Westpac InstitutionalBank

Nation building

Economic considerations for infrastructure investment

- **Both main political parties are considering a boost in infrastructure investment. This article discusses general considerations around infrastructure investment, including the hidden costs and benefits.**
- **We advocate a coordinated approach to infrastructure investment. We are wary of government debt to fund infrastructure except in a few circumstances. And we note the importance of macroeconomic stability for successful infrastructure investment.**
- **New Zealand should reconsider its aversion to public private partnerships, given their success overseas.**

New Zealand's infrastructure is popularly perceived to be inadequate. One can take pot-shots at the adequacy of our roads, electricity generation and transmission, broadband availability, ports, railway, sewerage, water quality, health facilities et al. And we are not alone: the Congressional Budget Office of the US estimates that their spending on infrastructure is 20% below what is required to simply stand still. At the same time, other parts of the world have embarked on major infrastructure programmes from South Korea's aggressive investing in telecommunications to Europe's strategic trans-national projects, to India and China's massive investment to accommodate their breakneck economic growth.

The problem is, there are no objective measures currently available as to the adequacy of NZ's infrastructure. Also, just by labelling something as infrastructure does not make it a good investment. There are hidden costs and hidden benefits to infrastructure investment. Equally, the empirical evidence does not shed light on cause and effect: does more infrastructure lead to more economic growth, or is it that wealthier countries can afford better quality infrastructure?

But intuitively, getting the provision of infrastructure right has a massive influence on the performance of an economy. Infrastructure is critical to: moving goods, ideas and workers; engagement with the rest of the world; providing a safe/secure and competitive environment; health of the environment; and enhancing quality of life.

Benefits of infrastructure investment – and how to maximise them

The benefits of infrastructure investment can be broken into three categories:

- ***Direct:*** infrastructure directly improves people's lives in the same fashion as other goods or services. For example, public transport makes people's lives more convenient.
- ***Externalities:*** the benefit of infrastructure might extend beyond its users. For example, public transport reduces traffic for other road users.
- ***Higher productivity:*** infrastructure investment can alleviate macroeconomic bottlenecks and improve the growth rate of the economy. For example, better public transport might allow more people to enter paid employment, increasing the economy's sustainable growth rate.

Historically, infrastructure has been considered on a project-by-project basis. This is unfortunate because infrastructure investment can be a means to advance national priorities and achieve national goals (e.g., energy self sufficiency, carbon emissions). Infrastructure is often long-lived, meaning choices should reflect future needs, not just today's shortfalls. Infrastructure decisions are often interconnected (e.g., public transport – broadband and the ability to telecommute – population density – congestion – roads etc). Interconnectivity and the influence of infrastructure on economic and social development suggests that an integrated, long-term national infrastructure programme is required. The focus of such a programme should be on outcomes, rather that building infrastructure for infrastructure's sake. That programme would ideally set priorities, report and evaluate decisions, provide appropriate information, and ensure quantitative measures are available for every dollar of spend.

Consideration should be given to managing demand for infrastructure as well as supply. Infrastructure should be used efficiently. For example, free provision of water encourages waste. Charging for water should be considered before installing expensive extensions to water infrastructure. Building new

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roads is often a poor solution to congestion, since it encourages car use. Congestion charges or public transport may be a better solution. Technological advances are making it more practical to charge for infrastructure services on a user-pays basis, which helps to ensure efficient use.

The costs of infrastructure investment – and how to minimise them

Infrastructure costs money. If the public sector pays, it must spend less on services such as education and health, or else raise taxes. The immediate question is whether infrastructure should be paid for out of current tax revenue or using debt. Debt is always tempting – current voters will reward governments for better infrastructure, and the people who will eventually pay are still in nappies and have no vote. Debt invites bad behaviour from future governments, who may attempt all sorts of tricks to avoid repayment. It goes without saying that sovereign debt defaults are disastrous. More subtly, indebted governments often seek to create inflation, which reduces the real value of the taxpayer's debt burden but is extremely damaging to the wider economy. And some indebted governments have resorted to financial market regulation to keep the interest rate on their own debt low, which throws sand in the gears of the economy.

In general, it seems reasonable that if a country engages in a constant level of infrastructure investment then each generation should pay a constant share of its tax revenue toward infrastructure. Debt funding should only be considered if a country needs a short-term boost to establish new infrastructure. This situation may occur at the advent of a new technology with huge benefits and one-off establishment costs, such as railways in the early-1800s and roads for cars in the early-1900s.

If debt funding is considered, then the cost of debt can be minimised by ensuring macroeconomic stability. Countries that are prone to debt default or inflation are heavily punished by lenders, and get charged higher interest rates. Any government that is considering increasing New Zealand's debt level would do well to re-commit to the main planks of macroeconomic stability, the Reserve Bank Act and the Fiscal Responsibility Act.

Economic stability and strong protection for property rights are also crucial if the private sector is to be involved in providing infrastructure. Before investing, firms need certainty that they will actually receive a return. When assets are sold to the private sector, any restrictions on operation or ability to on-sell need to be made crystal clear *before* the sale. Changing the rules *after* the sale is unfair and will make the private sector reluctant to do business with government in the future.

Raising taxes to fund infrastructure investment comes at an efficiency cost to the economy known as "dead weight loss". Income taxes erode the incentive to work, and corporate taxes deter private investment, reducing economic growth. The government services and infrastructure provided via taxation have an efficiency benefit, so there is some "optimal" level of taxation. Government investment in infrastructure may also crowd out other forms of investment, by tying up construction resources or by creating inflationary pressures that force the RBNZ to increase interest rates.

Infrastructure investment often features "negative externalities" – costs that are incurred by non-users. For example, a new motorway might increase noise levels for nearby houses, or a new dam might reduce natural beauty. The trouble is that the benefits of infrastructure are often enjoyed by one group while the costs are borne by another, creating a conflict of interest that must be balanced and resolved. New Zealand's mechanism for doing so is the Resource Management Act, but this is often criticised as cumbersome, non-transparent, and non-objective. A frequent complaint is that trivial objections to projects can be raised by competitors.

Large infrastructure sometimes comes into conflict with personal property. This has the potential to subvert the security of property rights throughout the economy, at enormous economic cost. For example, an investor would be much less likely to build a lakeside resort if s/he feared that a future hydroelectric project might flood the property without adequate compensation. The best way to minimise these costs is a transparent process for weighing up individual rights against the greater good, combined with an adequate compensation scheme.

Public or private?

The key reason that the public sector is often involved in infrastructure provision is the presence of externalities. Left to its own devices, the private sector will make profit-maximising infrastructure choices rather than socially optimal choices. For example, the private sector would only provide public transport if enough passengers were willing to pay – no account would be taken of other road users who might benefit. The socially optimal choice may be running public transport at a loss in order to reduce road congestion. The second rationale for public provision is that sometimes it is impractical to extract revenue from users (eg. storm water systems, national parks).

The public sector does not have the best track record for efficiency because the incentive structure is different. Collaboration between the public and private sectors is often the solution. In some industries such as telecommunication, electricity and airports, ownership is on a private-sector model, while public sector regulation deals with externalities. For other forms of infrastructure governments/councils own and operate the facilities, but they normally contract private sector providers for design and construction. This system exposes taxpayers to risks associated with cost overruns or construction delays.

Public private partnerships

A new model is sweeping the infrastructure world – public private partnerships (PPPs). The defining feature of a PPP is that the public sector buys an end service, not an item of infrastructure. For example, a traditional contract might involve the government contracting a construction firm to build a train station with two escalators and four stairways. A PPP might involve the government paying a firm to furnish it with a train station capable of moving a specified number of passengers per minute. Design and construction decisions are left to the private-sector provider. The same firm is then licensed to operate the facility and to collect any revenues for a set period. The government pays for the service at a pre-arranged rate and only upon delivery – no service, no pay. Not surprisingly, PPPs are far more likely to result in ahead-of-schedule construction, because the sooner the firm builds the facility, the sooner it can begin collecting revenues. If the facility is designed well and built quickly, the firm might realise a handsome profit. Unexpected construction delays or poor management may result in a loss. PPPs transfer risk to the private sector, which is appropriate.

Further advantages of PPPs are that contract terms can:

- protect the public interest;
- disclose spending decisions;
- spell out measurable goals and milestones towards achieving those goals;
- stipulate consequences both for excellent and poor performance; and
- private involvement in infrastructure development and operation can reduce the likelihood of pork-barrel politics.

Overseas, the most visible example of PPPs is toll roads. A firm agrees to build and maintain the road in return for the right to charge tolls for a specified number of years. But PPPs can be applied to any public service with a measurable output. Most New Zealand cities already operate a form of PPP for public transport, where councils specify the subsidy and leave the private sector to operate the buses. In Sweden about 10% of children attend schools that are run by private companies but funded by the government on a pay-per-pupil basis. The overseas popularity and success of PPPs for infrastructure provision strongly suggests they are underutilised in New Zealand.

Conclusion

New Zealand may be embarking on a period of greater infrastructure investment. We suggest that New Zealand needs a national plan for infrastructure, to keep it well co-ordinated and future-proofed. Consideration should be given to managing demand for infrastructure services as well as supply. Public debt should be used sparingly for infrastructure – the decision to impose taxes on future generations should not be taken lightly. A genuine case for debt funding can only really be raised in the case of short-term boosts in infrastructure spending. Such periods of infrastructure investment must be carefully managed to ensure there is sufficient construction capacity available and to avoid "crowding out" private investment.

Macroeconomic stability is an important pre-condition to successful infrastructure provision, as it makes borrowing cheaper and encourages private sector involvement. If the government is serious about infrastructure, it should reaffirm its commitments to the Reserve Bank Act and the Fiscal Responsibility Act. On-the-fly rule changes as issues arise should be avoided, as they create uncertainty.

New Zealand has an odd dearth of public private partnerships. PPPs are hugely popular overseas, and have proven very successful at delivering infrastructure at lower cost and with fewer delays than traditional contracts. New Zealand's aversion to PPPs is certainly something that should be reconsidered.

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