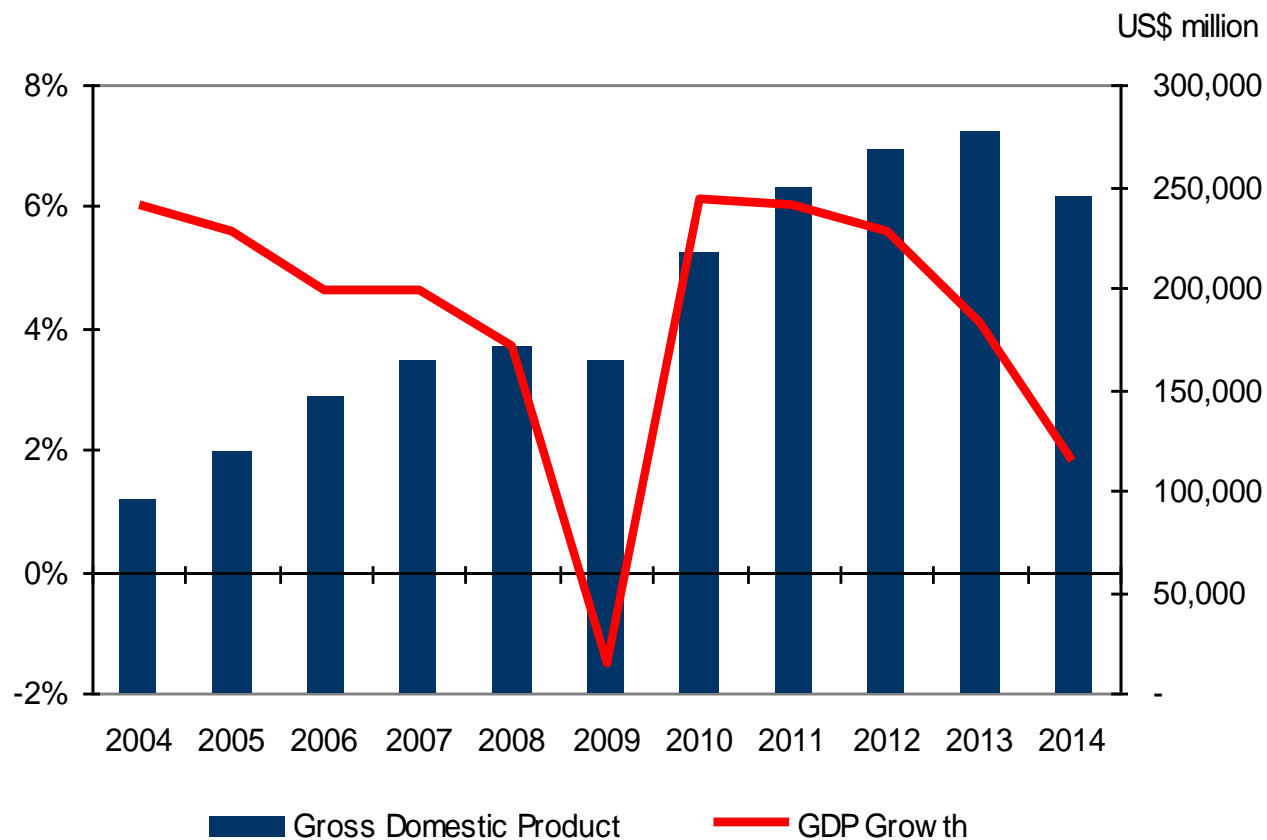


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# The Role of Commercial Banks and Private Sector in NAMA Design and Implementation

Rodrigo Violic  
Head of Project Finance, Banco BICE

## Chilean Main Economic Figures



Source: Banco BICE

## Reasons to Invest in Chile

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- Low country risk: **AA-** (Standard & Poor's)
- Highly competitive economy: **33rd** place out of 144 economies, **1st** in LATAM (WEF, 2014-2015 Global Competitiveness Index)
- Attractive business climate: **13th** place out of 82 economies (EIU, Business Environment Ranking 2014-2018)
- Globally integrated: **21** trade agreements with more than 60 countries in the world
- High transparency: **21st** of 175 countries and **1st** in LATAM (Transparency International, 2014 Corruption Perception Index)
- Sound business environment and economic freedom: **7th** place out of 178 countries and **1st** in LATAM (Heritage, 2015 Economic Freedom Index)
- Good transport infrastructure and modern connectivity
- Institutional and financial strength: economic stability, monetary discipline and strong political and fiscal environment

## Reasons to Invest in Chile – Global Competitiveness

| Latin America Top 10                       |              |
|--|--------------|
| The Global Competitiveness Index 2014-2015 | Global rank* |
| Chile                                      | 33           |
| Panama                                     | 48           |
| Costa Rica                                 | 51           |
| Brazil                                     | 57           |
| Mexico                                     | 61           |
| Peru                                       | 65           |
| Colombia                                   | 66           |
| Guatemala                                  | 78           |
| Uruguay                                    | 80           |
| El Salvador                                | 84           |

Source: The Global Competitiveness Report 2014-2015  
 Note: \* 2014-2015 rank out of 144 economies

- Most competitive country in Latin America according to the WEF
- Strong institutional set up (28th), with low levels of corruption (25th), efficient government (21st) and solid macroeconomic stability (22nd)

## Reasons to Invest in Chile - Financial Market Development

|  | Info | Rank / 144 | Score      | Trend | Distance from best |
|--|------|------------|------------|-------|--------------------|
| <b>Global Competitiveness Index</b><br>1-7 (best)            | ⓘ    | 33         | 4.6        | —     |                    |
| Subindex A: Basic requirements 1-7 (best)                    | ⓘ    | 30         | 5.3        | —     |                    |
| 1st pillar: Institutions 1-7 (best)                          | ⓘ    | 28         | 4.8        | —     |                    |
| 2nd pillar: Infrastructure 1-7 (best)                        | ⓘ    | 49         | 4.6        | —     |                    |
| 3rd pillar: Macroeconomic environment 1-7 (best)             | ⓘ    | 22         | 5.9        | —     |                    |
| 4th pillar: Health and primary education 1-7 (best)          | ⓘ    | 70         | 5.7        | —     |                    |
| Subindex B: Efficiency enhancers 1-7 (best)                  | ⓘ    | 29         | 4.7        | —     |                    |
| 5th pillar: Higher education and training 1-7 (best)         | ⓘ    | 32         | 5.1        | —     |                    |
| 6th pillar: Goods market efficiency 1-7 (best)               | ⓘ    | 34         | 4.7        | —     |                    |
| 7th pillar: Labor market efficiency 1-7 (best)               | ⓘ    | 50         | 4.4        | —     |                    |
| <b>8th pillar: Financial market development</b> 1-7 (best)   | ⓘ    | <b>19</b>  | <b>4.9</b> | —     |                    |
| 9th pillar: Technological readiness 1-7 (best)               | ⓘ    | 42         | 4.6        | —     |                    |
| 10th pillar: Market size 1-7 (best)                          | ⓘ    | 41         | 4.5        | —     |                    |
| Subindex C: Innovation and sophistication factors 1-7 (best) | ⓘ    | 49         | 3.9        | —     |                    |
| 11th pillar: Business sophistication 1-7 (best)              | ⓘ    | 55         | 4.2        | —     |                    |
| 12th pillar: Innovation 1-7 (best)                           | ⓘ    | 48         | 3.5        | —     |                    |

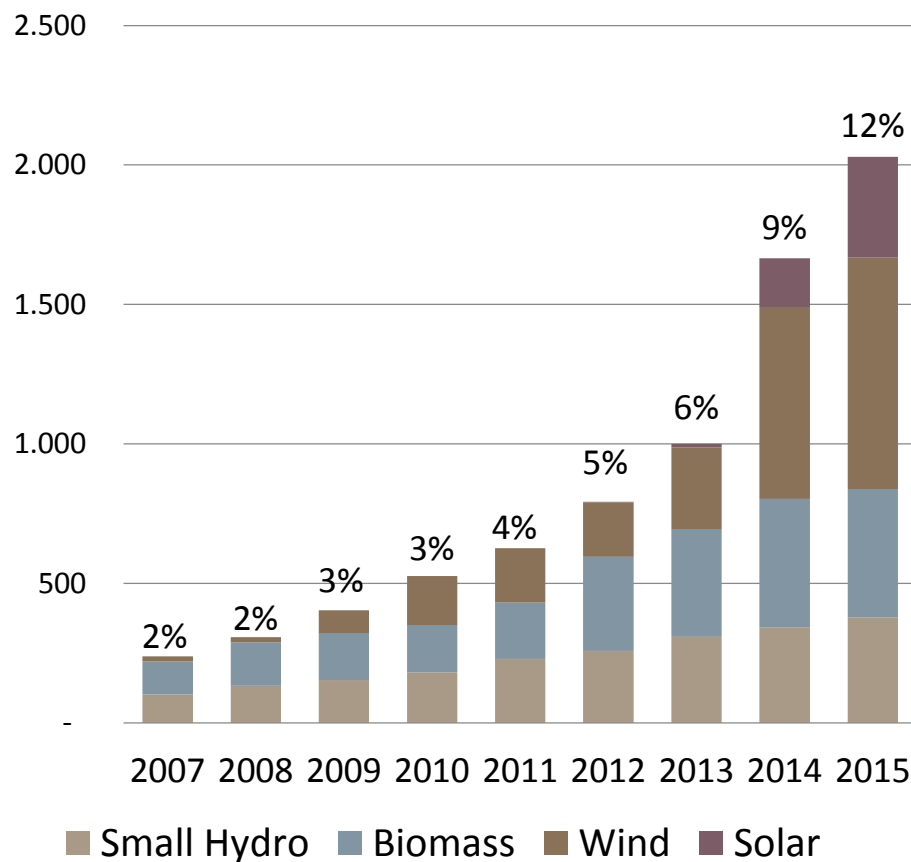
### ■ FMD measures:

- ⦿ Availability of financial services
- ⦿ Affordability of financial services
- ⦿ Financing through local equity market
- ⦿ Ease of access to loans
- ⦿ Soundness of banks
- ⦿ Regulations securities exchange
- ⦿ Legal rights index

- Chile ranks among the **top 20** economies in terms of financial market development and 1st in LATAM
- Ahead of France (23rd), Germany (25th) and Denmark (27th)

## State of RE in Chile

(% of total installed capacity, in MWs)


























- Current law promotes the introduction of RE into the Chilean power matrix setting up a quota system for large generators: 20% of electricity marketed must come from RE sources by 2025 (as of June 2015, legal requirement was exceeded by 2.4x).
- 45% of Chile's new installed capacity from 2014 through 2025 must come from RE sources.
- Deployment of new RE capacity is favoured by Chile's geography:
  - Solar potential in the north among the best in the world
  - Wind potential in the south
  - Important geothermal resources along the Andes
  - Strong potential for small hydro

## Strong Pipeline of RE Projects (in MWs)

| Technology     | In Operation | Under Construction | With Environmental Approval / Not Constructed | Without Environmental Approval / Not Constructed |
|----------------|--------------|--------------------|---|--|
| Biomass/Biogas | 466          | 0                  | 78  | 92   |
| Wind           | 894          | 112                | 5,257   | 1,860  |
| Small Hydro    | 364          | 67                 | 415   | 101  |
| Solar PV/CSP   | 553          | 1,951              | 10,318  | 3,217  |
| Geothermal     | 0            | 0                  | 120   | 0  |
| <b>Total</b>   | <b>2,277</b> | <b>2,130</b>       | <b>16,188</b>                                 | <b>5,270</b>                                     |

**> 20,000 MWs of potential RE projects**  
(~ 1,0x Chile's current total installed capacity!)

## Presence of Multilaterals in the Chilean RE Sector

|   |  IFC |  KFW |  IDB |  IIC |  OPIC |
|---|---|---|--|---|--|
|    |      |      |     |   |       |
|    |   |      |     |   |  |
|    |      |   |  |   |  |
|   |     |     |  |   |  |
|  |   |   |   |    |  |
|  |   |   |   |   |  |



## The Chilean Financing Sector: a Brief Overview

- Banking sector is conformed by **23** private banks + 1 state-owned bank
- With **USD 298 billion** in total assets, as of December 31, 2014 the Chilean Banking System represented **1.20x** the Chilean GDP (~2.0x in the US).
- Out of the 24 banks **9** have experience in providing **Project Finance** facilities to the Chilean RE sector during the last 5 years.

BANCO  BICE

 *BancoEstado*

 Santander

 Bci

BANCO security

BBVA

 Banco  
CONSORCIO

Banco de Chile

 CORPBANCA

# BANCO BICE RE PROJECT PORTFOLIO (2007-2014)

|   |   |   |  |  |
|---|---|---|--|--|
| <br>Central Hidroeléctrica Pucclaro<br><b>5.8 MW</b><br>2008   | <br>Central Hidroeléctrica El Manzano<br><b>4.7 MW</b><br>2008 | <br>Central Hidroeléctrica Trueno<br><b>5.6 MW</b><br>2009     | <br>Central Hidroeléctrica Guayacán<br><b>12 MW</b><br>2009                             | <br>Central Hidroeléctrica Mariposa<br><b>6 MW</b><br>2009     |
| <br>Central Hidroeléctrica La Paloma<br><b>4.5 MW</b><br>2009  | <br>Central Hidroeléctrica Dongo<br><b>6 MW</b><br>2010        | <br>Central Hidroeléctrica Mallarauco<br><b>3.3 MW</b><br>2010 | <br>Central Hidroeléctrica La Arena<br><b>6.8 MW</b><br>2010                            | <br>Planta Biogás Loma Los Colorados<br><b>14 MW</b><br>2010   |
| <br>Central Hidroeléctrica Río Huasco<br><b>4.3 MW</b><br>2011 | <br>Central Hidroeléctrica Nalcas<br><b>8 MW</b><br>2011       | <br>Central Hidroeléctrica Callao<br><b>3 MW</b><br>2011       | <br>Central Hidroeléctrica Allipén<br><b>2.6 MW</b><br>2011                             | <br>Central Hidroeléctrica El Canelo<br><b>6.1 MW</b><br>2011  |
| <br>Complejo Hidroeléctrico Bonito<br><b>12 MW</b><br>2012   | <br>Central Hidroeléctrica Las Flores<br><b>2 MW</b><br>2012 | <br>Parque Eólico San Pedro<br><b>36 MW</b><br>2013          | <br>Parque Eólico Totoral<br><b>46 MW</b><br>2013                                     | <br>Central Hidroeléctrica El Diuto<br><b>3.2 MW</b><br>2013 |
| <br>Parque Eólico Raki<br><b>9 MW</b><br>2014                | <br>Parque Eólico Huajache<br><b>6 MW</b><br>2014            | <br>Central Hidroeléctrica Mulchén<br><b>3 MW</b><br>2014    | <br>Centrales Hidroeléctricas Munilque 1, Munilque 2 y Bureo<br><b>3.2 MW</b><br>2014 | <br>Planta Solar FV Laborinto<br><b>146 MW</b><br>2015       |

>25 Projects

~ 360 MW  
Installed Capacity

Small Hydro, Wind,  
Solar PV & Biogas

>US\$ 600 million  
committed  
100% Project Finance

## Attract Financing Resources from the Private Sector

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- As a general rule, the private sector will only be willing to contribute with financing resources if there is an adequate **balance between perceived risks and returns** on its investment compared to other alternatives
- Hence, the need to stimulate low-carbon investments and mobilize private sector resources at scale means **first finding ways to increase returns and reduce risk to investors**, as the key dimension of investment decisions is the trade-off between the risks of a project and the return on investment
- Certain instruments may **improve the risk-return ratio** for investors either by increasing revenues and/or **allocating risks more widely**
- **Enabling environments** are crucial for attracting private finance for scaled-up investment (e.g. policy, technology, finance, etc), as well as the technical quality of the projects
- **NAMAs** can help to de-risk low carbon investments for the Private Sector, for instance, through the use of **policy de-risking instruments**, which can be combined with **financial instruments** such as those that will be provided by the Green Climate Fund to help mitigate some of the risks associated with climate finance

## Project Finance for the RE Sector

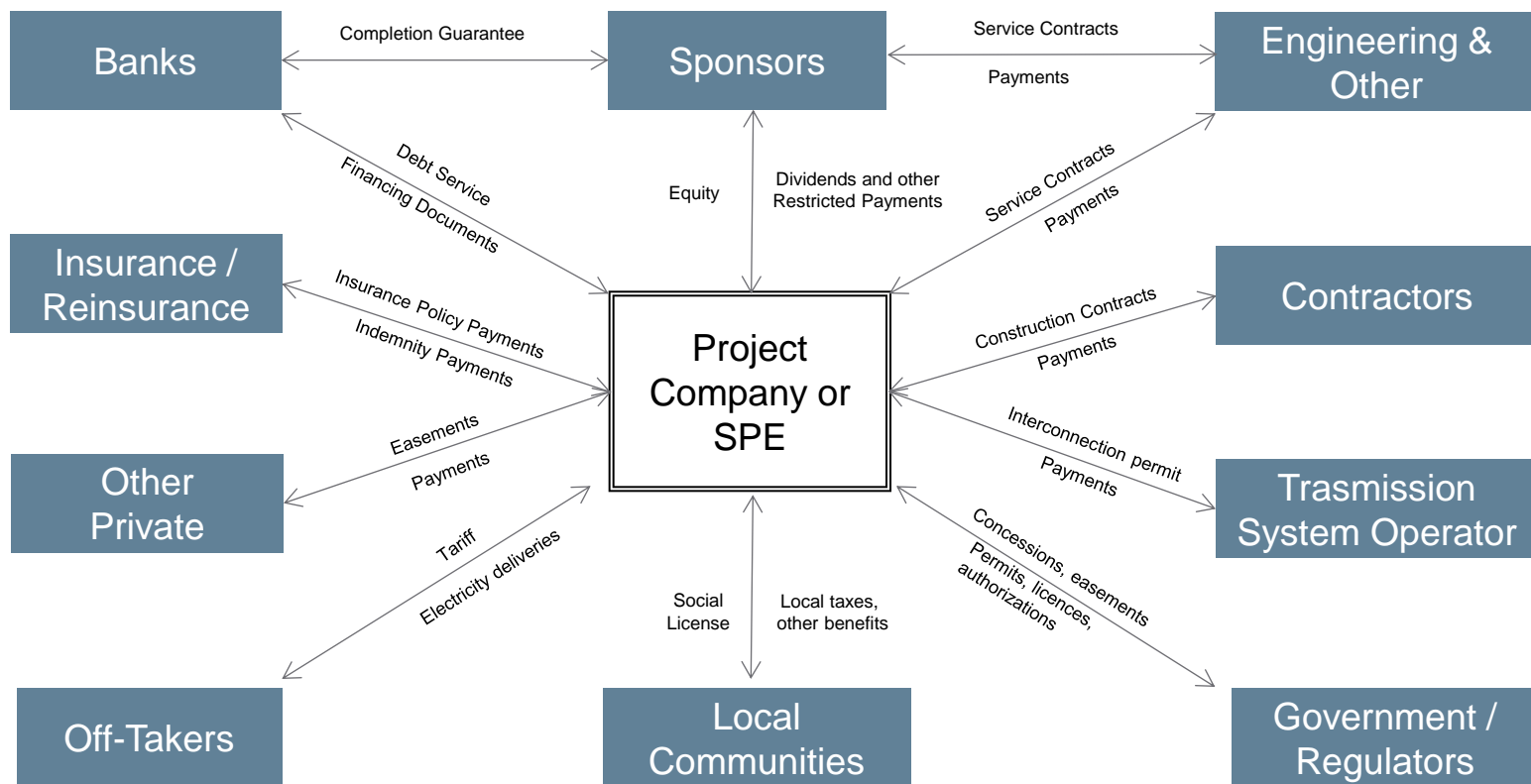
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Project Finance is a type of financing in which the different risks involved are identified and shared logically among Sponsors, Lenders and other Stakeholders, allowing for an adequate balance of risks and return between all parties involved.



...a closer look to this balance might give us a clue on what part of the equation is missing so as to improve the bankability of RE projects in Chile ...

# The Complexity of Project Finance



## Risk Dimensions in Project Financing



### Sponsors



- Creditworthiness / Solvency
- Experience/ Knowledge/ Track Record
- Logical Capital-at-Risk
- Minimum IRR Criteria



### Resource Assessment



- Methodology for Resource Assessment
- Length of Measurements / Data Quality
- Capacity Factor / Net Energy Produced @ P50 & P90



### Engineering & Construction / O&M



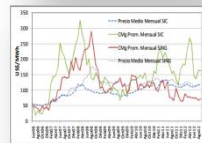
- Bidding Process / Contractor Appointment
- Type of Contract
- Contractor's Credentials/ Track Record
- EPC & O&M Contractor's Guarantees



### Technology



- Proven Technology
- Capex & Opex / Benchmarks
- Manufacturer / Vendor



### Market



- Merchant or PPA (offtaker's creditworthiness, tenor, minimum block of energy committed)
- Offtaker of Last Resort
- Price Stabilisation Mechanism or "Virtual PPA"



### Permits



- Title over Project Assets
- Overlapping with Mining Rights
- Concessions/ Rights of Way
- Construction Permits

## Risk Dimensions in Project Financing



### Project Management



- Leadership
- Experience
- Relations with Stakeholders



### Legal (Security/Collateral)



- Pledge over SPV Shares
- Limited Recourse (pre-Completion)
- First Ranking Security over all Project Assets
- Debt Service Reserve Account



### Insurable Risk



- Construction & Transportation + ALOP
- Operational



### Financial



- Interest rate volatility
- Currency hedging



### Grid Connection



- Capex or Opex (tolling agreements)
- Rights of Way
- Compliance with Technical Regulation



### Social & Environmental



- Compliance with Local Regulation
- Performance Standards



## Examples of Policy Instruments to help de-risk low carbon investments for the Private Sector

| Barrier                | Risk  | Mitigation Policy Instrument  |
|------------------------|---|---|
| Grid Integration Risk  | <ul style="list-style-type: none"> <li>• Curtailment of large-scale intermittent/variable RE sources (wind and solar) due to grid instability</li> <li>• Nodal price difference due to transmission losses</li> </ul> | <ul style="list-style-type: none"> <li>• Development of a national strategy for grid expansion and continued reinforcement</li> <li>• Development of reserve power plants to provide storage capacity (i.e. hydro, pump storage, etc) to balance the system</li> <li>• Development of demand side management instruments</li> </ul> |
| Social Acceptance Risk | <ul style="list-style-type: none"> <li>• Posponement of investments in RE projects</li> </ul>   | <ul style="list-style-type: none"> <li>• Awareness raising campaigns targeting communities</li> <li>• Optimization of land use through territorial planning</li> </ul>  |
| Power Market Risk      | <ul style="list-style-type: none"> <li>• Hourly mismatch between Discos demand and solar/wind Gencos supply</li> </ul>  | <ul style="list-style-type: none"> <li>• Design energy auctions to incentivize solar/wind Gencos to group with other non-intermittent RE sources</li> </ul>   |
| Permits                | <ul style="list-style-type: none"> <li>• Delays in permit granting</li> </ul>   | <ul style="list-style-type: none"> <li>• More transparent and efficient process</li> <li>• Dedicated one-stop shop for RE permits</li> </ul>  |



## Examples of Financial Instruments to help de-risk low carbon investments for the Private Sector

| Barrier   | Risk   | Mitigation Instrument  |
|---|--|--|
| Weak domestic capital markets / lack of financial infrastructure                      | Limited access to capital at the right cost impacts revenue flow and profitability         | <ul style="list-style-type: none"> <li>Concessional loans: senior and subordinated debt/loans provided at concessional rates and/or extended maturities</li> <li>Equity and/or quasi-equity</li> </ul> |
| Weakly scoped energy projects due to lack of human capital                            | Longer Project development period resulting in crowding-out of private investors           | <ul style="list-style-type: none"> <li>Grants for technical assistance and capacity building</li> </ul>  |
| Project specific  | Failure to achieve project completion  | <ul style="list-style-type: none"> <li>First loss partial guarantee</li> </ul>   |
| Lack of coherent, long-term predictable and stable political and regulatory framework | Unrewarded exposure to political and regulatory risk discourages private sector investment | <ul style="list-style-type: none"> <li>First loss partial guarantee</li> <li>Insurance products (eg: political risk insurance, sovereign risk insurance) → complex to deploy</li> </ul>                |

**Thank You**

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