Chilean Experience in Regulation of Roads Public-Private Partnerships (PPP)

Submitted by: Chile
Chilean Experience in Regulation of Roads PPP

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Chemonics International
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Agenda

1. Chilean Institutional Framework
2. Roads Regulatory Strategy in Chile
3. Key elements of the Chilean PPP Case
   3.1 Lessons learned
   3.1 Trends in the Road Regulation
1. Chilean Institutional Framework

Chilean Institutional Structure

- Comptroller
- Finance Ministry
- Ministry of Public Works
- PPP Unit
- Health Ministry, Justice Ministry, Civil Aviation Direction, Railroad Company, Local Governments

Responsible for the complete PPP project Cycle
Chilean Institutional Structure

New Business Coordinator

- Legal Unit
- Budget and Management Control
- New Business Division
  - Demand and Cost Benefit Analysis
  - Current Sector Development
  - New Sector Development

- Financial and Economic Unit
  - Engineer Unit
  - Environmental Unit
  - Bidding Division
    - Urban Roads and Public Buildings
    - Public Transportation
    - Airports
    - Hospitals
    - Dams and Approach Civil Works
    - Municipal Roads

Management of PPP Contract Coordinator

- Construction Division
  - Construction Management and Supervision
    - Contingencies and Emergencies Unit
- Contract Management
- Operation Division
  - Operation Management and Supervision
- Technical Advisors
- Legal Unit
- Environmental Unit
- Conflict Resolution Unit
- Auditing Unit
- Transportation System Unit

CONSULTANCIES FOR TECHNICAL INSPECTION OF CIVIL WORKS (TOS)
Solicited and Unsolicited Proposals

- Public
- Private

MOP

Mandate Agreement

Pre Qualification

Bidding

Declarations of Public Attractiveness

Chilean Project Cycle

Planning
- Ministry of Public Works
- Roads Department
- PPP Department

Bidding
- PPP Department
- Ministry of Public Works

Construction Oversight
- PPP Department
- Roads Department
- Ministry of Public Works

Operation Regulation
- PPP Department
- Roads Department
- Ministry of Public Works
Total Concession Investment
US$8,000 million

- Urban Roads: 20%
- Penitenciaries: 2%
- Dams: 1%
- Interurban Highways: 72%
- Airports: 5%

Chilean Infrastructure Investment
Pension Funds (Sept. 2007)

<table>
<thead>
<tr>
<th>Country</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Chile</td>
<td>$107.000 million</td>
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<tr>
<td>Mexico</td>
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<tr>
<td>Poland</td>
<td>$53.000 million</td>
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<td>Argentina</td>
<td>$30.000 million</td>
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<td>Colombia</td>
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<td>Perú</td>
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<td>Russia Fed.</td>
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<td>Kasakhstan</td>
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<td>El Salvador</td>
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<tr>
<td>Uruguay</td>
<td>$2.000 million</td>
</tr>
<tr>
<td>Bolivia</td>
<td>$2.000 million</td>
</tr>
</tbody>
</table>

2. Roads Regulatory Strategy in Chile
PPP Design

- Regulatory System
- Private Sector Participation
- Economic Structure
- Institutional System and Procedures
- Business Design

Private Sector Participation

- Reform Health System
- Reform to the Education
- Reform to the Pension System
- Foreign Investment Promotion
- Privatisation

Reform to the Pension System

Reform to the Health System

Privatisation

Foreign Investment Promotion
Legal System

Regulatory System

Concession Law N.900 Ministry of Public Works

Complementary Law Amendments

Project Finance Law

Long Term Minimum Income Guarantee

Revenues

CURRENT REVENUES

GOV. PAYMENT TO CONCESSION

MINIMUM INCOME GUARANTEE

OVER PROFITABILITY

P Time
Revenue Sharing Mechanism

2.1. Panamerican Highway (Road 5)
Panamerican Highway 1995-1998

US$ 2,100 million
1590 Kms.

Road 5

SANTIAGO

La Serena

Los Vilos

Talca

Chillán

Collipulli

Temuco

Río Bueno

Concepción

Puerto Montt

Talcahuano

Valparaíso

San Antonio

Los Andes

Túnel El Molón

SANTIAGO

Chillán

Los Vilos

La Serena

SANTIAGO

SANTIAGO

Monopoly Regulation

Financial Regulation

Business Design

\[
NPV = -CAPEX + \sum_{t=1}^{N} \frac{(P \times Q + S_F + S_V)_t - (O & M)_t}{(1 + CAPM)_t} 
\]
Tariff System

- Natural Monopoly. No alternative roads
- Sequential and Competitive Bidding
- Transport Modeling to determine tariffs
- Second best tariffs to reduce deadweight loss
- Efficient and equity criteria to implement the tariff system and affordable for the users.

Business Design

- Geographic Equity: Tariffs relatively similar along the highway according to the service level
- Horizontal Equity: Users pay according to his category
- Vertical Equity: Local Users or Frequent Users can receive a special payment treatment
- Generational Equity: Users pay for a service level during a specific period of time.
Panamerican Highway

- Risk Sharing Mechanism
- Feasibility Studies prepared by the Chilean government and available for the bidders
- Quality of Service: Guarantee by prizes and fines
- International Pre qualification and sequential bidding
- International Road Shows
Cross Subsidy (Million US$/year)

- La Serena - Los Vilos: 8.18
- Los Vilos - Santiago: -7.02
- Santiago - Talca: -4.18
- Talca - Chillán: -4.35
- Chillán - Collipulli: 3.51
- Collipulli - Temuco: 5.85
- Temuco - Río Bueno: 7.02
- Río Bueno - Pto Montt: 9.35

Tariff System (US$/100 kms)

- Río Bueno - Pto Montt: Complete Self Funded
2.2. Urban Roads

Santiago in the Nineties

Population: 5 million

10.3 Million of trips per day

65%: Public Transportation

35%: Private Transportation

Economic Development

135 cars / 1000 persons

Rate Growth: 6% annually

Lack of Public Investment

Transport System with huge operation problems
Santiago Infrastructure Plan

- Public Transportation Modernization
- Enlargement of the Metro System
- Enlargement of Suburban Trains
- PPP for the main urban roads
- Economic regulation for the private transportation
- Enhancement of the local transportation infrastructure
- Traffic control system improvement

Urban PPP Roads

Urban Road System
1. Autopista Costanera Norte
2. Sistema Norte – Sur
3. Américo Vespucio Sur
4. Américo Vespucio Norte 215 Km.
5. Sistema de Telepeaje
Santiago Infrastructure Plan

- Three tariffs:
  - Valley US$ 0.05/km
  - Peak US$ 0.06/km
  - Congestion US$ 0.12/km
- Tariff adjustment RPI + 3.5% annually.
- Concessionaire can do tariff management.

East-West Urban System

- Sequential Bidding Mechanism:
  - Variable 1: “Payment for goods and rights (BD)”
    Payment by the sponsor of the concessionaire before to create the concessionaire company.
  - Variable 2: Investment Plan
  - Variable 3: Payment from the Government
Urban Road Concession: East-West Urban System

Results

- Investments: US$385 million
- Length: 42 kilometers
- Reduce gas emission
- Reduce contamination
- Reduce congestion
- Reduce travel time from Las Condes to the Santiago Airport

- Implementation of the electronic toll road system “free flow” which let to the users go through the road without stop to pay tolls.
- The number of accidents in the road is very low and it reach 8 in average per month.

Urban Roads Bidding Results

<table>
<thead>
<tr>
<th>Project</th>
<th>Kms.</th>
<th>Investment (MMUSS)</th>
<th>N° Bidders</th>
<th>Adjudication</th>
<th>Payment to State (MMUSS)</th>
<th>Concessionaire</th>
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<tbody>
<tr>
<td>Sistema Oriente - Poniente</td>
<td>38</td>
<td>380</td>
<td>4</td>
<td>Dic - 99</td>
<td>17</td>
<td>Impregilo / Fe Grande</td>
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<tr>
<td>(Costanera Norte - Kennedy)</td>
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<tr>
<td>Sistema Norte - Sur</td>
<td>61</td>
<td>440</td>
<td>4</td>
<td>Ago - 00</td>
<td>120</td>
<td>Dragados / Skanska</td>
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<tr>
<td>(Eje Norte - Sur General Velásquez)</td>
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<tr>
<td>América Vespucio Sur</td>
<td>24</td>
<td>270</td>
<td>4</td>
<td>Jun - 01</td>
<td>55</td>
<td>Sacyr / Acciona</td>
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<tr>
<td>América Vespucio Norte</td>
<td>27</td>
<td>250</td>
<td>4</td>
<td>Dic - 01</td>
<td>90</td>
<td>Dragados / Hochleif</td>
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<tr>
<td>Total</td>
<td>150</td>
<td>1340</td>
<td>4</td>
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<td>282</td>
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<td>Sistema Oriente - Poniente Obras</td>
<td></td>
<td></td>
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<td>-80</td>
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<tr>
<td>Financiadas por el Estado</td>
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<tr>
<td>Net Benefit for the State</td>
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<td>202</td>
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</table>
3. Key Elements of the Chilean PPP Case

3.1. Lessons Learned
Lessons Learned

• **Lesson 1**: Competition is an important first step for road regulation and prequalification is an important strategy to mitigate the adverse selection (concessionaire) problem.

• **Lesson 2**: Competition is not able to solve the incomplete contract problems. Every risk must be carefully studied. Technical studies to estimate the official investment cost of the PPP project.

• **Lesson 3**: Low balling and Winner's Curse

Lessons Learned

• **Lesson 4**: Regulation strategy must be included in early stages of the project cycle. Economic variables to define the bidding winner.

• **Lesson 5**: Transport and financial Models, must be considered in the Regulatory studies to have a consistent PPP model.

• **Lesson 6**: Incomplete contracts must include in a easy way the potential conflict resolution issues like easy buy out or way out, negotiation mechanisms, new investments treatment.
3.2. Trends in Road Regulation

Trends in Road Regulation

- **Trend 1**: Vertical Integration of Regulation versus Independent Regulator
- **Trend 2**: Application of Least Present Value of Revenues
- **Trend 3**: Unsolicited Proposals
- **Trend 4**: Intermodal Competition (Minimum Revenue Guarantee)
- **Trend 5**: Total Integration of the Transport Model-Financial Model and Regulatory Model (sequential or simultaneous)
Thank you!!

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