Perspectives on Innovation for Brazilian Industry

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InSySPO - São Paulo, July &, 2017

A Survey - The Paths of Innovation of Brazilian Industry

- **50 researchers ... UFRGS, UNISINOS, UCS and PUCRS**
- Development of a simple, objective and realistic analytical model: **the innovation capabilities of the firm**
- Extensive research (4 years) with more than **1,500 Brazilian manufacturing firms** (located at Rio Grande do Sul).
- The sample reflects 95% of the Brazilian industrial structure.
- Report available at www.ufrgs.br/nitec

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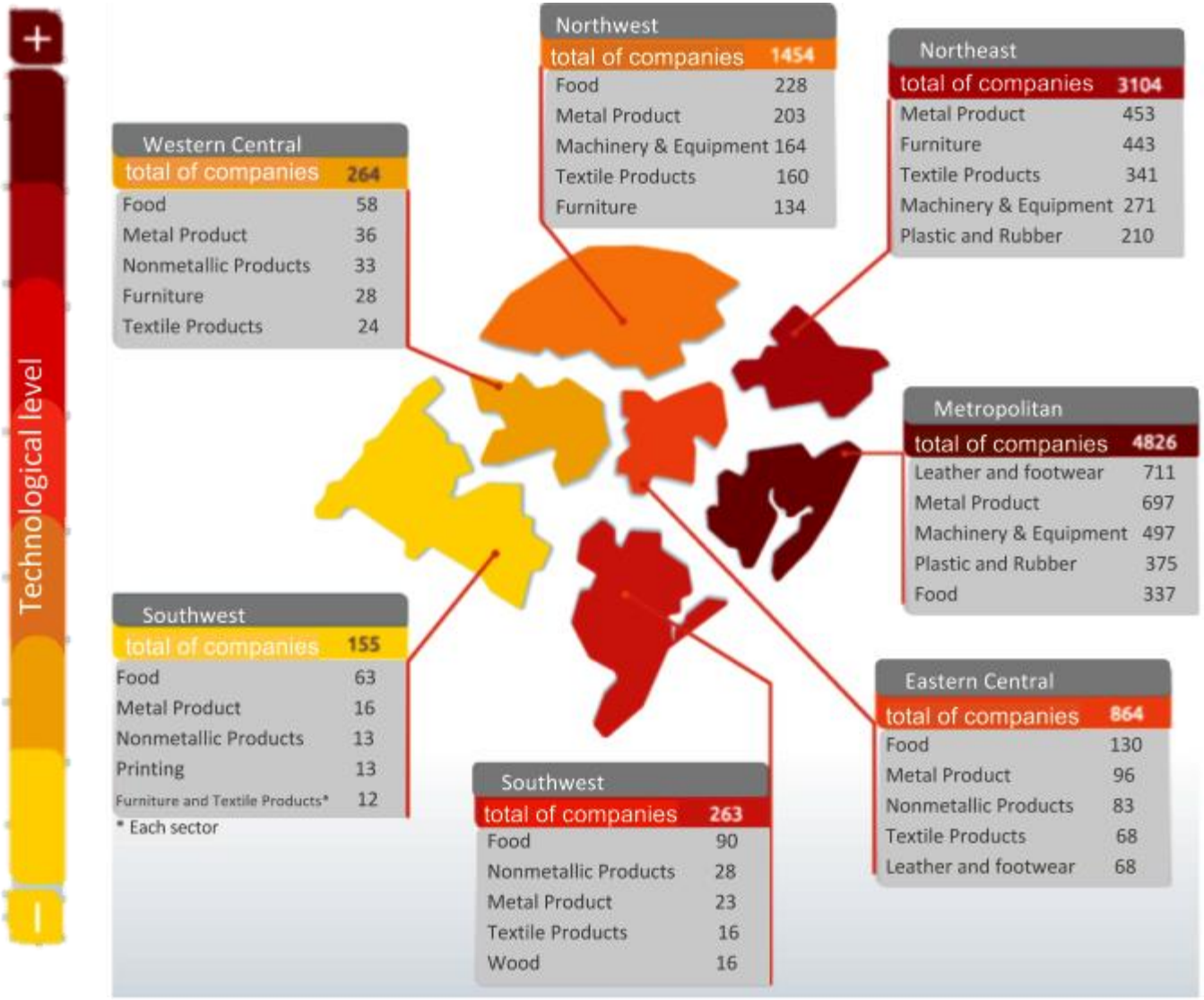
Brazilian Industry & Innovation

- Some Stylized Facts
- Some Findings upon the Innovation Capabilities
- Some Perspectives on Innovation and Competitive Reconversion

Some Stylized Facts

- Brazil has a **wide range industrial landscape**… composed of different value chains.
- However, the largest number of companies still belongs to **clothing, food, metal and nonmetal products, wood and furniture (~60%)**.
- Tradition on **Arts & Crafts** (immigration legacy) and the **distance to knowledge centers** help on explaining the high concentration of **low-tech firms**.

The Geography of Technological Intensity



Industry's Major Features

- **Lower-tech sectors** (almost 80%!). Which means that:
  - Companies are often in **the same technological base** for more than 20 years… stabylized or stucked?
  - The classical cost reduction "Survival strategy" reinforces it… **products tend to fall behind**, due to quality downgrading and obsolescence!
  - All this works as weak incentive for entrepreneurial behavior… what, somehow, justify **weak innovation activities**.
- The outcome:
  - Brazilian manufacturing sectors look like… **"Industry 2.5"!!**
  - Participation in the GDP of the Brazilian Industry **fell from 19% to 11%** (in 10 years)… **"Deindustrialization"?**

WHAT SHOULD BE DONE?

WHAT SHOULD BE CHANGED?

General Features

(Sample - n=1331)

- Brazilian Manufacturing companies are:
  - **Low-tech** (75%)
  - **SMEs** (87%)
  - **Full use** of installed capacity (75%)
  - **Family-based** management models (88%)
  - Based on (low) **costs**, rather than value (81%)

HOW DO COMPANIES BEHAVE?

Innovation Capabilities

The Level of Innovation Capabilities

	LOW-TECH (n=990)	HIGH-TECH (n=341)
DEVELOPMENT CAPABILITY	2.97	4.03
OPERATIONS CAPABILITY	3.90	3.86
MANAGEMENT CAPABILITY	3.64	3.92
TRANSACTION CAPABILITY	3.11	3.55
ALL	3.42	3.86

Which are the Relevant Innovation Capabilities?

1. **Operations Capability**... Acquisition of machinery and equipment and quality programs
2. **Management Capability**... informal decision making process, based on the past... less entrepreneurial is translated into “always produce more... of the same!”
3. **Transaction Capability…** Price represents “how much it costs” rather than “how much it is worth”
4. **Development Capability…** Customers’ requests to adjust, adapt and improve existing products

HOW DO COMPANIES INOVATE?

The Way They Innovate: Operations

- Most of the companies ends by being **industrial service providers** with limited added value… the so-called **industrial commodities**.
- To focus on **operations innovation** is of little (no) help for competition, since it is only an **ordinary capability**, not a dynamic capability…
- Production and quality are important; however, they are not differentiation elements.

WHAT SHOULD BE DONE?

WHAT SHOULD BE CHANGED?

Do low-tech firms dream of high-tech innovation?

- The typical industry economy of the 20th Century is fast moving to the **digital and creative economy** of the 21st Century.
  - digital transformation of existing processes (Industry 4.0)
  - creative transformation of existing products (IoT, design)
- It is not possible to imagine that low-tech less innovative companies may suddenly become “hi-tech innovative firms”.
- **The challenge**: how to perform the **competitive reconversion** of low-tech firms?

Competitive Reconversion

Competitive Reconversion

- **Specialization of low-tech firms** in their core knowledge and techology base... So they can **add value** on what they know.
- Development of (really) **new product in low-tech sectors**...By giving rise to novelty, based **on knowledge-based initiatives and creative solutions**, for already existing markets: specialties, premium products, designation of origin, Industry 4.0, design, marketing and fashion.
- Creation of incentives for **low-tech entrepreneurship** (awareness and behavior)… Bringing **new capital and new midset** to the businesses.
- Finding the **right balance** between the **existing capability arrangement** and the **upgrading target** for low-tech firms!

What can Universities do?

- Adoption of an **active attitude** to interact with low-tech companies!
  - Act as **driver** to knowledge culture and **support** the competitive reconversion trajectories of low-tech companies.
  - Highly qualified HR training, specialized services, technical extensionist structure, centers for technological innovation, **partial/total emulation of the (missing) innovation activity.**
- Increase incentives for **"researcher-entrepreneur" spin-offs**… UI interaction in the XXI Century is much more "startup based" then "collaborative R&D based"!

What can the Government do?

- **Development of special programs and policy** adapted to each type of company...
  - **Public calls** for low-tech SMEs must be different from those developed for high-tech companies!
- **Innovation and marketing programs** (instead of quality and productivity ones).
- Use the existing human, social, urban and economic capitals for supporting the development of **innovation ecosystems for creative economy:**
  - Redirect poles and parks programs to the competitive reconversion;
  - Stimulate brain attraction, digital transformation, conscious and sustainable consumption, collaboration and sharing.
  - Support co-workings, startups and accelerators, living labs, smart cities.

Brazilian Industry & Innovation

- **Some Stylized Facts**
  - Low-tech, low entrepreneurship, low innovation
  - Falling behind and Industry 2.5
- **Some Findings upon the Innovation Capabilities**
  - Family based SMEs focused on operations and low cost
  - operations as an ordinary capability
- **Some Perspectives on Innovation and Competitive Reconversion**
  - Firms: Specialization, knowledge-based NPD, low-tech entrepreneurship
  - Univ's: driver and support, innovation activity emulation and researcher-entrepreneur spin-offs
  - Gov's: low-tech SME policy, innovation ecosystem

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THANK YOU!

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