OXFORD ECONOMICS

# THE OPPORTUNITY COST OF POOR PRODUCTIVITY PERFORMANCE IN THE AUSTRALIAN CONSTRUCTION INDUSTRY

## Introduction and Summary

This paper considers the opportunity cost – in terms of foregone construction and broader economic output – from the relatively poor productivity performance of the Australian construction industry over the past 30 years. Following a discussion of the importance of productivity growth and the historical performance of Australian industry in terms of productivity growth, the paper then presents a valuation of the opportunity cost of the poor multifactor productivity performance of the construction industry in Australia since 1990 relative to a 'Selected Industries' measure. Foregone construction output as a result the industry's relatively poor multifactor productivity performance since 1990 is valued at $35 billion for 2019/20, with impacts on construction work done and the broader economy (through multipliers) likely to be higher. While there are some caveats to interpreting this figure, this suggests that the benefits from improving construction industry productivity over time are likely to be substantial – both for the construction industry and the broader economy.

## The Importance of Productivity Growth in the Construction Industry

In a world where construction labour and capital inputs are limited, and where demand for construction output is rising, productivity improvements offer the critical link to minimising capacity and capability risks, enhancing industry sustainability and lowering infrastructure costs. The Australian construction industry has generally lagged other industries in terms of productivity growth, but considerable "step changes" can be observed over time.

As noted by the Productivity Commission in its 2014 inquiry into public infrastructure provision:[1]

*As in all industries, improved productivity (when this also encompasses quality improvements) is the key method for reducing the costs of output to customers, improving business returns in the shorter run, and providing more infrastructure for a given spend.*

While productivity can be difficult to measure in the construction sector, data suggests that the industry in Australia, like its overseas counterparts, has had a chequered history in achieving sustainable, strong growth in productivity over time. Relatively slower growth in productivity, compared to the rest of the economy, means that greater pressure is placed on boosting the quantity of labour and capital inputs to achieve higher levels of construction output, rather than improving the way they are used together. Where labour and/or capital is scarce, this itself can lead to increased demand pressure on resources, increasing construction costs.

## Recent Productivity Trends in the Australian Construction Industry

Productivity can be defined as the ratio of a volume of output to the volume of inputs; that is output per unit of input. Output, in the current context, is usually referenced as the "gross value added" by the construction industry over a period. Growth in productivity implies that output has grown by more than the growth in inputs. For the construction industry, it is useful to consider both labour productivity as well as multi-factor productivity (MFP). The former considers how output changes with a given change in labour inputs, while the latter represents changes in output driven by changes in the combined value of inputs, which effectively means "doing things better than in the past" The link between the two measures is capital deepening, which refers to increasing the share of capital used in production which allows the (lower) share of labour to be more productive.

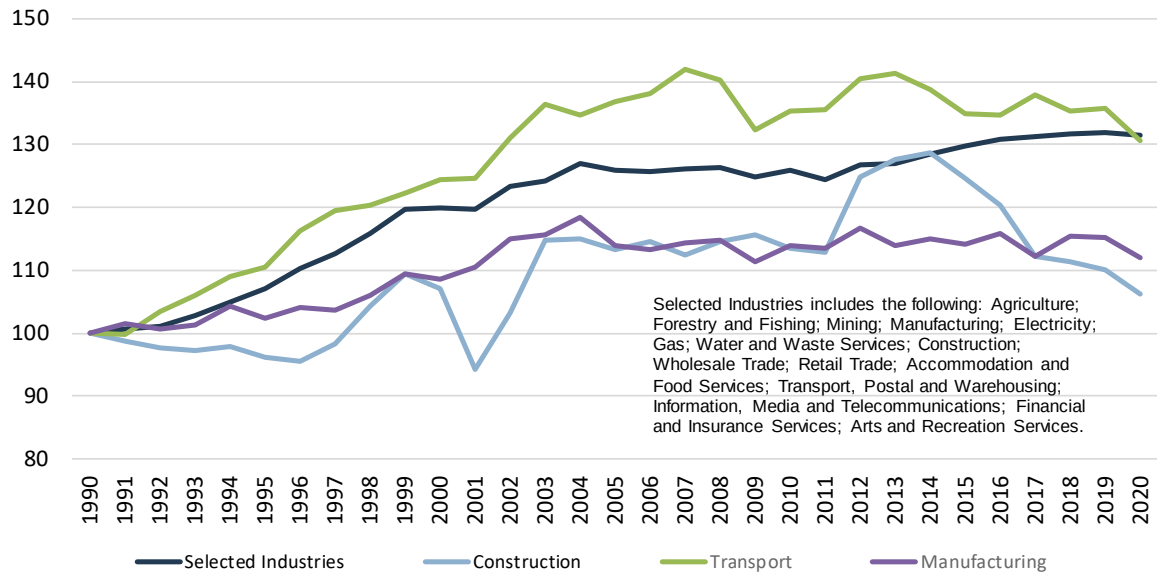
Since the peak of the resource boom, multifactor productivity (MFP) has been declining in the construction sector, as shown in Figure 1. Since its peak in 2014, the construction industry's MFP index has declined 17.4%. Not only is this a more significant drop than felt by other industries since the end of the resource boom, it also takes the construction industry back to its late 1990s productivity performance. Overall, **multifactor productivity in the construction industry has grown an**

[1] Productivity Commission (2014) Public Infrastructure, Inquiry Report No. 71, Canberra, p417.

**average of only 0.2% per annum since 1990**, well below transport (0.9% per annum), other selected industries[2] (0.9% per annum) and manufacturing (0.4% per annum).

There are some caveats to interpreting construction productivity data. Firstly, it focuses exclusively on the construction industry itself, and so does not include labour working in construction-related roles in other sectors such as Professional, Scientific and Technical services (e.g. engineers and designers), Manufacturing (materials supply) as well as Public Administration and Safety (infrastructure-related agency staff). Secondly, construction output is not a tradeable good and, as such quality improvements in construction output over time (such as improved safety outcomes which increases labour hours) may not be adequately reflected in productivity statistics.

Fig. 1: **Multifactor Productivity Indexes by Industry: 1990-2019**




Year ended June

Source: ABS Data

With these caveats in mind, national ABS productivity data shows that construction industry productivity growth – both multifactor and labour – has tended to lag that of the broader "selected industries" measure. Over the 30 years since 1990, the 'gap' between multifactor productivity of the construction industry and that of 'selected industries' has grown. 'Selected Industries' has achieved multifactor productivity growth of 31.4% since 1990, while the construction industry has only achieved 6.2% growth – a difference of 25.2%.

Over time, productivity in the construction industry tends to stall for several years before experiencing a step change (such as in the late 1990s, and again in the early 2010s). While there is some uncertainty regarding the causes of these step changes, one possible explanation is rising capital intensity, which could have boosted both productivity measures. In the early 2010s a likely candidate for rising capital intensity may be the start of the phase of oil and gas construction in Australia which, apart from the sheer scale of construction, also brought with it highly capital-intensive methods of construction, such as prefabrication and modularisation on a massive scale. The use of more collaborative procurement and contracting models during this time – which allocated risks more efficiently to those best able to manage them, as well as fostering innovation and investment in capacity and capability – may have also contributed to the stronger productivity outcome.

[2] Selected Industries includes the following: Agriculture; Forestry and Fishing; Mining; Manufacturing; Electricity; Gas; Water and Waste Services; Construction; Wholesale Trade; Retail Trade; Accommodation and Food Services; Transport, Postal and Warehousing; Information, Media and Telecommunications; Financial and Insurance Services; Arts and Recreation Services.

**The Opportunity Cost of Poor Construction Industry Productivity Performance**

Australia's construction industry is not alone in experiencing relatively weak productivity growth. International studies[3] point to similarly poor productivity performance in the construction industry globally. While much of the literature focuses on *why* the productivity performance has been poor, an interesting issue is valuing *the cost* of this poor performance in terms of potentially foregone construction or economic output.

In a recent paper, the McKinsey Global Institute estimated that boosting construction industry productivity and closing the 'productivity gap' to other industries could increase global construction output by $1.6 trillion – roughly the size of the economy of Canada – and boosting global GDP by up to 2% per year.[4]

For Australia, similar calculations undertaken by BIS Oxford Economics for this paper suggest that the potential foregone construction output from a 30 year period of relatively weak productivity performance is roughly $35 billion in 2019/20 alone, with this opportunity cost continuing to rise in future with every year of relatively poor productivity growth compared to other industries.[5]

While construction output (in gross value added, or GVA, terms) is not the same as construction work done as it focuses on the 'value added' by the construction industry (not its overall expenditures) this is still a stark figure. Indeed, the value of work done by the construction industry is, by definition, higher than measures of construction GVA, indicating that the loss in work done terms is an order of magnitude higher than this. To put the size of the loss in context, the $35 billion figure for 2019/20 alone dwarfs the cost of some of Australia's largest infrastructure projects currently in planning or under construction such as North East Link (an estimated $15.8 billion cost), the Western Harbour Tunnel and Beaches Link ($14 billion+ combined) and Inland Rail ($10 billion+).

There is also a wider economic loss considering the multipliers associated with construction activity in Australia, with every $1 million invested in the Australian heavy and civil engineering industry (encompassing civil infrastructure and mining-related construction) seeing $2.95 million of output contributed to the economy, and $1.3 million contributed to Australian GDP.[6]

These figures come with some caveats. Primarily, any measure of foregone output assumes that all existing resources currently employed by the construction industry could immediately be redeployed to new works under the higher productivity setting. This in turn implies that there is a strong pipeline of planned construction projects in reserve that could be put into flight to absorb the freed resources. If not, it is possible that higher productivity in the construction industry could see underutilised resources absorbed by other sectors of the economy. In this respect, it is important to note that the construction industry's current draw on resources is itself a function of its poor productivity performance over a long period of time. Even with a strong pipeline of new works, it is not unreasonable to suggest that, with higher productivity in the construction industry, there will be likely be a reduced need for capital and labour inputs in achieving output goals, and these resources could be attracted to other industries where their relative economic contribution may be higher.

Furthermore, it should be recognised that these figures are based on 30 years of relatively poor productivity performance which will not be corrected quickly. However, there may be good

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[3] McKinsey Global Institute (2017), Reinventing Construction: A Route to Higher Productivity. Viewed 21/4/21 at https://www.mckinsey.com/~/media/McKinsey/Business%20Functions/Operations/Our%20Insights/Reinventing%20construction%20through%20a%20productivity%20revolution/MGI-Reinventing-construction-A-route-to-higher-productivity-Full-report.pdf

[4] Ibid, p1.

[5] Based on a 25.2% multifactor productivity differential between the construction industry and 'Selected Industries' index sourced from published ABS multifactor productivity statistics (Cat. No. 5260.0.55.002) since 1990 applied to the $138 billion in construction industry gross value added recorded in 2019/20 from the quarterly set of Australian National Accounts (ABS Cat. No 5206.0).

[6] Based on latest national input-output tables published by the ABS. ABS (2020), Australian National Accounts: Input-Output Tables 2017-18, Cat. No. 5209.0.55.001

opportunities for achieving some immediate productivity gains through policy mechanisms, such as those outlined in the Australian Constructors Association's industry response to Infrastructure Australia's 2019 Infrastructure Audit.[7]

However, even with these caveats, the figure is a stark reminder that there are sharp opportunity costs associated with sustained poor productivity performance. In turn, correcting the productivity performance of the construction industry over time will offer substantial economic benefits.

[7] ACA (2020) *Sustaining the Infrastructure Industry: Challenges, Solutions and Case Studies*, report prepared by BIS Oxford Economics.