Developing countries challenges: Main aspects to consider when setting innovation policies

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Country 1

1980, $2 Billion
Food: 41.58%
Fuels: 30.63%
Crude materials: 9.61%

2018, $6 Billion
Food: 40.29%
Crude materials: 16.91%
Food: 7.42%
Chemicals: 7.32%

Country 2

1980, $127 Million
Food: 29.41%
Fuels: 29.21%
Crude materials: 28.15%

2018, $280 Billion
Machinery and vehicles: 42.97%
Other manufacturers: 24.37%
MSMEs can innovate but they don’t because ....

1) Market failures: externalities and incentives
2) System failure: non-firm actors and linkages

MSMEs don’t know how to innovate

3) Capability failure: lack of capabilities and opportunities for effective learning
The critical innovation is **product innovation** that is new to the country.

Diversification is associated with higher GDP.

\[ y = 267.34x^{0.4652} \]

\[ R^2 = 0.7501 \]

Diversification is associated with lower competition in international markets.

Source: Author based on Freire (2017), *Diversification and structural economic dynamics*. Boekenplan, Masstricht.
But there is usually a low rate of “new to the country” product innovation.
How innovation happens?

- Combination of technologies
- New work is added to old work
- Intuition, ideas comes from the work
  - Materials or skills already in use
  - Problems in the course of the work

Creativity + Time + Work — Lacking in developing countries
How emulation happens?

- Repairing
  Repair shops add parts-making work
- Parts making
  Part makers add “assembly” work
- Assembly
  Assemblers add parts-making work
- Retailing
  Retailers add manufacturing work
In GVCs, emulation is constrained by the pattern of technological learning of MSMEs

Source: Author based on Keun Lee (2013), *Schumpeterian analysis of economic catch-up: Knowledge, path-creation and middle-income trap*, Cambridge.
y = 1x + 2E-06

\[ R^2 = 0.91 \]

Diversification & Average Complexity & Size of labour force explain 91% of differences in total GDP between countries

Source: Freire (2017), Diversification ad structural economic dynamics.
Innovation is path dependent

Product space showing products connected to each other based on the likelihood of them being exported together.

Source: Atlas of economic complexity, Angola (http://atlas.cid.harvard.edu)
Emulation is affected by technological revolutions

Source: UNCTAD based on Perez (2002).
CATCHING THE WAVES

The great divide, and waves of technological change.
Barriers

- MSMEs do not know how to innovate
- MSMEs do not know what are the most promising opportunities
- MSMEs do not have resources to innovate
- MSMEs do not have the support of a network and complementary technologies

Solutions

- Build MSMEs capabilities & Create opportunities for effective learning
- Provide policy direction to innovation & Provide technological, innovation and business advisory services
- Provide/facilitate diverse financing options
- Strengthen the national innovation system & provide/facilitate the infrastructure

Policy instruments

Targeted policy instruments
- Innovation
- Education
- Infrastructure
- Promote entrepreneurship
- Finance
- FDI
- Industrial parks
- Special economic zones
- Industrial institutes
- Trade policy
- Digital
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Innovation Policies and MSMEs
4 May 2021 Geneva