

Innovation and development

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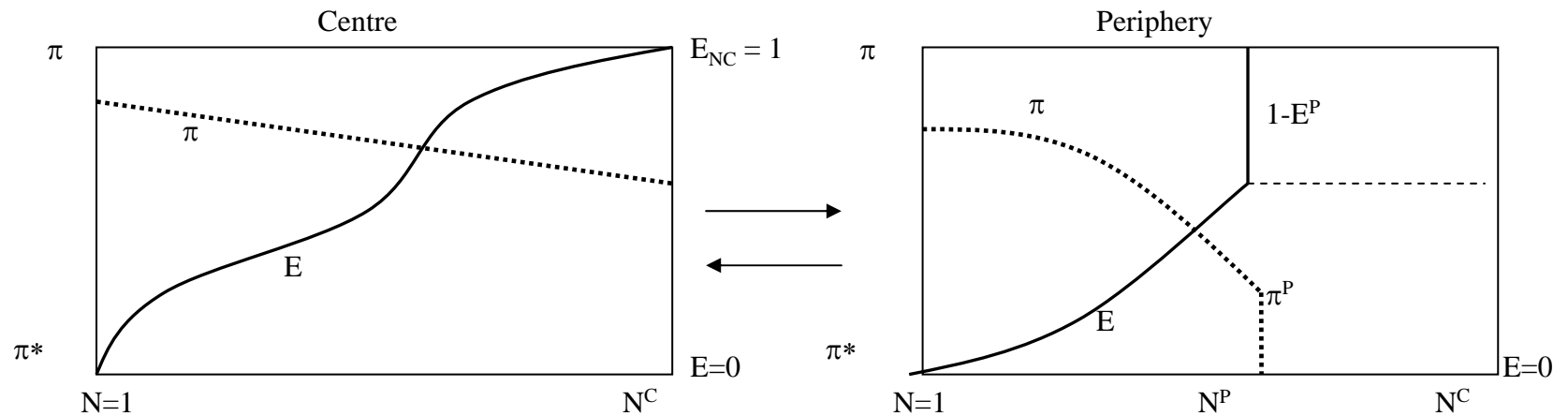
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Center-periphery theory (structuralist approach)

- This approach stress the existence of large **asymmetries** between developed and developing economies as regards the intensity of technical change, the pattern of specialization and the distribution of productivity gains.
- Technological asymmetries imply that peripheral exports will be concentrated in **few commodities with low income-elasticity of the demand**, compromising its ability to increase exports (and hence imports from the centre).
- These asymmetries are not inconsequential for **global growth**: redefining the pattern of specialization of the periphery (based on technological catching-up) may lead to a higher rate of growth of international effective demand.

The center and periphery economic structure



π = Labor productivity (pointed line)

E = accumulated participation in total employment (continuous line)

N = Number of sectors ranked as a monotonically decreasing function of labor productivity

The center

- The analysis begins with an undifferentiated international economy, where technological capabilities and productivity levels are fairly similar across regions.
- At a certain point in time **technical change accelerates** in one of the regions - **the centre** -, gradually transforming its productive structure, which becomes:
 - **diversified** → comprises a large number of sectors and activities
 - **homogeneous** → labor productivity is fairly similar across them

The periphery

- Technology diffuses at a **very slow rate** at the international level and penetrates in a highly localized form in other regions (chiefly in a few exporting activities).
- In these regions - **the periphery** - the economic structure is:
 - **specialized** → less sectors and activities
 - **heterogeneous** → sectors exhibit major differences in labor productivity, as technical change leaves untouched large traits of the production system
- These differences explain why the periphery is perceived as a **dual economy**, with a significant share of employment allocated in archaic and subsistence sectors.

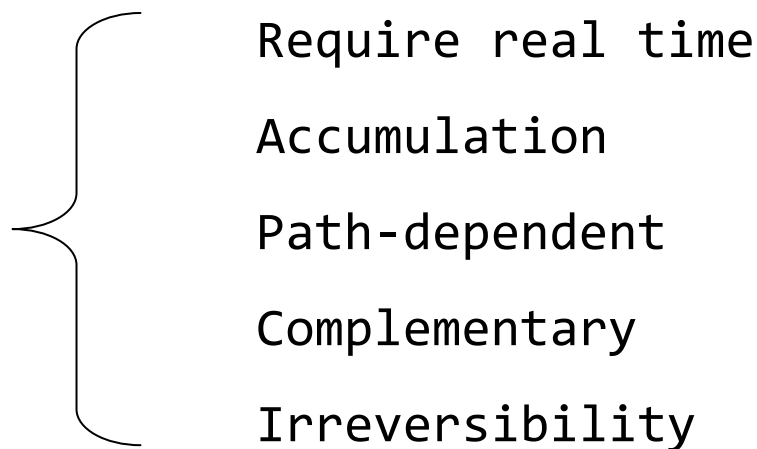
Innovation channels for growth and development

- productivity
- diversification (new products/processes)
- technological-gap/specialization
- income demand elasticity
- rent generation and distribution

Microeconomics of innovation (evolutionary approach)

- Atkinson-Stiglitz: **localized** technological change (localized learning)
- **Hysteresis** and **path-dependency** in learning
- Technological capabilities are **real assets** that cannot be easily rebuilt once they have been destroyed

Stickiness

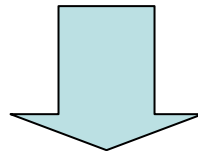


Sectoral implications: evolutionary microeconomics and economic growth

- Structural and technological change sustain productivity growth and international competitiveness
- This redefines market shares and the distribution of international effective demand
- When price instability destroys capabilities, it also affects the basis for growth in the long run
- The real sector will not recover initial shape: a negative shock changes the growth potential in a persistent way

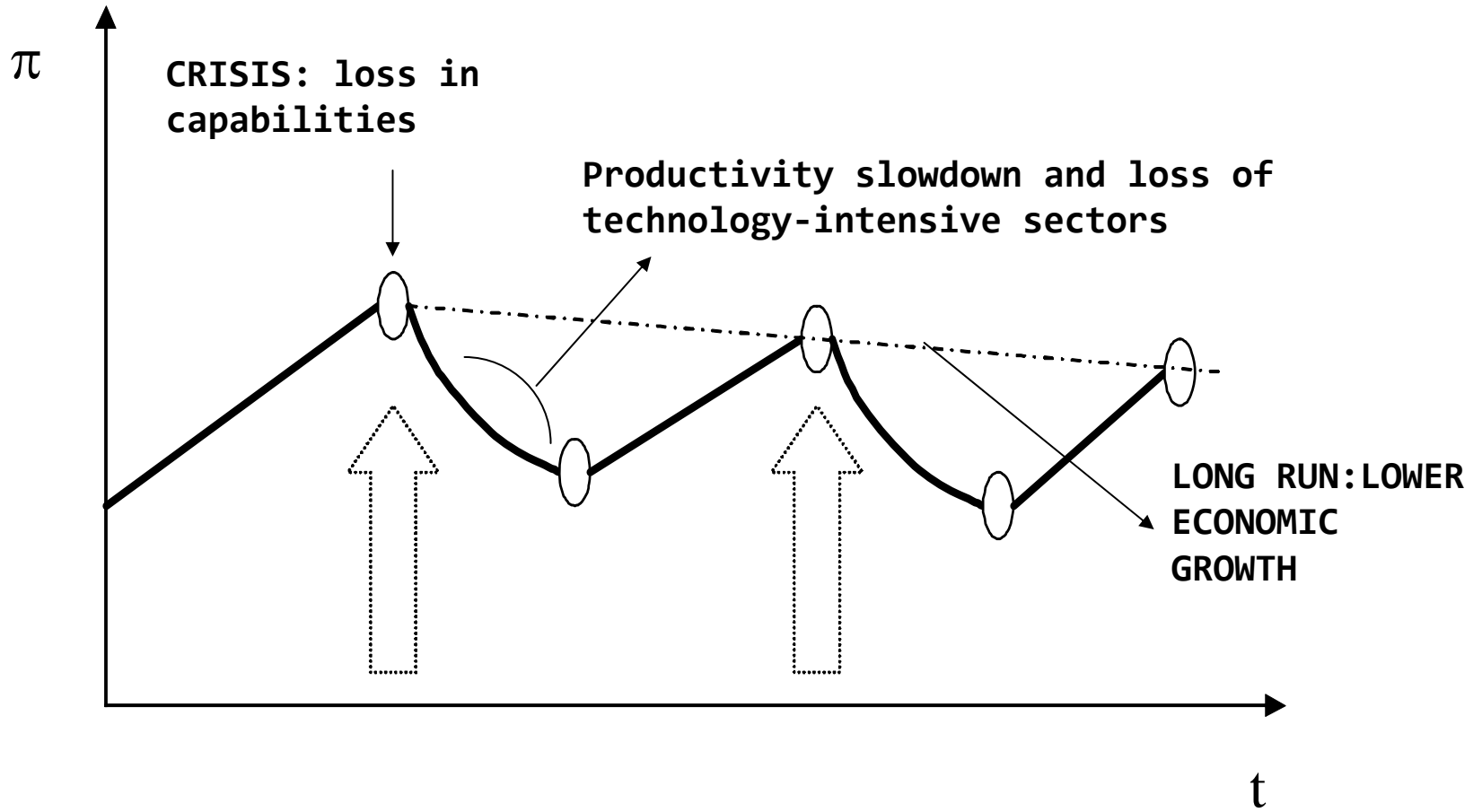
...think about of the real effect of the crisis

- Technological rigidity leads to a **loss in capabilities** expressed in two inter-related forms:
 - ❖ *productivity slowdown*
 - ❖ *loss of technology-intensive sectors (lesser diversification)*
- What are the **costs of loosing technological assets?** There are as well systemic implications:
 - *Lower Learning by interacting*
 - *Less complementarities*
 - *Lower increasing returns at the industrial level*
- In the long run, productivity and structural change are the drivers of economic growth and development

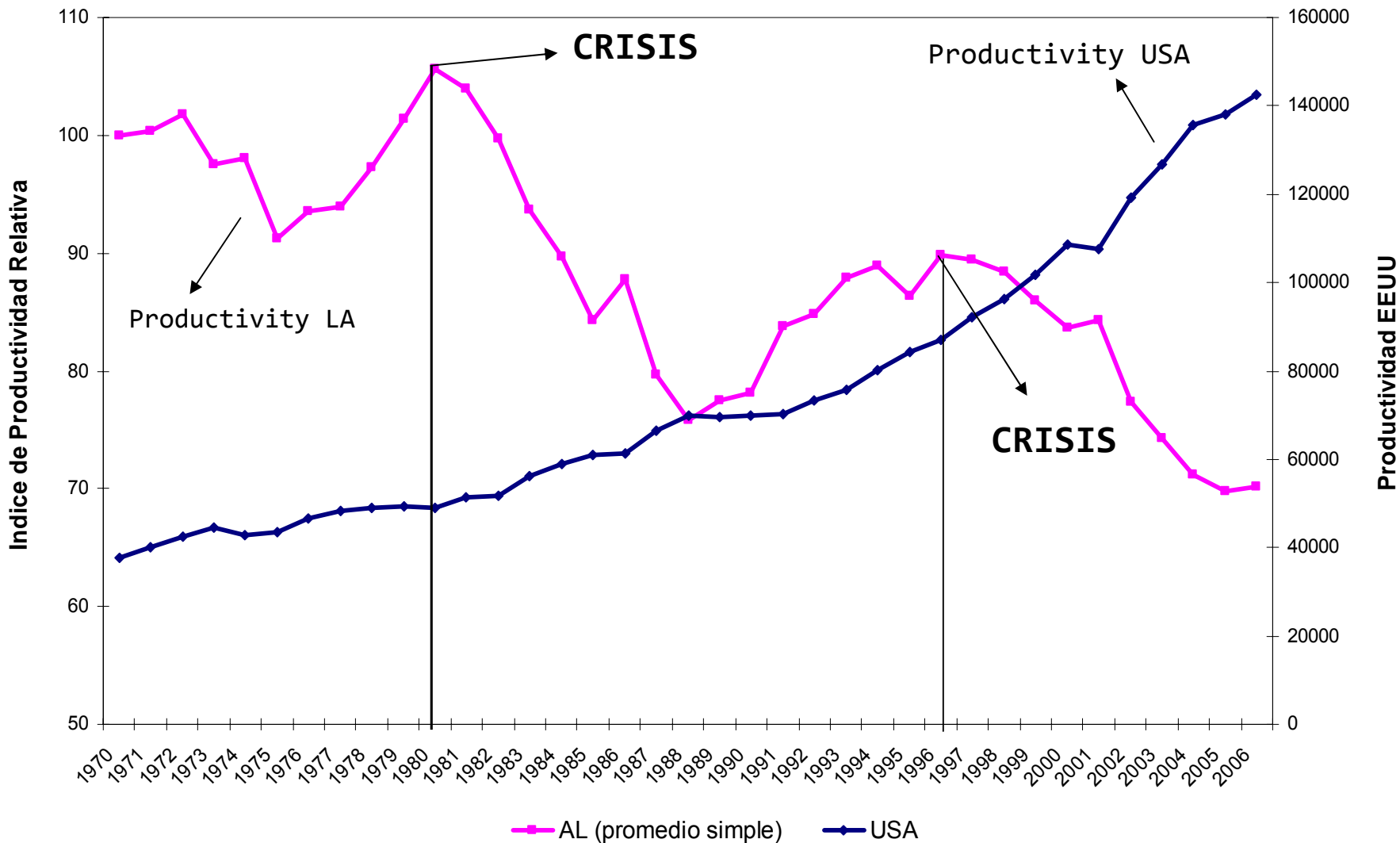


Therefore both the microeconomic and sectoral consequences of the loss of capabilities are lower economic growth

Re-adaptation of technological capabilities and productivity slowdown



Persistency and increase the technology gaps: LA-USA comparison



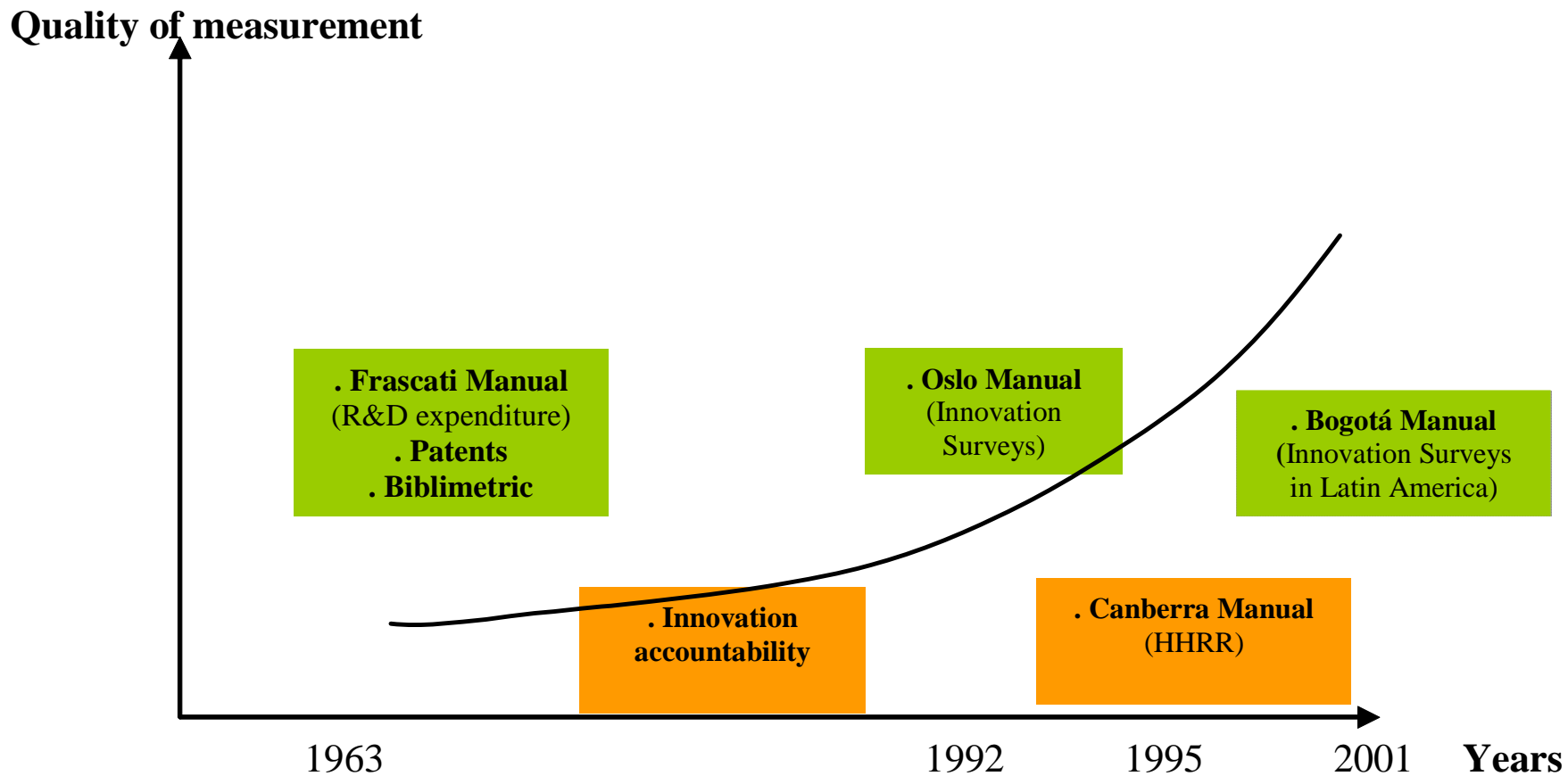
Contribution of microdata analyses to the innovation and growth debate:

- sound theory or bare econometric speculation? (panel, pseudo-panel...)
- just methodology or brings substantial contributions?
- what does it add to our understanding on development?

Measuring innovation

The importance of Innovation surveys

Evolution of innovation metrics



Source: Rovira (2008).

Innovations surveys and explicative factors

Types of innovation:

- Product
- Process
- Organizational
- Commercialization

Factors shaping the context:

- Human resources
- Scientific/technological activities
- Production capacities
- Consumption patterns
- Market and non market (incentives/institutions)

Latin American pattern

Lessons from the National Innovation Surveys (manufacturing industry)

- low and incremental innovation (product and process)
- machinery and equipment purchase is the prevailing with respect R&D activities
- high heterogeneity in sources and performances between firms (productivity, patenting...)
- cooperation (between firms and with others R&D centers) is an important source of innovative activities
- **innovative firms tend to be more productive and export more than non innovative firms**
- **innovative firms employ more qualified people and pay better salaries**

What is new and proved?

- sources of heterogeneity (machinery acquisition, R&D activities, human resources) explain the innovative pattern
- positive impact of innovation on productivity, exports, competitiveness and salaries
- utilization and soundness of econometric modeling and data analysis
- it is better to be innovative than not
→ ... it is better to be rich and healthy, than poor and sick...
- persuasive action on policy makers
→ in particular, on those that are mainstream... and have never read Schumpeter...

Some problems (...worries...) in interpreting the development process...

- asymmetries in sectoral patterns of innovation
- asymmetries between centre and periphery (informal sector explain more the gain and loss in productivity than formal-manufacturing sectors)
- no worries about development
is it an eurocentric approach?
- dichotomy between theory and research methods
...appreciative theory...

Lack of theoretical foundation?