

Megabang for megabucks

Driving a harder bargain on megaprojects

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Overview

Australians pay too much for major road and rail projects because governments don't drive a hard bargain on contracts with the big construction firms.

Governments procuring transport infrastructure should focus on one principle: delivering services at the lowest long-term cost to taxpayers, for a given quality standard. To achieve this in Australia, we need more competition, smarter procurement, and greater transparency.

Australia's transport infrastructure costs are above the global average. There is a government culture of caving in to contractor demands and paying sometimes hundreds of millions of dollars to settle a problem a few months or years after a contract is signed. Even after construction has begun, about 25 per cent of projects end up costing taxpayers more than governments promised when the contract was signed.

To get quality infrastructure at a sharp price, competition is fundamental. With more megaprojects, contracts have grown too; megaproject contracts have been 38 per cent bigger in the most recent seven years than they were in the preceding seven years. With larger contracts, competition inevitably thins. Few firms have the technical and financial capability to win contracts worth \$1 billion or more.

So it's crucial that international firms can enter the Australian market, bringing global innovation and know-how. Australian governments should not give undue priority to domestic experience or the comfort of dealing with familiar firms, and they should avoid market-led or unsolicited proposals for projects.

Governments should do more to ward off the risk of cartels and collusion, by routinely and transparently publishing key tender and contract information.

Procurement practices need to catch up with the reality of gigantic contracts. Rather than following fashion or giving undue weight to industry preferences, governments should be systematic in how they break up megaprojects into manageable contracts.

Problems often crystallise around site conditions: contamination, geology, and utilities. Instead of rushing projects to market, governments should understand and certify these risks so that bidders can price them more accurately. More certainty in scope and site conditions would facilitate use of fixed-price contracts. Collaborative contracts such as alliances, where parties share the upside and downside risks, should be reserved for projects where key elements are genuinely unknowable in advance.

Governments should only sign contracts that they are prepared to enforce. All infrastructure contracts should be awarded through an open tender process. And governments should investigate how similar countries overseas manage to build high-quality transport infrastructure more cheaply.

Industry claims that it's hard to turn a profit and that the future of local firms is in jeopardy are overblown. Governments should remember that dismantling industry protection since the 1980s has resulted in large increases in Australians' standard of living.

Governments must ensure the interests of the community prevail over the concerns of the engineering construction industry.

Recommendations

Pay more attention to costs

Governments should only sign contracts that they are prepared to enforce. When they sign a contract, they should show by their actions that they will not pay additional amounts for risks that contractors have agreed to take on.

The Bureau of Infrastructure and Transport Research Economics should make a long-term commitment to regularly update a benchmarking series of road and rail construction costs.

The Commonwealth Department of Infrastructure, Regional Development and Communications should report to the Transport and Infrastructure Council within one year on the means by which similar countries overseas build high-quality transport infrastructure more cheaply.

Governments should coordinate their own schedules and collaborate with neighbouring states to minimise costly bottlenecks on major infrastructure construction.

State governments should align their rules for local content with federal government procurement principles, avoiding giving preference to bidders for transport infrastructure construction projects who pledge to use Australian-produced materials.

Improve transparency

If governments decide to provide industry assistance to the engineering construction sector, they should do so transparently on-budget.

All states should publish a central register of all projects larger than \$500 million, on a comparable basis across projects and jurisdictions. The register should publish within three months, for all contracts larger than \$50 million: contract value, tender process, bidders who submitted an expression of interest, shortlisted bidders, any later changes to the contract value, and the tender process, bidders, and shortlisted bidders on the new scope.

State auditors-general should provide an expert panel governing renegotiation of major public construction projects. If a contractor seeks a significant renegotiation, they should on future projects be asked to show cause why they should be allowed to bid; if successful, they should warrant their bid against the risk that they will not be able to deliver to the contract. Governments should publish all deliberations and proceedings of the expert panel.

Foster greater competition

In selecting a successful bidder, governments should not weight local experience any more heavily than is justified to provide infrastructure at the lowest long-term cost. Governments should publish weightings of the criteria used to select the winning bid for a contract.

Governments should award all infrastructure contracts through an open tender process.

Don't rush: scope projects properly, and procure systematically

Governments should do sufficient discovery of site conditions before going to market, and certify to potential bidders what they have discovered.

State governments should develop and use a systematic approach to determining an optimal bundling of work packages for large projects, including when to disaggregate bundles that include both complex and straightforward activities.

Governments should adopt a systematic approach to selecting the contract type for each work package.

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1 Australian governments don't care enough about costs

Governments love to trumpet the size of their road and rail spending. Queensland's latest budget includes a 'record roads and transport budget'¹ of \$26.9 billion. Victoria's 'record transport investment'² entails more than \$130 billion of capital projects. NSW has a 'record \$107.1 billion infrastructure pipeline'.³ The Federal Government reports a 'record \$110 billion 10-year infrastructure investment pipeline'.⁴

But trumpeting the size of the spend only makes sense if the community gets value for every dollar spent, and if there isn't a less costly way to get a service of the same quality or better.

Our 2020 report, *The rise of megaprojects*,⁵ exposed cost overruns on transport 'megaprojects' – defined as projects worth at least \$1 billion in today's dollars – from the first cost announcement through to completion of construction. In this new report we zero in on the pre-contract and construction phases. We investigate how competitive the market is, how successful bidders are chosen, how risks are allocated, and what kind of contract is used. And we recommend reforms to ensure governments procure transport infrastructure at the lowest long-term cost for a given quality standard.

In this chapter we show that governments should: stop rushing to market before understanding the project scope and risks (Section 1.1); find out how similar countries manage to build less expensively (Section 1.2); benchmark their own costs over time (Section 1.3), schedule the project pipeline to minimise bunching both within and

across states (Section 1.4); and avoid giving preference to bidders who pledge to use Australian materials (Section 1.5).

1.1 Governments rush to market and pay a price

Governments want transport projects to get going as soon as possible, especially the big iconic ones they take to elections.

But rushing projects to market often leads to disputes, threats, and delays. Governments often pay firms more than they agreed in the contract, and it's often unclear why.

The Sydney Light Rail project took just 24 months from the initial promise to signing a preferred tenderer – even skipping gateway reviews to meet the schedule.⁶ The Auditor-General criticised the project's 'inadequate planning and tight timeframes'.⁷ When the project became fraught, NSW Premier Gladys Berejiklian stated:

All sorts of threats were made about bad headlines, I don't care. You have a job to do, do the job.⁸

We will throw the book at them in terms of this contract. We are not going to muck around . . . The NSW taxpayer is not going to be fleeced by anyone.⁹

Yet in June 2019, the NSW Government paid an extra \$576 million to contractors for this project.¹⁰

1. Bailey (2020).

2. Department of Treasury and Finance (2020).

3. NSW Government (2020, p. 5).

4. Commonwealth Government (2021).

5. Terrill et al (2020).

6. Audit Office of New South Wales (2016).

7. Audit Office of New South Wales (2016); and NSW Legislative Council, Public Accountability Committee (2019).

8. O'Keefe (2018).

9. Cockburn (2018).

10. Sas (2019).

The Queensland Government rolled out its New Generation Rollingstock trains in December 2017, to meet a timetable dictated by the 2018 Commonwealth Games, held on the Gold Coast.¹¹

But such was the Government's haste that the trains failed to comply with the Government's own disability legislation, and the roll-out occurred before the Government had heard whether the Australian Human Rights Commission would allow it a temporary exemption.¹²

The trains required refitting, at a cost of \$361 million.¹³

The NSW Government awarded the construction contract for Martin Place Station in Sydney to Macquarie Group, at a cost of \$416 million, in response to an unsolicited bid. The actual cost has since risen by more than \$200 million, with no justification for the increase provided in the contract documentation.¹⁴

That project's inadequate development has also affected the Sydney Metro City and Southwest project. The cost of the tunnel and station excavation works package, originally awarded at a cost of \$2.7 billion, has increased by more than half a billion dollars to account for the Martin Place Station design.¹⁵

Just six months after winning office in 2014, the Victorian Government signed an agreement with Transurban to build the West Gate Tunnel. It has since emerged that the soil at the site of the new road is contaminated with dangerous chemicals, and the project is locked

in dispute. Who will end up paying for the delays has not yet been resolved, but the project is currently two years behind schedule.¹⁶

It's common for governments to end up paying firms more than the amount publicly claimed when the contracts were signed, yet we rarely find out the legal basis of the claim, or how the size of the additional payment was arrived at. When this happens on large projects, it is very costly (Figure 1.1 on the next page).¹⁷ It's for this reason that we focus in this report on transport projects worth at least \$1 billion.

Recommendation 1

Governments should only sign contracts that they are prepared to enforce. When they sign a contract, they should show by their actions that they will not pay additional amounts for risks that contractors have agreed to take on.

Recommendation 2

All states should publish a central register of all projects larger than \$500 million, on a comparable basis across projects and jurisdictions. The register should publish within three months, for all contracts larger than \$50 million: contract value, tender process, bidders who submitted an expression of interest, shortlisted bidders, any later changes to the contract value, and the tender process, bidders, and shortlisted bidders on the new scope.

11. Caldwell (2017); and New Generation Rollingstock Train commission of inquiry (2018, p. 13).

12. Caldwell (2017); and New Generation Rollingstock Train commission of inquiry (2018, p. 13).

13. Probert (2019).

14. NSW eTendering (2018a); and Transport for NSW (2019).

15. NSW eTendering (2017).

16. Western Distributor Authority (2018); and Western Distributor Authority (2020).

17. Occasionally, the eventual payment is *less* than the amount publicly claimed when the contracts were signed. This occurs on around 7 per cent of projects larger than \$20 million.

1.2 Australian governments should copy similar countries that build at lower cost

The cost of building infrastructure in Australia is above the global average.

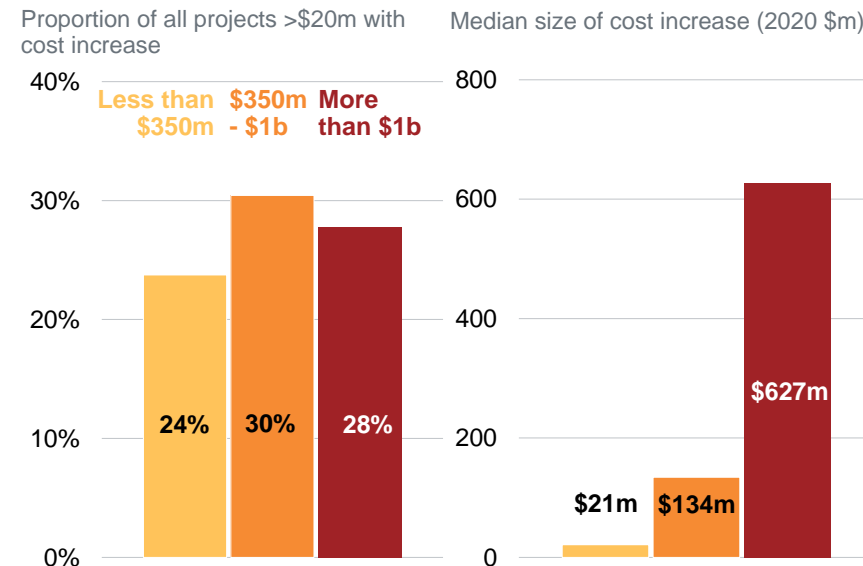
The empirical evidence is incomplete, but what there is shows that rail construction costs in Australia are in the top quarter of 27 OECD countries studied. They are higher than in numerous other rich countries: 26 per cent higher than in Canada, 29 per cent higher than in Japan, and more than three times as high as in Spain (Figure 1.2 on the following page). And road and rail tunnels cost more in Australia than elsewhere in the world, according to an international study.¹⁸

Of course, international comparisons are fraught. The Productivity Commission’s detailed 2014 study noted that ‘infrastructure costs in Australia appear high, but significant uncertainty applies to many published comparisons’.¹⁹

The cost of any particular project depends on factors such as geology, location, the extent of the existing network, and whether the project is bespoke. Madrid avoided bespoke designs when expanding its rail network by 234km, of which 180km was underground, over the 20 years from 1995. The cost of 10 billion euros was much cheaper than new rail lines in many other countries at the same time.²⁰

High labour costs – either because of competition for construction workers from other sectors, or because relevant unions are particularly effective at negotiating wages and conditions – are often considered particularly important in explaining Australia’s high costs.²¹ These explanations may be true, but they are not sufficient to explain

Figure 1.1: Even after contracts are signed, it’s common for governments to spend more than they claimed



Notes: Includes all projects worth more than \$20 million, completed between March 2001 and December 2020. A cost increase is defined as the final project cost exceeding the estimated cost at the start of the construction period. The median sizes shown are medians across all projects that had a cost increase.

Source: Grattan analysis of Deloitte Access Economics Investment Monitor.

18. Efron and Read (2012, p. 25).

19. PC (2014, p. 353).

20. Levy (2019).

21. See, for example, Efron and Read (2012, p. 30) and PC (2014, pp. 436–47).

Australia’s high costs, given that other high-wage countries, such as those of Scandinavia and continental Europe, can build major projects more cheaply.

Australia should do more to learn from countries that manage to build their infrastructure at lower cost.

Recommendation 3

The Commonwealth Department of Infrastructure, Regional Development and Communications should report to the Transport and Infrastructure Council within one year on the means by which similar countries overseas build high-quality transport infrastructure more cheaply.

1.3 Governments should collect benchmarking data to track how much infrastructure costs over time

Today’s stricter requirements for building infrastructure have probably increased costs. As Australia has become richer, governments have become more attentive to local concerns, with noise barriers, bike paths, landscaping, and increased compensation for compulsorily acquired real estate. Contemporary norms also rightly focus more on environmental considerations for soil disposal, storm water, and flood risk.

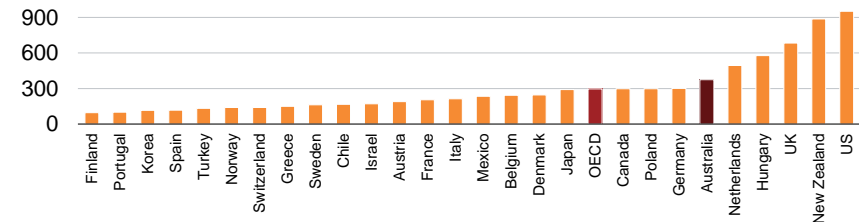
While costs may well be higher today, it is not clear by how much, or to what extent different factors may have contributed to any increases.

An index of the cost of inputs to road construction has shown no sustained real increase over time.²² The inputs included are labour, including on-site and in head office; materials, including bitumen,

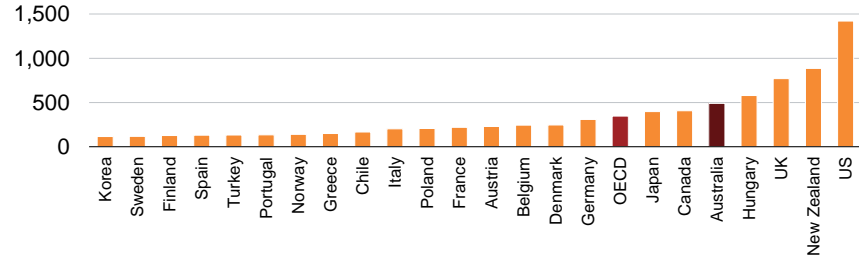
22. BITRE (2016, pp. 2–3).

Figure 1.2: Rail projects cost more in Australia than in many other OECD countries

Average cost per kilometre, railway projects, 2020 \$US million



Average cost per kilometre, railway projects with 100% tunnel, 2020 \$US million



Notes: Includes all OECD countries in the study. Converted to US dollars on a Purchasing Power Parity basis.

Source: Levy (2020).

cement, quarry products, and steel; and equipment, comprising the cost of hire or depreciation of machinery, and the diesel fuel used to run it.²³ Since the 1950s, real prices of these inputs have fluctuated only within a narrow band.²⁴ A cost index of these inputs fell in the few years leading up to the most recent update of the index in 2015-16, after rising significantly in the few years before that.²⁵

The shares of labour, materials, and equipment have on average also not varied much over recent years or decades, although shares on a particular road project often deviate from the average.²⁶

What is not known is whether a given bundle of labour, materials, and equipment still produces as many lane kilometres of road as it used to.

It doesn't in the US: the cost of building a mile of interstate highway has increased dramatically, not because the cost of the inputs rose, but because more inputs are now needed per mile constructed. As incomes have risen, governments have been willing to pay for more expensive highways, with more ramps, bridges, noise barriers, environmental standards, and routes that avoid bulldozing homes.²⁷

In Australia, the Federal Government has started a benchmarking series. A pilot study was published in 2015 and updated in 2017, but there has been nothing since then. This exercise will be useful only if it is repeated regularly over a much longer period.²⁸

23. BITRE (2016, p. 1); and BITRE (2013, p. 6).

24. BITRE (2016). This includes maintenance, but the trend for construction only would be similar: BITRE (2013, p. 11).

25. BITRE (2016, p. 4). The index does not include the cost of land, which has increased, nor the cost of finance, which has decreased since the early 1990s and especially since the Global Financial Crisis.

26. As with input costs, the shares of input types are not available for rail.

27. Brooks and Liscow (2019).

28. See BITRE (2018). This work was carried out at the request of the Transport and Infrastructure Council of the Council of Australian Governments (see Transport and Infrastructure Council (2015)), which commissioned the work in response

Recommendation 4

The Bureau of Infrastructure and Transport Research Economics should make a long-term commitment to regularly update a benchmarking series of road and rail construction costs.

1.4 Governments should schedule projects to avoid bottlenecks

The cost of building road or rail varies according to how avidly firms chase the work, and that depends in part on how much other engineering construction work they're already doing.

In late 2014, it was reported that 'the cost of building projects has fallen by up to 50 per cent as construction firms desperately seek work after the end of the mining boom'.²⁹ The then Minister for Infrastructure and Regional Development, Warren Truss, was quoted as saying:

What we have found is that when we have been calling tenders for projects over the last 12 months or so, we are getting prices sometimes as low as half the cost that we were being asked to pay three or four years ago, or maybe two or three years ago ... Almost universally now tenders are coming in under our estimates, and projects are being completed under our estimates.³⁰

The Minister's insight was borne out in cases such as the Cooroy to Curra: Section C project on the Bruce Highway in Queensland, and Stage 2 of the Gold Coast Light Rail, both of which cost substantially less than expected.³¹

to recommendations of the Productivity Commission's 2014 inquiry into public infrastructure: PC (2014, p. 47).

29. Freed (2014).

30. Ibid.

31. Terrill et al (2020, pp. 43–44).

His view is also supported by a flattening of the cost of building transport infrastructure that coincided with the winding down of the mining construction boom (Figure 1.3).

Governments could constrain the costs to the taxpayer by strategic timing of their transport infrastructure construction plans. Not only could they coordinate their own state's agenda more carefully, they could negotiate with other state governments as to timing. The Federal Government could facilitate such negotiations for projects where it is a partial funder.

Recommendation 5

Governments should coordinate their own schedules and collaborate with neighbouring states to minimise costly bottlenecks on major infrastructure construction.

This would entail stepping back from current practice where governments fast-track projects to get them going within the current term of government. More coordination and cooperation across state lines on timing seems unlikely for as long as project selection remains so highly politicised.

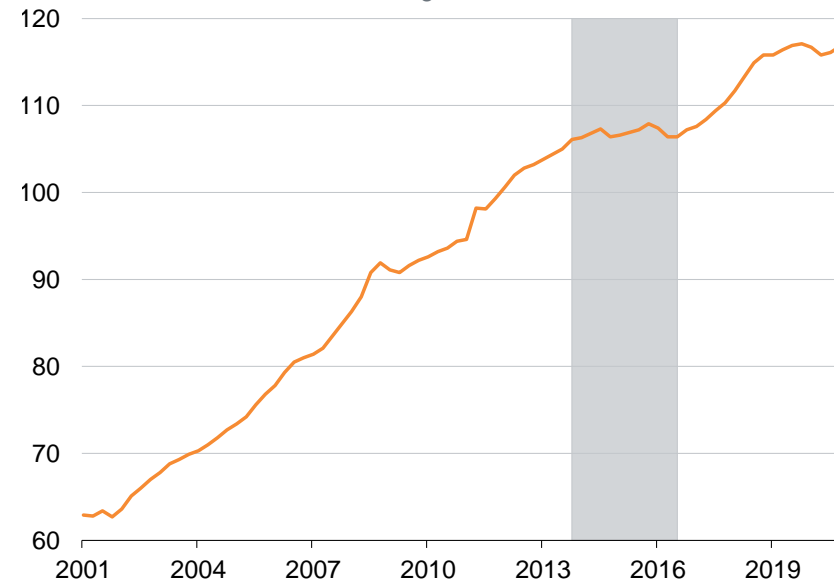
1.5 Local content rules could be forcing up costs

The federal and state governments give preference to bidders who pledge to use specific proportions of Australian-produced materials. Where these rules induce construction firms to purchase materials other than from the cheapest source, higher end prices for infrastructure are the inevitable result.

The Productivity Commission found in 2014 that: 'Local content rules . . . add to bid costs and may risk the selection of the best

Figure 1.3: Transport construction costs were broadly flat during the winding down of the mining construction boom

Producer Price Index, road and bridge construction, Australia



Source: Index Number 3101 from Table 17 of Australian Bureau of Statistics (2021).

value-for-money bidder. The objectives that underpin them are also questionable. These rules should be abolished.³²

Preferences for local content in government procurement are due to legislation and policy both at a federal and state level. For example:

- Nationally, the *Building and Construction Industry (Improving Productivity) Act 2016* requires that companies bidding for government projects worth more than \$4 million specify ‘the extent to which domestically sourced and manufactured building materials will be used to undertake the building work’.
- The Queensland Procurement Policy requires that at least one regional and one Queensland supplier is invited to quote or tender for every procurement opportunity.³³
- Victorian rules state that, for construction projects larger than \$50 million, the Minister for Industry can require as much as 90 per cent of materials to be Australian-produced. Further, all short-listed bidders for jobs worth more than \$3 million must complete a Victorian Industry Participation Policy Plan containing estimates of the levels of local content, local employment, and skills/technology transfer that would arise if their bid were successful.³⁴

These local content rules are additional to employment targets; for instance, Victoria requires at least 10 per cent of the total estimated

32. The Productivity Commission acknowledged that local content rules, in many cases, ‘do not appear to bind or add significantly to the final turnout costs’, but it nonetheless concluded that ‘they may risk government not selecting the least-cost bid on non-cost ground . . . their objectives are questionable . . . nuisance costs [are] created’: PC (2014, pp. 439, 475).

33. Office of the Chief Advisor – Procurement (2019, p. 13).

34. The \$3 million threshold applies to projects in metropolitan Melbourne. A \$1 million threshold applies to projects in regional Victoria: Victorian Department of Treasury and Finance (2020).

labour hours on projects worth more than \$20 million to be done by Victorian apprentices, trainees, or cadets.³⁵ NSW has a similar requirement.³⁶

Whether local content rules are enforceable is open to question, however. The main contractors for Melbourne’s West Gate Tunnel project, CPB Contractors and John Holland, have reneged on an agreement to use 92 per cent Australian steel, and instead imported Chinese steel for about 15 per cent of the project.³⁷ It is unclear whether they have been penalised for this breach.³⁸

Whether local content rules are consistent with stated principles of procurement is also questionable. The Commonwealth Procurement Rules specify that ‘All potential suppliers to government must . . . not be discriminated against due to . . . the origin of their goods and services’.³⁹ In practice, however, states are not bound by this principle.

Whether local content rules are consistent with international free trade agreements is also open to question. New international procurement rules now apply to Australian jurisdictions, including a general prohibition on conditions that require the use of local content, designed to encourage economic development in Australia.⁴⁰

The typical defence of local content rules is that they create or shore up local jobs. Aside from compliance costs, this is harmless enough if the local materials would have been used anyway, provided the local content arrangements do not sway the selection of the successful bidder. But if the rules induce firms to change where they source materials, this makes projects more expensive.

35. DJPR (n.d.).

36. Berejiklian (2018).

37. Victorian Public Accounts and Estimates Committee (2019, p. 6).

38. Hore (2019); and Victorian Public Accounts and Estimates Committee (2019).

39. Department of Finance (2020, p. 14).

40. Hayford (2020a).

Procurement policies are essentially being used to prop up specific firms and sectors that cost more. Such rules are at odds with competition policy reforms introduced since the 1980s, and credited with causing a substantial increase to real GDP. These reforms have been premised on the idea that governments should erect barriers to competition only if the benefits of doing so outweigh the costs, and only if these benefits can be achieved only by restricting competition.⁴¹

If governments insist that new infrastructure projects be used to create or shore up jobs in other sectors, in essence they are insisting on building a version of a road or rail line that is unnecessarily expensive. As the 2015 Harper Review recommended, promoting competition – rather than promoting local providers – should be a central feature of government procurement and privatisation frameworks and processes.⁴²

Local content rules, specifically those relating to steel, have also been defended on the grounds of concerns about the quality of steel from elsewhere, particularly China.⁴³ To the extent such concerns are valid, a quality requirement would be a more effective protection.

Recommendation 6

State governments should align their rules for local content with federal government procurement principles, avoiding giving preference to bidders for transport infrastructure construction projects who pledge to use Australian-produced materials.

41. PC (2020, Appendix B p.3).

42. Harper et al (2015, p. 8).

43. Joint submission from 63 Australian businesses (2016); and Cooper (2015).

1.6 The structure of this report

The behaviour of Australian governments when they procure transport infrastructure is not reassuring to the taxpayer.

Project selection is highly politicised. There is surprisingly little agreement between political parties as to what transport infrastructure priorities should be. Governments want to get projects started during the current term of government, to claim the credit and make it infeasible to reverse them. Governments therefore rush projects to market with inadequate scoping, discovery of site conditions, or attention to how to ensure the best bang for the taxpayer buck. They commonly accept cost increases, even for contracts where the price is relatively fixed.

This report shows that the taxpayer is not getting the best deal because governments:

- are too concerned about what industry wants (Chapter 2);
- do too little to foster competition in the construction industry (Chapter 3); and
- design contracts poorly (Chapter 4).

2 Governments are too concerned about what industry wants

Australian governments are too sensitive to the concerns of the engineering construction sector. It is no surprise that industry wants as good a deal as possible, but it is surprising how responsive governments are to its concerns.

This chapter shows that industry concerns of low profitability (Section 2.1) are due not to any shortage of government work but rather to firms claiming that they are making insufficient profit on that work (Section 2.2). If governments want to protect firms by paying more than a project warrants on its merits, this should not be bundled into a contract price but funded transparently on-budget (Section 2.3).

2.1 Governments are responding to industry claims of low profitability

Industry insiders are talking about a ‘profitless boom’.⁴⁴ The engineering construction sector has become very vocal about wanting a better deal from governments on public infrastructure projects. Unless risk is rebalanced, industry leaders argue, the sector is in jeopardy.⁴⁵ According to John Holland CEO, Joe Barr, ‘Tier one contractors in Australia are not making any money . . . As an industry we are teetering on the brink of collapse’.⁴⁶ Others agree.⁴⁷

Certainly, there are claims of losses. Lendlease Engineering announced a \$350 million after-tax write-down at the end of 2018 because of lower productivity on Sydney’s NorthConnex project, bad weather, access issues, and remedial work on other projects.⁴⁸ An

Australian study of contractor profitability claimed that the largest firms in Australia have had disastrous financial results for 17 years, on average destroying the originally planned 9 per cent profit margin on large infrastructure projects plus a further 7 per cent.⁴⁹ The study does not explain why shareholders would tolerate such a pattern of losses.

The profitability or otherwise of a firm is difficult to determine, particularly when it’s part of a multinational enterprise, as is the case for most large firms operating in Australia. It’s usual for multinational enterprises to structure their financing arrangements to establish a tax-efficient mix of equity and debt for the jurisdictions in which they operate, and they may engage in related-party transactions, such as transfer pricing, that complicate any attempt to determine profitability.

Nevertheless, governments are listening to industry concerns. In June 2018, the NSW Premier made a 10-point commitment to the construction sector, promising to procure and manage projects in a more collaborative way, and to take a partnership approach to risk allocation.⁵⁰ In May 2019, the Victorian Premier asked Roads Australia to find solutions to industry concerns about the delivery of major transport infrastructure projects in Victoria. Those two state governments say they have joined with industry to form the Construction Industry Leadership Forum to improve the value of procurement and delivery of infrastructure not only to the taxpayer but also to industry.

We should be wary. As Adam Smith observed in 1776:

44. Hayford (2020b); and Croagh (2020).

45. Australian Constructors Association (2020, p. 4).

46. Wiggins (2020).

47. Croagh (2020); and Hayford (2020a).

48. Bullock (2018).

49. Ryan and Duffield (2017).

50. Infrastructure NSW (2018).

People of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the publick, or in some contrivance to raise prices.⁵¹

2.2 There's no shortage of government work in the pipeline

In recent years, there has been no shortage of government infrastructure work. Grattan Institute's 2020 report, *The rise of megaprojects: counting the costs*,⁵² found that the value of work underway on road and rail projects for Australian governments exceeded \$120 billion for the first time in March 2020.

When the pandemic hit, and recession followed, government infrastructure projects were relatively unscathed (Figure 2.1). If anything, federal and state governments were even keener, wanting to fast-track projects in pursuit of an 'infrastructure-led recovery'.

In this environment, it is difficult to see why governments should be contemplating corporate welfare to the sector.

Firms may make losses because of bad luck, or because they bid a loss-making price on infrastructure projects. There are concerns among some industry observers that consistent loss-making could result in firms leaving the market, decreasing competition to the point where governments end up paying more in the long run.⁵³ These concerns are overblown.

While it is possible that individual firms may become insolvent, or leave the Australian infrastructure market after suffering losses, this is different to a bigger exodus. An insolvency is invariably a bad outcome for the firm involved, and disruptive for staff and suppliers, but this does not necessarily make it government's problem.

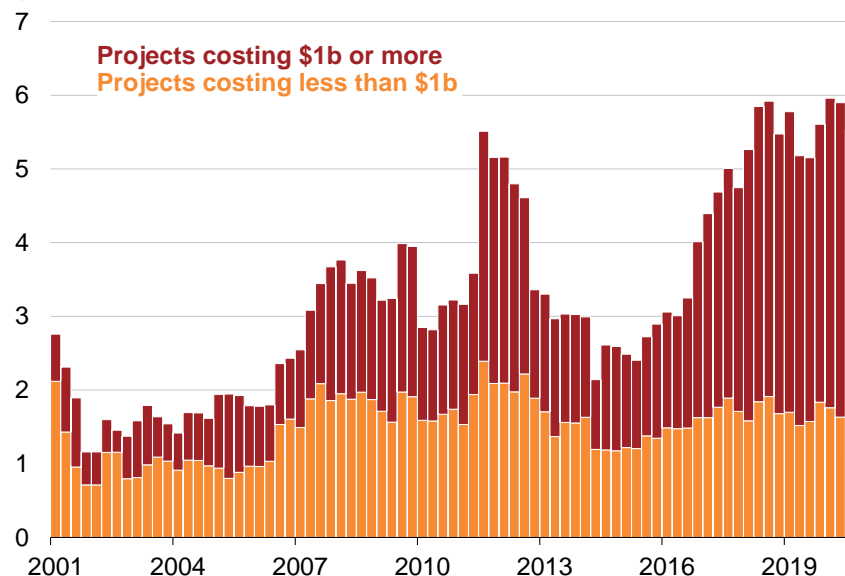
51. Smith (1776).

52. Terrill et al (2020).

53. Hayford (2020c); and Battley (2020).

Figure 2.1: There continues to be a large pipeline of transport infrastructure projects

Estimated value of work done on transport infrastructure projects per quarter, \$2020 billion



Notes: Includes all projects worth more than \$20 million. Where a project is under construction across multiple quarters, we have assumed the total project cost is incurred equally across the period of construction.

Source: Grattan analysis of Deloitte Access Economics Investment Monitor.

The sector at large does not appear to be close to a point of dangerously low competition: there is no evidence of a widespread or chronic exodus of firms from the sector. Firms continue to bid for government work. While Lendlease's engineering division reported substantial write-downs on several major projects, and was sold by the Lendlease group in 2019,⁵⁴ the business was purchased by Acciona as a going concern, cementing its place in the Australian sector.

Aside from bad luck, four reasons are commonly put forward to explain why firms might bid a loss-making price: optimism bias, the 'winner's curse', to gain a ticket to play, or strategically, in the expectation of making up their margin later on through variations and claims. The question is whether any of these should be of concern to a government, rather than just to shareholders.

2.2.1 Firms may make losses because they suffer from optimism bias or the winner's curse

Firms might sometimes sign up to a loss-making project because they believe it will probably turn out fine in the end. A negotiation team within a large firm may be susceptible to 'deal fever' – the thrill of winning the work – without worrying too much about how the project will actually turn out.⁵⁵

Firms might also have a tendency to optimism bias if they are not fully aware of the distribution of costs on past projects. The likelihood of a cost overrun is much greater than the likelihood of a cost underrun,⁵⁶ but this is not obvious to people who rely on official cost estimation guidance. While data on benefits is harder to come by, where it is available it shows that benefits are often overestimated.⁵⁷

54. Danckert (2019).

55. Ryan and Duffield (2017, p. 32).

56. Terrill and Danks (2016); and Terrill et al (2020).

57. Flyvbjerg et al (2002).

Alternatively, firms might sign up to a loss-making project because of a phenomenon known as the winner's curse,⁵⁸ which has been explained in the following terms.

The winner's curse model ... was first developed by three ... oil company employees. In their model a field is worth a similar amount to most companies, but this value is hard to estimate before drilling begins. Before an auction, each firm commissions a survey to estimate the value of the field: if the surveys are unbiased, then their average should be close to the true value. But the estimates themselves will vary, perhaps widely. Companies know only their own estimates, and the firm with the highest estimate is likely to bid the most and win the auction – only to discover that the oil field is, on average, worth less than they thought. The blocks they win are those on which their geologists have screwed up. This problem recurs in business and finance: in corporate takeovers, the bid most often succeeds because the bidder has paid too much.⁵⁹

It should be up to the successful bidder to foresee and manage the risk of optimism bias or the winner's curse; after all, that firm or consortium enjoys the profit, if all goes well. If governments shield firms from the risk that they may make no profit or lose money on a project, they invite firms to underbid.

2.2.2 Firms may make losses to gain a ticket to play

Firms might sometimes sign up to a loss-making project if they decide this is a way to prove themselves as new entrants to the Australian market. Contractors 'can price the same project completely differently depending on how desperate they are for the piece of work'.⁶⁰

And it seems that that strategy can work. Many of the new international entrants came to Australia from depressed European markets,

58. Eliasson and Fosgerau (2013).

59. Kay and King (2020, pp. 256–257).

60. According to Scott Langdon, a partner at KordaMentha, cited in Battley (2020, p. 5).

particularly Spain.⁶¹ They have employed various strategies to establish a presence in Australia. Several have entered partnerships and joint ventures with domestic firms; for example, UK-based company Laing O'Rourke partnered with Australasian firm Fulton Hogan on Victoria's Level Crossing Removal program, and Asian giant Samsung C&T with Australasian company CPB Contractors on major contracts for Sydney's WestConnex network.⁶² Spanish firm Acciona has acquired domestic firms, including Geotech Group and Lendlease Engineering.⁶³ And some international firms have won work in their own right; Italian company Salini and Impregilo (now Webuild) won the surface civil works package for Sydney's North West Rail Link.⁶⁴

Australian governments should not be concerned if new market entrants undercut domestic firms as they establish themselves in this country. The Australian Competition and Consumer Commission has shown no signs of concern.⁶⁵ From the perspective of taxpayers, it's hard to see good-quality, low-cost infrastructure in anything other than a positive light.

2.2.3 Firms may engage in strategic underbidding with an expectation of making claims later

Perhaps encouraged by governments' practice of not enforcing contracts (Section 1.1), firms sometimes underbid strategically, with the expectation of making up their margin through claims and variations.

According to Austroads, where bidder selection is mostly or entirely about price, 'this was perceived to contribute to contractors seeking to recover losses through variations and challenges'.⁶⁶ Austroads further

reports that contractors 'buy' contracts in tight markets 'in expectation that they will recover money through aggressively seeking variations'.⁶⁷ So that they can avoid 'resorting to defensive tactics', contractors argue that unassessed risk should remain with the client.⁶⁸

Several forces are at work here. A fundamental transformation of bargaining power occurs at the point of contract execution. Instead of multiple bidders, there is one contractor. Contractors gain power to hold up the works in a variety of ways, and can leverage this power to bargain for better terms and conditions.⁶⁹

This shift in bargaining power is partly mitigated by the fact that both the government and the contractor expect the current project to be one of a series. Contractors need to manage their reputations in order to be contenders when they bid on future projects.

The likelihood of claims and variations later on increases when projects are rushed to market, as they often are. Rushing projects leads to inadequate scoping and specification, and insufficient attention to discovery of site conditions.⁷⁰

To discourage strategic underbidding, governments could introduce an expert panel to oversee variations to a contract, decide whether any variations should be put to the market, and publish its deliberations and reasons, as well as all contract modifications.⁷¹ Contractors that regularly seek to renegotiate terms should face a higher hurdle to succeeding in future procurements.

These strategies are discussed further in Chapter 4.

61. Stothard (2018).

62. Major Transport Infrastructure Authority (2019); and Freitas (2020).

63. Acciona (2017).

64. Transport for NSW (2013); and Saulwick (2013).

65. ACCC (n.d.); and PC (2014, p. 425).

66. Austroads (2020a, p. 21).

67. Austroads interviewed 26 government/peak body stakeholders and 11 contractors and consultants: Austroads (ibid, p. 25).

68. Ibid (p. 11).

69. Ibid (p. 19).

70. PC (2014, p. 409); and Infrastructure Australia (2019, p. 213).

71. Engel et al (2020, pp. 23–24).

2.3 If governments provide corporate welfare, it should be transparently on-budget

One reason governments worry about the profitability of the engineering construction sector is that they are thinking not just of today's project, but also of tomorrow's. They do not want to see a major firm fail, because that could mean less competition in future. Therefore, an incumbent firm may win a job when its bid did not warrant victory.

Such behaviour by governments muddies a project transaction with corporate welfare. It is far from clear that such choices do in fact obtain infrastructure at the lowest long-term cost to taxpayers.

Industry assistance, if it can survive public scrutiny and debate, should be funded explicitly on-budget as separate outlays.

Recommendation 7

If governments decide to provide industry assistance to the engineering construction sector, they should do so transparently on-budget.

But preferable to attempting to ensure individual firms avoid unprofitable scenarios, governments should focus on two major areas to ensure the amount paid for new infrastructure is as low as possible over the long term.

Firstly, governments should ensure that the market for engineering construction is as competitive as possible (Chapter 3).

Secondly, governments should adopt a systematic process to select the best procurement strategy (Chapter 4).

3 Competition is fundamental

Few locally-based engineering construction firms have the expertise and balance sheet to tackle projects worth \$1 billion or more. Yet competition is fundamental to procuring public infrastructure at lowest cost to the taxpayer. Robust competition helps keep construction costs down and encourages firms to innovate.

This chapter shows that plenty of megaproject work is done by firms other than the largest, or ‘tier one’, firms (Section 3.1). But this may change: as projects have grown, so too have contracts (Section 3.2). For the market to be attractive to new entrants, governments should avoid giving undue priority to local experience, publish the weightings of bid selection criteria, and stop accepting market-led proposals (Section 3.3). To deter collusion, governments should publish key contract and tender process details (Section 3.4).

3.1 Mid-tier firms have been getting a substantial share of megaproject work

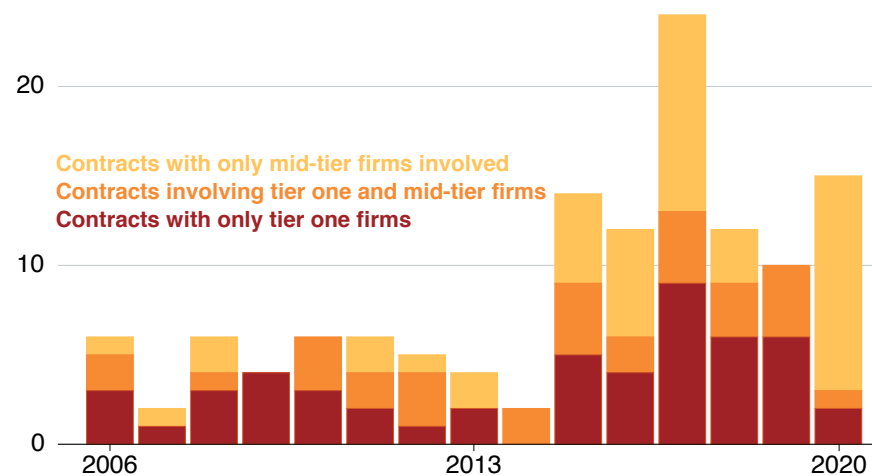
A tier one firm is capable of delivering a project or contract worth \$1 billion or more solo. The tier one firms operating in Australia today are CPB Contractors, John Holland, and Acciona;⁷² historically, there have generally been two or three such firms active at once (Figure 3.10 on page 31). There are many more mid-tier firms: tier twos, able to take on contracts up to about \$500 million without a joint venture partner, and tier threes, able to take on contracts of less than \$100 million.⁷³

72. We classify Acciona as a tier one firm following its acquisition of Lendlease Engineering in September 2020, and refer in this report only to the firm’s Australian operations. We consider all non-tier one firms in our data to be ‘mid-tier’.

73. Infrastructure Australia (2019, p. 233).

Figure 3.1: Mid-tier firms have consistently won a share of megaproject work

Number of contracts in projects worth more than \$1 billion awarded to firms since 2006



Notes: This includes construction contracts only. We classify John Holland, CIMIC Group firms CPB Contractors (formerly Leighton Holdings) and Thiess, Lendlease, Bilfinger Berger (including Valemus firms Abigroup and Baulderstone), and Acciona as tier one firms. Acciona is included as a tier one firm for all past projects, even though it only became a tier one with the acquisition of Lendlease Engineering in 2020. All construction contracts considered by the procuring agency as a major contract or work package are included, for projects over \$1 billion since 2006. Does not include rollingstock contracts.

Source: Grattan analysis. See Appendix A.

Tier one firms often win government megaproject work. But mid-tier firms also have a history of winning megaproject work (Figure 3.1 on the preceding page).

In fact, mid-tier firms won 31 per cent of the contracts on megaproject work over the past 15 years without the involvement of a tier one firm. The proportion rose slightly, from 28 per cent between 2006 and 2013, to 34 per cent between 2014 and 2020. Tier one firms won 27 per cent in joint ventures with mid-tier firms, and 41 per cent without.⁷⁴

But the value of the contracts that mid-tier firms won on megaprojects is smaller on average than those won by tier one firms. On contracts beyond \$1 billion, mid-tier firms are rarely involved without a tier one partner (Figure 3.2).

3.2 But very large contracts are becoming more common

Large projects are typically broken up into several contracts. The average megaproject worth \$1 billion or more is divided into two or three contracts; the average mega megaproject, worth \$5 billion or more, is divided into four or five contracts.⁷⁵

The size of contracts has grown. The average contract in a megaproject was 38 per cent higher in the 2014-to-2020 period than it was between 2006 and 2013. It's no longer a rarity for a single contract on a megaproject to be worth more than \$2 billion, and even as much as \$4 billion or \$5 billion (Figure 3.3 on the following page).

The growth in contract size calls into question how many firms can feasibly bid for such work. Even though mid-tier firms can and do win megaproject work, they do not do the very largest contracts without

Figure 3.2: Mid-tier firms are often involved in large projects, but mostly win smaller contracts on those projects

Number of contracts of different sizes, in projects over \$1 billion, awarded to firms since 2006, by value (\$2020 billion)



Notes: We classify John Holland, CIMIC Group firms CPB Contractors (formerly Leighton Holdings) and Thiess, Lendlease, Bilfinger Berger (including Valemus firms Abigroup and Baulderstone), and Acciona as tier one firms. Acciona is included as a tier one firm for all past projects, even though it only became a tier one with the acquisition of Lendlease Engineering in 2020. All construction contracts considered by the procuring agency as a major contract or work package are included, for projects over \$1 billion since 2006. Does not include rollingstock contracts.

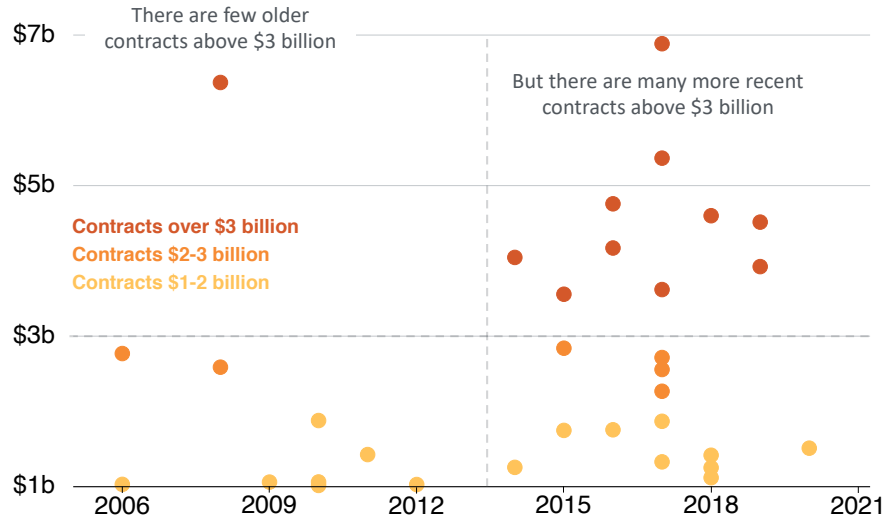
Source: Grattan analysis. See Appendix A.

74. Based on analysis of all major construction work packages, on all government transport infrastructure projects valued at \$1 billion or more and begun since 2006, whether completed or still in progress. See Appendix A for details.

75. Grattan analysis. See Appendix A.

Figure 3.3: There has been an increase in very large contracts for transport construction megaprojects

Contracts over \$1 billion since 2006, by value (\$2020 billion)

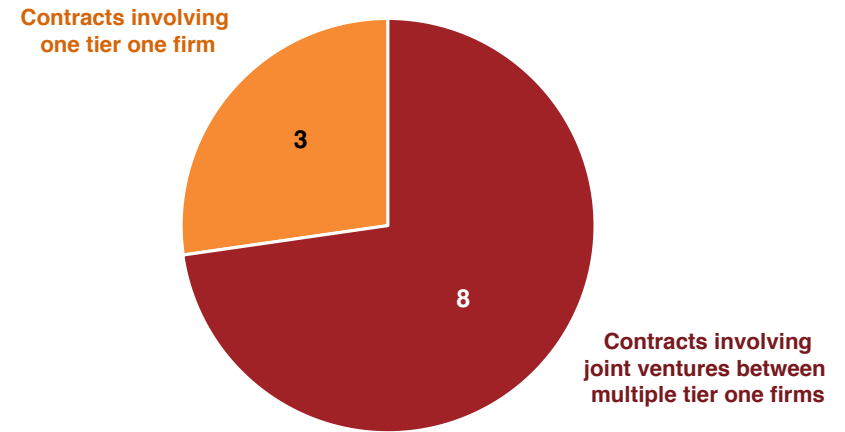


Notes: This chart includes only construction contracts worth over \$1 billion, in megaprojects (projects over \$1 billion) where the first contract was signed during or after 2006. Does not include rollingstock contracts.

Source: Grattan analysis. See Appendix A.

Figure 3.4: Most contracts worth more than \$3 billion have been joint ventures between tier one firms

Number of construction contracts worth more than \$3 billion (2020 dollars) awarded since 2006



Notes: This includes construction contracts only. We classify John Holland, CIMIC Group firms CPB Contractors (formerly Leighton Holdings) and Thiess, Lendlease, Bilfinger Berger (including Valeum firms Abigroup and Baulderstone), and Acciona as tier one firms. Acciona is included as a tier one firm for all past projects, even though it only became a tier one with the acquisition of Lendlease in 2020. If a contract was awarded to a partnership between two or more of these firms, it is classified as a tier one joint venture. Does not include rollingstock contracts. See Table B.1 in Appendix B for further details.

Source: Grattan analysis. See Appendix A.

partnering, typically with a tier one firm. Once contract size exceeds about \$3 billion, even tier one firms tend not to undertake the largest contracts without entering into a joint venture with another tier one firm (Figure 3.4 on the previous page).

An example of this is the Rozelle Interchange project in NSW, which initially attracted only one bidder – a joint venture between the big three firms (Box 1).

If very few firms are willing and able to take on the kind of work that is becoming increasingly common, there may be less competition for government transport projects. And less competition could call into question whether governments can get infrastructure at the lowest long-term cost to taxpayers.

3.3 A competitive market is attractive to new entrants

Like many markets, the engineering construction market is not perfectly competitive. Taking on contracts worth more than \$3 billion or so demands very considerable technical and financial capability. And the Australian market can sustain only so many players.

But *potential* competition has a role to play too. Even if only a handful of firms or consortia bid on a particular project, the prospect that other firms *could* bid, or could enter the market for future work, dampens the enthusiasm of the few actual bidders to propose too high a price.⁷⁶

The Australian Competition and Consumer Commission would welcome more entrants; its Chairman has expressed concerns about the construction industry, saying ‘if we had more competition, particularly at the top end . . . that would be a lot better for the Australian economy’.⁷⁷

76. Baumol et al (1982).

77. CEDA News (2021).

Box 1: The Rozelle Interchange

In 2017, the NSW Government put to tender a multi-billion-dollar contract for the design and construction of the Rozelle Interchange, a key part of the WestConnex project. This contract was both large and complex, including tunnelling on multiple levels to a depth of 65 metres.^a

When the tender closed, there was only one bid. This was from a consortium made up of the three tier one firms operating at the time: Lendlease, CPB Contractors (formerly Leighton Holdings), and John Holland.

The Government rejected this offer on the grounds that it was ‘unlikely to deliver value for money’.^b The works were subsequently re-tendered under a collaborative contractor client model to offer contractors more flexibility in the design of the project, as well as a promise to compensate losing bidders up to \$20 million for bid costs.^c

This second tender resulted in two shortlisted bidders: the original bidders (minus Lendlease, which pulled out) and a consortium of Salini Impregilo, Samsung C&T, and Clough. The work was eventually awarded to CPB Contractors and John Holland.

a. Hawke (2017).

b. Ibid.

c. O’Sullivan (2018); and Wiggins (2018a).

The engineering construction market in Australia must be open to new entrants, both local (Section 3.3.1) and from overseas (Section 3.3.2).

3.3.1 There are pathways for local firms to compete for the largest contracts

In Australia, the immediate competitors on a contract worth \$1 billion or more are few and well-known, but the field of potential competitors is wider.

Potential competitors include firms that usually operate in related fields, such as building construction or construction services. Such firms can and do take on engineering construction work. For instance, while most of Laing O'Rourke's work in Australia is in energy and commercial building, the firm recently won a contract worth more than \$1 billion to build Sydney Metro's Central Station.⁷⁸

Firms can also compete for extremely large contracts if they are able to increase their scale, by merging, forming joint ventures, or simply growing. Joint ventures between mid-tier firms can compete for very large contracts. For example, mid-tier firms McConnell Dowell and Fulton Hogan have each won a share of contracts worth well over \$1 billion as part of joint ventures in Victoria's level crossing removal programs. Neither alliance venture included a tier one firm.⁷⁹ However, it's not typical for mid-tier firms to grow into tier ones (Figure 3.10), or to merge.⁸⁰

While it is possible for local mid-tier firms to win large contracts on megaprojects, it does not happen often. One remedy is to break megaprojects into smaller contracts, as discussed in Chapter 4. If the

78. NSW eTendering (2018b).

79. Buying for Victoria (2017); and McConnell Dowell (2021).

80. There has been no case over the past decade where an engineering construction firm has sought either an informal merger review or a merger authorisation from the Australian Competition and Consumer Commission.

trend to extremely large contracts, worth more than \$3 billion, persists, the short-to-medium term opportunity for governments to draw on mid-tier firms for transport megaproject work will be very limited.

3.3.2 International firms can enter the market, and this must continue

From time to time, engineering construction firms operating overseas establish a presence in Australia. Many that have entered during the past 15 years have won work on Australian government megaprojects (Figure 3.5 and Figure 3.6 on the next page).

International entrants establish themselves in different ways. Spanish firm Acciona established itself as a tier one firm in 2020, when it completed the acquisition of Lendlease Engineering and Geotech Group. International entrants often partner with domestic firms to gain familiarity with local norms and institutional arrangements, and to earn a local reputation.

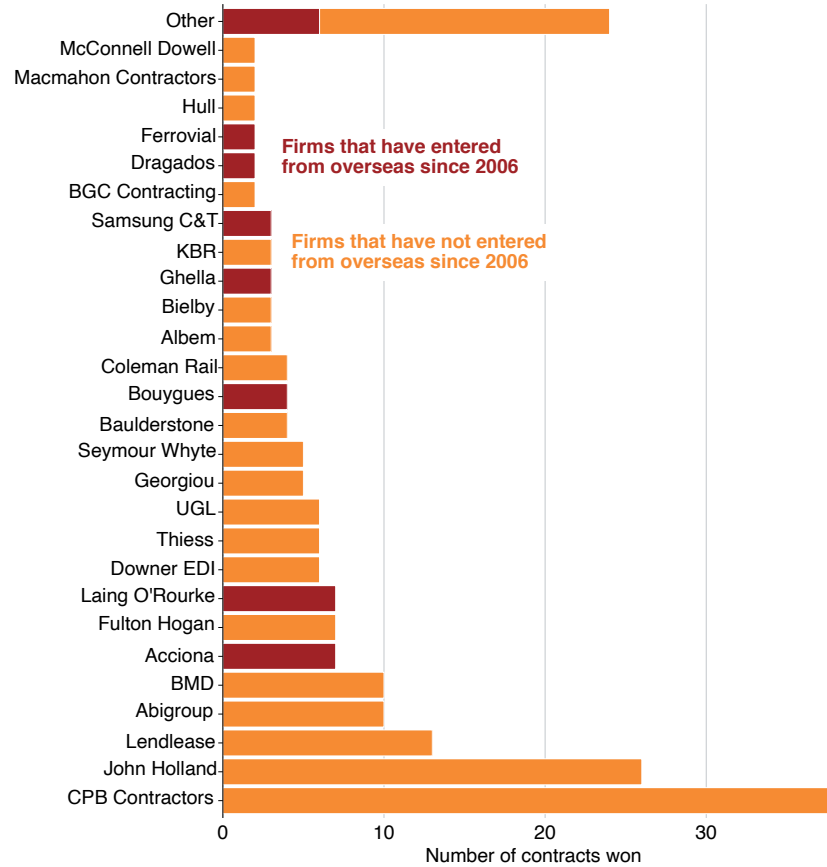
International entrants add to local competition, and it's very helpful to governments if there are a variety of market players willing and able to take on work.⁸¹ In particular, when tier one firms form a joint venture to bid on a large contract, the only source of genuine competition may be from international firms (as was the case with the Rozelle Interchange, described in Box 1).

International entrants have had more success in NSW than in other states. Over the past 15 years, NSW has awarded 28 per cent of its megaproject contracts to international entrants, whereas Victoria has awarded only 11 per cent to international entrants. Queensland and WA have awarded 16 per cent and 25 per cent respectively (Figure 3.7 on page 26). NSW has also awarded a substantially larger share of the value of its megaproject work to international entrant firms than

81. Wiggins (2016).

Figure 3.5: Many different international entrants have been awarded megaproject contracts in the past 15 years

Number of contracts won in projects over \$1 billion, awarded since 2006

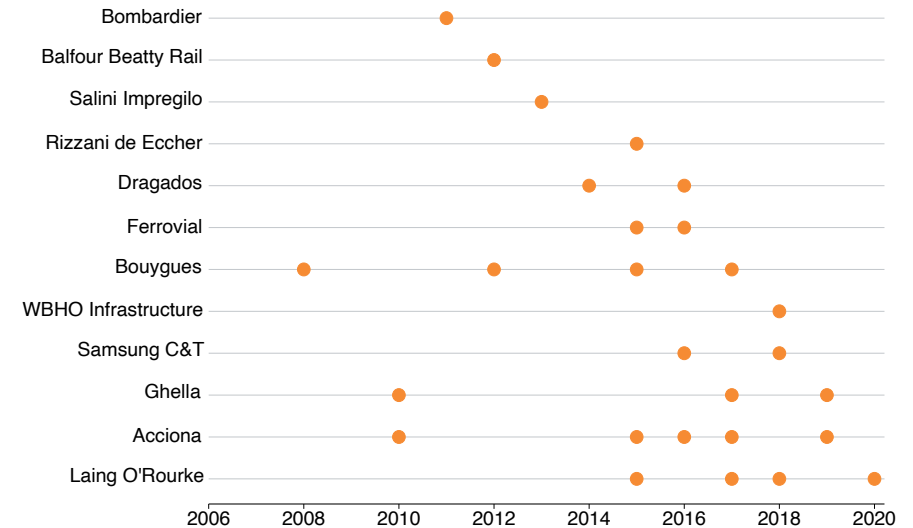


Notes: 'Other' includes firms that have been awarded one contract in megaprojects since 2006. Contracts have been assigned to the firm that was awarded the contract at the time of issue – thus, some of the firms listed are no longer functioning entities. Any firm that has entered the Australian transport construction market within the past 15 years and was previously operating in other regions is considered an international entrant. This is distinct from international ownership. The number of contracts won includes contracts won as part of a joint venture, alliance, or consortium. The CPB Contractors category includes contracts awarded to Leighton Contractors.

Source: Grattan analysis. See Appendix A.

Figure 3.6: International entrants have consistently won megaproject work

Years in which international entrant was awarded contract/s in projects over \$1 billion, since 2006



Notes: Any firm that has entered the Australian transport construction market within the past 15 years and was previously operating in other regions is considered an international entrant. This is distinct from whether a firm is internationally or locally owned. Each point represents a year in which an international entrant won one or more contracts. In some cases a point represents multiple contracts.

Source: Grattan analysis. See Appendix A.

other states. This may change; the Victorian Government has sought to foster competition, by restricting tier one firms from partnering on the North East Link.⁸²

The record of the past 15 years shows that barriers to entry from overseas are not insurmountable. But there are two reasons to think the barriers to entry may nonetheless be higher than necessary.

Firstly, industry insiders claim governments show a strong preference for extensive local experience.⁸³ Any requirement for extensive local experience seems poorly founded – over the past 15 years, projects with an international entrant involved performed at least as well in terms of cost during the construction phase as projects with no international firms.⁸⁴

Significant requirements for local experience unnecessarily disadvantage international entrants.

It's also harder for international entrants to win work in situations where the weightings attached to selection criteria are not transparent or not specified.⁸⁵ The Australian Constructors Association says tenders are often opaque as to how selection criteria are weighted.⁸⁶

The NSW Government has explicitly stated that it does not 'use a formulaic approach in evaluating bids because weighting and formulas may place undue emphasis on price rather than overall value for money'.⁸⁷ But if governments don't specify how the criteria are weighted, procurement agencies may consciously or unintentionally assess different bids differently, focusing on different factors for each

82. Wiggins (2018b).

83. KPMG (2010, p. 13).

84. Grattan analysis. See Appendix A.

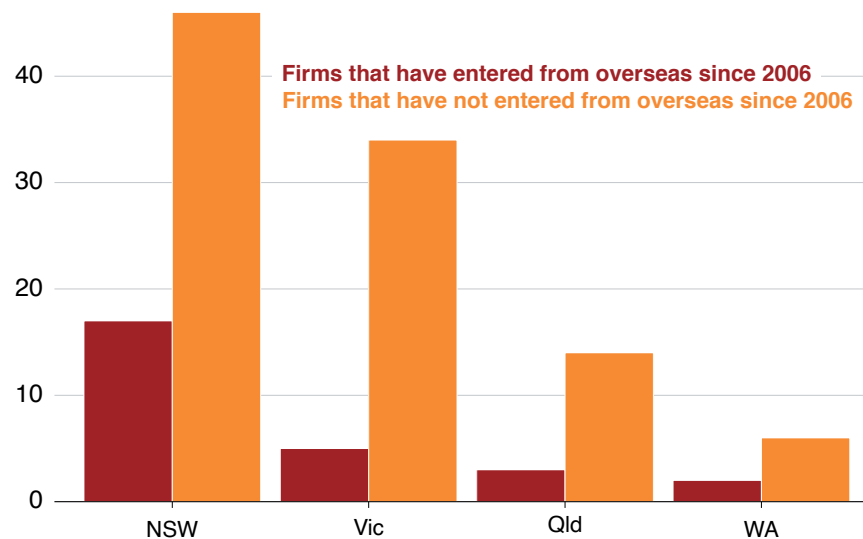
85. Livesey and Bold (2013, pp. 3–4).

86. Australian Constructors Association (2020, p. 22).

87. NSW Treasury (2017, p. 36).

Figure 3.7: International entrants have been awarded more contracts in NSW than any other state

Number of contracts in projects over \$1 billion awarded to firms since 2006



Notes: Any firm that has entered the Australian transport construction market within the past 15 years and was previously operating in other regions is considered an international entrant. This is distinct from whether a firm is internationally or locally owned. Only construction contracts are included.

Source: Grattan analysis. See Appendix A.

firm. This approach runs the risk of favouring established local firms, due to local firms' familiarity with the process, and procurement agencies' familiarity and comfort with firms they have worked with before.⁸⁸

A second indication that barriers to entry are higher than necessary is that it's more costly to bid in Australia than other jurisdictions, partly because Australian governments require bidders to do more design work than governments elsewhere.⁸⁹

Because it can cost tens of millions of dollars to bid, most firms cannot tolerate too many losing bids. This affects domestic tier two firms as well as international entrants.

To address this, some state governments now offer reimbursement of up to 50 per cent of bid costs on certain projects.⁹⁰

Recommendation 8

In selecting a successful bidder, governments should not weight local experience any more heavily than is justified to provide infrastructure at the lowest long-term cost. Governments should publish weightings of the criteria used to select the winning bid for a contract.

3.3.3 Market-led proposals bypass competition and should be rejected

A market-led proposal involves private-sector proponents developing a project proposal and then lobbying government to invest in it. When

88. Livesey and Bold (2013).

89. PC (2014, p. 453); and Infrastructure Australia (2019).

90. Australian Constructors Association (2020, pp. 19, 22); and NSW Government (2018a).

a government accepts a market-led proposal, it usually bypasses the tender process, and instead negotiates directly with the firm that submitted the proposal.

It's an extreme case of bypassing competition; the government engages with a monopoly provider during as well as after the contract negotiation. About \$11 billion of transport infrastructure over the past fifteen years has been commissioned through market-led proposals. They are particularly prominent in Victoria, where a sixth of the value of megaproject contracts has been awarded through market-led proposals (Figure 3.8 on the next page).

Advocates of market-led proposals claim that they enable infrastructure that might not otherwise be built, and that the firm making the proposal has a special innovation or unique edge of some kind.

But market-led proposals come at a cost. Accepting unsolicited proposals for toll roads 'generally leads to higher costs to taxpayers, drivers, or both', according to Rod Sims, Chairman of the Australian Competition and Consumer Commission.⁹¹ A World Bank review of market-led proposals in Australia and fourteen other countries found that 'allowing a proponent to develop the project creates significant challenges in ensuring competition and . . . value for money', and often leads to 'poorly structured deals'.⁹²

In reality, projects adopted through market-led proposals are unlikely to be genuine innovations. Instead, they are more likely simply to be projects that are not in the project pipeline.⁹³

The federal and state governments have all created infrastructure advisory bodies to identify infrastructure needs and develop long-term infrastructure plans. It is difficult to believe that governments do not

91. Jacks and O'Sullivan (2018).

92. World Bank (2017, pp. 10–11).

93. Ibid (p. 8).

already know the transport problems that need to be addressed, or that they do not already have a reasonable idea of how to address them. The proposals that transport departments and infrastructure bodies generate are more likely to be in the public interest than those generated by the private sector.

And, in practice, it seems that firms do not actually bring a unique edge. The following two case studies of prominent market-led proposals illustrate how flimsy the arguments of uniqueness, and thus the rationale for bypassing competition, can actually be.

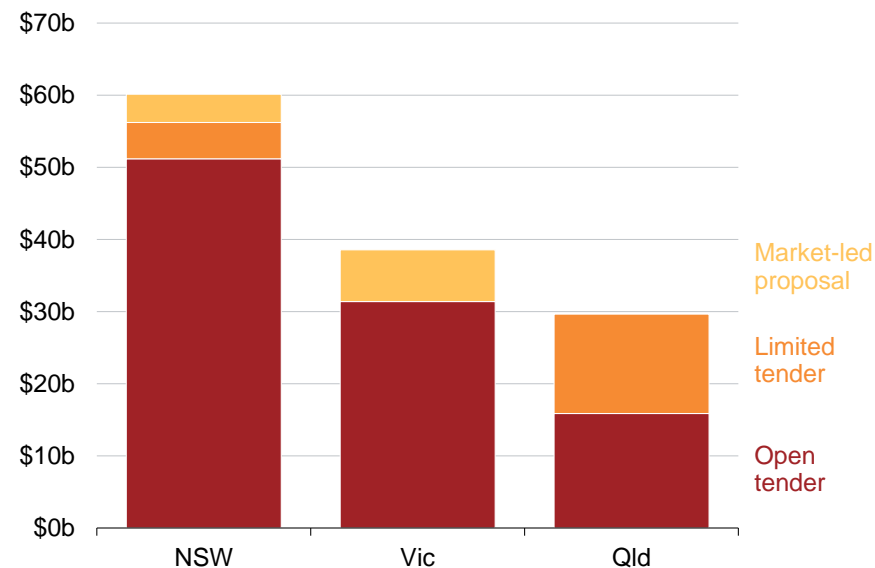
Case study 1: Martin Place Station

In 2018, Macquarie Group made an unsolicited proposal to the NSW Government to develop the Martin Place Station and an above-station precinct and tower, as part of the Sydney Metro City and Southwest project.⁹⁴

The Government awarded the contract to Macquarie Group without a competitive tender. The rationale for not going to competitive tender mostly relied upon the ‘unique’ opportunity arising from Macquarie Group’s ownership of its heritage-listed headquarters at 50 Martin Place, where tunnelling would be required for a new underground pedestrian connection linking Martin Place with Hunter Street, with the potential to extend through to O’Connell Street.⁹⁵

It’s difficult to sustain an argument that this market-led proposal brought unique benefits that outweighed the benefits of competition. In fact, the Government rejected a bid for the development from competing firm Dexus, which, like Macquarie Group, also owns a building next to the proposed Martin Place Station exit.⁹⁶ Indeed, the Government

Figure 3.8: Most but not all tenders on transport megaprojects are open
Value of tenders in projects over \$1 billion since 2006



Source: Grattan analysis. See Appendix A.

94. Todd and Drummond (2020).

95. Todd and Drummond (2020); and Transport for NSW (2018).

96. Todd and Drummond (2020); and Winestock (2017).

compulsorily acquired a separate building owned by Dexus for the project.⁹⁷

Case study 2: The West Gate Tunnel

Melbourne's West Gate Tunnel was awarded to Transurban in response to a market-led proposal. The Victorian Government bypassed the usual tender process and signed a contract with Transurban on the basis of advice from the Department of Treasury and Finance in December 2017 that the company's offer was 'unique'.⁹⁸

The uniqueness related solely to Transurban's ability to fund the project via an agreement with the Victorian Government allowing the company to raise tolls on its existing CityLink concession, and to charge tolls on that road for a further decade, to 2045.

An Auditor-General's report quite reasonably questioned whether funding should have been considered the defining 'unique' characteristic to exclude a competitive procurement process, since the community will pay for the project whichever funding source is adopted.⁹⁹

Recommendation 9

Governments should award all infrastructure contracts through an open tender process.

3.4 Collusion is a concern

Collusion among firms bidding for government infrastructure work is an ever-present danger which may lead government to overpay

97. Dexus (2016).

98. VAGO (2019, p. 35).

99. Ibid (p. 36).

on infrastructure contracts. Robustness against collusion is a key determinant of a competitive market.¹⁰⁰

The Australian Competition and Consumer Commission has set up a Commercial Construction Unit to investigate allegations of anti-competitive conduct in the commercial construction sector. In Chairman Rod Sims' words, 'the construction sector is a bit more prone to cartel activity' than other sectors.¹⁰¹

Collusion among firms can take the form of market-sharing, bid-rigging, or price fixing. Any of these is hard to prove, because there may also be legitimate commercial reasons for firms to sit out some tender processes, or bid different prices on a project. It's even harder to prove when the collusion is tacit.

Australian governments should be vigilant and assiduous about probity in awarding contracts. They should run open tender processes, and publish contract information so it is readily available to current and potential market entrants.

3.4.1 Open tenders are far less prone to collusion

The most common way Australian governments award megaproject work is through open tender; that is, when any firm can participate, subject to fulfilling entry criteria relating to technical capability and balance sheet.

But states have different practices. Almost half the value of Queensland contracts over the past 15 years has been awarded through limited tenders; that is, tenders that are only open to selected firms. About a sixth of the value of Victoria's megaproject contracts has been awarded through market-led proposals (Figure 3.8 on the preceding page).

100. Klemperer (2002).

101. CEDA News (2021).

Open tenders clearly make collusion more difficult than limited tenders or market-led proposals. The existence of more competitors or potential competitors creates a discipline on price and contract terms.

More open tenders should mean less need to provide corporate welfare in the interests of ensuring a particular few firms survive over time.

3.4.2 Transparency should be enhanced

Transparency during and after the tender process makes collusion less likely, and makes detection of any collusive behaviour more likely.¹⁰² Transparency also limits opportunities for collusion between government agents and bidders, because it enables stakeholders to monitor the decisions of government officials.¹⁰³

Yet information about contracts – who bid, who won, by what process, and the contract value – is not routinely published in Australia, and when it is, it can be hard to find.

NSW discloses the most information, publishing contract and tender information as a matter of routine in a central register. It has improved its practice significantly in the past five years. Queensland discloses the least information, and less of what it does publish is available in a central location (Figure 3.9).

Figure 3.9: NSW has the most transparent disclosure of tender information

	Most transparent			Least transparent
	NSW	WA	Vic	Qld
Overall transparency ranking	0.7	0.6	0.6	0.4
Contract value obtained from a government source	0.6	1.0	0.8	0.4
Tender process published	0.9	0.7	0.8	0.7
All bidders published	0.6	0.0	0.3	0.1
Shortlisted bidders published	0.7	0.8	0.5	0.5
Information ease ranking	0.7	0.6	0.6	0.2

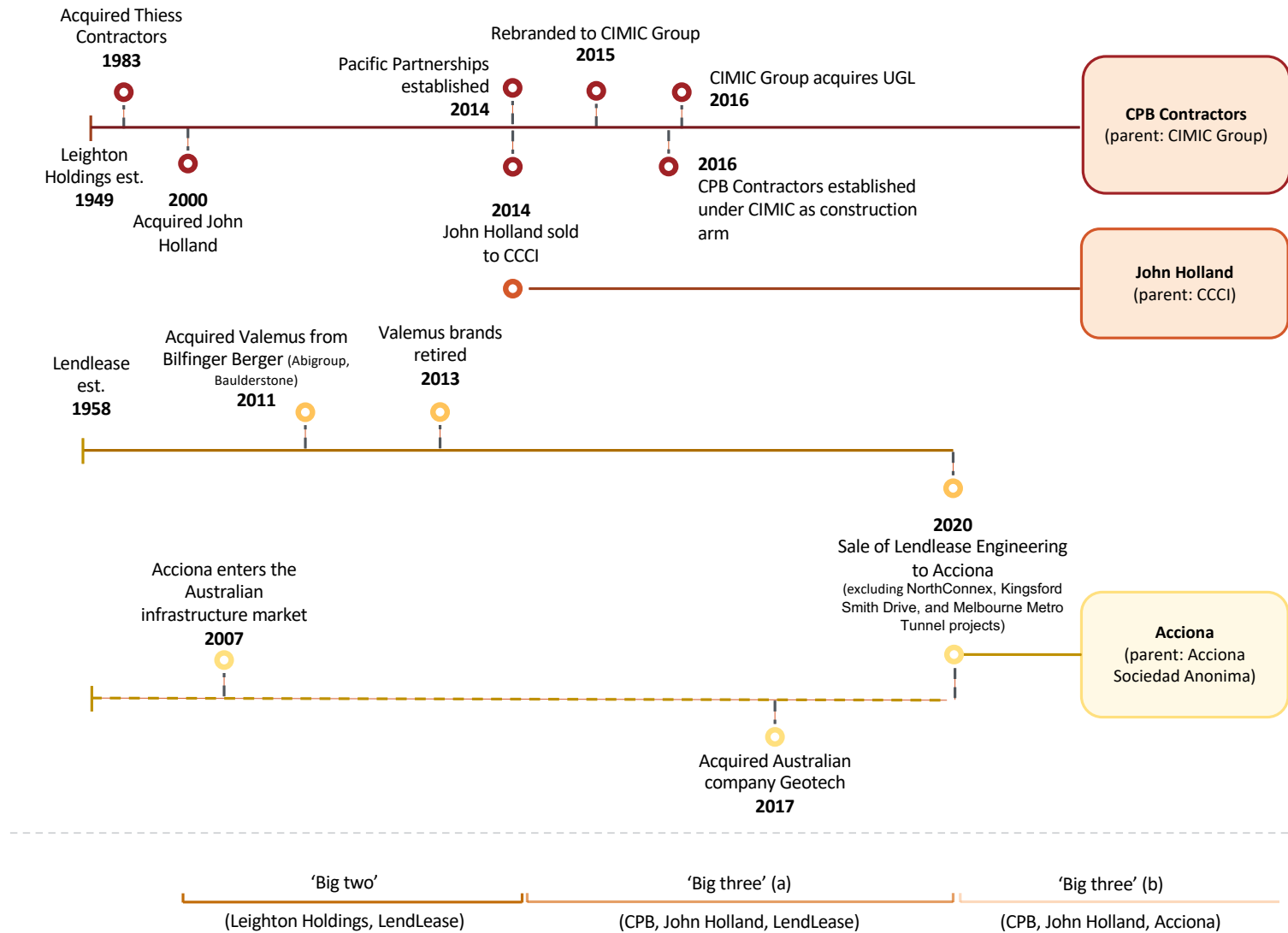
Notes: Includes construction contracts on Australian infrastructure projects larger than \$1 billion in 2020 dollars, contracted from 2006 onwards. The 'overall transparency ranking' is calculated as the average of the factors shown. The 'information ease ranking' equals 1 for projects where the information is clearly obtainable from documents stored in a centralised register, 0.5 for projects where the information is relatively easy to find but is not in a centralised register, or 0 for projects where the information is no longer stored on a government website or can only be gleaned from irregular sources.

Source: Grattan analysis. See Appendix A.

102. Amaral et al (2009).

103. Transparency International (2008, p. 6).

Figure 3.10: Today's tier one firms have arisen from mergers of domestic firms and entry of international firms



4 The right procurement for the job

While there is no one silver bullet to fix the problems Australia has with paying too much for its infrastructure, governments could get better bang for their infrastructure buck by smarter procurement.

Governments should take a more systematic approach to bundling activities within a project (Section 4.1), and take more care to discover site risks before going to market (Section 4.2). Governments should take a more systematic approach to choosing what type of contract to use, and they should treat subsequent variations with no less discipline than they treated the initial contract (Section 4.3).

Ultimately, many problems could be circumvented if governments stopped rushing projects to market (Section 4.4).

4.1 Bundle the work packages efficiently

Governments have plenty of discretion in how they combine, or 'bundle', the various activities that collectively comprise a megaproject. These activities may include building roads, tunnels, bridges, ramps, stations, landscaping, and installing signalling systems. Governments may also bundle these construction activities with design, operations and maintenance, and financing.

Governments face a tension in how they bundle works. On the one hand, it's understandable that they prefer fewer contracts. Keeping the number of contracts low helps minimise interface risks and allows for economies of scope, if one contractor or consortium is handling a series of interconnected activities. It also makes contract management simpler.

On the other hand, beyond the \$500 million point, bigger bundles mean that fewer firms are willing and able to bid for the work. Bigger bundles make it more difficult for smaller or more specialised firms to

bid, and they increase the level of risk borne by a single contractor or consortium.

The incentives for government agencies don't always lead them to strike the right balance when bundling the activities within projects. While governments should be aiming to find the most efficient packaging option to balance interface risks with competition, there does seem to have been a bias toward larger contracts, and fewer of them.¹⁰⁴

This bias has been mitigated in some recent projects, as industry stakeholders have increasingly raised concerns and works have been divided into a larger number of discrete packages.¹⁰⁵ The example of Victoria's suburban roads upgrade is detailed in Box 2 on the following page.

Unfortunately for government project managers, there's little guidance on how to package works optimally. Neither the national PPP (public private partnership) guidelines nor the 2014 Austroads and Australasian Procurement and Construction Council's procurement guidelines specify the principles that should determine how packaging is done.¹⁰⁶ In fact, they give essentially no consideration to packaging at all, aside from implying it is an option.

State guidelines aren't much better. NSW in its procurement guidelines makes no reference to packaging or bundling of works.¹⁰⁷ Queensland goes no further than to say that there is an option to design 'smaller

104. Austroads (2020b, p. 18).

105. Hayford (2020d).

106. DIRD (2008); and Austroads and Australasian Procurement and Construction Council (2014).

107. NSW Treasury (2017); New South Wales Government (2008); and NSW Government (2018b).

packages of work to be offered to a greater number of suppliers’, and that ‘feedback may also be received on the ways the project can be packaged and presented to the market’.¹⁰⁸

Although in practice Victoria does appear to more rigorously analyse packaging options for projects,¹⁰⁹ published guidelines underpinning the methodology are limited.¹¹⁰ They only go so far as saying that project bundling should ‘take into consideration specific project attributes and risks’, and referring to a series of criteria that should be considered when packaging works so as to obtain the best overall value for money.¹¹¹

The increased volume of procurement, particularly of extremely large contracts, exacerbates the problems of insufficient guidance and misaligned incentives. Infrastructure Australia has pointed to public service resources being ‘over-stretched’ in fast-growing cities and ‘less well-developed’ in smaller capitals.¹¹²

Governments should develop and use a systematic, consistent, and transparent process to determine bundling options for a project.

One aspect of a systematic approach to bundling is to separate activities that are particularly non-routine and specialised, such as bored tunnels. For each such activity, consideration should be given to whether it could be put to market in a smaller rather than larger configuration without creating excessive interface risks. The more this can be done, the stronger the competition is likely to be, and the less the risk of hold-up by a single constructor at some point after the

Box 2: Melbourne’s suburban roads upgrade was re-bundled into several smaller packages

The Victorian Government initially planned to contract the \$5 billion suburban roads upgrade project under three PPP (public private partnership) contracts – a Western, South Eastern, and Northern package. Each package was to be worth \$1-to-\$2 billion and include construction upgrades and 20 years of maintenance.^a

The Government awarded the Western package to the Netflow consortium in 2017 as a PPP, and announced shortlists for the other two packages in 2018.

However, in 2020 the Government halted the procurement of the two remaining packages and broke them into 12 smaller works. They are now to be procured using a similar collaborative approach as used for the Victorian Government’s level crossing removal program.^b

a. Infrastructure Partnerships Australia (2021).

b. Allen (2020).

108. Queensland Government (2015a); and Queensland Government (2015b).

109. As evident in the North East Link Business Case, Appendix S: Victorian Government (2018).

110. Ibid.

111. Victorian Department of Treasury and Finance (2012); Victorian Department of Treasury and Finance (2013); and Victorian Government (2016).

112. Infrastructure Australia (2019, p. 236).

'fundamental transformation' of bargaining power that occurs when many bidders become a single contractor.¹¹³

A systematic approach to bundling also entails specifying activities at the other extreme, that are relatively well understood and predictable – or could become so with more early scoping work. There is more flexibility in how activities such as building an at-grade road may be bundled. With smaller contracts there can be more bidders. But there's also scope to bundle similar types of work into larger bundles, thus minimising the monitoring and compliance costs to government.¹¹⁴

Recommendation 10

State governments should develop and use a systematic approach to determining an optimal bundling of work packages for large projects, including when to disaggregate bundles that include both complex and straightforward activities.

4.2 Risks should be allocated to construction partners only where it's economical

Construction firms want governments to be responsible for more of the risks that lead to some individual projects costing more than expected to build. John Holland CEO Joe Barr said in 2020:

John Holland will no longer bid on projects where it believes the risk profile is unacceptable. Risks that are controlled by governments should be held by governments.¹¹⁵

113. Austroads (2020b, p. 19).

114. An example of a project which could have been bundled using an alternative approach is included in Austroads (ibid, pp. 24, 27–28).

115. Wiggins (2020).

Mr Barr's comments reflect an industry perspective that risk is project-specific, is largely about ground conditions at the worksite, and is associated with bad results – there's no suggestion that senior industry figures wish to socialise gains on profitable projects. Mr Barr has matched his words with actions, evident in John Holland's approach to bidding for contracts on Melbourne's North East Link project (Box 3 on the next page).

This managerial view is not the only way to view risk. The economic and government perspective is broader.

There is no hard and fast rule for which risks should sit with government and which with construction firms. It depends on the circumstances who will be better able to minimise the likelihood or severity of each particular risk occurring, mitigate any loss suffered from that risk, and insure against any residual risk that cannot feasibly be avoided.¹¹⁶

But, as a general rule, the party best able to manage a given risk at the lowest cost should hold that risk.¹¹⁷ For example, under a fixed-price contract, the contractor will probably be better placed to manage the risks of design costing more than expected, of construction running over time, or of poor service provision during the operation of the infrastructure. But government will be better placed to manage the risk of a change in law, or of inadequate performance specifications, or of scope changes that it comes up with or agrees to during the life of the project.¹¹⁸ Government is also best placed to hold the risk of changes in political or community sentiment, and changes to perceived benefits or value to the community of a particular project or type of project.

For many projects, user charges will be part of the funding, for example, tolls charged to drivers on a toll road. If the tolls are paid

116. Posner and Rosenfield (1977).

117. PC (2014, p. 125).

118. Hayford (2020e, pp. 17–20).

to the PPP contractor, it faces a demand risk, that fewer people than expected use the infrastructure. A user-charge PPP contract will usually transfer this demand risk to the contractor.¹¹⁹

When risks that could be better managed by government are allocated instead to the private sector, then the premium charged is likely to be unnecessarily high.¹²⁰ For this reason, transferring as much risk as possible to private contractors is unlikely to lead to the lowest costs for government.¹²¹

It may seem appealing to governments to design contracts that ostensibly transfer significant risks to contractors. But firms bidding for such contracts will charge a premium for the risk they are taking on. That is, they can be expected to charge an additional amount beyond the expected cost of adverse outcomes, which will often be higher than the cost to government of retaining the risk.¹²²

Part of the risk premium will relate to the uncertain financial outcomes for the contractor, requiring the contractor to hold additional capital on which a market return is required. A further part of the risk premium will be to cover frictional costs, such as the expense of assessing the risk and managing the risk transfer. Both parts of the risk premium will often be more expensive for a risk which is transferred to a private contractor.

Chapter 2 argued that construction companies don't always charge sufficient risk premium to cover their eventual costs. Certainly, it is common that an adverse outcome can cause contractors to make a loss on a particular project. Nonetheless, risk transfer will still come at a cost for governments, even if the risk premium proves inadequate for the contractor.

119. Ibid (p. 20).

120. PC (2014, p. 132).

121. Ibid (p. 109).

122. International studies have shown that the risk premium can in some cases be much higher than is warranted: Makovšek and Bridge (2019, pp. 37–38).

Box 3: Consortia are pushing back on proposed risk allocation on Melbourne's North East Link

In 2018, the Victorian Government prevented the three largest firms operating in Australia at the time (CPB Contractors, John Holland, and Lendlease) from partnering to bid on a \$7-to-\$9 billion primary package for the North East Link. This decision was to ensure competition from both local and international firms.^a

Three bidders were shortlisted for the project:

- Onelink (CPB Contractors, Samsung C&T Corporation, Egis Road Operations, UGL Engineering, Pacific Partnerships, and DIF Management Australia)
- Via Nova (John Holland Group, Acciona Construction, Lendlease Services, Plenary Group, and Acciona Concesiones)
- Spark (Salini Impregilo (Webuild), GS Engineering and Construction, China Construction Oceania, Broadspectrum Australia, Capella Capital, John Laing Investments, and advisors Lendlease Engineering).

Both Onelink and Via Nova subsequently resisted the risk allocation proposed by the Government. Onelink pulled out of the bidding after its 'demands that the Government take on more risk were rejected'.^b Via Nova submitted a non-compliant bid, proposing that government bear the risk of cost overruns.^c

The winning bidder has yet to be announced.

a. Wiggins (2018b).

b. However, some have claimed that it withdrew because the firms' tunnelling machines are caught up in delays on the West Gate Tunnel project: Jacks and Lucas (2019).

c. Jacks and Preiss (2020).

Even if contracts specify that certain risks are to be borne by the consortium undertaking the construction, it is unclear whether risks will be transferred in reality. The political imperative will often be to quell disputes and drive projects to completion, whatever the cost, especially if the timetable is linked to an election. And, ultimately, if a private contractor fails, or is unable to meet its obligations, the government is likely to have to step in and ensure the project is completed.

For instance, the contractor for the Maryland Purple, an orbital light rail in the suburbs of Washington DC, took all the construction cost risk, according to the contract for the job. However, when costs turned out to be higher than expected, the contractor quit, leaving behind a mess of ripped-up roads. In the end, the government came up with an extra \$250 million to hire a new contractor.¹²³ No matter what the contract says, government cannot rid itself of the political cost of a half-finished project, or the residual risk if there is no one left to sue. A PPP may offer a partial buffer to government in the event that the construction firm defaults or becomes insolvent, but only to the extent that investors and financiers generally invest more to solve the problem. If they cannot or will not do so, the risk sits with government.¹²⁴

When it comes to ground conditions, often no one has much information, and therefore pricing the risks of soil contamination or geological challenges is very imprecise. Governments could do more discovery before going to market; it is generally more efficient for one party to do more detailed discovery and to certify that information to all the bidders than it is for each bidder to invest in duplicating the discovery process, but probably investing less in a job that they are not certain of winning.

123. Levy (2021). The Productivity Commission has also raised this concern: PC (2014, pp. 134–136).

124. Hayford (2020e, p. 20).

An example of government not sharing relevant information about the location of utilities occurred on Sydney's CBD and South East Light Rail (Box 4 on the following page).

This point has also been made in an Austroads study of government clients, contractors, and consultants. Agency interviewees observed that risks are 'genuinely knowable in most cases', given sufficient time, and 88 per cent of respondents agreed that more time should be allowed for such discovery before engaging the market. However, contractors noted the limitations they faced in conducting their own due diligence before tendering; often they were limited to 'dial before you dig' information and not able to speak to utilities providers. Once a project has begun, utility company scheduling is generally outside the control of the contractor.¹²⁵

Recommendation 11

Governments should do sufficient discovery of site conditions before going to market, and certify to potential bidders what they have discovered.

In principle, it should be cheap to manage project-specific risks, regardless of whether they are held by government or by a large contractor.¹²⁶ The reason it should be cheap is that large entities, such as a government or a multi-national construction company, can offset weak performance on one project with strong performance on another, and capital markets can diversify these risks. While the outcomes on any given project are uncertain, outcomes on average are much less uncertain.

125. Austroads (2020a, pp. 10–11).

126. Arrow and Lind (1978).

Large construction firms engage in diversification within a single market when they build several projects as part of a consortium or joint venture in preference to going solo on one project. Governments engage in diversification across their portfolio, and to some degree across the nation.

4.3 Choose the right contract type

The talk these days, from both industry and government, is all about collaboration. The Australian Contractors Association, a peak body, has recommended more collaboration, supporting initiatives such as its own joint forum with the NSW and Victorian governments, known as the Construction Industry Leadership Forum.¹²⁷ Collaboration is also a key recommendation of Roads Australia, developed at the behest of the Victorian Government.¹²⁸

The call for more collaboration could be considered as a call for more arrangements such as ‘pain-share/gain-share’ regimes and open-book costings, as well as for more market engagement and interactive contracting processes.¹²⁹

In Australia, these collaborative elements are most commonly used under alliance contracts. Alliances are a form of relational contracting in which the government client collaborates with its private sector partner or partners, such as designers or construction firms, to share the risks and responsibilities in building a project. The participants share responsibility for a quality result, and this is reflected in remuneration that comprises a fixed fee plus a ‘pain-share/gain-share’ fee linked to the delivery of agreed outcomes.¹³⁰ Participants agree to a ‘no blame’

127. Australian Constructors Association (2020, p. 3).

128. Roads Australia (2020, p. 3).

129. Infrastructure NSW (2018).

130. WSP (2021, pp. 6–7).

Box 4: The location of utilities on Sydney’s CBD and South East Light Rail

In December 2014, the NSW Government signed a contract for Sydney’s CBD and South East Light Rail project with ALTRAC Light Rail, a consortium comprising Acciona Infrastructure Australia, Alstom, Capella Capital, and Transdev.^a

Through the course of construction, the cost of digging up and replacing power lines on George Street proved to be unexpectedly high. In April 2018, the consortium filed a lawsuit in the NSW Supreme Court, alleging that the Government had engaged in misleading or deceptive conduct when providing information regarding Ausgrid power lines.^b

Acciona CEO Bede Noonan testified to a state parliamentary committee that:^c

Transport for NSW had ... the Ausgrid guidelines in early February 2015, some weeks ahead of final contract signing. Transport for NSW did not provide those Ausgrid guidelines to our consortium until 27 February, which was after final contract signing ... The extra cost was approximately 865 days and \$426 million.

The Government eventually reached a settlement with the contractors. The cost to government for the settlement was \$576 million, which included incentive payments (\$44 million) and a two-year extension to ALTRAC’s licence to operate the light rail (worth \$221 million).^d

a. Audit Office of New South Wales (2016, p. 26).

b. Audit Office of New South Wales (2020, p. 6).

c. Parliament of NSW (2018, p. 2).

d. Audit Office of New South Wales (2020, p. 6).

regime, where they give up any entitlement to make claims against one another for poor performance.¹³¹

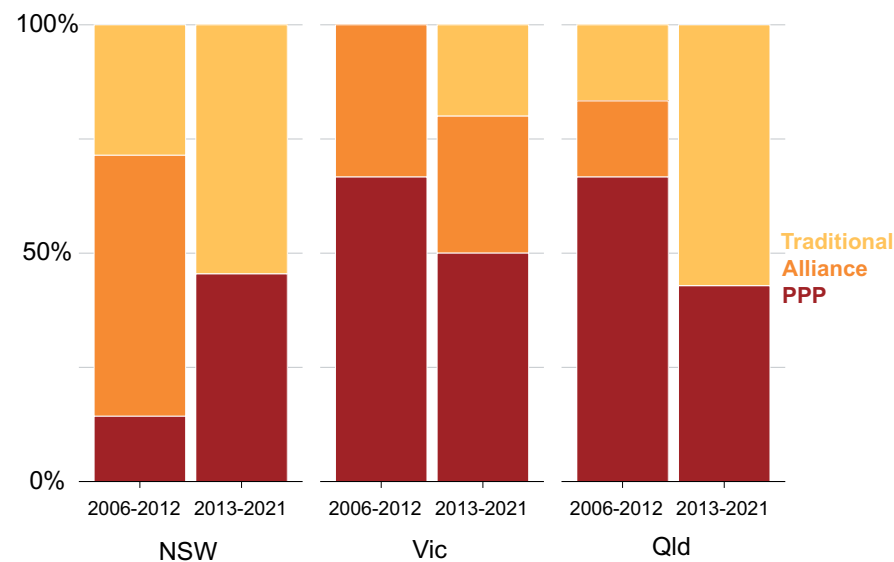
It may be that industry is calling for more collaboration now because, it seems, the pendulum has swung away from alliances in recent years (Figure 4.1).¹³² Alliances are attractive to industry because they're less risky; the contractor is much more assured of their financial gain with an alliance than with other contract types. And governments may be receptive because they think more alliances will help ensure a sustainable pool of profitable bidders into the future.

It's more common for governments to contract the large and complex projects that have become more prevalent in recent years via PPPs than via other contract types. PPPs involve not only design and construction, but also the operations phase, including maintenance. The contracts are privately financed and can last as long as several decades.¹³³

While PPPs are uncommon for projects worth less than \$1 billion, they are the predominant contract type about a third of the time on projects worth \$1 billion to \$5 billion, and most of the time on projects worth more than \$5 billion (Figure 4.2 on the following page).

PPPs are used on these particularly large projects instead of alliance contracts, or the other main alternative of traditional procurement. Traditional procurement contracts come in many variants; they typically assign to the contractor the responsibility for design as well as construction, and sometimes operations and maintenance too. The

Figure 4.1: The pendulum has swung away from alliances in recent years
Proportion of projects greater than \$1 billion in value, since 2006



Note: Contract type is allocated to a project based on the procurement method that makes up the largest share (by value) of construction contracts.

Source: Grattan analysis. See Appendix A.

131. A variation of this process is Early Contractor Involvement, in which the tender phase is collaborative, even though the construction is typically contracted as a traditional procurement: DIRD (2015, p. 13).

132. PC (2014, p. 445).

133. Hayford (2020e, p. 4).

remuneration is generally by fixed fee, best suited to well-understood and largely predictable works.¹³⁴

It is unsurprising that disputes do not arise with alliances; that's because shared responsibility is a core design feature of this contract type. Disputes are also uncommon with traditional procurement. It's on PPPs that disputes are most prevalent (Figure 4.2). While PPPs are the dominant contract type on fewer than half of all \$1 billion-plus transport projects, eight of the nine publicised government-contractor disputes over the past 15 years have been on PPPs.¹³⁵

A recent study of PPPs found that transport projects tend to be particularly problematic: 37 per cent of transport PPPs contracted by Australian governments in the period 1986 to 2016 incurred additional financial costs after the financial close date of the transaction, compared to 19 per cent of non-transport PPPs.¹³⁶

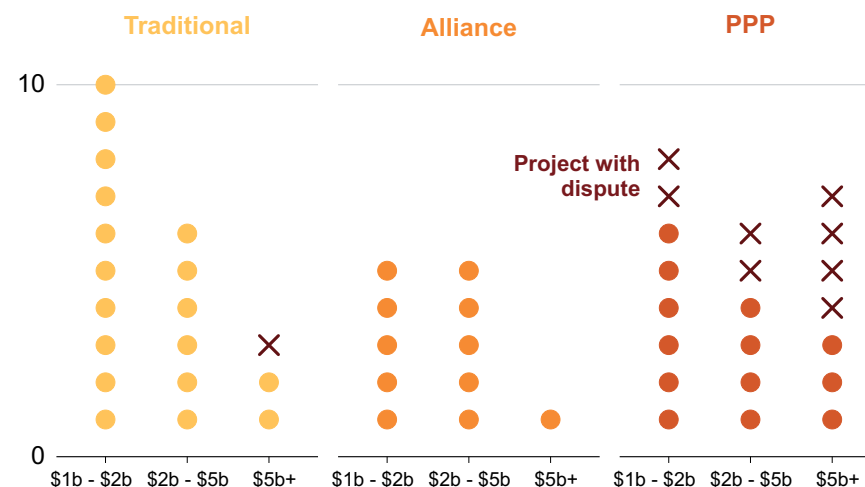
While no government wishes for disputes, that should not mean avoiding them at all costs. Rather, governments should be driving a hard bargain with contractors at every step of the way.

4.3.1 The contract type should create incentives that are in the taxpayer's interest

The ideal contract type depends on the project. In essence, the choice of PPP, alliance, or traditional procurement is one of how to balance strong incentives, where the contractor's rewards depend on their

Figure 4.2: Almost all public government-contractor disputes have related to PPPs

Number of projects greater than \$1 billion in value, since 2006



Notes: Includes any publicised government-contractor dispute or failure by contractor to fulfil contract. Based on public reports. Contract type is allocated to a project based on the procurement method that makes up the largest share (by value) of construction contracts. See Table B.2 in Appendix B for further details.

Source: Grattan analysis. See Appendix A.

134. Variants include construct-only, and Engineering, Procurement, and Construction (EPC) contracts.

135. Cost increases after contracts are signed are also more common for PPPs. Of completed megaprojects that commenced since 2006, the final project cost exceeded the cost estimated at the start of the construction period for 6 of 12 PPPs compared with 3 of 16 non-PPPs. The average extra cost was \$900 million for PPPs compared with \$500 million for non-PPPs.

136. Bianchi et al (2017).

efforts, and the risks associated with factors and contingencies not foreseen in the contract.

On the one hand, contracting firms might be expected to be particularly motivated to deliver on time and on budget projects that involve ‘high-powered’ incentives – that is, contracts with an ostensibly high level of cost certainty for government – because more of the benefits from efficiency improvements flow to the contractor.

On the other hand, such incentives in a contract may come with a cost premium (Section 4.2).

In practice, it’s very hard to know the relative cost performance of different contract types; a European study of 157 large road projects found that high-powered contract types led to greater cost certainty, but at a substantially higher cost per lane kilometre.¹³⁷ On the other hand, a study by the Victorian Department of Treasury and Finance found that when alliance contracts were awarded based on non-price factors, costs were significantly higher than with traditional contracting methods.¹³⁸

When governments contract a megaproject through a PPP, they are more likely to end up in a public dispute with the contractor (Figure 4.2 on the preceding page).¹³⁹ Even with traditional procurement and alliances, there can be substantial renegotiations.

Renegotiations come at a cost. Most obviously, if contractors know there is a good chance they can renegotiate, they are likely to make more aggressive bids. Conversely, if contractors face a penalty for

renegotiations, their incentive will be to push government agencies for better specifications at the start of a job.

There are three problems with a culture of renegotiations. First, enabling renegotiations on a regular basis rewards firms that lobby effectively over those that cost the work more accurately but less aggressively; in other words, it can lead governments to choose the wrong bidder. Second, if government routinely engages in renegotiations, it encourages carelessness; instead of adequate scoping and development, it rushes to market with the notion that it can fix any problems later. And third, an environment where renegotiations are routine is one where projects selection is weaker, because decision-makers don’t have good enough information when they decide to proceed with a project. This means that white elephants are more likely.¹⁴⁰

Recommendation 12

State auditors-general should provide an expert panel governing renegotiation of major public construction projects. If a contractor seeks a significant renegotiation, they should on future projects be asked to show cause why they should be allowed to bid; if successful, they should warrant their bid against the risk that they will not be able to deliver to the contract. Governments should publish all deliberations and proceedings of the expert panel.

4.3.2 A more systematic approach to contract type

At present, official guidance on how to choose a contract type is far from definitive. Government authorities have published decision-support documents, some quite detailed, including the

137. Reported in Makovšek and Bridge (2019, pp. 27–28).

138. Victorian Department of Treasury and Finance (2014, pp. 40–41); and PC (2014, p. 445).

139. We have only captured disputes that have been reported publicly. It is likely that disputes have arisen on traditionally procured projects, but been settled privately.

140. Engel et al (2020).

Austrroads and Australasian Procurement and Construction Council's 2014 Guide,¹⁴¹ the NSW Government's 2008 Guide,¹⁴² and the Victorian Government's 2013 Guide.¹⁴³ The guidelines are broadly consistent across Australia, and mostly follow the National PPP Guidelines developed through COAG and Infrastructure Australia in 2008.¹⁴⁴ The guidelines typically involve a 'procurement options analysis' (POA). A POA involves comparing the relevant delivery methods against a set of criteria, including design, capacity and capability of the market, cost, and scale. These factors are used to determine the procurement method that is likely to deliver the best overall value for money for a project.

However, these guidelines leave a great deal of room for subjectivity in the choice of contract type. Although some of the state guidelines and decision-support documents are quite detailed, none go so far as to prescribe a rigorous and systematic methodology for procurement strategy selection.¹⁴⁵

The construction market has a big influence on the contract type; market soundings are a key stage in the development of projects, and are usually done several times.¹⁴⁶ For instance, NSW leads a 'market interaction process' in which the government aims to 'use early market engagement to elicit industry views on the best choice of procurement pathway for the project'.¹⁴⁷

141. Austrroads and Australasian Procurement and Construction Council (2014, Chapter 4).

142. New South Wales Government (2008).

143. Victorian Department of Treasury and Finance (2013, Chapter 5).

144. DIRD (2008).

145. Austrroads and Australasian Procurement and Construction Council (2014, p. 18).

146. For example, as listed in the North East Link project business case appendices, the packaging analysis/shortlisting and market sounding/validation stages are iterative. Victorian Government (2018, p. 11).

147. NSW eTendering (2020).

A NSW Government discussion paper observes that market conditions 'may mean that decisions of procurement method differ over time for ostensibly similar projects – the technical nature of the project is just one element to be considered in method selection'.¹⁴⁸

Although in theory market soundings may help governments determine how likely a contract is to attract interest from a variety of firms and generate strong competition, it must be remembered that the incentives of industry and governments are not necessarily aligned. Firms have an incentive to win work and generate profits, while governments should be concerned with achieving the best whole-of-life costs for taxpayers. Relying on industry to determine procurement options is unlikely to provide the best value for money for taxpayers.

Governments should avoid being unduly swayed by industry perspectives, because there is an inherent tension between the interests of the parties, no matter how positive and constructive the relationship. If too few bidders emerge for a project, governments have the option of reconfiguring the project and taking it back to the market, as happened with the Rozelle Interchange in Sydney (Box 1) and the suburban roads upgrade project in Melbourne (Box 2).

Recommendation 13

Governments should adopt a systematic approach to selecting the contract type for each work package.

148. NSW Government (2018b, p. 5).

4.4 Conclusion: don't rush to market

Transport megaprojects are inherently complex, and it's unavoidable that some of the time things will go wrong. Shortcomings in dividing projects into bundles of work, in apportioning risk between the parties, and in selecting a suitable contract type for the job, exacerbate problems unnecessarily.

These risks are on the rise, as much bigger average project size is leading to much bigger average contract size.

And rushing to market exacerbates all these risks. When projects are rushed to market, sometimes one part of government doesn't know what another part of government is doing. This was evident with the Queensland Government's purchase of New Generation Rollingstock trains which didn't comply with its own disability access legislation (Box 6 on the next page), and with the Victorian Government's West Gate Tunnel, where authorities omitted to notify utilities that the project was classified as 'major', leading to delays and cost increases (Box 5).

When these and other risks eventuate, governments can be tempted to yield to claims in the short term, to the detriment of their longer-term reputation as stewards of the public interest. If governments do succumb to pressure to quash disputes and claims, they cultivate in contractors an expectation that they cannot be relied upon.

Rushing to market means risks not identified or mitigated, and problems not fixed. The price of a quick political win is often a long, slow, and unnecessary budget sink.

Box 5: Utilities dispute on Melbourne's West Gate Tunnel

Victoria's *Major Transport Projects Facilitation Act 2009* requires that gas, water, sewerage pipes, and electricity cables, must be moved to make way for major projects within 30 days of the government notifying the relevant utilities companies.^a

However, in the case of the West Gate Tunnel project, government omitted to notify utilities of the project's status under the Act.^b

The result has been significant delays and cost increases, which have led to arbitration between the Government, Transurban, and the construction consortium.^c

a. Jacks (2020a).

b. Ibid.

c. Walsh (2020).

Box 6: Non-compliant design of Queensland's New Generation Rollingstock trains

In 2008, the Queensland Government began a procurement process for New Generation Rollingstock trains, under a traditional procurement contract. With the election of a new government in 2012, the contract was changed to a PPP, and the project lead switched from Queensland Rail to Projects Queensland.^a

The technical specifications in the project deed were inadequate, because they did not comply with relevant disability legislation.^b A Commission of Inquiry found that the decision to request a non-compliant train, and the decision to accept a proposal based on a non-compliant design, were both made on the basis of incomplete information.^c The project team lacked a detailed understanding of the disability access requirements, and of the possible legal consequences of non-compliance.^d

On 27 September 2017, the Queensland Government applied to the Australian Human Rights Commission for temporary exemptions under the disability legislation in relation to the New Generation Rollingstock trains.^e While the application was pending, the trains were rolled out, to meet a timetable dictated by the 2018 Commonwealth Games, held on the Gold Coast.^f The trains required re-fitting, at a cost of \$361 million.^g

a. New Generation Rollingstock Train commission of inquiry (2018, p. vi).

b. *Ibid* (pp. 36–37).

c. *Ibid* (p. 37).

d. *Ibid* (p. 38).

e. *Ibid* (p. 8).

f. Caldwell (2017).

g. Probert (2019).

Appendix A: Data collection

Much of the analysis in this report – in particular the analysis of past projects and competition in Chapter 3 and Chapter 4 – uses data collated by Grattan Institute on all megaprojects (projects over \$1 billion) in Australia since 2006. The dataset includes 177 contracts across 51 megaprojects. This equates to more than \$180 billion worth of transport infrastructure projects (in December 2020 dollars).

A.1 We collected publicly available data

We used the Deloitte *Investment Monitor* dataset to prepare a list of megaprojects started in the transport infrastructure sector since 2006. We considered a project a megaproject if the cost exceeded \$1 billion at any point from when contracts were signed to completion.

For each megaproject, we obtained additional data from various publicly available sources (such as government tender websites, media reports, and government treasury documents) to identify all major contracts associated with each project.

We classified a contract as ‘major’ if it was identified by the agency responsible for the project as a major work package. We excluded early works from the dataset. We obtained further data at both a contract and project level.

A.1.1 Contract level data

At the contract level, we collected data on the contract award date, tender process, project type (e.g. road/rail), procurement type, contract value, and the consortium and parties involved in the contract.

We collected further data on all parties involved in contracts. We classified firms as construction or non-construction firms, tier one or non-tier one firms, international entrants or established firms.

We classified Lendlease (and Lendlease Engineering), Leighton Contractors, CPB Contractors, Thiess, John Holland, and Bilfinger Berger (through Valemus firms Abigroup and Boulderstone) as tier one firms (see Figure 3.10 on page 31).

We classified a firm as an international entrant if it had entered the Australian market for transport infrastructure in the past 15 years and had previously been operating in other regions. In some cases (for example Laing O’Rourke), an international firm may have been operating in Australia for more than 15 years, but predominantly in related sectors. If a firm’s entry into the Australian transport infrastructure market was within the past 15 years, we still considered these firms international entrants.

For each contract in our dataset, we also collected data on the public availability of documents. This included whether the contract value, tender process, and bidders were available from a government source.

A.1.2 Project level data

For each project in the dataset, we collected data on the jurisdiction, procurement type, tender type, and whether any disputes had arisen during the project. We obtained costs for each project from the Deloitte *Investment Monitor*. The cost information also included various manual adjustments detailed in Section A4 of Terrill et al (2020).

Large projects are often delivered under a range of contracts which may vary in type. For example, it is common for a complex, high-risk aspect of a project to be delivered under an alliance contract, while simpler works are delivered under a traditional contract.

We classified each project by the contract type that made up the largest share of the project by value.

In some cases, the distinction between contract types is less clear, particularly if contracts are complex and change over time. In such cases, we classify contracts and projects in accordance with the most recent government source. This is of particular note for the WestConnex project, in which some contracts were procured as traditional contracts, but have since been subject to different financing and other arrangements. We consider the project as a PPP, in line with the NSW project summary.¹⁴⁹

A.2 How we compared the costs of projects that occurred at different times

To compare the costs of projects that occurred at different times, we adjusted costs for inflation using the ABS Producer Price Index for road and bridge construction (Index Number 3101). Although this index does not include railway construction, we considered it a more appropriate index of transport construction costs than its parent indices, which include many non-transport construction activities. We inflated project values for completed projects, and contract values for all projects, from the June quarter of the year the first major contract was signed, to December 2020. For ongoing projects, we did not inflate the total project cost.

A.3 How we analysed joint ventures and consortia

We conducted most analysis by considering the number of contracts won by different firms. We considered a firm to have ‘won’ a contract if it is listed on that contract for any work. This is regardless of whether the contract was awarded to a single firm or group of firms.

A.4 How we considered PPPs and subcontracts

PPPs can be delivered in a variety of ways. At times, they are delivered as one large contract to a consortium of firms, with each firm having a distinct role in the broader project. For example, one firm may be responsible for the construction, while another is responsible for the operations and maintenance. Through this arrangement, the Special Purpose Vehicle (SPV) will typically award subcontracts to members of the consortium for these activities. However, these contracts are essentially a formality, and there is no competition for this work. In these cases, we have captured the main contract in our dataset.

Alternatively, a PPP contract may be awarded to a consortium or firm that acts more directly as an operator or manager of the works (for example, Transurban typically operates in this way). In these cases, subcontracts are often awarded to other firms (such as construction firms) not involved in the consortium. In many cases, these contracts are jointly tendered to subcontractors by the consortium and the responsible agency for the overall project works. In these cases, we have captured the subcontracts in our dataset, rather than the main contract. This is because this report is largely concerned with competition among construction firms, rather than among project managers.

A.5 How we determined transparency and disputes

In Section 3.4.2 on page 30 we evaluate how transparent Australian jurisdictions are in publicly releasing information regarding transport megaprojects.

We considered transparency at the contract level for all contracts in our dataset using five criteria:

- Is the contract value available from a government source? (yes/no)

149. NSW Government (2019).

- Is information on the tender process available from a government source? (yes/no)
- Are the expressions of interest available? (yes/no)
- Are the shortlisted bidders available? (yes/no)
- Is the available information readily available from a centralised register? (all available, some available, none available)

We used these criteria to score each contract out of five. One point was awarded for each 'yes' answer. The 'information ease ranking' equals 1 for projects where the information is clearly obtainable from documents stored in a centralised register, 0.5 for projects where the information is relatively straightforward to find but is not in a centralised register, or 0 for projects where the information is no longer stored on a government website or can be gleaned only from irregular sources.

For our analysis, a dispute is defined as an unforeseen circumstance which occurs between the government and contractor, risking or resulting in significant cost overruns and/or delays. We have captured only public disputes, that is disputes which have been reported on publicly.

Appendix B: Lists of projects in charts

Table B.1: Contracts over \$3 billion included in Figure 3.4

Project (project cost \$2020, billions)	Contract	State	Contract size (\$2020, billions)	Contract type	Construction firms
Airport Link (\$6.4)	Airport link and Northern Busway PPP	Qld	\$6.4	PPP	Thiess, John Holland
Melbourne Metro Rail (\$13.7)	Tunnel and Station PPP	Vic	\$6.4	PPP	Lendlease, John Holland, Bouygues
West Gate Tunnel (\$6.7)	Tunnel, road, and bridge works	Vic	\$5.3	PPP (sub-contract)	CPB, John Holland
WestConnex* (\$16.8)	M5 Tunnel Motorway	NSW	\$4.8	PPP (sub-contract)	CPB, Dragados, Samsung C&T
	Rozelle Interchange	NSW	\$4.7	Traditional	CPB, John Holland
	M4 Tunnel Motorway	NSW	\$4.1	PPP (sub-contract)	CPB, John Holland, Leighton Contractors, UGL
Cross River Rail (\$6.9)	Tunnels, stations, and development PPP	Qld	\$4.5	PPP	CPB, UGL, Ghella
Sydney Metro Northwest (\$8.2)	Operations, trains, systems	NSW	\$4.0	PPP	John Holland, Leighton Contractors, UGL
Sydney Metro City and Southwest (\$15.5)	Trains, systems, operations, and maintenance	NSW	\$3.9	PPP	John Holland, Leighton Contractors, UGL
	Metro tunnelling contract	NSW	\$3.6	Traditional	John Holland, CPB, Ghella
CBD & Southeast Light Rail (\$3.6)	DBFOM* contract	NSW	\$3.6	PPP	Acciona

Note: *Design, build, finance, operate, and maintain.

Table B.2: Projects involving government-contractor disputes, included in Figure 4.2

Project	State	Project cost (\$2020, billions)	Contract type	Nature of dispute
Melbourne Metro	Vic	\$13.7	PPP	Cost overruns and delays due to geological challenges. Government was in dispute with contractor over extra payment. Deal struck to share extra costs.
Cross River Rail	Qld	\$6.9	PPP	Technical difficulties relating to Boggo Road station caused suspension of work. Governance board was sacked, new compliance unit was established, reports directly to minister.
West Gate Tunnel	Vic	\$6.7	PPP	Dispute between multiple contractors and Government over liability to pay for soil contamination. Lead contractor has threatened to attempt to have the contract annulled. A further dispute relates to the Government's failure to notify utilities providers of the requirement to move utility pipes and cables to make way for the project.
Pacific Highway – Woolgoolga to Ballina	NSW	\$5.8	Trad	One of the lead contractors went into administration and failed to pay subcontractors. The Government intervened to provide financial assistance to the subcontractors.
Reliance Rail	NSW	\$5.3	PPP	Contractor accused the government authority of changing design specifications and lodged claims for \$160 million.
New Generation Rollingstock	Qld	\$4.4	PPP	Trains breached disability requirements. A Commission of Inquiry found that specifications in the project deed were inadequate. The trains required re-fitting, at a cost of \$361 million.
CBD and South East light rail	NSW	\$3.6	PPP	Overruns due to the unexpectedly high cost of digging up and replacing power lines. The contractor filed a lawsuit alleging that the Government had engaged in misleading or deceptive conduct when providing information regarding power lines. Settled at cost to the Government of \$576 million.
Legacy Way	Qld	\$1.9	PPP	15-day delay in tunnel opening. Brisbane City Council charged contractor \$2.05m for late delivery.
Western Roads Upgrade	Vic	\$1.8	PPP	Main subcontractor went into liquidation. Head contractor admitted to underbidding to get the job. Government called upon to rescue unpaid suppliers.

Sources: Jacks and Danckert (2019), Jacks (2020b), McCutcheon (2020), Crockford and Lynch (2020), Jacks and Lucas (2020), Jacks (2020a), Lu and Ford (2018), Hourigan (2018), Saulwick (2011), New Generation Rollingstock Train commission of inquiry (2018), Probert (2019), Audit Office of New South Wales (2020), Atfield (2015) and Jacks (2020c).

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