Politics, Finance and Transport: Megaprojects in Australia

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JACOBS
Overview

1. Introduction
2. The Macro Level: Transport funding
3. The Micro Level: Project Delivery
   – Evidence of Australian Megaprojects
   – Unit Costs
   – Cost Risk
   – Demand Risk
4. Improving Delivery and Planning
1. Introduction
1. Introduction

- Infrastructure decision making has lost public confidence
- Multiple multi-billion dollar project failures in past decade
- Lack of bipartisan support for policies or projects
- Lack of effective long-term planning and programming
1. Introduction

- Reforms are needed – how do we target them?
- Are we allocating the right amount of resources?
- Are we using the resources wisely?
- Apply Flyvbjerg (Megaprojects and Risk) analysis to Australia
- Identify specific reforms needed to reach acceptable practice
2. The Macro Level: Transport Funding
2 Macro Level: Transport funding

- Capital funding has become inconsistent
- Was average by OECD standards before 2008
- Increased to very high 2009 to 2012, then dropped back again
2 Macro Level: Transport funding

- Maintenance funding low relative to size and road/rail length
- Compares poorly to Canada with similar population density
- Funding skewed towards capital during period of high growth

Road Maintenance Funding as % of GDP (OECD data)
2 Macro Level: Transport funding

- What is the end result for infrastructure?
- Population growth (+1.5%pa) among highest in OECD (+0.5%pa)
- Inconsistent capital, low maintenance spending = poor quality
2 Macro Level: Transport funding

The road less travelled:

- Travel demand management?
- Developer contributions?
- Reviewing policy on population growth rate?
3 The Micro Level: Comparing Megaproject Delivery
3 Micro Level: Project Delivery

- Measure efficiency and risks in project delivery (Flyvbjerg 2003)
- Unit Costs: are projects efficient?
- Cost Risk: are cost estimates reliable?
- Demand Risk: are demand forecasts accurate?

Road building across Blue Mountains, 1860s
3 Micro Level: Data Issues

• Database of 38 projects, 1992 to 2015; $200m to $5300m

• All public data; Qld TMR and WA PTA provided demand data

• Major data weaknesses:
  – No post completion checks
  – No database of forecasts
  – Business cases not public
<table>
<thead>
<tr>
<th>Project</th>
<th>Type</th>
<th>Year</th>
<th>Real Cost ($M 2015)</th>
<th>Cost/Lane-km ($M)</th>
<th>PPP Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sydney Harbour Tunnel, Sydney</td>
<td>Tunnel</td>
<td>1992</td>
<td>$1106</td>
<td>$99</td>
<td>Profitable</td>
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<tr>
<td>M2 Motorway, Sydney</td>
<td>Surface</td>
<td>1997</td>
<td>$914</td>
<td>$11</td>
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<tr>
<td>Eastern Distributor, Sydney</td>
<td>Tunnel</td>
<td>1999</td>
<td>$1310</td>
<td>$55</td>
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<tr>
<td>City Link Melbourne</td>
<td>Surface</td>
<td>2000</td>
<td>$3947</td>
<td>$30</td>
<td>Profitable</td>
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<tr>
<td>Sydney Airport Rail</td>
<td>Tunnel</td>
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<td>$1615</td>
<td>$81</td>
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<td>South East Busway, Brisbane</td>
<td>Surface</td>
<td>2000</td>
<td>$912</td>
<td>$28</td>
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<tr>
<td>Pacific Motorway, SEQ</td>
<td>Surface</td>
<td>2000</td>
<td>$1491</td>
<td>$4</td>
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<tr>
<td>Brisbane Airtrain</td>
<td>Surface</td>
<td>2001</td>
<td>$362</td>
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<td>Bankrupt</td>
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<tr>
<td>Yelgun - Chinderah, NSW</td>
<td>Surface</td>
<td>2002</td>
<td>$573</td>
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<tr>
<td>Liverpool – Parramatta T-Way, Sydney</td>
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<td>2003</td>
<td>$546</td>
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<tr>
<td>Alice Springs - Darwin Rail</td>
<td>Surface</td>
<td>2004</td>
<td>$1894</td>
<td>$1.3</td>
<td>Bankrupt</td>
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<tr>
<td>Cross City Tunnel, Sydney</td>
<td>Tunnel</td>
<td>2005</td>
<td>$967</td>
<td>$115</td>
<td>Bankrupt</td>
</tr>
<tr>
<td>M7 Motorway, Sydney</td>
<td>Surface</td>
<td>2006</td>
<td>$2423</td>
<td>$15</td>
<td>Profitable</td>
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<tr>
<td>Regional Fast Rail, Melbourne</td>
<td>Surface</td>
<td>2006</td>
<td>$1066</td>
<td>$2</td>
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<tr>
<td>Mandurah Rail Line, Perth</td>
<td>Surface</td>
<td>2007</td>
<td>$2133</td>
<td>$15</td>
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<tr>
<td>Lane Cove Tunnel, Sydney</td>
<td>Tunnel</td>
<td>2007</td>
<td>$1414</td>
<td>$79</td>
<td>Bankrupt</td>
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<td>Inner Northern Busway, Brisbane</td>
<td>Surface</td>
<td>2008</td>
<td>$614</td>
<td>$68</td>
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<tr>
<td>Tugun Bypass, Gold Coast</td>
<td>Surface</td>
<td>2008</td>
<td>$676</td>
<td>$24</td>
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<tr>
<td>East Link, Melbourne</td>
<td>Surface</td>
<td>2008</td>
<td>$3114</td>
<td>$13</td>
<td>Profitable</td>
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</table>
### Australian Megaproject Database (continued)

<table>
<thead>
<tr>
<th>Project</th>
<th>Type</th>
<th>Year</th>
<th>Real Cost ($M 2015)</th>
<th>Real Cost/Lane-km ($M 2015)</th>
<th>PPP Outcome (7/16 Bankrupt)</th>
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<tbody>
<tr>
<td>Deer Park Bypass, Melbourne</td>
<td>Surface</td>
<td>2009</td>
<td>$426</td>
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<tr>
<td>Epping Chatswood Rail, Sydney</td>
<td>Tunnel</td>
<td>2009</td>
<td>$3020</td>
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<tr>
<td>Forrest Highway, Perth</td>
<td>Surface</td>
<td>2009</td>
<td>$829</td>
<td>$3</td>
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<tr>
<td>Clem 7 Tunnel, Brisbane</td>
<td>Tunnel</td>
<td>2010</td>
<td>$3493</td>
<td>$182</td>
<td>Bankrupt</td>
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<tr>
<td>Gateway Upgrade, Brisbane</td>
<td>Surface</td>
<td>2010</td>
<td>$2212</td>
<td>$18</td>
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</tr>
<tr>
<td>Go Between Bridge, Brisbane</td>
<td>Bridge</td>
<td>2010</td>
<td>$369</td>
<td>$132</td>
<td>Profitable</td>
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<tr>
<td>Monash-CityLink-Westgate, Melbourne</td>
<td>Surface</td>
<td>2010</td>
<td>$1517</td>
<td>$13</td>
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<tr>
<td>Northern Expressway, Adelaide</td>
<td>Surface</td>
<td>2011</td>
<td>$621</td>
<td>$7</td>
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<tr>
<td>Airport Link, Brisbane</td>
<td>Tunnel</td>
<td>2012</td>
<td>$5288</td>
<td>$132</td>
<td>Bankrupt</td>
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<tr>
<td>Western Ring Road Upgrade, Melbourne</td>
<td>Surface</td>
<td>2013</td>
<td>$2407</td>
<td>$32</td>
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<tr>
<td>Peninsula Link, Melbourne</td>
<td>Surface</td>
<td>2013</td>
<td>$774</td>
<td>$7</td>
<td>Viable (Shadow toll)</td>
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<td>Butler Rail Extension, Perth</td>
<td>Surface</td>
<td>2013</td>
<td>$225</td>
<td>$15</td>
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<tr>
<td>Ipswich Motorway, Brisbane</td>
<td>Surface</td>
<td>2014</td>
<td>$2996</td>
<td>$24</td>
<td></td>
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<tr>
<td>Seaford Rail Line, Adelaide</td>
<td>Surface</td>
<td>2014</td>
<td>$292</td>
<td>$26</td>
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<tr>
<td>South Road Superway, Adelaide</td>
<td>Bridge</td>
<td>2014</td>
<td>$948</td>
<td>$33</td>
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<tr>
<td>Gold Coast Light Rail</td>
<td>Surface</td>
<td>2014</td>
<td>$953</td>
<td>$37</td>
<td>Profitable</td>
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<tr>
<td>Regional Rail Link, Melbourne</td>
<td>Surface</td>
<td>2014</td>
<td>$3719</td>
<td>$39</td>
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<tr>
<td>South West Rail Line, Sydney</td>
<td>Surface</td>
<td>2015</td>
<td>$1809</td>
<td>$79</td>
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<tr>
<td>(Legacy Way, Brisbane) Excluded</td>
<td>Tunnel</td>
<td>2015</td>
<td>$1507</td>
<td>$82</td>
<td>Delayed</td>
</tr>
</tbody>
</table>
Unit Costs:
- Steady over time
- Road = Rail
- PPP = non-PPP
- Surface = $21m
- Bridge = $61m
- Tunnel = $102m
3 Micro Level: Project Delivery

Cost Risk
% planned vs actual
- Steady over time
- Heavily skewed
- Average +15%
- Road = Rail
- PPP = non-PPP
- Better than Europe (Flyvbjerg)
3 Micro Level: Project Delivery

Demand Risk
% planned vs actual
- Steady over time
- Heavily skewed
- Average -15% error
- Public -6% error
- PPP -44% error
- PPP same as Europe (Flyvbjerg)
3 Micro Level: Project Delivery

Recent Australian PPPs compared to European Megaprojects

- Cost risks well controlled
- Demand risk for PPPs worse than for non-PPPs
- Margin of demand risk difference (44%) statistically significant
- Poor forecasting accuracy for PPPs persistent over time
Why so bad for PPPs?

- Australian PPP issues vs Flyvbjerg recommended practices:
  - Transparency absent
  - Governance structures not independent (regulator/promoter)
  - Demand risk was private, now being transferred back (Melbourne EW Link)
- PPPs perform better where governance better (Chile, USA, Canada)
Managing project risk (Flyvbjerg 2003)

- Decision maker & proponent independent
- Public scrutiny of decision process (transparency)
- Rigorous regulatory regime (accountability)
- Unguaranteed risk capital (risk transfer)
4. Improving the Process

System map

Singapore LTA
4 An *Effective* Statutory Infrastructure Authority

Political reform:

- Independent statutory body needed for infrastructure decisions
- Decision making power
- Power to say “No”
- Power to allocate funds
- Stable revenue stream

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Project Governance Reforms

- **Transparency** is critical
- **Standardisation** of contract forms
- PPP guidelines must include **governance**
- PPP terms too long (UK: up to 20 years; Australia 30+ years?)
- More smaller projects?
- Simpler contract types? (D&C, conventional, not Alliance, PPP)
Planning and Project Assessment Reforms

- Need **up to date** models and data – funding needed
- Future **corridors** must be **preserved** in land use planning
- Realistic project assessment:
  - Guidelines should match international practice
  - Realistic discount rates – 4% not 7%
  - BCR **hurdle rate** of 1.5+ (cost risk, demand risk)
  - Guidelines road based; PT parameters deficient
  - All business cases should be made public when funded