugs for erectile dysfunction made the list.

The economics

Comparisons of the New Zealand and US experiences provide intriguing insights into the economic incentives to advertise directly to consumers. By any measure, expenditure on direct-to-consumer advertising is substantial in New Zealand; the advertising-to-sales ratio in New Zealand is double the US ratio. This points to the surprising possibility that direct-to-consumer advertising might be more profitable in New Zealand than in the US. Global budgeting and other Pharmac policies have kept New Zealand prescription-drug prices lower than US drug prices. As a result, New Zealand drug companies probably earn lower profits per pill. If advertising is still more profitable in New Zealand, the advertising must be more effective in increasing demand, i.e. the number of pills sold.

The 'Top 20' lists shed light on how direct-to-consumer advertising increases demand for prescription drugs. Advertising can increase demand for a drug by expanding the market for all drugs that treat the same condition, or

by increasing the advertised drug's share of its market. In many markets, including US markets for prescription drugs, it is hard to tell if firms advertise to expand the market or to capture market share. But in New Zealand, Pharmac policies have created unusual market conditions. For example, Lipitor, a subsidised product, has a huge advantage over its non-subsidised competitors that also treat high cholesterol, such as Crestor and Vytorin. Lipitor, Crestor and Vytorin all made the US 'Top 20' list, but in 2005 only Lipitor was advertised, and indeed heavily advertised, to New Zealand consumers. In New Zealand Lipitor advertisements do not seem to be about market share; instead they expand the market for cholesterol-lowering drugs. Similar forces appear to drive the advertising campaigns for many of the other drugs on the New Zealand 'Top 20' list.

Firms often worry that their advertising expenditure will spill over and help their competitors: does a McDonald's hamburger advertisement prompt a visit to the Golden Arches, or might it help Burger King too? The spillover problem is another possible reason direct-to-consumer drug advertising could be more profitable in New Zealand than in the US. When a Lipitor advertisement convinces people that high cholesterol is an important health problem that can be treated by medication, its manufacturer Pfizer captures the new demand. Unlike US markets, in New Zealand markets Pfizer doesn't have to worry too much that Lipitor advertisements spill over and increase demand for its unsubsidised competitors.

The exception that proves the rule is the New Zealand market for drugs that treat erectile dysfunction – Cialis and Viagra. Because neither drug is subsidised by Pharmac, Cialis and Viagra are on a level playing field and engage in US-style competition for market share. Both make New Zealand's 'Top 20' list of heavily advertised drugs. It is likely that Cialis and Viagra advertisements are helping to expand the market for drugs that treat erectile dysfunction. But despite the spillover problem, the advertisers are probably also quite concerned about their product's share of this profitable market.

Private profits and public health

Although not conclusive, there is evidence that direct-to-consumer advertising works to

expand markets for various prescription drugs in New Zealand. In at least some cases, expanding market demand for prescription drugs might lead to significant health gains. For example, in 2002 Pharmac estimated that less than half of the patients who could benefit were currently prescribed a statin, such as Lipitor, to lower their cholesterol. This puts Lipitor's place on New Zealand's 'Top 20' list of heavily advertised drugs in a new light. Pfizer advertises Lipitor in pursuit of higher profits, but could its advertising also promote public health?

Despite its potential to promote public health, direct-to-consumer advertising also has its strong critics. A prominent US critic argues that: 'The great majority of DTC ads are for very expensive me-too drugs that require a lot of pushing because there is no good reason to think they are any better than drugs already on the market.'¹³ In New Zealand, Pharmac doesn't subsidise 'expensive me-too drugs', and most of them are not heavily advertised. Yet there is still a lot of direct-to-consumer advertising of other drugs, including advertising for products like statins that address important public health problems.

When crafting regulatory policy it is important to keep in mind the private incentives to improve public health. People want to live healthier and longer lives, and private-sector firms can earn profits helping them do so. Regulatory policy should be structured to facilitate rather than impede the public health gains enjoyed when firms pursue private profits. US policymakers could learn useful lessons from New Zealand's approach, which allows direct-to-consumer advertising in a cost-conscious system of public-sector subsidies for prescription drugs.

1 Pharmaceutical Management Agency (2002) *Annual Review*, p21.

2 For New Zealand, the estimates in this article are preliminary and are based on the author's analysis of data from TNS Media Intelligence, the OECD Health Data, and Pharmac reports. For the US, the estimates are from JM Donohue, M Cevasco and MB Rosenthal (2007) 'A decade of direct-to-consumer advertising of prescription drugs'. *New England Journal of Medicine* 357 pp673-678.

3 M Angell (2005) 'The Truth About Drug Companies: How They Deceive Us and What to Do About It' p124 Random House.

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Counting the costs of ALCOHOL consumption

Alcohol abuse is a serious problem that requires serious analysis, but alcohol use also carries important consumer benefits. Drawing upon recent work by Eric Crampton and Matt Burgess¹, Bronwyn Howell argues the case for a comprehensive New Zealand cost-benefit analysis of the effects of alcohol.

Few would argue that real economic and social costs attend the abuse of alcohol. The carnage from drink-driving-related car crashes, healthcare costs incurred in treating alcohol-induced liver disease, and lost productivity (not to mention family dislocation) following binge drinking spring readily to mind. However, there would also be little dispute that positive benefits, both personal and societal, accrue from moderate alcohol consumption. On balance, more often than not the bonhomie generated at the firm's Friday afternoon drinks or the neighbourhood barbecue likely exceeds the costs of both delivery and external effects. The economic benefit to New Zealand from alcohol production (notably the wine industry) is substantial. And many new ideas and business ventures that have subsequently found their way into the nation's economic performance indicators can be attributed to the 'spillover' effects of alcohol-lubricated social networking in the local pub, sports club or licensed eatery.

This raises an important question for policymakers: what is the net economic effect of the alcohol industry on New Zealand? If the net effect is a loss, then policy measures to reduce the extent of the loss would be indicated. Policymakers might also be interested in

establishing whether any large negative externalities associated with the alcohol industry, such as costs unavoidably imposed by one group of industry participants on others, reduce the net economic benefit arising from the industry. If these externalities are sufficiently large, interventions to reduce them may be indicated, provided the cost of the interventions falls below the costs of the externalities avoided.

Costs, benefits and allocations

Typically, the first step in answering these questions is to undertake a cost-benefit analysis – identifying both the total costs incurred and total benefits accrued, and how these are allocated across the range of industry participants and society as a whole. Without such an industry-wide picture, there is a risk that well-intentioned but misguided policies designed to address a single symptom may be imposed. Such policies may invoke unexpected side effects altering the costs and benefits accruing to participants other than those targeted, potentially leaving society as a whole worse off in total. For example, despite being enacted as a measure to curb teenage binge drinking, taxing of light spirits (predominantly pre-mixed 'alcopop' drinks) in both Australia

and New Zealand has had minimal effect on patterns of teenage alcohol consumption.² Teenagers appear to have responded by switching to other forms of alcohol – such as straight spirits they mix themselves, where the alcohol content per drink is much harder to control. The small reduction in the total number of standard drinks consumed following imposition of the tax appears to have come at the expense of benefits accrued by moderate drinkers, such as elderly, moderately consuming port and sherry drinkers with fixed incomes and drink preferences, who now find their favourite (some might even claim medicinal) tipples priced beyond reach.

With this in mind, examination of a recent study commissioned by the Ministry of Health and ACC from consulting firm BERL, and released in March, is informative. The study, 'Costs of harmful alcohol and other drug use', found that the annual harm caused by alcohol was \$4.8 billion, or \$1100 per capita. In April, Law Commission president Sir Geoffrey Palmer cited the BERL figures when laying the groundwork for the Commission's review of alcohol taxation and regulation.³ If this is truly the net economic cost to New Zealand arising from the alcohol industry, then policy

intervention would certainly seem to be indicated. However, Burgess and Crampton's analysis reveals that the report falls far short of the requirements of a proper cost-benefit study capable of supporting sound policy formulation.

Firstly, BERL's report is a cost study, not a cost-benefit analysis. Specifically, it is a study of the costs of harm borne by drinkers and society once a drinker's average daily consumption exceeds an established epidemiologically (not economically) determined level.⁴ BERL was asked not to consider any offsetting economic benefits, which might appear in the form of health, economic and social benefits, and enjoyment.

The danger of using the BERL report as if it is a cost-benefit analysis for policymaking purposes is that the cost-based methodology presumes that drinkers who are defined as engaging in 'harmful' behaviour derive no benefits whatsoever from any of their drinking activity. This assumption does not appear consistent with much of the body of literature about the economic effects of alcohol consumption, which suggests that overall, alcohol saves lives and contributes to individual happiness. Moderate alcohol consumption, including consumption well into the range BERL defines as harmful, has cardiovascular benefits that prolong the lives of drinkers and saves more lives than harmful consumption takes⁵. Additionally, consumers of alcohol enjoy significantly higher incomes, other things being equal and controlling for causation, and those drinkers seem to get a multiplier effect on their education (likely from networking translating into higher productivity in the office).

Sensitivity to initial assumptions

Secondly, the size of BERL's cost estimate is highly sensitive to a number of other initial, and highly questionable, assumptions. The four most important are highlighted below, but the size of the BERL headline figure is affected by many other such assumptions, few of which are justified using the body of literature available.

The epidemiological threshold at which drinking is considered harmful in the BERL study equates to 1.8 English pints of 5% beer per day for men and half that amount for women. By this definition, one adult New Zealander in six is a 'harmful' drinker. By assuming that all 'harmful' drinkers are irrational, BERL's methodology enables the counting of all the private costs incurred by 'harmful drinkers' (including that drinking between zero and the threshold) as if

they are social costs (they are not offset against private benefits, as would be the case in a proper cost-benefit analysis). Consequently, all the costs incurred by 'harmful drinkers' in their drinking activity up to the threshold (including costs of production of the alcohol consumed) are included in the tally of \$4.8 billion per annum (unlike those of 'non-harmful drinkers', who it is presumed are treated as legitimate private costs). If instead it was assumed that the costs of 'harmful drinking' were accrued only in respect of consumption exceeding the very modest threshold of harmful drinking defined for the study, the headline cost would reduce to just 40% of the original.

Perplexingly, BERL counts as social costs not just the injuries and unemployment associated with alcohol use, but also the associated proportionate shares of insurance administrative costs incurred in paying benefits. This results in double counting, as insurance administration costs are defrayed by premiums paid by the insured.

The BERL study also assumes in its calculation of the value of production foregone as a consequence of harmful drinking that all of the difference between the value of production outputs and input costs can be attributed entirely to the labour component. This assumption will hold only under very restrictive conditions that do not appear to be the case in practice (for example, when workers are idle as a result of their drinking, the machinery used also always lays idle because there are no other under-employed individuals capable of taking up the slack or no-one else at all able to operate the machinery). Empirical studies suggest that the multiplier on lost labour hours used by BERL (1.87) substantially overstates the value of lost productivity resulting from harmful drinking. A more realistic multiplier (in the vicinity of 1.05 to 1.1) reduces the lost productivity component to 59% of the BERL level.

BERL's headline costs also include around \$250 million of excise tax. It is not clear why BERL counts total excise as a social cost. Yet the tax is in effect a benefit, as it is used to offset the costs incurred. In a cost-benefit analysis, the relevant cost to be counted is the standard deadweight loss of raising that tax. Yet, surprisingly, BERL omits this cost entirely.

(Im)plausible policies?

When a different set of (arguably more plausible) assumptions are applied across all of the cost categories considered, BERL's headline

cost figure of \$4.8 billion per annum collapses to just \$662 million. When offset against \$516 million in excise taxes, in the manner of a cost-benefit analysis, this suggests a net external annual cost of alcohol to New Zealand of only \$146 million. This suggests that the Law Commission, in basing its policy proposals on the BERL study, risks overstating the true cost of harmful alcohol and drug use by a factor of up to 30, and hence may recommend adopting policies far harsher and far more costly than is warranted.

Interestingly, one of the proposals already articulated by the Commission is a substantial increase in the tax paid on alcohol. While this would likely reduce alcohol consumption in total, from both the literature and the case studies available, it is far from clear that the result would be either an increase in the tax take to fund rehabilitative programmes or a total reduction in harm. It is not simply a matter of tallying costs. What the benefits are and where they accrue also matters.

The literature confirms that alcohol consumption is a tremendously complex issue. Alcohol abuse is a serious problem that requires serious analysis, but alcohol use also carries important consumer benefits that must be taken into account by policymakers. Targeted measures to reduce harm without sacrificing personal benefits may be a better strategy for policymakers than across-the-board tax and regulation. But firstly, the benefits as well as the costs must be addressed. Only a cost-benefit analysis can achieve this.

1 E Crampton & M Burgess (2009) 'The price of everything and the value of nothing: a (truly) external review of BERL's study of harmful alcohol and drug use' <http://www.econ.canterbury.ac.nz/RePEc/cbt/econwp/0910.pdf>

2 J Sammut (2009) 'Alcopops: One more for the road'. Centre for Independent Studies http://www.cis.org.au/executive_highlights/EH2009/eh80409.html; 'Hospitality groups say light spirit tax has backfired'. *New Zealand Herald* 25 June 2003.

3 See 'The Law Commission's Liquor Review'. Address to the New Zealand Police's 'Alcohol Related Harm' Breakfast, 24 April 2009, p4 (available from www.lawcom.govt.nz).

4 BERL's report also considers illicit drugs; our focus here is on alcohol, the regulation of which is before the Law Commission.

5 G Corrao, L Rubbiati, V Bagnardi, A Zambon & K Poikolainen (2000) 'Alcohol and coronary heart disease: a meta-analysis' *Addiction* 95(10), 1505-1523

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Is telecommunications separation the way to go?

Integration lessons from the electricity sector

The government's 2007 requirement that Telecom separate into component companies stands at the vanguard of a growing international trend toward sector segregation. But will it prove to be a successful move? In other sectors (notably electricity) some integration appears to be better than forced separation plus contracting for achieving sufficient and sustainable investment. Bronwyn Howell, Richard Meade and Seini O'Connor highlight some lessons that telecommunications can learn from electricity's experience.¹

In recent years, governments in the United Kingdom, Italy, Sweden, Australia, and New Zealand have required their incumbent telecommunications operator to separate structurally into network, wholesale and retail functions. This kind of structural separation will sound familiar to many in the electricity sector: during liberalisation, most historically-integrated electricity operators were required to separate into electricity generation (wholesale), transmission, distribution (network), and retail components. The idea was that separation would enhance competition in the wholesale and retail markets, and hence ensure efficient pricing and investment. Experts thought that long-term contracts would help the separated generators and retailers manage the risks inherent in competitive wholesale and retail trading.

However, some years after this liberalisation, vertical integration is rapidly re-emerging in the electricity sector, principally between retail and generation functions (where this has been permitted). It has somewhat 'naturally' arisen in response to serious failings in wholesale-retail contracts, which have led to poor wholesale price and quantity risk-management, to problems of adverse selection and strategic bargaining in the presence of asymmetric information and market power, to forestalled investment (undermining supply security), and to company failures. Research into structural arrangements in the electricity sector increasingly suggests that vertical integration between wholesale and retail functions is the more natural and resilient industry structure. Research also highlights the (potentially destructive) role of excessive retail-level competition in undermining

contracting, investment, and durable retail competition.²

What does this have to do with telcos?

The telecommunications and electricity sectors share many similar features. Some of the more obvious are structural: both sectors have 'natural monopoly' elements, with telecommunications' local-access networks being akin to electricity's transmission and distribution lines. Much of the current literature on telecommunications focuses on potential problems with, and proposed remedies for, these structural features. For instance, some commentators have noted that an integrated incumbent with natural monopoly power may actively impede competitive retail entry and this has given rise to arguments in support of separation as a means of increasing competition.³ Similar arguments have been presented for the electricity sector.

However, it may be more illuminating to focus on a different set of features that the two sectors share: those related to contracting, risk management, and asset ownership.

Perverse incentives

Upstream firms in both sectors have relatively long-lived assets (albeit slightly shorter for telecom network operators than for electricity generators) and these assets comprise substantial proportions of fixed and sunk costs. By contrast, retailers have minimal asset holdings and a shorter-term focus. This 'mismatch' in investment horizons makes contracting difficult – especially when the sector needs capacity increases or (in the case of telecommunications) technology upgrades, and when both upstream firms and retail operations face competition.⁴ In order to

justify investment in new network capacity, telecommunications network owners (and electricity generators) require either established demand from their own retail arm or long-term contracts with separated retailers. However, the (separated) retailers have few incentives to enter into long-term contracts with network operators because these could be undercut by subsequent new entrants negotiating a better access deal – or by the emergence of newer, cheaper and more capable network technologies.

Regulatory interventions in access and retail markets have, perversely, often made these problems worse. For instance, regulated access agreements that enable new retail entrants to buy network services on a very short-term basis (which in turn makes both entry and exit relatively low-cost and low-risk) bias entrants towards preferring short-term rather than long-term contracts. So does retail regulatory obligations (such as number portability) that facilitate end-consumer switching. A third culprit is the regulation of wholesale prices on the basis of hypothetically efficient current network costs – such that prices must decrease over time as the cost of the hypothetically efficient network decreases with improvements in technology, even though the network operator has invested in a specific technology-variant at prevailing historic costs.

This bias towards short-term contracts does not stand alone. These factors also need to be put into the mix:

- Future technologies are at best uncertain.
- Demand for new network services is highly uncertain (especially for separated network operators without a retail arm).
- There is a very real risk that new retail entrants will use the existing network to

build up market share and then shift it to their own network (assuming they are permitted to be integrated, as in New Zealand regulations) thus bypassing the incumbent network operator.

The result is that the incumbent has few incentives to invest in new capacity and, where it does invest, it will be biased towards investing in shorter-term, less extensive, and more flexible technologies. This not only poses a potential capacity problem for the market; it also means that the incumbent network operator is placed at a considerable competitive disadvantage if it is not permitted to have a retail arm.

By contrast, a vertically-integrated network and retail firm does not need to worry about contracting risks and price regulation because it can internalise hold-up, wholesale, and regulatory risks. The larger the integrated firm's retail market share, the lower the risks and the more likely it is that some (but not fully efficient) investment will occur. Of course, mandatory separation of retail and network operations precludes any such internalising occurring – and thus increases the investment hold-up risk over access regulation alone.

Someone has to pay

Another feature shared by the two sectors is that of coordination costs arising from information asymmetries. These costs may be even greater in telecommunications than in electricity markets: demand from end consumers for new telecommunications technologies such as fibre-optic-cable broadband as well as for applications and bandwidth is highly uncertain, and is likely more so in telecommunications than in the (comparatively) technologically stable electricity market. A network operator needs access to retail demand information to determine not just which technology to build, but where to place it and when to deploy it.

Forcing integrated electricity or telecommunications firms to separate (in order to encourage increased competitive retail entry) means trading internal coordination costs for (arguably higher) market-coordination costs and information-asymmetry risks. In particular, ownership separation lowers the incentives for retailers to take due care in making demand forecasts. The lower the costs of retail entry and exit, the less the retailer has at risk – and

so it's less important to a retailer than to an integrated operator that the retail forecast is accurate. Retailers may even face incentives to deliberately over-estimate forecast demand in order to secure more attractive (regulated) contracting terms, although this may to some extent be offset by reputational risks to entrants that have long-term aspirations or by financial risks to entrants that have invested themselves in upstream network technologies (such as additions to the incumbent's network via local loop unbundling or an entrant's own technologies).

Separation inducing low-cost retail entry magnifies these individual retailer-forecast error effects, because there is greater risk that more than the efficient number of retailers will have entered the market. Even if all retail entrants are responding individually to the same aggregate market-demand projection, the ensuing estimates of demand (to which the network operator must generally respond in order to meet regulatory requirements) will be systematically biased upward as the entrants fail to adequately estimate the effect of other competitive entry decisions on their likely market share. A network operator anticipating such over-estimates faces even greater incentives to withhold or delay initial investment in new technologies, exacerbating the potential hold-up problem.

The joys of ownership

Risks such as demand over-estimation and the resulting hold-up costs could be efficiently mitigated by contractually sharing with retailers some of the risks that network owners bear – for example by binding entrants to long-term contracts with penalties for renegeing, or by restricting regulated access to the incumbent's network (e.g. exchange investments under local loop unbundling). However, when new investment is needed and demand is increasingly uncertain, it becomes more difficult to contractually apportion these risks. In such cases, the most efficient arrangement is more likely to lie in ownership (vertical integration) rather than in contracting.

Natural integration

Reforms in both the electricity and telecommunications sectors have often emerged against the experience of investment risks

being borne disproportionately by consumers or taxpayers. However, as the preceding discussion shows, the danger now is that reforms involving mandatory separation have shifted the balance of risk-sharing too far towards investors, which only exacerbates any inherent problems of contracting in separated systems. In turn this excessive imposition of risk on investors undermines investment (and hence the long-term evolution of competition) and creates short-term problems of supply security and adequacy. Indeed, to the extent that regulation artificially imposes unduly competitive requirements across the industry, even entrants face hold-up and other investment risks that can undermine entry.

This suggests that any policies which encourage or result in intense retail competition may be self-defeating – especially if they emphasise competition at the expense of internalising the problems of investment, risk management, and market-power mitigation between retailing and upstream activities. Such policies risk confusing the means (competition) with the end (efficient sector evolution). They also potentially undermine efficient risk-sharing between investors and consumers, for short-term benefits at the expense of longer-term gains. The fact that separated systems based on contracting tend to be imposed, whereas integrated systems often emerge endogenously where permitted, further highlights the inherent attractiveness of integrated over separated structures for both electricity and telecommunications.

1 This article is based on: B Howell, R Meade and S O'Connor (2009) 'Structural Separation versus Vertical Integration: Lessons for Telecommunications from Electricity Reforms' (available at www.iscr.org.nz/research).

2 See '(Some) vertical integration may not be so bad after all' *Competition and Regulation Times* issue 28 p4.

3 E.g. M Cave (2002) *Is LoopCo the Answer?* *Info* 4 pp25-31.

4 Despite shorter investment horizons (a consequence of more rapidly changing technology), the contracting problem can be even more significant in telecommunications than in electricity. This is because traditional fixed-line network operators face competition from mobile, wireless, and cable network operators; enabling consumers to access the same end applications over multiple network platforms.

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In our last issue Lewis Evans, Neil Quigley and Kevin Counsell reported on mechanisms for protecting private property rights in New Zealand, noting that they are weak by OECD standards and apply inconsistently across different forms of rights. Dave Heatley explores some recent high-profile events that highlight the inconsistencies inherent in New Zealand's fragmented approach to property right protection and compensation when these rights are violated as a consequence of central- and local-government decisions.¹

Well-defined, secure and properly-enforced property rights enable economic agents to have security in their property, to make decisions with respect to that property, face incentives that are compatible with the sustainable, welfare-enhancing use of the property, and reduce socially-wasteful expenditure incurred in protecting existing rights or securing and enforcing rights not recognised in law. In many developed countries, constitutional provisions or legal precedent require that compensation is paid when government decisions interfere with an owner's ability to exercise rights of ownership. Without the requirement to pay such compensation, governments will engage in 'too much' (that is, socially undesirable) confiscation of rights, resulting in investment limitation, higher costs of contracting, more lobbying expenditure and reduced

accountability in the management of resources.²

In the New Zealand context, the Public Works Act 1981 provides protection for the owners of land compulsorily acquired for public purposes. Affected landowners are entitled to 'full compensation', so they are left in a position that is no better or worse than the position they were in before the public work commenced. Compensation is also payable when land is not acquired but is 'injuriously affected' by public works.

The private costs of public decisions

The requirement to compensate should lead to the consideration of private costs when public decisions are made, resulting in improved decisions from a total social perspective. In two controversial examples, this would appear to be the case.

A decision on the route for Auckland's Waterview motorway connection was announced by the government on 13 May 2009.³ In addition to the 160 houses already owned by the New Zealand Transport Agency (NZTA), a further 200 will be compulsorily acquired and demolished. The owners will receive market value for their houses and will be relocated free of charge. Although this may not meet the value that the owners place on their residences, it is a tangible basis for compensation. The demolition of these houses could have been avoided with a twin-tunnel route option at an additional cost of approximately \$1.5 billion. As this is at least ten times the amount of additional compensation payments required, the May 13 decision minimises the total social cost of the project (all other things being equal). Intuitively, if no compensation had been

payable, there might have been an incentive for the NZTA to further minimise the direct project cost by choosing a route that involved the demolition of even more houses.

Similar considerations apply in the case of Transpower's controversial proposal for a new transmission line in Waikato. The proposal was approved on 27 May 2009 in a draft decision by a board of inquiry set up under the Resource Management Act.⁴ The \$683 million plan involves 200 km of 70-metre-high pylons running a 400-kv line between South Waikato and Auckland. The board of inquiry found that the public-good aspects of increased reliability of electricity supply to Auckland outweighed the environmental costs of the proposal. As a network utility operator under the Public Works Act, Transpower has the right to acquire land compulsorily and pay compensation. One hundred and ninety properties will be affected by the transmission line, most of them farms. Transpower will pay \$120 million in compensation to the affected property owners. The cost of this compensation is roughly one-third of the total project cost. Transpower decisionmakers have strong incentives to examine and implement alternatives that reduce the effects of the project on landowners.

Who pays for protecting our heritage?

In contrast with the clear compensation requirements for private landowners under the Public Works Act, the creation of Heritage Areas by local government carries no such obligation.

For example, Wellington City Council is currently considering making Thorndon a Heritage Area, which would bring with it stricter rules for altering houses.⁵ Thorndon is considered nationally important, and 'a unique remnant of the early planned settlement of Wellington', according to councillor Andy Foster. While heritage listings serve the national public good, and may lead over time to increased amenities for the affected community, the costs of these listings fall disproportionately on those who own what are arguably the most historically valuable properties – older houses that have not been renovated to modern standards. A Thorndon couple described their heritage-listed home thus: 'the roof leaks, walls are not insulated, water drips from the bathroom to the kitchen, and light switches sizzle'.⁶ They reported substantial delays and costs in attempting to

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authorities.

get approval to upgrade their home to modern standards while maintaining its heritage character.

In the absence of any obligation to compensate the owners of heritage properties, the owner of a modern Thorndon property with no heritage value, or any non-Thorndon resident who has the opportunity to enjoy the historical character of the suburb, stands to benefit from the proposed Heritage Area (and thus gains a valued new 'property right') without bearing the cost. Without the obligation to use rates revenue to compensate property-owners, there is no need for local government policymakers to weigh up the proper social costs and benefits, as must necessarily occur in the case of projects subject to the Public Works Act. If ratepayers value the declaration of the Heritage Area sufficiently in excess of the costs of the violation of property rights required to ensure preservation, then they will still be better off after paying rates-funded compensation. If this is not the case, then creating the Heritage Area results in a net loss to society, and it should not proceed.

The ability to create heritage listings without a responsibility to pay compensation to those adversely affected may lead to the overuse of that power by local authorities.

Conversely, heritage listings may be underused due to an expectation of substantial political opposition and protracted legal challenges from those who bear the (uncompensated) costs. A requirement to compensate affected landowners would see the costs of heritage listings more evenly spread across those who benefit, and reduced political opposition from those adversely affected.

The Wellington 'foothills motorway' cut a swathe through Thorndon in the 1970s. Its construction was delayed and the cost of completion increased by obligations to preserve the historic heritage of the suburb, including relocating most of the bodies and headstones of settlers buried in the Bolton Street Cemetery. As part of the recent project to extend the motorway, a number of historic houses were relocated and restored. As it stands, the property rights of the owners of historic homes are better protected, and incentives better aligned for a societally efficient outcome, in the case of threat of motorway construction than the threat of Heritage Area declaration.

A general requirement to provide compensation for the confiscation of property rights as proposed by Evans, Quigley and Counsell, for example one embedded in the New Zealand Bill of Rights, would send a strong signal to asset owners that their property rights have some prospect of being protected, and encourage better government decisionmaking and appropriate investment behaviour. Were such a provision in place, there would be a principled means of addressing legislative anomalies.

1 L Evans, N Quigley and K Counsell (2009) 'It's just compensation: The economic consequences of New Zealand's last unprotected human right' *Competition and Regulation Times*, issue 28 (available at www.iscr.org.nz).

2 L Evans, N Quigley and K Counsell (2009) 'Protection of Private Property Rights and Just Compensation: An Economic Analysis of the Most Fundamental Human Right Not Provided in New Zealand' (available at www.iscr.org.nz).

3 See <http://www.3news.co.nz/Motorway-decision-upsets-Waterview-and-Mt-Albert-residents/tabid/423/articleID/104033/cat/67/Default.aspx>.

4 See http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=10574830.

5 See <http://www.stuff.co.nz/dominion-post/news/wellington/2402523/Historic-homes-face-more-red-tape>.

6 See <http://www.stuff.co.nz/dominion-post/news/wellington/2441564/Thorndon-heritage-talks-extended>.

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Is LOOKING BEHIND the border the key to CATCHING UP?

How does the quality of a country's structural policies – the regulations and institutions that impact on businesses' access to markets and efficient market operation – affect economic growth? Robert Buckle and Laura Hubbard report on a recent study.¹

The Asia Pacific Economic Community (APEC), of which New Zealand is a member, has recently begun to take an interest in this question and in the quality of the structural policies of its members. Robert Buckle and Amy Cruickshank investigated the issue by estimating the impact of the quality of structural policies on the rate of income convergence in the APEC region.

Playing 'catch up'

APEC promotes economic integration by encouraging the removal of trade barriers and, more recently, by promoting structural policy reforms. These policies should, under certain conditions, also contribute to income convergence, which refers to the rate at which the incomes of less developed economies 'catch up' to the income levels of developed economies. This article reports on a recent study that looked at the impact of structural policies on the rate of income convergence in APEC to investigate whether this factor is as important to economic growth as APEC holds it to be.

Past studies of the link between the quality of regulation and economic growth have found that there is a positive correlation between the factors. Djankov et al. (2005)², using the World Bank's Ease of Doing Business data, found that after controlling for other factors, improvement from the worst quartile of business regulations to the best quartile implies an annual GDP increase of 2.3%. An update of this study by Erickson (2006)³ drew the same broad conclusion, but with a lower impact on GDP. He found that a 1.4% increase in GDP occurred if a country moved from the worst to the best quartile of regulatory environment.

Allsina et al. (2005)⁴ found that OECD product-market deregulation since the 1970s had significantly impacted on investment in utilities, transport and communication. Using a computable general equilibrium model of the region, Dee (2005)⁵ evaluated the relative impact of three policy reforms: a regional trade agreement; completion of the WTO Doha round of negotiations, and unilateral regulatory reform. Interestingly, regulatory reform was found to have by far the biggest

impact on incomes in the region, contributing US\$100 billion per year.

Negatives and positives

The approach in the Buckle and Cruickshank paper was to estimate a cross-economy convergence model to test the link between income convergence and the quality of structural policies in APEC countries. First, income convergence in the region was tested without controlling for the quality of structural policies, then the model was estimated controlling for the quality of structural policies to see if that made a material difference to growth in the region.

This basic model predicts that if incomes are converging in the region, there will be a negative correlation between per-capita income levels in a country at the start of the period and its rate of economic growth. This is a property of traditional growth models and can be explained in a number of ways. They found that this correlation holds for the APEC group of economies, although there are some low-income countries which are not growing at sufficient levels to 'catch up'.

Using this methodology, while not controlling for the quality of domestic structural policy, it was found that incomes converged on average by 0.73% per annum between 1989 and 2007. This gave an estimated half-life for convergence of 96 years. When purchasing power parity (PPP) terms were used to measure per-capita income, which allowed for pricing differences in different countries, the convergence occurred at a faster rate, giving a shorter half-life of 81 years.

The World Bank's Ease of Doing Business data and IMD's World Competitiveness Yearbook were then used to quantify the quality of each country's structural policies. The World Bank data assesses the direct costs of business operation, such as the costs of opening a business and accessing finance. The World Competitiveness measure includes indicators of four areas of each economy: economic performance, government efficiency, business efficiency and infrastructure.

Both these sources were used to assess the rate of income convergence when the quality of structural policies is accounted for. The results indicate that the quality of structural policies has an important effect on growth. It found that on average countries with poor structural policies, as measured by these statistics, had lower rates of income growth. These results suggest that improving the quality of structural policies can increase the rate of income convergence. The half-life of APEC income convergence was found to be between 19 and 59 years when conditioned on the quality of structural policies (with 95% confidence). This represents a significant reduction in convergence time.

This result suggests that APEC's emphasis on the quality of the structural policies of its members is appropriate to achieve its goal of regional economic integration and productivity growth. Cohesion between domestic policies, such as structural regulation, and 'at the border' trade and investment, APEC's traditional focus, will be important to the success of economic reforms.

1 This article is based on Robert A Buckle and Amy A Cruickshank (2008) 'APEC Moves Behind-the-Border: Evidence that Structural Reform Will Hasten Income Convergence in the Asia-Pacific Region' *Agenda* 15(4) pp19-34.

2 S Djankov, C McLeish, R Ramalho (2005) 'Regulation and growth' <http://rru.worldbank.org/documents/discussions/regulationofgrowth.pdf>

3 D Ericson (2006) 'Testing the effect of business regulations on growth' http://economics.wustl.edu/conference/Honors/David_Erickson_Thesis.pdf

4 A Alesina, S Ardagna, G Nicoletti, F Schiantarelli (2005) 'Regulation and investment', *Journal of the European Economic Association* 3: 791-825.

5 Dee, P. 2005, 'East Asian trade strategies and their impact', paper presented to the CSIS/ANU Conference, Bogor, 1-2 August.

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