Value for Money Analysis Exercise Review

P3-VALUE 2.0 Webinar

February 16, 2016
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IMG/Rebel
This is a follow-up to the second of five topical webinars to introduce P3-VALUE

- P3 Evaluation Overview (January 25, 2016)
- **Value for Money Analysis (February 8, 2016)**
  - Value for Money Exercise Review (today)
- Project Delivery Benefit-Cost Analysis
- Risk Valuation
- Financial Viability Assessment
Exercise Objective

- Learn how to compare the Public Sector Comparator to the P3 option to determine which option delivers greater Value-for-Money (VfM) from the perspective of the procuring Agency.
- Learn how to identify key drivers in the VfM analysis.
Webinar Outline

Intro
- Project Background

Parts A & B
- Toll Concession

Part C & D
- Availability Payment Concession

Recap
- Summary of Webinar
Introduction

Project Background
Homework Exercise

A study was done previously by a state DOT to estimate Value for Money of P3 delivery for a highway project. The various inputs required for the analysis are included in the P3-VALUE 2.0 spreadsheet model.
Project Information

- 20 miles highway expansion
- From 3 lanes to 5 lanes in each direction
  - 3 General Purpose Lanes (GPL)
  - 2 Managed Lanes (ML)
- Costs (excluding risks and financing):
  - Pre-construction & construction: $425M
  - Routine O&M: $4M per year
  - Major maintenance: $10M (every 8 years)
- Preconstruction start: 2015 (2 years)
- Construction start: 2017 (4 years)
- Operations start: 2021 (40 years)
Questions?

Submit a question using the chat box or hit *6 to ask your question by telephone.
Questions from February 8 Webinar

- Kent Olsen: Why don't you consider DBOM as one of the delivery options in your VfM analysis?

- HPTE: How do you define the input benefit as opposed to the P3 Efficiencies inputs?

- Karen Holmes: At what point do variances in project start and completion dates make the data incomparable?
Parts A and B

Toll Concession Analysis
Toll Concession Analysis Steps

- **Part A:** Use the Value for Money Analysis training module to:
  1. Review the Public Sector Comparator (PSC)
  2. Review the P3 Option
  3. Compare PSC and P3 Option from the perspective of the Agency

- **Part B:** Use the Value for Money Analysis training module to test impact of a higher discount rate
Part A, Step 1: PSC Inputs

Key project information for the PSC in the input sheets of the model:

- **Revenues** and their timeline
- **Costs** and their timeline
  - Build phase: Pre-construction and construction
  - Operations phase: O&M plus periodic major maintenance
- **Risks** (to be covered in topical Webinar 4)
- **Financing fees**, which are the upfront costs incurred to arrange public debt
- **Competitive neutrality adjustment** to correct for taxation effects in the P3 option
Part A, Step 2: P3 Option Inputs

Key P3 Option inputs are:

- **Revenues**: PSC revenues and timeline, but adjusted to take into consideration assumed P3 differences

- **Costs**: PSC costs and timeline, but adjusted to take into consideration assumed P3 differences:
  - Build phase: Pre-construction and construction
  - Operations phase: O&M plus periodic major maintenance

- **Risks**: Will be covered in Webinar 4

- **Financing conditions**:
  - Equity
  - Debt
Part A, Step 3 and Part B

PSC vs. P3 Comparison:

Key input for the comparison is the discount rate to be applied to future cash flows:

- Discount rate for **Part A**: State borrowing rate (4%)
- Discount rate for **Part B**: Higher rate (5%)
Review of Model Inputs

Please stand by as we open the Excel file
Review of Model Outputs
### PSC - Outputs

<table>
<thead>
<tr>
<th>Costs &amp; revenues under Conventional Delivery</th>
<th>Units &gt;&gt;</th>
<th>NPV @ 4.00% USD m</th>
<th>Nominal total USD m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toll revenues</td>
<td>756</td>
<td>2198</td>
<td></td>
</tr>
<tr>
<td>Toll revenues uncertainty adjustment</td>
<td>(130)</td>
<td>(377)</td>
<td></td>
</tr>
<tr>
<td>Pre-construction &amp; construction costs</td>
<td>(397)</td>
<td>(454)</td>
<td></td>
</tr>
<tr>
<td>O&amp;M costs</td>
<td>(129)</td>
<td>(363)</td>
<td></td>
</tr>
<tr>
<td>No Build O&amp;M cost savings</td>
<td>250</td>
<td>680</td>
<td></td>
</tr>
<tr>
<td>Base variability</td>
<td>(79)</td>
<td>(112)</td>
<td></td>
</tr>
<tr>
<td>Pure risks</td>
<td>(69)</td>
<td>(121)</td>
<td></td>
</tr>
<tr>
<td>Lifecycle performance risk</td>
<td>(228)</td>
<td>(574)</td>
<td></td>
</tr>
<tr>
<td>Financing fees</td>
<td>(3)</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>Competitive neutrality adjustment</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Total net revenues / (costs) under Conventional Delivery</strong></td>
<td>(29)</td>
<td>873</td>
<td></td>
</tr>
</tbody>
</table>
P3 Option – Bid Calculation

- Combining all revenues, costs, risks and financing allows the concessionaire to prepare a bid
- Depending on the structure of the transaction, the bid is either a subsidy/concession fee or availability payment
# P3 Output – Developer Bid Calculation

<table>
<thead>
<tr>
<th>Costs &amp; revenues to Developer under P3</th>
<th>NPV</th>
<th>Nominal total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units &gt;&gt;</td>
<td>USD m</td>
<td>USD m</td>
</tr>
<tr>
<td>Toll revenues for private side</td>
<td>298</td>
<td>2224</td>
</tr>
<tr>
<td>Pre-construction &amp; construction costs (transferred)</td>
<td>(304)</td>
<td>(390)</td>
</tr>
<tr>
<td>O&amp;M costs (transferred)</td>
<td>(43)</td>
<td>(296)</td>
</tr>
<tr>
<td>Base variability (transferred)</td>
<td>(54)</td>
<td>(94)</td>
</tr>
<tr>
<td>Pure risks (transferred)</td>
<td>(40)</td>
<td>(98)</td>
</tr>
<tr>
<td>Net subsidy from Agency to Developer</td>
<td>146</td>
<td>205</td>
</tr>
<tr>
<td>Financing fees</td>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td>Taxes</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

*Total net revenues / (costs) to Developer under P3*  
0 1548
From the procuring Agency’s perspective, the cost of P3 includes the bid as well as any retained costs or risks.
## P3 Output – Agency Perspective

<table>
<thead>
<tr>
<th>Costs &amp; revenues to Agency under P3</th>
<th>NPV @ 4.00% USD m</th>
<th>Nominal total USD m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toll revenues (for public side)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Toll revenues uncertainty adjustment (for public side)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pre-construction &amp; construction costs (retained)</td>
<td>(39)</td>
<td>(43)</td>
</tr>
<tr>
<td>O&amp;M costs (retained)</td>
<td>(12)</td>
<td>(33)</td>
</tr>
<tr>
<td>No Build O&amp;M cost savings</td>
<td>259</td>
<td>691</td>
</tr>
<tr>
<td>Base variability (retained)</td>
<td>(7)</td>
<td>(10)</td>
</tr>
<tr>
<td>Pure risks (retained)</td>
<td>(6)</td>
<td>(11)</td>
</tr>
<tr>
<td>Net subsidy from Agency to Developer</td>
<td>(175)</td>
<td>(205)</td>
</tr>
<tr>
<td><strong>Total net revenues / (costs) to Agency</strong></td>
<td><strong>19</strong></td>
<td><strong>389</strong></td>
</tr>
</tbody>
</table>
Compare PSC and P3 Option

Part A (4% discount rate):
- NPV of net revenues/cost to Agency under PSC $(29) M
- NPV of net cash flows to Agency under P3 $19 M
- NPV of difference (= VfM) $48 M

Part B (5% discount rate):
- NPV of net revenues/cost to Agency under PSC $(63) M
- NPV of net cash flows to Agency under P3 $(18) M
- NPV of difference (= VfM) $45 M
Questions?

Submit a question using the chat box
Parts C and D

Availability Payment Concession
AP Concession Analysis Steps

**Part C:** Use the Value for Money Analysis training module to:

1. Review the Public Sector Comparator (PSC)
2. Review the P3 Option
3. Compare PSC and P3 Option from the perspective of the Agency

**Part D:** Use the Value for Money Analysis training module to test impact of elimination of the assumed P3 cost efficiencies
Part C, Step 1: PSC Inputs

Key project information for the PSC in the input sheets of the model are the same as for the Toll Concession option:

- **Revenues** and their timeline
- **Costs** and their timeline
  - Build phase: Pre-construction and construction
  - Operations phase: O&M plus periodic major maintenance
- **Risks** (to be covered in topical Webinar 4)
- **Financing fees**, which are the upfront costs incurred to arrange public debt
- **Competitive neutrality adjustment** to correct for taxation effects in the P3 option
Part C, Step 2: P3 Option Inputs

AP P3 Option inputs that are *the same as* the Toll Concession are:

- **Revenues:** PSC revenues and timeline, but adjusted to take into consideration assumed P3 differences
- **Costs:** PSC costs and timeline, but adjusted to take into consideration assumed P3 differences:
  - Build phase: Pre-construction and construction
  - Operations phase: O&M plus periodic major maintenance

AP P3 Option inputs that are *different* from the Toll Concession are:

- **Financing conditions:**
  - Equity
  - Debt
Part C: Base case PSC vs. P3 Comparison:
Key input for the comparison is the discount rate to be applied to future cash flows:

- **Discount rate** (same as for Toll Concession): 4%

Part D: For evaluation of impact of P3 efficiencies on the PSC vs. P3 Comparison:

1. **Construction timing** -- Eliminate early completion of P3 construction
2. **Construction cost** -- Eliminate reduction in P3 pre-construction and construction costs
3. **Operations cost** -- Eliminate reduction in P3 operations phase costs
Review of Model Inputs

Please stand by as we open the Excel file
Review of Model Outputs
# PSC – AP Concession Outputs

<table>
<thead>
<tr>
<th>Costs &amp; revenues under Conventional Delivery</th>
<th>NPV @ 4.00% USD m</th>
<th>Nominal total USD m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toll revenues</td>
<td>756</td>
<td>2,198</td>
</tr>
<tr>
<td>Toll revenues uncertainty adjustment</td>
<td>(130)</td>
<td>(377)</td>
</tr>
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<td>(576)</td>
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<td>(3)</td>
</tr>
<tr>
<td>Competitive neutrality adjustment</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total net revenues / (costs) under</strong></td>
<td><strong>(29)</strong></td>
<td><strong>872</strong></td>
</tr>
<tr>
<td><strong>Conventional Delivery</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
AP P3 Option – Bid Calculation

- Combining all revenues (i.e., agency upfront or milestone payments to the concessionaire), costs, risks and financing allows the concessionaire to prepare a bid.

- The bid is an availability payment.
## AP P3 Output – Bid Calculation

### Costs & revenues to Developer under P3

<table>
<thead>
<tr>
<th>Item</th>
<th>Units &gt;&gt;</th>
<th>NPV @ 7.24% USD m</th>
<th>Nominal total USD m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toll revenues for private side</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pre-construction &amp; construction costs</td>
<td>(318)</td>
<td>(390)</td>
<td></td>
</tr>
<tr>
<td>(transferred)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O&amp;M costs (transferred)</td>
<td>(57)</td>
<td>(296)</td>
<td></td>
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<td>(58)</td>
<td>(94)</td>
<td></td>
</tr>
<tr>
<td>Pure risks (transferred)</td>
<td>(44)</td>
<td>(98)</td>
<td></td>
</tr>
<tr>
<td>Availability Payment &amp; milestone payment</td>
<td></td>
<td>479</td>
<td>1,837</td>
</tr>
<tr>
<td>to Developer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financing fees</td>
<td>(3)</td>
<td>(4)</td>
<td></td>
</tr>
<tr>
<td>Taxes</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Total net revenues / (costs) to Developer</strong></td>
<td></td>
<td>0</td>
<td>955</td>
</tr>
</tbody>
</table>
From the procuring Agency’s perspective, the cost of P3 includes the bid as well as any retained costs or risks.
### AP P3 Output – Agency Perspective

<table>
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<td>777</td>
<td>2,224</td>
</tr>
<tr>
<td>Toll revenues uncertainty adjustment (for public side)</td>
<td>(133)</td>
<td>(381)</td>
</tr>
<tr>
<td>Pre-construction &amp; construction costs (retained)</td>
<td>(39)</td>
<td>(43)</td>
</tr>
<tr>
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<td>(10)</td>
</tr>
<tr>
<td>Pure risks (retained)</td>
<td>(6)</td>
<td>(11)</td>
</tr>
<tr>
<td>Availability Payment &amp; milestone payment to Developer</td>
<td>(794)</td>
<td>(1,837)</td>
</tr>
<tr>
<td><strong>Total net revenues / (costs) to Agency</strong></td>
<td><strong>45</strong></td>
<td><strong>600</strong></td>
</tr>
</tbody>
</table>
Compare PSC and P3 Option

Part C (AP concession):
- NPV of net revenues/cost to Agency under PSC $-(29)\ M$
- NPV of net cash flows to Agency under P3 $45\ M$
- NPV of difference (= VfM) $74\ M$

Part D (AP concession with no early completion):
- NPV of net revenues/cost to Agency under PSC $-(32)\ M$
- NPV of net cash flows to Agency under P3 $(22)\ M$
- NPV of difference (= VfM) $54\ M$
Compare PSC and P3 Option

Part D (AP concession with no early completion and no P3 build phase cost efficiencies):

- NPV of net revenues/cost to Agency under PSC $(32) M
- NPV of net cash flows to Agency under P3 $(39) M
- NPV of difference (= VfM) $(7) M

Part D (AP concession with no early completion and no P3 build and operations phase cost efficiencies):

- NPV of net revenues/cost to Agency under PSC $(32) M
- NPV of net cash flows to Agency under P3 $(52) M
- NPV of difference (= VfM) $(20) M
Questions?

Submit a question using the chat box
Webinar Summary
Webinar Recap

**Intro**  
Project Background

**Parts A & B**  
Toll Concession

**Part C & D**  
Availability Payment Concession

**Recap**  
Summary of Webinar
Upcoming P3-VALUE Training

- February 22  Project Delivery Benefit Cost Analysis
- March 7    Risk Valuation
- March 21  Financial Viability Assessment
Tool and References

- P3-VALUE 2.0 Excel Spreadsheet
- User Guide
- Primers & Guidebooks
Resources

FHWA’s Office of Innovative Program Delivery Website:
http://www.fhwa.dot.gov/ipd/

P3 Website:
Questions?

Submit a question using the chat box

[Image of computer]
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