Infrastructure: A dead end or a way to prosperity?

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Source: latimes.com

Donald Trump has become the 45th president of the United States. President-elect Donald Trump delivered his acceptance speech on 9 November 2016 in New York City in the presence of his family and vice president-elect Mike Pence. He spoke to a crowd of his supporters after his election victory over Hillary Clinton:

> *We are going to fix our inner cities and rebuild our highways, bridges, tunnels, airports, schools, hospitals. We're going to rebuild our infrastructure, which will become, by the way, second to none. And we will put millions of our people to work as we rebuild it.*

HOW'S TRUMP GOING TO MAKE AMERICA GREAT AGAIN?

President Trump proposes spending a trillion dollars on infrastructure over the next ten years to achieve his pro-growth, pro-jobs plans.

President Trump's rhetoric isn't empty. The US economy is expected to lose $4 trillion in GDP and 2.5 million jobs by 2025 due to infrastructure deficiencies, according to the latest Failure to Act[1] report by the American Society of Civil Engineers (ASCE).

Every four years, the ASCE assesses America's major infrastructure categories in ASCE's *Report Card for America's Infrastructure*, which grades the current state of national infrastructure categories on a scale of *A* through *F*. Table 1 shows infrastructure grades for 2013, evaluated on the basis of capacity, condition, funding, future need, operation and maintenance, public safety, resilience, and innovation. Since 1998, the grades have been mostly fails, averaging only D, due to delayed maintenance and under-investment. Roads, water and wastewater systems in the US are clearly aging, and investment is not keeping up with need.[2]

Table 1: Infrastructure grades for the United Sates for 2013

Category	Grade	Category	Grade
Aviation	D	Ports	C
Bridges	C+	Public Parks & Recreation	C−
Dams	D	Rail	C+
Drinking Water	D	Roads	D
Energy	D+	Schools	D
Hazardous Waste	D	Solid Waste	B−
Inland Waterways	D−	Transit	D
Levees	D−	Wastewater	D

A: Exceptional, B: Good, C: Mediocre, D: Poor, F: Failing
Source: infrastructurereportcard.org

WHAT DID PRESIDENT OBAMA ACHIEVE?

The Obama Administration took steps to enhance infrastructure investment, as real private investment per capita declined more than 20% during the 2007-9 recession. In February 2009, in response to significant weakness in the economy, the American Recovery and Reinvestment Act of 2009 (ARRA) was signed into law by President Obama, with the goal of stimulating domestic economic activity.

Public spending on infrastructure projects was a major component of this stimulus package and "investing in transportation, environmental protection, and other infrastructure that will provide long-term economic benefits" was stated as one of the purposes of

1. infrastructurereportcard.org/wp-content/
2. Prescott and Ohanian (2016) note that there were significant transportation and water infrastructure investments made in California in the 1960s. However, those investments are not being adequately maintained nor expanded.

the ARRA. Many infrastructure projects were accompanied by signs bearing the slogan "Putting America to Work."

Finally, on December 4, 2015, President Obama signed the Fixing America's Surface Transportation (FAST) Act.[3] FAST authorised more than $300 billion in spending on highways, transit, rail, and safety over the next five years (CEA, 2016).

BUT WILL IT WORK?

There are several sceptics among economists who question whether infrastructure spending will lift the US economy.

For example, Cochrane (2016) argues that modern infrastructure is built by machines and the accelerated automation of tasks will make (less-skilled) labour redundant. According to Cochrane, "a freeway in California will do little to help employment of a high school dropout in New York, or a middle-aged mortgage broker in New Jersey."

Another sceptic is Harvard professor Ed Glaeser. Glaeser (2016) discusses the myths and realities about America's infrastructure spending and argues that (transportation) infrastructure is not a useful tool against unemployment during temporary economic downturns.

In support of Glaeser, Garin (2016) studies the ARRA's local employment effects using new geographically detailed data on highway construction projects funded by the ARRA. Garin's estimates show that highway projects had essentially zero effect on local employment, and so he concludes that infrastructure construction is not effective for stimulating local labour markets (at least in the short-run).[4]

Source: mikeettner.com

Lawrence Summers, who was Director of the National Economic Council for President Obama for 2009-10, does not support Trump's infrastructure spending policies. Summers (2016), in principle, believes that enhancing infrastructure investment in the public and private sectors should be a fiscal policy priority. His main concern is that total private sector participation á la tax credits will exclude infrastructure investments that do not generate commercial returns (such as upgrading schools and modernising air traffic control systems).

IS INFRASTRUCTURE A CURE FOR SLOW GROWTH?

In most advanced and emerging market countries, there is a substantial need for investments, especially in infrastructure which includes transport (e.g. roads, railways, maritime and air), water, sanitation, energy, waste disposal networks, housing, schools, hospitals, libraries and information and communication technologies. Any economic activity, one way or another, relies on infrastructure in some form or other. That's why economists view infrastructure as an important ingredient for productivity and growth.

What are the macroeconomic effects of public investment? How big is the contribution of infrastructure to aggregate economic performance? How do the future economic returns compare with the costs of infrastructure? Answers to such questions are critical for many policy decisions. Empirical estimates of the magnitude of infrastructure's contribution are characterised by considerable variation across studies.

Inspired by the contributions of Aschauer (1989),[5] there is now a substantial literature that estimates the long-term elasticity of output to public capital – i.e., the percentage change in output that results from a one-percent increase in public capital.[6]

Recently, Núñez-Serrano and Velázquez (2016) reviewed and synthesised the results of many previous studies, with the aim of obtaining more accurate and statistically-robust general conclusions. Their findings highlight the positive and important effect of public investment on productivity and economic development. Infrastructure complements a wide variety of private investments, and the provision of infrastructure services is an important contributor to welfare provision and therefore development outcomes.

There has been a massive investment gap in infrastructure across countries. For example, a detailed study published by the McKinsey Global Institute (MGI) in 2013 estimates $57 trillion in infrastructure investment will be required between now and 2030 – simply to keep up with projected global GDP growth.

Infrastructure investments in Sub-Saharan Africa (SSA) are especially urgent, where millions of people still have no electricity connection or access to safe water sources, and many road networks remain unpaved in the region. On just about every measure of infrastructure coverage, SSA countries lag behind their peers in the developing world. Relatively poor infrastructure conditions and deficiencies in the availability of infrastructure are impediments to long-term development in the region.

Many African countries have made large investments in electricity generation since 2000, such as building large-scale hydropower plants. Fried and Lagakos (2017) study the effects of increases in grid electricity on economic growth in six of the most populous SSA countries: the Democratic Republic of the Congo, Ethiopia, Kenya, Nigeria, Sudan and Tanzania. The authors find that, on average, around one-third of growth in GDP per capita in these countries since 2000 can be attributed to energy investments.

REVIVING FISCAL POLICY

Economic policy matters. Monetary policy and fiscal policy are the two most widely recognised policies for influencing a nation's economic activity. A government's choice of spending and taxes is known as fiscal policy, whereas actions taken by the central banks

3. fhwa.dot.gov/fastact
4. Several interesting studies are available regarding the effects of such spending programmes on national economies. For example, Leduc and Wilson (2014) review the findings for the US and other developed economies and compare the effects of transportation spending to those of other types of government spending.
5. Aschauer's (1989) findings imply that US public capital investment has been an important factor in influencing historical growth in US economic output.
6. Calderón et al. (2015) find that the long-run output elasticity of infrastructure does not seem to vary with countries' level of per capita income, their infrastructure endowment or the size of their population.

(such as the Reserve Bank of New Zealand) to influence interest rates are known as monetary policy. It's important to get the right combination of the two policies at a given time – i.e. the monetary-fiscal policy mix.

Fiscal policy is again in the spotlight in policy discussions globally, although high public debt acts as a major handbrake on the use of fiscal policy in some countries. A particular reason for increased fiscal space[7] is the constraints on monetary policy, mostly coming from historically low interest rates. For example, in the aftermath of the financial crisis of 2007-8, the Fed (the US central bank) decreased the federal funds rate (short-term nominal interest rate) from 5% in mid-2007 to 0-0.25% by the end of 2008, when it hit the zero lower bound.[8]

In a speech, on 21 November 2016, at the Council on Foreign Relations in New York, Stanley Fischer, vice-chairman of the Federal Reserve Board, said "certain fiscal policies, particularly those that increase productivity, can increase the potential of the economy and help confront some of our longer-term economic challenges."[9]

Closing investment gaps requires large amounts of financing. In this regard, countries with fiscal space should mobilise public resources to boost infrastructure investments, without jeopardising medium-term fiscal frameworks. Countries without fiscal space should find ways to mobilise private sources to finance infrastructure investments. In all cases, central governments should take necessary measures to create an enabling environment and encourage private sector participation.

Fiscal reforms can affect growth through several transmission channels, such as investment in physical and human capital and productivity enhancements. A key research issue is the size of fiscal multipliers – i.e., the effect on overall economic activity of government spending, measured as the ratio comprising the dollar change in economic activity caused by a $1 change in government spending.

For example, if a $1 increase in government spending leads to a $2 increase in GDP, then the fiscal multiplier is 2 for that economy. There is no theoretical and empirical consensus about the magnitude of fiscal multipliers,[10] and so policy-makers should bear in mind that they can vary across countries.

Source: aiib.org

THE ASIAN INFRASTRUCTURE INVESTMENT BANK

Understanding the impact of large-scale infrastructure projects has become the focus of public and policy-related discussions around the world. Recently, the new Asian Infrastructure Investment Bank (AIIB) is attracting the world's attention. China sought to establish the Bank in October 2013 with the aim of providing finance for infrastructure investments in the Asia-Pacific region, where millions of people live on less than $2 dollars a day each.

Several European and Asian countries have declared their intention to become members of the Bank, and its 1st Annual Meeting of the Board of Governors was held in Beijing in June 2016. The AIIB's first four loans totalled more than $500 million for power, transport and urban investments in Bangladesh, Indonesia, Pakistan and Tajikistan.

It is plausible to expect that the AIIB will offer incentives for the private sector to create good jobs, increasing opportunities for the poorest people in the Asia-Pacific region. Infrastructure projects such as electricity generation, gas, railroads, highways and irrigation will be sources of growth and jobs and likely to reduce poverty in the next few decades.

Asian countries have enormous infrastructure financing needs because of poor roads and airports, aging electricity grids and inadequate water distribution. Nobel laureate Joseph Stiglitz argues that the AIIB will meet Asia's infrastructure needs, which will complement the capacity of today's institutional arrangements to finance.[11] There are several projects to be funded by the AIIB, some of which will be co-financed with the World Bank, the Asian Development Bank and the European Bank for Reconstruction and Development.

OPPORTUNITIES AND CHALLENGES FOR NZ

Global growth is still far from being strong and unemployment is still a big problem around the world. According to the IMF's *World Economic Outlook (October 2016 update)*, global growth is projected to slow to 3.1% in 2016 before recovering to 3.4% in 2017.[12] A moderate recovery continues, but with uneven prospects across countries and regions. A pick-up in growth and employment has been observed in some advanced economies; however, the recovery in the Euro area and Japan remains weak.

7. Heller (2005) defines fiscal space as "room in a government's budget that allows it to provide resources for a desired purpose without jeopardising the sustainability of its financial position or the stability of the economy."
8. The interest rate cannot go below zero, a constraint known as the zero lower bound.
9. federalreserve.gov/newsevents/speech/fischer20161121a.htm
10. See Christiano et al., 2011; Woodford, 2011; Auerbach and Gorodnichenko, 2012 and the references therein.
11. theguardian.com/business/2015/apr/14/in-defence-of-the-asian-infrastructure-investment-bank
12. imf.org/external/pubs/ft/weo/2016/02

It is often argued that New Zealand's economic future lies in Asia. NZ was the first developed western nation to join negotiations to establish the AIIB. The AIIB will provide opportunities for NZ firms to participate in the Bank's projects in the near future. Concomitantly, the AIIB may provide opportunities to revisit the infrastructure spending plans of NZ. The government plans to spend approximately $110 billion on infrastructure, according to the *Thirty Year New Zealand Infrastructure Plan 2015*.[13] Natural disasters such as the 2011 Christchurch earthquake and the 2016 Kaikoura earthquake exposed weaknesses in NZ's infrastructure.

SOMETHING ROTTEN IN THE PROVINCE OF OTAGO

Maintenance of existing assets deserves at least as high a priority as the acquisition of new ones. For example, thousands of rotting power poles are due for replacement in Alexandra, Cromwell, Frankton, Queenstown, Wanaka and Dunedin.[14] Ageing infrastructure and a backlog of renewals are among the major infrastructure challenges NZ faces.

Many people of Dunedin would agree with this view. This challenge is reported in the *2015/16 – 2024/25 Long Term Plan* of the Dunedin City Council:

Much of the infrastructure used to deliver water, wastewater and stormwater services in the city has a long life, with parts of it dating back to the 19th century. But the nature of Dunedin's growth over time, with periods of rapid growth, led to large quantities of infrastructure being built at the same time. This means they will require renewal at about the same time, creating peaks in costs for renewals.[15]

A re-think and an upgrade of infrastructure will be important considering the significance of Dunedin for the wider Otago region.

Rotting power poles in Otago.
Source: radionz.co.nz, Photo: RNZ / Ian Telfer

QUESTIONS TO CONSIDER

1. How big is the contribution of infrastructure to national income?
2. What policies and institutions are needed to sustain infrastructure investments?
3. To what extent do infrastructure investments have a significant impact on economic development?
4. Will New Zealand's membership of the Asian Infrastructure Investment Bank enhance economic, trade, and investment links with the Asian region?

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