



DESIGNING INNOVATION POLICY

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INTRODUCTION

- THE KEY ISSUE
- TECHNOLOGY ABSORPTION RATHER THAN INNOVATION
- IDENTIFYING, ASSIMILATING AND ADAPTING PRODUCTION PROCESSES, CAPITAL EQUIPMENT AND PROODUCTS – THAT ARE OBTAINED FROM ABROAD.
- PARTICULAR EMPHASIS ON THE PRODUCTION PROCESS

WHY TECHNOLOGY ABSORPTION?

- Technological transfer and absorption play a critical role in development by allowing technological late-comers to catch up: *“learning something is easier than inventing it”*.
- Catch-up growth through technology absorption from the global economy: *“import what they knew, export what they want”*. Hence, the importance of technology absorption through trade and FDI.
- Technology absorption is particularly relevant to Africa.
 - African manufacturing industries face competitive pressures on two fronts: knowledge intensive economies, and low labor cost economies.
 - Africa in general does not have significant comparative advantage in terms of labor cost ----- must rely more on productivity to compete.
 - However, this is exactly the weakness of African economies ----- greater technology transfer and absorption is critical to strengthen competitiveness.

TOTAL FACTOR PRODUCTIVITY (TFP): SSA COMPARED WITH THE REST OF THE WORLD, 1990-2005

Regions and income groups	Absolute Level(Index, U.S. =100) in 2005	Annual growth rate (%) 1990-2005
East Asia and the Pacific	8.4	5.1
Europe and Central Asia	21.7	2.2
Latin America and the Caribbean	19.3	0.2
Middle East and North Africa	13.3	0.5
South Asia	5.8	2.3
Sub-Saharan Africa	5.6	0.2
High-income OECD	77.1	1.3
High-income non-OECD	53.1	0.7
Upper-middle-income	23.7	1.2
Lower-middle-income countries	9.6	3.2
Low-income countries	5.2	1.7

WHAT ARE THE KEY FINDINGS?

- While Southern Africa needs more trade (esp. export) and FDI, the potential for technology absorption through existing trade and FDI has not been fully realized.
- Low absorptive capacity appears to be the leading constraint to greater technology absorption, with the shortage of skills being the most significant factor behind.
- In addition to improving investment climate, governments could strengthen absorptive capacity through:
 - increasing skills supply,
 - supporting learning through trade,
 - taking more proactive actions to increase FDI spillovers,
 - encouraging firm level R&D activities.

CHANNELS FOR TECHNOLOGY ACQUISITION ABSORPTION

CHANNELS OF TECHNOLOGY ABSORPTION

○ **TRADE**

● **Learning By Exporting**

- Increased global competition increases firm incentives to invest in technology absorption.
- Firms exporting in Mauritius to advanced economies invested in new machinery and equipment as compared to those exporting to the region investing in second hand equipment

● **Acquisition of machinery and equipment**

- 80 percent of the firms in South Africa (NIS) and 54 percent of the firms in Mauritius (WB ES) cite acquisition of machinery, equipment and software as their primary channel by which they acquire new technology.

CHANNELS OF TECHNOLOGY ABSORPTION

○ **FDI**

- Brings in positive spillovers – e.g. access to foreign technologies and management practices.
- Some evidence to show greater investment in training and technology absorption in South Africa and Mauritius.

○ **TRADE IN KNOWLEDGE**

- **Licensing of Technology acquired from the trading partners**
 - Technology agreement with MNCs as in the case of South African auto component industry.
 - Acquisition of technology and know-how from their suppliers of materials and equipment, foreign or domestic.
- **Stronger IPR regime**
 - Increases incentives for firms to invest in technology absorption.

CHANNELS OF TECHNOLOGY ABSORPTION

- **SKILLS TRANSFER**

- **Technical consulting services provided by equipment suppliers**
- **Hiring skilled expatriate labor**

FIRM LEVEL PROCESS AND PRODUCT DEVELOPMENT AND R&D

- **With a strong emphasis on process and product development**

- **INDUSTRY RESEARCH INSTITUTIONS LINKAGES**

- **Limited in most industries**

POLICY OPTIONS FOR GREATER TECHNOLOGY ABSORPTION

GOVERNMENT SUPPORT FOR INNOVATION AND TECHNOLOGY ABSORPTION

- Basic level: Creating a supportive business environment, in which firms driven by profit motives will seek to update their technology in the best way they can.
- Addressing market failure: Beyond those general policies, governments will also need to intervene at the industry and firm levels.
- Four potential areas of public policy intervention based on findings in this study:
 - Skills development;
 - Learning through trade;
 - FDI spillovers;
 - R&D activities.

FDI SPILLOVERS – AN ILLUSTRATIVE EXAMPLE

- First-order challenge is to attract FDI, but spillover does not happen automatically. Need proactive policy actions.
- Providing incentives to foreign investors for deliberate actions aimed at technology transfer.
 - Ensure the extra cost is fully compensated for.
 - Linked to performance and results.
 - Can be offered by government as well as domestic firms.
- Encouraging domestic firms' learning efforts and strengthen their absorptive capacity.

A STRONG LINK WITH INDUSTRIAL POLICY

- SUPPORT FOR TECHNOLOGY ABSORPTION IS ONLY ONE PART OF FIRM AND INDUSTRY UPGRADING
- NEW INDUSTRIAL POLICY – DEFINED IN CLOSE COLLABORATION WITH FIRMS AND FIRM LEVEL ASSOCIATIONS

THANK YOU