



Value for Money Analysis: *Homework Assignment Review*

P3-VALUE Webinar – July 19, 2013

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Background

- This webinar is a follow-up webinar to review the homework assigned at the Value for Money Analysis webinar presented on July 11
- Value for Money Analysis webinar recording is available at:
<https://connectdot.connectsolutions.com/p4jg5w4li0n/>



Webinar Outline

Part 1

Review of assigned homework on Value for Money Analysis for Project with No Tolls

Part 2

Assignment of Homework 2 on Value for Money Analysis for Project with Tolls

Webinar Objectives

After participating in this “office hours” webinar you should be able to:

- Explain the value for money analysis results from runs of the P3-VALUE PSC Tool, Shadow Bid Tool, and Financial Assessment Tool
- Undertake sensitivity tests of various assumptions made in conducting a value for money analysis
- Undertake a value for money analysis for a hypothetical toll-based project and explain its results



Part 1

Value for Money Analysis for a Non-tolled Project: Homework Assignment 1



Hypothetical PSC Cost Data

- Design-Bid-Build (or Design-Build)
- Base design/construction costs of \$30M in Year 1 and \$70M in year 2 – in nominal dollars
- \$10 million (real dollars) per year O&M costs over 28 years
- Risk cost estimates for design-build phase:
 - 10% probability (P10) that they will be at or below \$10 M
 - 70% probability (P70) that they will be at or below \$20 M
 - 90% probability (P90) that they will be at or below \$30 M
- Risk cost estimates for operations phase:
 - 10% probability (P10) that they will be at or below \$1 M
 - 70% probability (P70) that they will be at or below \$2 M
 - 90% probability (P90) that they will be at or below \$3 M
- Other project costs are assumed to be zero for simplicity



Hypothetical PSC Assumptions

- Financing:
 - Debt financing for 100% of construction costs, at 5% interest and 30-year maturity
 - \$2 M in debt issuance costs are financed as part of the debt
 - No grace period
 - Annual debt service coverage ratio of 1.2 (i.e., cash available for debt service must be at least 1.2 times the annual debt service payment)
- Inflation = 3% annually
- Discount rate = 5%
 - This rate is the same as the public sector borrowing rate
 - It assumes that all project risks are accounted for in the cash flows



Hypothetical Shadow Bid Costs

- DBFOM with “availability payments” made by public agency over a 28-year operations period of a 30-year concession term, contingent on meeting performance standards; no toll revenue
- 10% DB cost reduction relative to PSC
- 5% O&M cost reduction relative to PSC
- Risk management efficiency
 - 50% of design-build phase risk costs are transferred
 - 100% of operations phase risk costs are transferred
 - 25% lower risk costs for all transferred risks



Hypothetical Shadow Bid Assumptions

- Financing costs
 - Project funded 80% by debt and 20% by equity
 - Average debt interest rate is 6.0% (vs. 5% for PSC)
 - Required return on equity is 12% (“hurdle” rate)
 - No consideration of taxes paid by concessionaire
- Inflation = 3% annually
- Discount rate = 5%
 - This rate is the same as the public sector borrowing rate
 - It assumes that all project risks are accounted for in the cash flows, e.g., through contingencies and risk premiums in financing costs



P3-VALUE Demonstration

- We will now transition to the P3-VALUE tools and review the inputs and outputs of:
 - PSC Tool
 - Shadow Bid Tool
 - Financial Assessment Tool (VfM Analysis only)



PSC Results from P3-VALUE

<i>Nominal Discount Rate</i>	Results - Risk Adjusted Payments (\$)		
5.00%	PV of Payments with P10 Risk Adjustment	PV of Payments with P70 Risk Adjustment	PV of Payments with P90 Risk Adjustment
Payment Item			
Design and Construction After Subsidy #	-	-	-
Construction Phase Transferrable Risks #	-	-	-
Construction Phase Retained Risks #	-	-	-
Operations	101,692,152	101,692,152	101,692,152
Routine Maintenance	101,692,152	101,692,152	101,692,152
Periodic Maintenance	-	-	-
Operations Phase Transferrable Risks	20,338,430	40,676,861	61,015,291
Operations Phase Retained Risks	-	-	-
Other Project Costs (ROW etc)	-	-	-
PSC Adjustments	-	-	-
Principal Debt Payments	41,890,908	45,768,288	49,645,668
Interest & Fee Payments	76,377,465	82,473,436	88,569,408
Total Payments	\$ 341,991,107	\$ 372,302,889	\$ 402,614,671
Toll and Other Revenue	-	-	-
Total Payments After Toll and Other Revenue	\$ 341,991,107	\$ 372,302,889	\$ 402,614,671



Shadow Bid Costs (from P3-VALUE)

- Note: Procurement costs are not included; they may be higher for a P3 and would be included in “Other Project Costs (for Agency)”

Value for Money Analysis Results

<i>Manual Input</i>	Risk Adjusted Payments (\$)		
5.00%	PV of Payments with P10 Risk Adjustment	PV of Payments with P70 Risk Adjustment	PV of Payments with P90 Risk Adjustment
Payment Item			
Availability Payments	\$ 332,769,407	\$ 355,241,557	377,713,707
Construction Phase Retained Risks	\$ 4,434,779	\$ 8,869,557	13,304,336
Operations Phase Retained Risks	\$ -	\$ -	-
Other Project Costs (For Agency)	\$ -	\$ -	-
<i>Total Payments Before Toll Revenue</i>	\$ 337,204,186	\$ 364,111,114	391,018,042
Toll and Other Revenue	\$ -	\$ -	-
Total Payments After Toll Revenue	\$ 337,204,186	\$ 364,111,114	391,018,042



P3-VALUE Availability Payment Results

- With P3-VALUE, the availability payment is inflated over the term of the concession, rather than being uniform throughout – that is why the first year availability payment is lower than we calculated with our simple model

Availability Payment

Payment Calculation

Annual Nominal Payment Amount:

	P10	P70	P90
Annual Nominal Payment Amount:	16,361,607	17,466,518	18,571,429



P3-VALUE Present Value Comparison (P70)

PSC Discount Rate: 5%	PV of Payment with P70 Risk Adjustment	
	PSC	SB
VfM Discount Rate: 5%		
Project Payments		
Design Construction After Subsidy [#]	\$ -	(1)
Operations	\$ 101,692,152	(1)
Routine Maintenance	\$ 101,692,152	(1)
Periodic Maintenance	\$ -	(1)
Risk Adjustments		
Construction Transferrable Risk [#]	\$ -	(1)
Construction Retained Risk [#]	\$ -	\$ 8,869,557
Operations & Maintenance Transferable Risk	\$ 40,676,861	(1)
Operations & Maintenance Retained Risk	\$ -	\$ -
Availability Payment		\$ 355,241,557
Payment Type		
Adjustments		
PSC Adjustments	\$ -	N/A
Financing		
Principal Debt Payments	\$ 45,768,288	(1)
Interest & Fee Payments	\$ 82,473,436	(1)
Other Project Costs	\$ -	\$ -
Toll + Other Revenues	\$ -	\$ -
Total Payments	\$ 372,302,889	\$ 364,111,114
Notional Value For Money (\$)	\$8,191,775	
Notional Value For Money (% of PSC)	2%	

(1) Included in the Availability Payment



P3-VALUE Comparison: P10, P70, P90

- With the higher risk scenario, the difference is larger due to the more efficient risk management assumed in the P3 option. Likewise, difference is lower in the lower risk scenario.

PSC Discount Rate: 5%	PV of Payment with P10 Risk Adjustment		PV of Payment with P70 Risk Adjustment		PV of Payment with P90 Risk Adjustment	
VfM Discount Rate: 5%	PSC	SB	PSC	SB	PSC	SB
Project Payments						
Design Construction After Subsidy [#]	\$ -	(1)	\$ -	(1)	\$ -	(1)
Operations	\$ 101,692,152	(1)	\$ 101,692,152	(1)	\$ 101,692,152	(1)
Routine Maintenance	\$ 101,692,152	(1)	\$ 101,692,152	(1)	\$ 101,692,152	(1)
Periodic Maintenance	\$ -	(1)	\$ -	(1)	\$ -	(1)
Risk Adjustments						
Construction Transferrable Risk [#]	\$ -	(1)	\$ -	(1)	\$ -	(1)
Construction Retained Risk [#]	\$ -	\$ 4,434,779	\$ -	\$ 8,869,557	\$ -	\$ 13,304,336
Operations & Maintenance Transferable Risk	\$ 20,338,430	(1)	\$ 40,676,861	(1)	\$ 61,015,291	(1)
Operations & Maintenance Retained Risk	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Availability Payment		\$ 332,769,407		\$ 355,241,557		\$ 377,713,707
Payment Type						
Adjustments						
PSC Adjustments	\$ -	N\A	\$ -	N\A	\$ -	N\A
Financing						
Principal Debt Payments	\$ 41,890,908	(1)	\$ 45,768,288	(1)	\$ 49,645,668	(1)
Interest & Fee Payments	\$ 76,377,465	(1)	\$ 82,473,436	(1)	\$ 88,569,408	(1)
Other Project Costs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Toll + Other Revenues	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total Payments	\$ 341,991,107	\$ 337,204,186	\$ 372,302,889	\$ 364,111,114	\$ 402,614,671	\$ 391,018,042
Notional Value For Money (\$)	\$4,786,921		\$8,191,775		\$11,596,628	

(1) Included in the Availability Payment

Questions?

Submit a question using the chat box



Or



Dial *1 to call in your question by phone



Part 2

Value for Money Analysis of a Tolled Project: Homework Assignment 2



Illustrative Hypothetical Tolled Project

- Project life = 30 years (includes D-B phase)
- Design and Construction Costs
 - Base = \$100 M (\$30 M in Year 1; \$70 M in Year 2)
 - Risks: P10 = \$10 M; P70 = \$20 M; P90 = \$30 M
- Operations and Maintenance Costs
 - \$10 M/year (real dollars, i.e., Year 0 dollars)
 - Risks: P10 = \$1 M; P70 = \$2 M; P90 = \$3 M (real dollars)
- Inflation Rate = 3%
- Nominal discount rate = 5% (i.e., borrowing rate of public agency)



Illustrative Hypothetical Project Revenues

- Inputs for revenue estimation:
 - Average Annual Daily Traffic (AADT) in Year 3 = 21,600 vehicles, no growth over project life (for simplicity)
 - Average toll rate = \$2.00 in Year 0 dollars (increases with inflation)
 - Year 3 Traffic = 21,600 X 365 days = 7,884,000 annual
- Ramp up period (Year 3 and Year 4):
 - Year 3 = 67% reduction
 - Year 4 = 33% reduction
- Adjustment for revenue leakage = 5% reduction



Homework Assignment 2

- Run a Value for Money analysis using the P3-VALUE tools with the hypothetical project data for the tolled project presented in this webinar
- Homework 2 instructions may be downloaded momentarily
- Technical assistance options:
 - E-mail questions to: P3-VALUE@dot.gov
 - Participate in “Office-Hours” webinar on **August 16, 2013**. Register at:
<http://www.nhi.fhwa.dot.gov/resources/webconference/eventcalendar.aspx>



Upcoming P3-VALUE Training

- **Aug. 7:** P3 Financial Assessment 201
- **Aug. 16:** Review of P3 Homework Assignments for Value for Money and Financial Viability Analysis
- **Aug. 23:** P3 101
- **Sep. 5:** P3 Evaluation Overview
- **Sep. 20:** P3 Project Risk Assessment 201
- **Oct. 3:** Value for Money 201
- **Oct. 18:** P3 Financial Assessment 201

To register, please visit

<http://www.nhi.fhwa.dot.gov/resources/webconference/eventcalendar.aspx>



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Questions?

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Or



Dial *1 to call in your question by phone