

***OECD Global Forum  
on Knowledge Economy  
The Digital Economy***

***Panel 1: Economic Growth and the  
Knowledge-Based Economy***

***Brasília, September 2002***

**Prof. Celso P. de Melo, Director**



## **Provocative question:**

- **What are the strengths and weaknesses, opportunities and threats for developing knowledge-based activities in the current Latin American economic circumstances of slower growth and external capital market constraints?**

## **First Point:**

- **Economic growth associated to production of high-technology goods:**
  - **innovation**
  - **higher added value in products**
  - **competitiveness in foreign markets**
  - **spillover effects for other sectors**

## **Second Point:**

- **in terms of knowledge-based activities,**  
**Latin American countries:**
  - **have different histories and backgrounds,**
  - **present distinct stages of development,**
  - **exhibit different momentum.**

<b>High-Technology Manufacturing Production in 2000*</b> (in billions of 1997 US dollars)		
<b>Brazil</b>	<b>26</b>	<b>50.0</b>
<b>Mexico</b>	<b>18</b>	<b>34.6</b>
<b>Argentina</b>	<b>5</b>	<b>9.6</b>
<b>Others</b>	<b>3</b>	<b>5.8</b>
<b>Total</b>	<b>52</b>	<b>100.0</b>

\*Source: "Latin America: High-Tech Manufacturing on the Rise, but Outpaced by East Asia",

InfoBrief NSF 02-331, August 2002

<b>High-Technology Manufacturing Production in 2000*</b>				
<b>Country</b>	<b>% of GDP</b>		<b>% of total manufacturing</b>	
<b>Argentina</b>	<b>1.7</b>		<b>4.5</b>	
<b>Brazil</b>	<b>3.0</b>		<b>8.0</b>	
<b>Chile</b>	<b>1.3</b>		<b>2.2</b>	
<b>Colombia</b>	<b>1.4</b>		<b>3.7</b>	
<b>Costa Rica</b>	<b>4.0</b>		<b>10.4</b>	
<b>Mexico</b>	<b>3.9</b>		<b>5.2</b>	
<b>Venezuela</b>	<b>0.5</b>		<b>1.6</b>	

\*Source: "Latin America: High-Tech Manufacturing on the Rise, but Outpaced by East Asia",

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## **Third Point:**

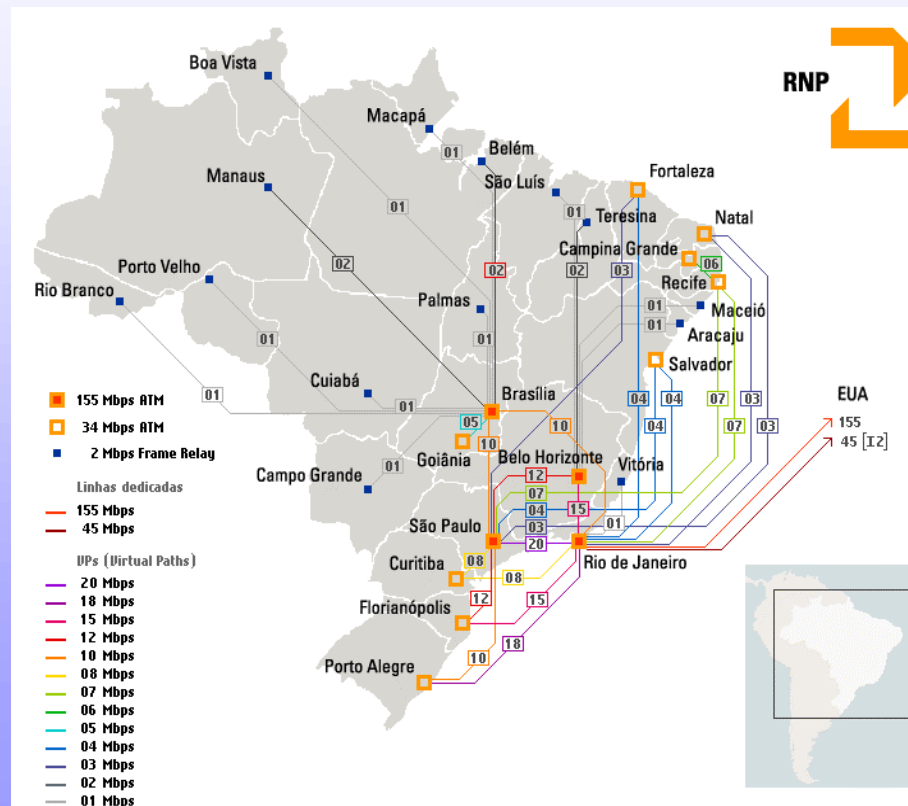
- **How to tie the growth of the economy to the existing basis of knowledge?**
  - **foster opportunities for cooperative research**
  - **approach engineering programs to the needs of companies:**
    - \* **'internship' experiences**
    - \* **continuing education**
  - **enlarge basis of science and math exposure of the average citizen**
    - \* **effective science education 'programs'**

## **Brazil 2002: a brief diagnosis**

- **a (still) small but well-qualified scientific basis**
  - ➔ ~1.4% of world scientific output
  - ➔ 6,000 PhDs in 2001
- **a very small number of applied patents**
  - ➔ 70% of R&D personnel in the academic sector
- **regional concentration of R&D activity**

## Internet in Brazil

- academic network
- national coverage, but regional concentration
- how to integrate to neighboring countries?



## **Four leading indicators\*:**

- 1. “national orientation”**
  - government policy, entrepreneurship**
- 2. socioeconomic infrastructure**
- 3. technological infrastructure**
- 4. “productive capacity”**
  - quality of skilled labor and local suppliers**

**\*See A. Porter et al: Indicators of Technology-Based Competitiveness of Nations, Summary Report**

**([www.tpac.gatech.edu/hti99/exsum99.pdf](http://www.tpac.gatech.edu/hti99/exsum99.pdf))**

**Indicators of Technological Competitiveness: 1999\***

<b>Country</b>	<b>National Orientation</b>	<b>Socioeconomic Infrastructure</b>	<b>Technological Infrastructure</b>	<b>Productive Capacity</b>
<b>Argentina</b>	<b>41.3</b>	<b>53.3</b>	<b>27.5</b>	<b>31.0</b>
<b>Brazil</b>	<b>61.5</b>	<b>49.1</b>	<b>40.4</b>	<b>39.6</b>
<b>Mexico</b>	<b>41.8</b>	<b>40.4</b>	<b>21.8</b>	<b>24.8</b>
<b>Venezuela</b>	<b>39.8</b>	<b>49.4</b>	<b>21.3</b>	<b>24.3</b>

**\*Source: "Latin America: High-Tech Manufacturing on the Rise, but Outpaced by East Asia",**

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## **Possible Common Actions:**

- **Science and math education initiatives**
- **Integration of the Internet backbones**
- **Cooperative networks in frontier areas**
  - biotechnology
  - nanosciences and nanotechnologies
  - advanced materials
  - ...
- **Latin American facilities  
for pre-competitive research**
  - Synchrotron radiation
  - genomics
  - high-energy physics
  - ...



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