Project Viability Screening:  
A method for early-stage merit-based project selection

Ryan J. Orr, Ph.D  
Executive Director

Jeremy Tchou  
Research Assistant
Roadmap

- Motivation – Shift from Public to Project Finance
- Current Practice – Contractors, Infra Funds, Rating Agencies, Government Agencies
- Theory – Finance, Economics
- New Method – Project Viability Screening
- Implications for Theory & Practice
Motivation

- Many people are calling for P3s out of desperation, recognizing old system is broken, not knowing what the new P3 system means.

- What the shift to P3s means, is that we shift from the world of public finance to the world of project finance.

- This forces a shift in paradigms:
  - **Old paradigm**: public works, politicians cut ribbons.
  - **New paradigm**: infrastructure investment, bankers run cash flow models.

- More emphasis on project screening and selection, project level economics, and structuring to ensure value!
  - And hopefully, fewer white elephants!
What Does the Shift from Public to Project Finance Mean?

<table>
<thead>
<tr>
<th></th>
<th>Public Finance</th>
<th>Project Finance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Underlying Logic</strong></td>
<td>Social returns; public works</td>
<td>Economic returns; market imperatives</td>
</tr>
<tr>
<td><strong>Borrower</strong></td>
<td>Public entity</td>
<td>Single-asset project company</td>
</tr>
<tr>
<td><strong>Source of Debt Repayment</strong></td>
<td>Typically general tax collections (except revenue-based bond issues)</td>
<td>Typically project revenues (except gov’t guarantees or availability payments)</td>
</tr>
<tr>
<td><strong>Rating Agency Focus in Creditworthiness Assessment</strong></td>
<td>Strength of the tax base and existing levels of indebtedness of public entity</td>
<td>Project revenue forecasts; Debt service coverage ratios; Project contracts</td>
</tr>
<tr>
<td><strong>Who Drives Process?</strong></td>
<td>Elected officials</td>
<td>Financial executives</td>
</tr>
</tbody>
</table>
What Does the Shift from Public to Project Finance Mean? (con’t)

<table>
<thead>
<tr>
<th>How are Projects are Selected &amp; Prioritized?</th>
<th>Politicians—like jobs, expansion of tax base, special interests</th>
<th>Financial executives—watch risk-adjusted returns, hurdle rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>What Happens if Project Runs Over Budget/Schedule?</td>
<td>More tax money is allocated; politicians make excuses; project limps along; No feedback loop</td>
<td>Private investors lose capital; project is restructured; sometimes gov’t steps in</td>
</tr>
<tr>
<td>Exit Strategy</td>
<td>N/A</td>
<td>Sell to investors</td>
</tr>
<tr>
<td>Main Criticisms</td>
<td>Too many white elephants; Parochial selection process; Inefficient delivery; Deferred maintenance</td>
<td>Too many toll roads; User fees restrict access; Natural monopolies can be abused</td>
</tr>
</tbody>
</table>
Roadmap

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Contractor Methods for Project Screening

- Seasoned industry veterans do “business development”
- Leads from trade journals, business partners, past clients
- Competitive bidding, proposal writing, lobbying
- Checklists used to summarize attractive project characteristics

**Skanska’s 5 Questions**
- Is it legal (supported by legislation)?
- Is there political will?
- Is there institutional capacity?
- Is the project economically viable or will the government provide financial support?
- How does the project integrate into the regional infrastructure?
Infrastructure Fund Methods for Project Screening

Top-Down Analysis / Screening Countries, Sectors & Deals

- Screen Universe of Countries
- Screen Universe of Strategic Partners
- Identify Sector Trends
- Set Portfolio Framework

Diversified Portfolio of 10-20 Investments

- Leverage Network to Source Deals
- Conduct Rigorous Due Diligence
- Structure Deals to Maintain Influence
- Attract High Quality Mgmt
- Consider Multiple Exit Opportunities

Bottom-Up Execution / Strategy-in-Action

- Proactive, funnel-based, driven by sector and geographic targets
- Deal-seekers and intermediaries are paid large success fees
- Investment memo is presented to investment committee to gain budget for deep-dive due diligence
Rating Agency Methods for Project Screening

- Rating agencies distill project success factors into detailed rating methodologies
- Cross-disciplinary rating teams vote to assign a rating

Moody’s Rating Methodology for Toll Roads

<table>
<thead>
<tr>
<th>Key Factor</th>
<th>Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset Type</td>
<td>20%</td>
</tr>
<tr>
<td>Fundamentals of Service Area</td>
<td>10%</td>
</tr>
<tr>
<td>Traffic Profile</td>
<td>10%</td>
</tr>
<tr>
<td>Concession &amp; Regulatory Framework</td>
<td>10%</td>
</tr>
<tr>
<td>Stability of Business Model &amp; Financial Structure</td>
<td>10%</td>
</tr>
<tr>
<td>Key Credit Metrics</td>
<td>40%</td>
</tr>
</tbody>
</table>
Rating Agency Methods for Project Screening

- Further breakdown of rating factors:

<table>
<thead>
<tr>
<th>Factors</th>
<th>Sub-Factors</th>
<th>Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset Type</td>
<td>Asset Features</td>
<td>10.00%</td>
</tr>
<tr>
<td></td>
<td>Competing Routes</td>
<td>10.00%</td>
</tr>
<tr>
<td>Fundamentals of Service Area</td>
<td>Robustness and Diversity of Service Area</td>
<td>5.00%</td>
</tr>
<tr>
<td></td>
<td>GDP / Capita in Service Area</td>
<td>5.00%</td>
</tr>
<tr>
<td>Traffic Profile</td>
<td>User Profile</td>
<td>3.33%</td>
</tr>
<tr>
<td></td>
<td>Track Record and Stability of Tolled Traffic</td>
<td>3.33%</td>
</tr>
<tr>
<td></td>
<td>Annual Average Daily Traffic per Lane Km</td>
<td>3.33%</td>
</tr>
<tr>
<td>Concession and Regulatory Framework</td>
<td>Risk of Adverse Changes to Concession Terms and Conditions</td>
<td>3.33%</td>
</tr>
<tr>
<td></td>
<td>Ability to Increase Tariffs</td>
<td>3.33%</td>
</tr>
<tr>
<td></td>
<td>Protection against Events outside the Concessionaire’s Control</td>
<td>3.33%</td>
</tr>
<tr>
<td>Stability of Business Model and Financial Structure</td>
<td>Ability and Willingness to Pursue Opportunistic Corporate Activity</td>
<td>3.33%</td>
</tr>
<tr>
<td></td>
<td>Ability and Willingness to Increase Leverage</td>
<td>3.33%</td>
</tr>
<tr>
<td></td>
<td>Targeted Proportion of Revenues outside Core Concession</td>
<td>3.33%</td>
</tr>
<tr>
<td>Key Credit Metrics (Historical &amp; Projected)</td>
<td>Cash Interest Coverage</td>
<td>8.00%</td>
</tr>
<tr>
<td></td>
<td>FFO / Debt</td>
<td>8.00%</td>
</tr>
<tr>
<td></td>
<td>Moody’s Debt Service Coverage Ratio</td>
<td>8.00%</td>
</tr>
<tr>
<td></td>
<td>RCF / Capex</td>
<td>8.00%</td>
</tr>
<tr>
<td></td>
<td>Debt / PV Base Cash Flows or Concession Life Coverage Ratio</td>
<td>8.00%</td>
</tr>
</tbody>
</table>
Government Methods for Project Screening

- Seldom done at all, typically money allocated by:
  - Politics, patronage, parochial processes
  - Formula-based allocations

- Very few countries have merit-based, criteria-driven approaches:
  - Chile, Mexico, etc.

**Mexico Case Study**

- Salinas - Council of Ministers
- 10 projects of national importance funded early-90s
- Today, four ranking criteria:
  - Socio-economic benefit
  - Pro-poor development
  - Regional impact
  - Synergies with other projects
- Application review process
  - Ministry of Finance ranks & assigns single number
  - Blocks powerful senators
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- **Theory** – Finance, Economics
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## Modern Finance Theory

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
<th>Benefits</th>
<th>Drawbacks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payback Period</td>
<td>Initial costs</td>
<td>Simple</td>
<td>Lack of information on profitability and timing of cash flows</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Emphasis on liquidity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Annual profits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net Present Value</td>
<td>NPV = ( \sum_{n=0}^{N} \frac{C_n}{(1 + r)^n} )</td>
<td>Accounts for time value of money</td>
<td>Sensitive to discount rates</td>
</tr>
<tr>
<td>Internal Rate of Return</td>
<td>NPV = ( \sum_{n=0}^{N} \frac{C_n}{(1 + r)^n} = 0 )</td>
<td>Accounts for time value of money</td>
<td>Ignores scale; Difficult with negative cash flows</td>
</tr>
<tr>
<td>Real Options</td>
<td>Calculates NPV due to added flexibility</td>
<td>Accounts for risks of individual project cash flows</td>
<td>Sensitive to discount rates; Complicated</td>
</tr>
</tbody>
</table>

### General Drawbacks:
- Uncertainty of cash flows
- Narrow view
- Lack of qualitative considerations
Modern Economics Theory

- Why should government invest in capital projects?
- Resolve market failures
  - Public goods, externalities, monopolies
- Improve general welfare
- The Kaldor-Hicks rule
  - Benefit-cost analysis
  - If the gain from the gainers is greater than the loss from the losers, then proceed with the project

General Drawbacks:
- Promotes a “good enough” mentality
- Tolerates sub-par allocation of resources

Source: Gramlich, E. A Guide to Benefit-Cost Analysis
Assumptions in Modern Finance Approaches

- Assumptions in current finance approaches:
  - Projects are mutually exclusive
  - Project definition & information is complete
  - Costs, cash flows, and risks are known and quantifiable
  - Financial rate of return is the only decision driver
Assumptions in Modern Finance Approaches

- Assumptions in current finance approaches:
  - Projects are mutually exclusive
  - Project definition & information is complete
  - Costs, cash flows, and risks are known and quantifiable
  - Financial rate of return is the only decision driver

- NOT TRUE!!!

- Current theory is insufficient, seldom used outside the classroom
  - Projects must be socially, politically, legally, technically, economically, and financially viable!
We need a new method to guide project selection in the real world, where:

- Constrained by limited time & resources
- Abundance of possible projects
- Scope of each project is inconsistently defined
- Costs, cash flows, and risks are known only vaguely
- Multiple decision criteria are important
- Premature lock-in could limit further exploration
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Project Viability Screening (PVS)

- Merit-based analysis to rank and prioritize projects using a defined set of project viability criteria (PVC)
- Heuristic-driven approach that mimics current practice
- Intended for early-stage efforts when selection process is limited by time and resources
- Supports multiple decision-criteria, not just financial rate of return
- Developed after studying 10 different project ranking methods
Project Viability Screening

Step 1: Establish Integrated Team

Step 2: Develop Project Viability Criteria

Step 3: Deal-Breaker Screening

Step 4: Project Viability Screening

Step 5: Prepare Project Short-List

Step 6: Prepare Feasibility/Business Case

Step 7: Obtain Board Approval
1. Establish Integrated Team

- Seek to assemble team with holistic knowledge of projects, politics, stakeholders, market trends, history & current issues
- Define roles, responsibilities & critical communication links between stakeholders
- Adjust team membership and size in response to changes in assignments
2. Develop Project Viability Criteria

- Familiarize team with all projects
- Clearly define project selection process
- Identify project viability criteria and deal-breakers
- Consider time constraints, resources, and final goals

Case Study – California Transportation Sector:

1. Environmental permits
2. Regional political support
3. Viability of plan of finance
4. Social benefit-cost ratio
5. Value-add of private sector
Project Viability Criteria

Category 1
Non-Rankable Attributes

Project criteria that generally cannot be ranked

Examples:
Project Location?
Type of Project?
Champion?

Category 2
Project Viability Attributes

Project criteria that determine whether it is advisable to invest

Examples:
Social Benefit/Cost?
Enhances Regional Integration?
Public Support?
Political Feasibility?

Category 3
Delivery Modality Attributes

Project criteria that determine the most favorable delivery vehicle

Examples:
Complexity?
Innovativeness?
Scale?
Fast-track?
Project Viability Criteria

- Environmental Permits
- Social Cost/Benefit
- Public Support
- Political Feasibility
- Jurisdictional Complexity
- Constructability
- Revenue Source
- Investor Interest
- Enabling Legislation

**Deal-breakers** are fatal flaws in projects that would prevent project success.
Conduct Project Screening

- Initial Database: 100%
- Deal-Breaker Screening: 50%
- Project Viability Screening: 10%
- Prepare Project Short-List: Short List 10%

* Percentages are hypothetical
3. Deal Breaker Screening

- Deal breakers are usually sector specific
- Hydro-Electric Dam
  - Steep creek, road to top, transmission
- Ports
  - Location and size of economy, diversity of cargo, transportation infrastructure
- Toll Roads
  - Competing routes, connection to large trunk routes, GDP/capita, type of traffic (commuter vs. freight vs. leisure)
4/5. Project Viability Screening & Preparation of Short-List

- Assign quantitative scores & weights to criteria
- Perform relative ranking, watch for “order of magnitude” differences in ranks
- Prepare short-list of top 10% for detailed feasibility study
6. Feasibility Study/Business Case

- Articulate project scope & schedule
- Complete stakeholder mapping
- Assess GDP & job growth benefits
- Perform detailed benefit-cost analysis
- Prepare cash flow model
  - Market study & revenue forecast
  - Construction cost estimate
  - Phasing plan
7. Obtain Board Approval

- Sell the project internally to the chief secretary, congress, legislature, board, commission, etc.
  - Tell a story – power point, you tube, local news
  - Citizen Advocates – find good spokespeople
  - External Advocates – “we did it too & it worked”
  - Petitions – strength in numbers
# Example - Screening Matrix

<table>
<thead>
<tr>
<th>Key Criteria</th>
<th>New Jersey Lottery</th>
<th>Atlantic City Expressway</th>
<th>New Jersey Turnpike</th>
<th>Garden State Parkway</th>
<th>HOT Lanes</th>
<th>Newly-Tolled Facilities</th>
<th>Development Rights at NJ Transit Stations</th>
<th>Naming Rights</th>
<th>PNC Bank Arts Center</th>
<th>Atlantic City International Airport (ACIA)</th>
<th>Fiber Optic Network</th>
<th>NJSEA¹</th>
<th>HESAA²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope (i.e., Discrete Project)</td>
<td>++</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
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<td>++</td>
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<tr>
<td>Size</td>
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<td>+++</td>
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<td>++</td>
<td>+ (7)</td>
<td>++</td>
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<td>+</td>
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<td>+++</td>
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<td>Time</td>
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<td>-</td>
<td>+</td>
</tr>
<tr>
<td>Skill-sets</td>
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</tr>
<tr>
<td>Financeable</td>
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<td>+</td>
<td>+++</td>
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<td>Interfaces</td>
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</tr>
<tr>
<td>Legal Platform ²</td>
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<td>+++</td>
<td>+++</td>
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<td>Technical Information</td>
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<td>Land Ownership</td>
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<td>Economically Sound</td>
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<td>-</td>
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<tr>
<td>Overall Potential</td>
<td>+++</td>
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<td>+++</td>
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<td>+++</td>
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<td>+++</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

+++ Very Favorable  ++ Favorable  + Somewhat Favorable  − Somewhat Unfavorable  −− Unfavorable  −−− Very Unfavorable  NA: Not Applicable

Notes:
1 Reflects a group of 7 venues
2 Assuming enactment of appropriate legislation
(7) Additional due diligence required
Example - Screening Matrix

<table>
<thead>
<tr>
<th>Tier 1 Assets</th>
<th>Atlantic City Expressway</th>
<th>Development Rights at NJ Transit Stations</th>
<th>Garden State Parkway ¹</th>
<th>New Jersey Lottery</th>
<th>New Jersey Turnpike ¹</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Investment Profile</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predictable earnings and cash flow</td>
<td>+++</td>
<td>-</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
</tr>
<tr>
<td>Potential for clear regulatory framework</td>
<td>+++</td>
<td>NA</td>
<td>+++</td>
<td>++</td>
<td>+++</td>
</tr>
<tr>
<td>Monopoly characteristics</td>
<td>+++</td>
<td>++</td>
<td>+</td>
<td>+++</td>
<td>+</td>
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<tr>
<td>Growth potential</td>
<td>++</td>
<td>++</td>
<td>+++</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Low volatility</td>
<td>+++</td>
<td>++</td>
<td>+++</td>
<td>+</td>
<td>+++</td>
</tr>
<tr>
<td>Low correlation of returns compared to other asset classes</td>
<td>+++</td>
<td>+</td>
<td>+++</td>
<td>+</td>
<td>+++</td>
</tr>
<tr>
<td>Marketable asset size</td>
<td>++</td>
<td>+++</td>
<td>++</td>
<td>+++</td>
<td>+</td>
</tr>
<tr>
<td>Capital expenditures</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>+++</td>
<td>+</td>
</tr>
<tr>
<td>Potential for O&amp;M enhancements</td>
<td>+++</td>
<td>NA</td>
<td>+</td>
<td>+++</td>
<td>+</td>
</tr>
<tr>
<td>Yield potential</td>
<td>+++</td>
<td>NA</td>
<td>+++</td>
<td>+</td>
<td>+++</td>
</tr>
<tr>
<td><strong>Expected Investor Interest</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strategic/industry acquirers</td>
<td>+++</td>
<td>++</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
</tr>
<tr>
<td>Financial sponsors</td>
<td>++</td>
<td>+</td>
<td>++</td>
<td>+++</td>
<td>+</td>
</tr>
<tr>
<td>Listed/public equity investors</td>
<td>+++</td>
<td>NA</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
</tr>
<tr>
<td>Infrastructure funds</td>
<td>+++</td>
<td>NA</td>
<td>+++</td>
<td>+++</td>
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</tr>
<tr>
<td>Bank debt providers</td>
<td>+++</td>
<td>++</td>
<td>+++</td>
<td>+++</td>
<td>+</td>
</tr>
<tr>
<td>Debt capital markets</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
<td>+</td>
</tr>
</tbody>
</table>

+++ Very Favorable  ++ Favorable  + Somewhat Favorable  – Somewhat Unfavorable  –– Unfavorable  ––– Very Unfavorable
NA: Not Applicable

Note:
¹ Included in NJ Turnpike Authority Assets which are not individually available without total NJ Turnpike Authority debt defeasance
Example - Screening Graph

The diagram illustrates a matrix for screening potential projects. It uses two axes: Relative Value and Feasibility. Projects are plotted based on their relative value and feasibility, with different symbols indicating market readiness:

- **High Relative Value**
- **High Feasibility**
- **High Market Readiness**

Some projects highlighted include:
- **Newly-Tolled Facilities**
- **HOT Lanes**
- **NJ Turnpike Authority Assets**
- **NJ Turnpike**
- **GS Parkway**
- **AC Expressway**
- **NJ Lottery**
- **Fiber Optic Network**
- **Development Rights at NJ Transit Stations**
- **NJSEA**
- **PNC Bank Arts Center**
- **HESAA**

This graph helps in prioritizing projects based on their potential impact and practicality.
Roadmap

- Motivation – Shift from Public to Project Finance
- Current Practice – Contractors, Infra Funds, Rating Agencies, Government Agencies
- Theory – Finance, Economics
- New Method – Project Viability Screening
- Implications for Theory & Practice
Implications for Theory

- Overcomes assumptions and removes over-confidence associated with financial theory (i.e. NPV, IRR)
- Goes beyond the notion of merely improving “General Welfare,” to trying to maximize it
- Underpins current practice with a conceptual model
Implications for Practice

- Effective under limited time & resources
- Merit-based
- Criteria can be customized to meet local goals
- Applicable to all sectors
- Focuses attention on “high grade” opportunities
References

- Fernandez, C. Ministry of Finance, Mexico. Conversation, June 2009

Contributors include: Deloitte, Scott Balice Strategies, First Southwest Company, P3LA, MP3 Solutions