Conceptual Framework of Local Innovation and Production System: the Brazilian and BNDES experience

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World Crises of the 3rd Millennium

- Social inclusion sustains dynamic domestic market
- De-mystifying the need to dissociate and antagonize economic and social policies
- Robust banking system not exposed to problematic assets
- Investment growing above consumption
- Several investment opportunities:
  - Oil & Gas, Energy, Infrastructure, PAC 2, Competitive sectors, 2014 World Cup, 2016 Olympic Games...
- The role of government: fiscal and monetary instruments, as well as regulatory and financial instruments.
Why is the Brazilian economy at a new level?

✓ Public indebtedness on the wane

Consolidated Net Debt in the Public Sector (% GDP) – End of Period

Source: Bacen

Why is the Brazilian economy at a new level? (1/2)

✓ Unemployment falling

Unemployment rate (%)

Source: IBGE
Why is the Brazilian economy at a new level?

✓ Improved distribution of income

Population per Income Bracket (%)

- 2003: 7.6%, 37.6%, 26.7%, 28.1%
- 2004: 7.7%, 39.7%, 27.2%, 25.4%
- 2005: 8.3%, 41.8%, 27.1%, 22.8%
- 2006: 9.4%, 44.9%, 26.4%, 19.3%
- 2007: 9.7%, 46.9%, 25.1%, 18.3%
- 2008: 10.4%, 49.2%, 24.4%, 16%
- 2009: 10.6%, 50.5%, 23.6%, 15.3%

A/B Class - from US$ 2.743 on
C Class - from US$ 637 to US$ 2.743
D Class - from US$ 459 to US$ 637
E Class - below US$ 459

Source: FGV and Ministry of Finance

Why is the Brazilian economy at a new level?

✓ Workers’ salaries have risen

Minimum Salary: Real Variation (Deflator- IPCA)(%)

- 1996: 2.23%
- 1997: 6.57%
- 1998: 4.77%
- 1999: 10.71%
- 2000: 9.79%
- 2001: 9.17%
- 2002: 13.11%
- 2003: 3.97%
- 2004: 0.68%
- 2005: 3.94%
- 2006: 3.13%
- 2007: 7.42%
- 2008: 3.56%
- 2009: 0.34%
- 2010: 0.34%
- 2011: 0.34%

Average of 5.7% p. a.

Source: Ministry of Labour and Employment, Central Bank
## Investment perspectives

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Industry</td>
<td>257</td>
<td>341</td>
<td>32.5</td>
</tr>
<tr>
<td>Oil &amp; Gas</td>
<td>136</td>
<td>202</td>
<td>48.5</td>
</tr>
<tr>
<td>Mining</td>
<td>39</td>
<td>29</td>
<td>(25.2)</td>
</tr>
<tr>
<td>Steel</td>
<td>18</td>
<td>18</td>
<td>0.6</td>
</tr>
<tr>
<td>Petrochemical</td>
<td>14</td>
<td>17</td>
<td>19.5</td>
</tr>
<tr>
<td>Vehicles</td>
<td>18</td>
<td>31</td>
<td>74.0</td>
</tr>
<tr>
<td>Electronics</td>
<td>13</td>
<td>18</td>
<td>37.1</td>
</tr>
<tr>
<td>Pulp &amp; Paper</td>
<td>11</td>
<td>12</td>
<td>8.3</td>
</tr>
<tr>
<td>Textile and Apparel</td>
<td>6</td>
<td>8</td>
<td>33.3</td>
</tr>
<tr>
<td>Aviation</td>
<td>2</td>
<td>5</td>
<td>198.6</td>
</tr>
<tr>
<td><strong>Infrastructure</strong></td>
<td><strong>184</strong></td>
<td><strong>227</strong></td>
<td><strong>23.3</strong></td>
</tr>
<tr>
<td>Electric Power</td>
<td>81</td>
<td>90</td>
<td>10.6</td>
</tr>
<tr>
<td>Telecoms</td>
<td>41</td>
<td>42</td>
<td>4.6</td>
</tr>
<tr>
<td>Sanitation</td>
<td>18</td>
<td>25</td>
<td>33.5</td>
</tr>
<tr>
<td>Railroads</td>
<td>14</td>
<td>26</td>
<td>76.8</td>
</tr>
<tr>
<td>Roads</td>
<td>23</td>
<td>30</td>
<td>32.9</td>
</tr>
<tr>
<td>Ports</td>
<td>5</td>
<td>9</td>
<td>61.9</td>
</tr>
<tr>
<td>Airports</td>
<td>1</td>
<td>6</td>
<td>333.9</td>
</tr>
<tr>
<td>Housing</td>
<td>341</td>
<td>491</td>
<td>44.2</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>782</strong></td>
<td><strong>1058</strong></td>
<td><strong>35.4</strong></td>
</tr>
</tbody>
</table>

Source: BNDES  US$/R$ = 1.75

- Highlights: energy infrastructure, logistics (especially airports) and housing

### BNDES’ disbursements over 12 months reached US$ 78.7 billion in January

**BNDES’ Disbursements and Approvals 2003-2012**

Data accumulated over the last 12 months

*Secondary market operations not included
**Accumulated result over 12 months up to Jan.

Source: BNDES

US$/R$ = 1.75
BNDES: strategic priorities

• Creation in 2007 of two units at the Presidency Office aiming at discussing new policies for innovation and regional, local and environmental development
  • a Committee for Production Systems, Regional Development, Innovation and the Environment and
  • a Secretariat for Local Innovation and Production Systems (LIPSs) and Regional Development

Main Purposes
• Bring the BNDES’ sector insights and operational areas together in order to build a systemic vision of development
• Contribute to incorporating the priority to regional and local development
• Propose new policies to support production and innovation systems, as well as regional and local development within a long-term sustainable perspective

Policies for policies for sustainable production and innovation development: how to advance

1 – Need to contextualize analytical and policy frameworks

The production and innovation capacity of a country or region – seen as the result of relations between the economic, political and social actors – reflects historical, political, institutional, social, economic and cultural circumstances (Furtado, 1957, 1961)

Different contexts, cognitive and regulatory systems as well as means for articulation and learning lead to different ways of generating, assimilating, using and accumulating knowledge in addition to specific political requirements

Type of insertion of a country or region within the wider geopolitical context and the role of:
• implicit policies (Herrera, 1971) and
• malign macroeconomic regimes (Coutinho, 2003)
2 – Production and innovation are not limited to specific groups of companies, sectors and regions

There are known reasons as to why policies for production and innovation tend to focus mainly on the manufacturing activities of leading corporate groups

But it is necessary to evolve and recognize that they should not be restricted solely to these actors, sectors and regions

Need to
✓ Incorporate social inclusion and development in the worldwide research and policy agendas
✓ Break with the invisibility of activities capable of boosting social and economic development

3 – Production and innovation dynamics strongly
✓ relates to capacities in the production of raw materials, equipments, final good and commercialization segments, besides involving a series of other activities and organizations that are responsible for
  • their promotion, regulation, financing and representation
  • assimilating, using and disseminating knowledge and capabilities
✓ depends on these economic, political and social actors, and on the environments where they are located

Development of the concepts of national systems of innovation (Freeman, 1982 and 1987; Lundvall, 1985) and local innovation and production systems (Cassiolato and Lastres, 1997)

Focus on the different production and innovation systems as well as their territories
Local Production and Innovation Systems – LIPSs

New way to look, think and implement policies for production and innovation development, capable of focusing activities:

• with different levels of maturity and dynamics, from the most intensive in terms of knowledge to those that use internal or traditional knowledge

• with different actors, sizes and functions, deriving from the primary, secondary and tertiary sectors, operating locally, nationally or internationally

Possibility to boost the potential of policy efforts, redirecting them to the territory and to the interactions among actors to encourage

• learning, innovation and competence building processes

• fostering and enrooting sustainable local development

The BNDES' strategy for LIPSs and Regional Development

✓ Support to structuring projects and their surrounding areas, mainly in developing regions, in order to disseminate and foster development, by encouraging:

• enhancement of 3 types of LIPSs aiming at enrooting development and adding value to goods and services locally produced; and

• commitment of large and medium companies, government and promotion agencies as well as other organisms to locally-integrated socio-economic and institutional development

New policy with three main axes

• Representative and coordinating organism = companies + national, regional and local government + others

• Territorial development agenda, with specific targets, time schedule and budget

• Participative financial mechanism, such as collective funds
<table>
<thead>
<tr>
<th>The BNDES' strategy towards LIPSs and Regional Development</th>
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</thead>
<tbody>
<tr>
<td>✔ Support for state plans for integrated development –</td>
</tr>
<tr>
<td>priority to the mitigation of regional imbalances</td>
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<tr>
<td>Includes the support of LIPSs for social inclusion with non-</td>
</tr>
<tr>
<td>reimbursable funds</td>
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<tr>
<td>✔ Support of other national and regional policies and</td>
</tr>
<tr>
<td>programs:</td>
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<tr>
<td>• Ministry for National Integration</td>
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<tr>
<td>✔ Individual and collective support for Small and Medium-</td>
</tr>
<tr>
<td>size Enterprises – SMEs</td>
</tr>
<tr>
<td>Ex. <strong>BNDES Card</strong> has significantly enlarged the reach of</td>
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<tr>
<td>BNDES’ support within the different regions of the country</td>
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<table>
<thead>
<tr>
<th>The BNDES’ strategy for LIPS and Regional Development</th>
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<tbody>
<tr>
<td>Mapping and Policies for Local Innovation and Production</td>
</tr>
<tr>
<td>Systems (LIPSs) - **Commissioned study involving 200</td>
</tr>
<tr>
<td>researchers in the five Brazilian regions**</td>
</tr>
<tr>
<td>Main Purposes</td>
</tr>
<tr>
<td>• Consolidate knowledge on identification and mapping of</td>
</tr>
<tr>
<td>Local Production Systems in 22 Brazilian states</td>
</tr>
<tr>
<td>• Design and analyze LIPSs and trade flows relations</td>
</tr>
<tr>
<td>• Assess existing support policies and provide means to</td>
</tr>
<tr>
<td>design and improve policies for LIPSs in Brazil</td>
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</table>
Results of research program

Advances in mapping LIPSs
GeoBDNES – identification of around 700 LIPSs already supported by different types of promotion agencies in 22 Brazilian states

Analysis of LIPSs relations with trade flows between states and with other countries
✓ what goods and services are imported from other regions and could be produced locally?

Local and regional teams - PhDs, professors, postgraduate students and other researchers specialized in regional and local development

Results of research program

Importance of local and regional research teams` capacity in:
• obtaining, processing and evaluating information
• revealing local production and innovation structures, their linkages, potentialities and requirements
• exchanging and cross-fertilizing experiences and recommendations of different parts of the country
• translating gathered information into policy prescriptions
• helping to connect and inform local and regional policy spheres
Supporting LIPSs: the Brazilian experience

Progress made in Brazil:
- Brazilian network of researchers analyzing over 150 LIPSs in different activities and regions of the countries
- Almost 15 years of a significant collective learning process and accumulation of experiences
- Important process for creating, using, improving and disseminating knowledge
- Support to public and private policy
- Intense interaction and learning among researchers, policy-makers, entrepreneurs and others
- International cooperation and exchange of experience – Mercosur, Latin America, Globelics and BRICSs
- Associated possibilities for advances and fine-tuning

Requirements and opportunities to design and implement policy models
- Proper and suitable to the different local conditions
  - concepts, indicators, and analytical and policy models are not neutral
- Geared towards inclusive, cohesive and sustained development
- Capable of fostering knowledge intensive production and innovation capabilities
- That integrate the priorities on national, regional, state and local development within a long-term perspective
Supporting LIPSs: the Brazilian experience

Refinement of LIPSs’ policies adopted in Brazil relates mainly to the need to use contextualized concepts, indicators and models capable of:

- Recognizing and mobilizing local opportunities and potentialities
- Reaching different regions, activities and actors
- Cutting down imbalances instead of reinforcing them
- Putting in its center the capability to acquire and use all sort of knowledge – formal, informal, traditional, etc.
- Associating economic and social development

New plan focusing on reducing inequalities in income and in access to public services

Income inequalities  Insufficiency of public services

Brazil’s Zero Misery Plan and Map of Opportunities

Challenges and opportunities for adequate and proper policy alternatives for inclusive and sustainable development
Policies for sustainable production and innovation development: how to advance

There is a wide array of consequences from adopting policies that favor the development production and innovation capacities related to expanding the quality of services involving food, health education, housing (with sanitation and access to water and electricity), solid waste treatment, culture and other essential public services, as prioritized in Brazil's Zero Misery Plan.

- Access to knowledge as the main focus for the Third Millennium
- Logic compatible with the cooperation and dissemination of knowledge and capacities
- Considerable expansion of the agenda in support of different local production and innovation systems spread across the entire Brazilian territory

Crisis, new development pattern and the need for policies

- Crisis and a new production regime
- More involvement for developing countries in the growth of world production
- Renewed interest in development issues and policies
- Policy and financing emphasis in variety, as opposed to the pursuit for homogenization and for large projects with little commitment to social and local development
- Development models focusing on social and environmental sustainability
- Need to mobilize national, regional and local production and innovation systems
Crisis, new development pattern and the need for policies

- Creation of the BRICS' Development Bank
- Emphasis to deeper exchanging of experiences, policy priorities, programs and mechanisms
  - seminars
  - short stages
- Joint creation of new forms of mobilizing sustainable development policies and instruments
  - the need to explore and forge the basis for the new world system (Maharajh, forthcoming)
- Identification of main institutions representing the five countries from academia and governments

BNDES vs. Multilateral Banks

<table>
<thead>
<tr>
<th>US$ million</th>
<th>BNDES</th>
<th>IDB</th>
<th>IBRD</th>
<th>CAF</th>
<th>China DB</th>
<th>BIDV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Assets</td>
<td>329,504</td>
<td>87,217</td>
<td>282,842</td>
<td>18,547</td>
<td>774,180</td>
<td>18,566</td>
</tr>
<tr>
<td>Shareholders' Equity</td>
<td>39,551</td>
<td>20,960</td>
<td>37,401</td>
<td>5,753</td>
<td>60,953</td>
<td>1,056</td>
</tr>
<tr>
<td>Net Income</td>
<td>5,950</td>
<td>330</td>
<td>(870)</td>
<td>166</td>
<td>5,618</td>
<td>150</td>
</tr>
<tr>
<td>Loan Disbursements</td>
<td>96,322</td>
<td>10,341</td>
<td>28,854</td>
<td>7,694</td>
<td>86,690</td>
<td>2,451</td>
</tr>
<tr>
<td>Total Loans</td>
<td>217,006</td>
<td>63,007</td>
<td>120,103</td>
<td>13,873</td>
<td>682,926</td>
<td>12,707</td>
</tr>
<tr>
<td>Capitalization</td>
<td>12.0%</td>
<td>24.0%</td>
<td>13.2%</td>
<td>30.8%</td>
<td>7.9%</td>
<td>5.7%</td>
</tr>
<tr>
<td>ROA</td>
<td>2.1%</td>
<td>0.4%</td>
<td>-0.3%</td>
<td>1.6%</td>
<td>0.8%</td>
<td>0.9%</td>
</tr>
<tr>
<td>ROE</td>
<td>21.2%</td>
<td>1.6%</td>
<td>-2.3%</td>
<td>3.7%</td>
<td>9.5%</td>
<td>16.9%</td>
</tr>
</tbody>
</table>

- **IDB** = Inter-American Development Bank
- **IBRD** = The International Bank for Reconstruction and Development (World Bank)
- (*) Unlike other institutions, 12-month fiscal year ends June 30th
- **CAF** = Corporación Andina de Fomento
- **CDB** = China Development Bank
- **BIDV** = Bank for Investment and Development of Vietnam
- Capitalization = Shareholders' Equity / Total Assets
- **ROA** = Return On average Assets
- **ROE** = Return On average Equity
Thank you very much!

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