

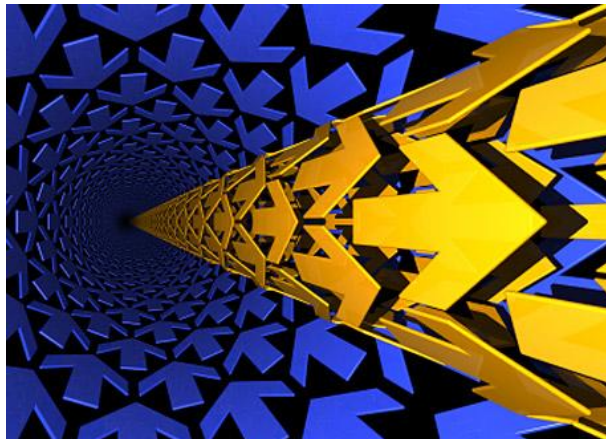
“Constructing a Prosperous and Sustainable Post-Conflict Society in Colombia”

Growth, Innovation and Upgrading

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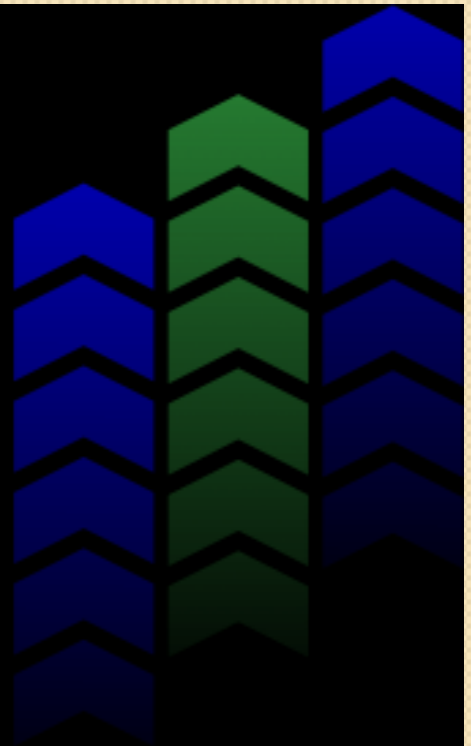
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Agenda

- Sources of Growth
- Role of Productivity
- Innovation and Upgrading
- Government's Role
- Industrial Policy
- Clustering
- Case Studies of Upgrading

ECONOMIC
GROWTH



What Generates Economic Growth?

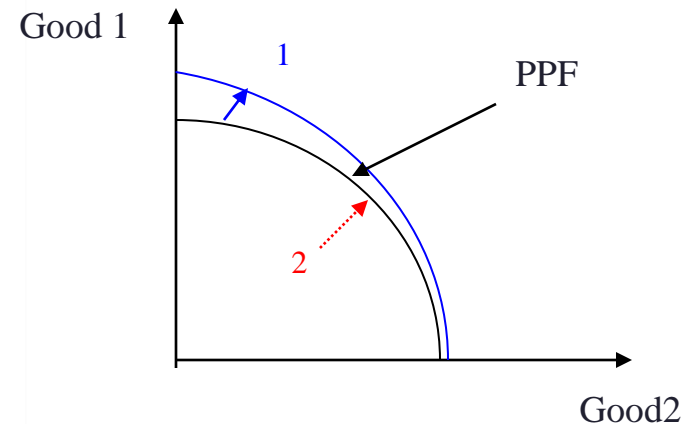
- *Capital accumulation*
 - All new investments in land and physical equipment
- *Accumulation of human capital*
 - Higher skills through improved education and health
- *Population growth*
 - Leads to an eventual increase in the labor force
- *Improvements in productivity*

What is Total Factor Productivity (TFP)?

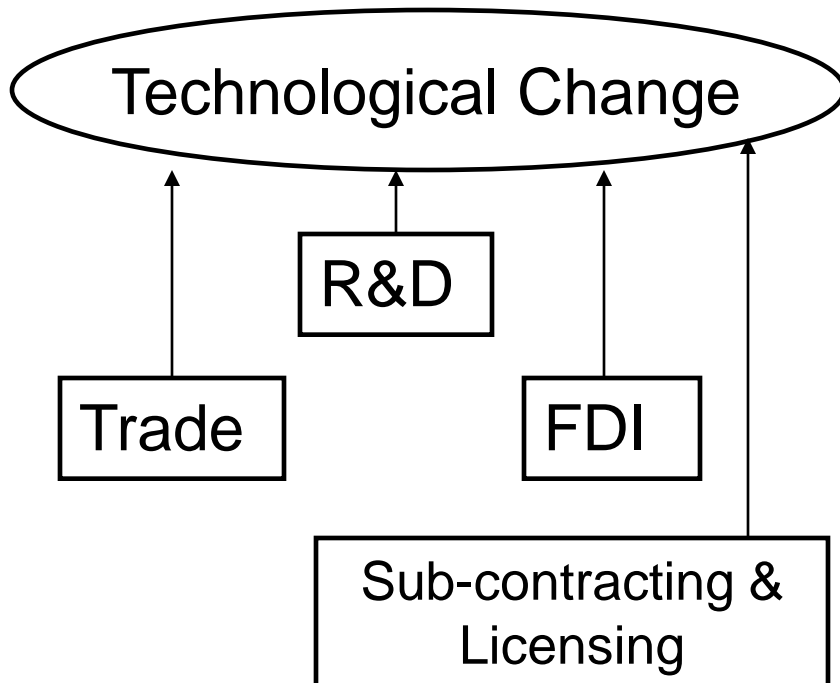
TFP explains the growth in national output that cannot be attributed to increases in the level or quality of measured inputs

TFP has two components:

- (1) Technological progress in best practice (e.g., in producing Good 1)
- (2) Change in technological efficiency (movement toward best practice)



What are the Sources of Productivity Growth?

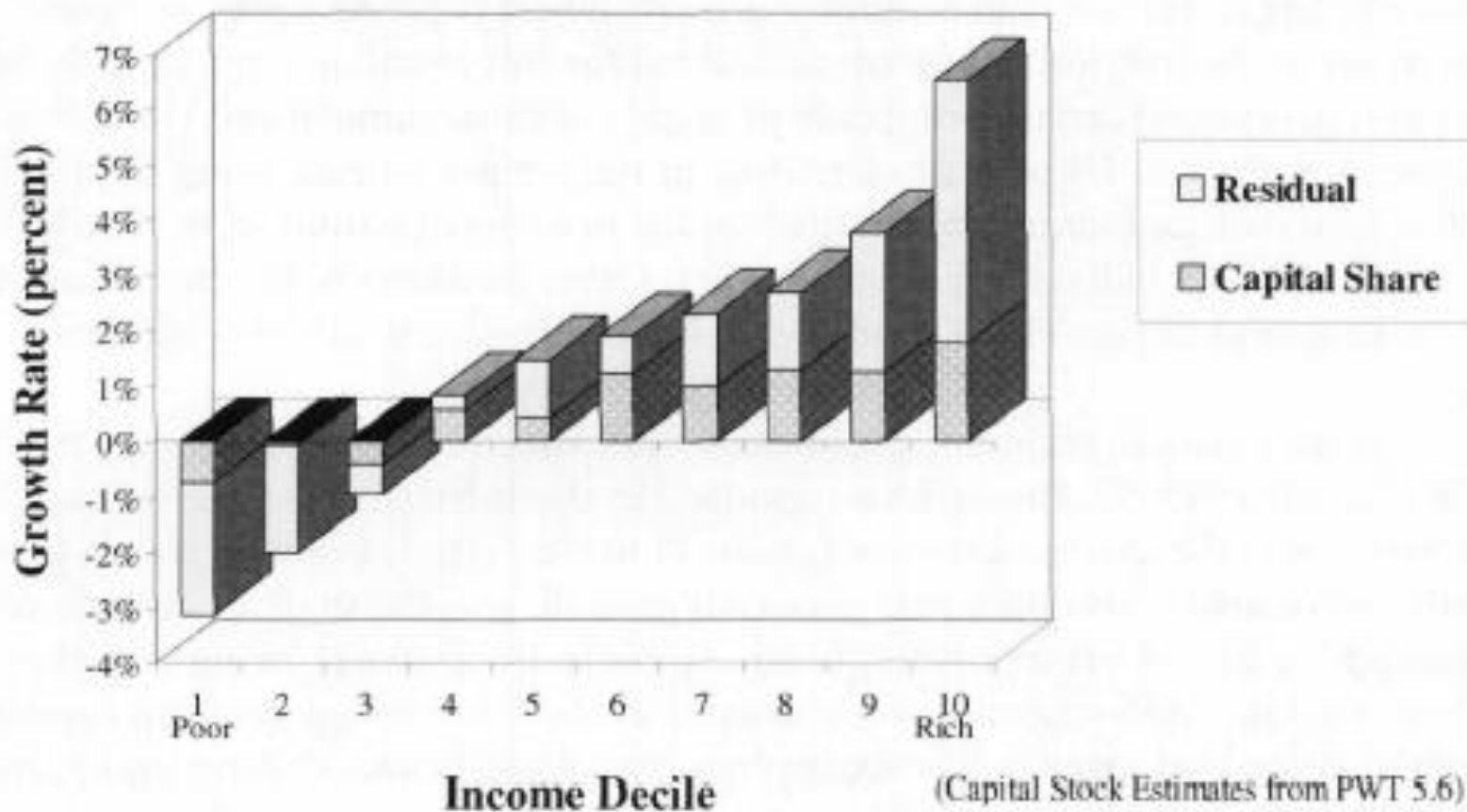


- **Process innovation**
(e.g., reengineering of shop floors)
- **Management innovation**
(e.g., “total quality management”)
- **Externalities**
(e.g., knowledge spillovers)
- **Scale effects**
(e.g., “learning by doing” and “matching”)

TFP, Not Factor Accumulation, Drives Growth

- Accumulating physical capital and human capital is necessary but not sufficient
- Differences in TFP largely account for differences in the rate of economic growth across countries
 - In faster growing countries, TFP accounts for more than half of economic growth
- Sustained growth is characterized by continuous industrial and technological upgrading

FIGURE 1. Growth Accounting: Growth Rates by Decile



Source: Easterly and Levine (2001)

Total Factor Productivity in LAC Relative to USA

Relative Productivity in Latin America, 2005)

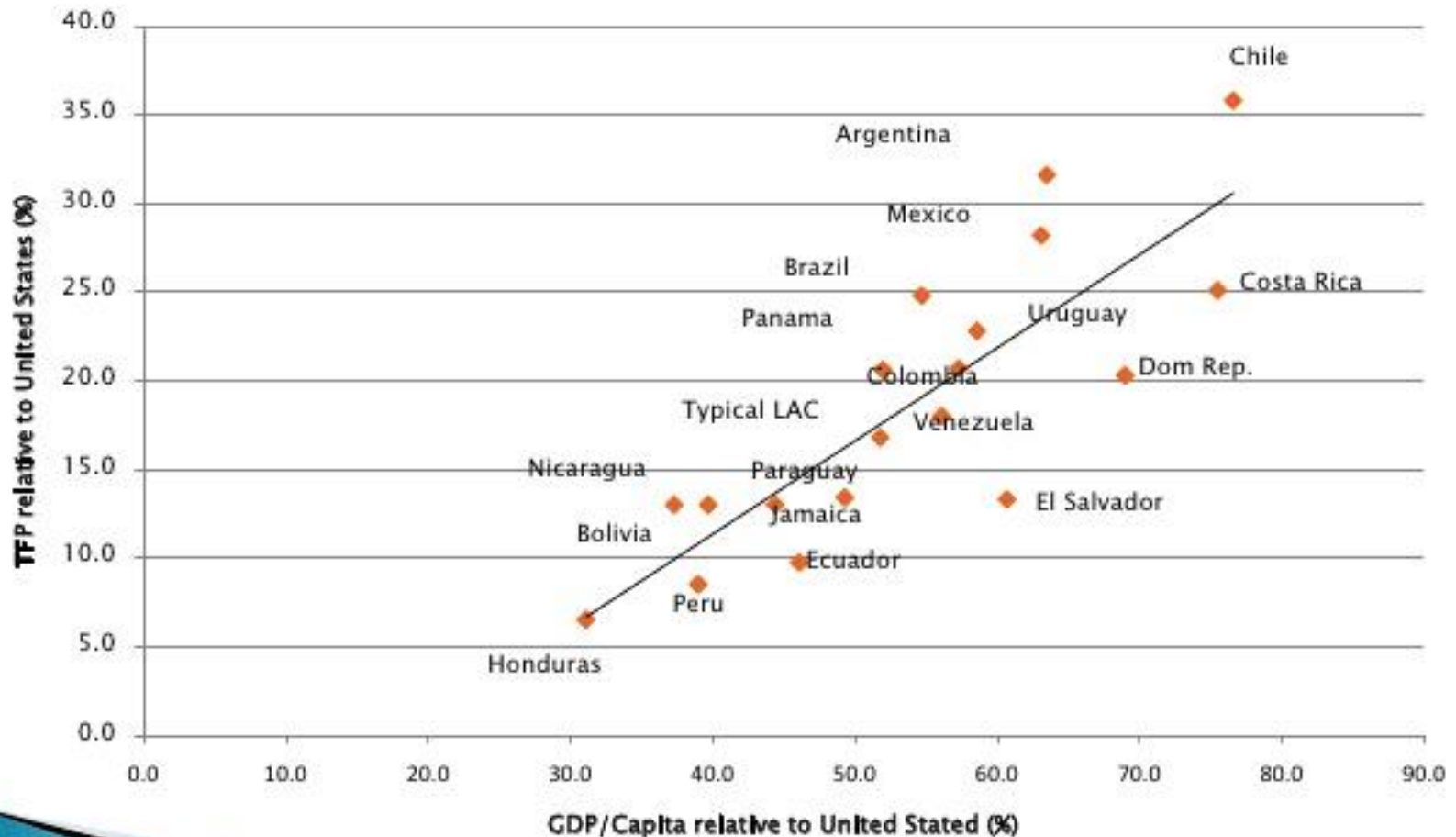
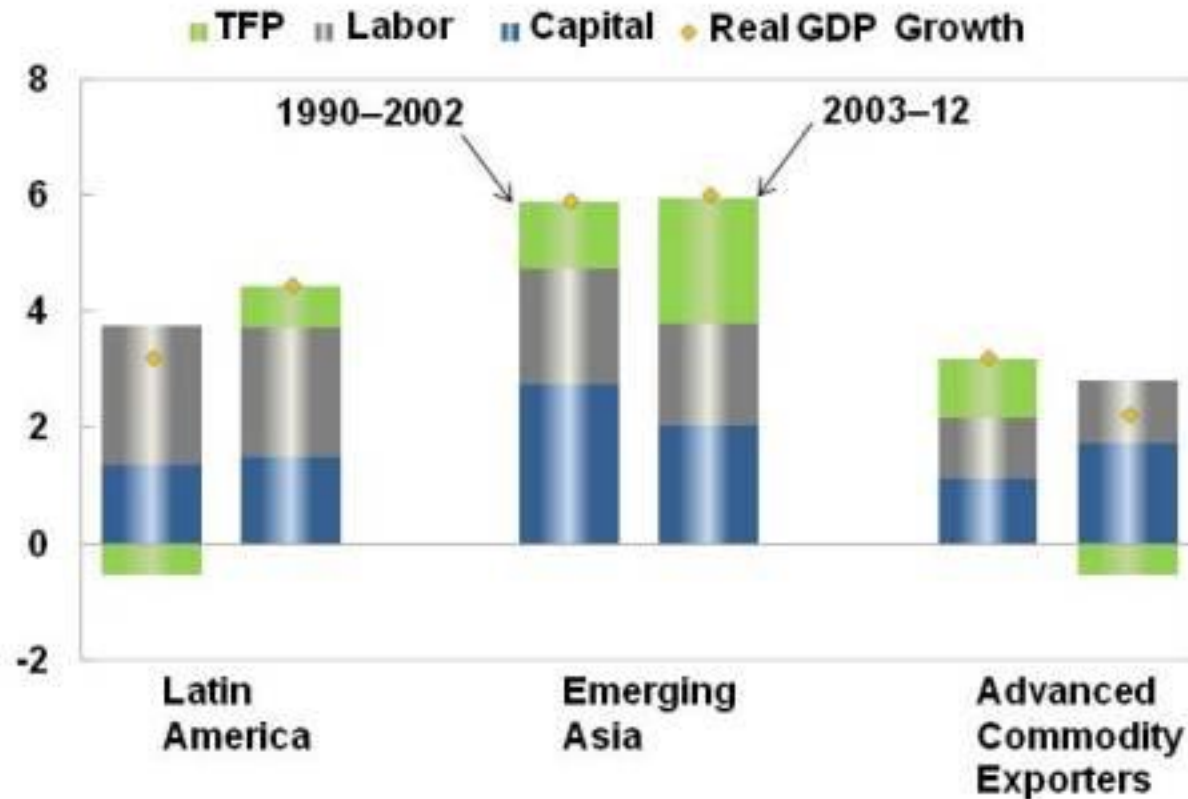


Chart 1 Contribution to Real GDP Growth

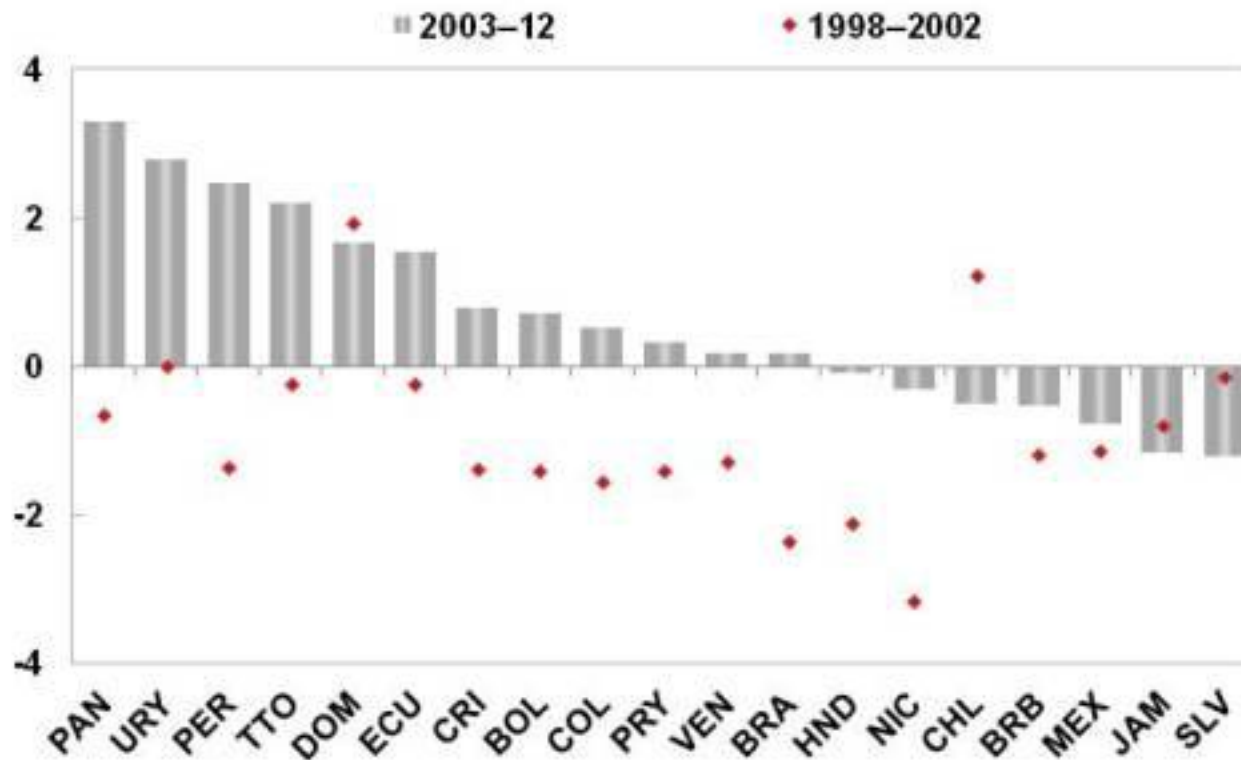
(Annual average, percent)¹



Sources: IMF, *World Economic Outlook*; International Labor Organization; Penn World Table 7.1; World Bank, *World Development Indicators*; and IMF staff calculations.

¹ Simple average of countries within each group.

Chart 2
Total Factor Productivity growth
(Annual average, percent)



Sources: Barro-Lee (2010); IMF, *World Economic Outlook*; Penn World Table 7.1; and IMF staff calculations.

Industrial Upgrading

- More countries are vying for the same goods and services markets
 - Lower costs and better communication enable new entrants
 - Quick diffusion of technology and an ever shorter product life cycle
 - Intense competition for investment funds
- This creates the need to move into new sectors

What is Upgrading?

- Upgrading is moving up the value-added ladder
 - => Primary products
 - => Labor-intensive activities
 - => More integrated, capital-intensive manufacturing
 - => Most profitable skill- and knowledge-intensive activities

Upgrading and Competitiveness



Michael Porter

A nation's long-term growth requires firms to:

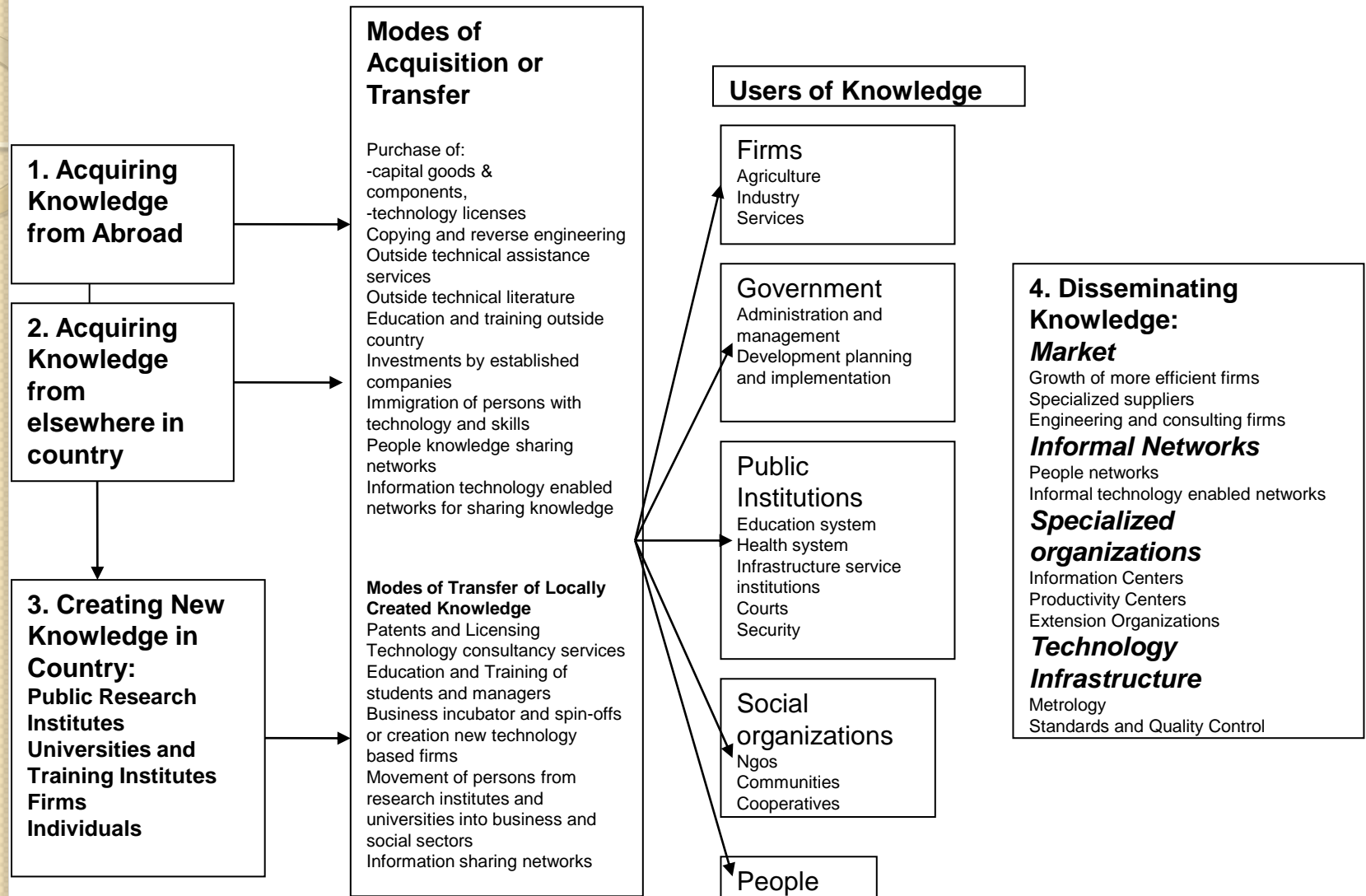
- Relentlessly improve productivity in existing industries
- Acquire the necessary capabilities to compete in increasingly sophisticated industry segments
 - Productivity is generally high in this segments
- Develop the capability to compete in entirely new, sophisticated industries



What is Innovation?

- Innovation is developing products, processes, designs, means of organization or delivery that are completely new or new for the nations or firms that use it

Sources of Innovation and Use Map



Key Enablers: Economic and Institutional Regime--Information and Communications Infrastructure-Education

Innovation in Emerging Markets

Emerging market countries can get high returns inexpensively from tapping into existing knowledge

- In the public domain (e.g., technical literature)
- Purchased through formal means (e.g., licensing)
- Acquired by copying and reverse engineering
- Forming part of sub-contracting networks
- Outside consultants and foreign hires
- Educating nationals outside the home country


Innovation in Emerging Markets

Emerging markets also need to invest in their own capability to acquire, use, and create knowledge

- Know what to look for, assess its relevance to the domestic context, adapt and improve it
- Eventually do basic R&D in order to be part of global research networks
 - Firm research and development
 - Contract R&D from government, university, or private labs
- Tap ideas of customers, suppliers, competitors

Barriers to Innovation in Emerging Markets

- Institutional Structure
 - Inadequate property rights
 - Opposition from vested interests
- Lack of competition
- Ideology
- Large informal sector and small firm size
- Insufficient human capital (education and health)
- Poor infrastructure



THE ROLE OF THE STATE

State Must Play Some Role

- The state must take an active role in improving productivity and upgrading
 - Few if any countries have succeeded with largely laissez-faire policies
- How extensively and in which ways should the state intervene?
- The debate often comes down to whether the state seeks to *facilitate or defy* comparative advantage

State as Facilitator

- Help the private sector exploit the nation's comparative advantage
- Entering into a sector too early results in:
 - Inefficient use of scarce resources
 - Market distortions
 - Inability to accumulate factor surpluses necessary for the process of upgrading
 - Import substitution industrialization showed the failure of this approach
- States that have successfully upgraded did so in a gradual process in line with their changing factor endowments

State as Transformer

- Transform economic structure by defying comparative advantage
- Countries acquire industry-specific technical capabilities through actual production experiences
 - Accumulating capital and human capital generally will not enable a country to become proficient in new areas
- Target sectors with desirable characteristics or those where comparative advantage “ought to emerge”
 - These are sectors where the private market underinvests

Industrial Policy Options

- Most economists are skeptical of transformer approach
- Few governments have:
 - The institutional capacity of the most successful East Asian cases
 - A political context that allows decisions to be made on the basis of economic criteria
- Governments should focus on:
 1. Providing functional industrial policies
 2. Strengthening private-to-private networks at the regional, national, and international level

1. Functional Industrial Policy

- Implement policies that benefit all industrial sectors (though the impact may be asymmetrical)
- Examples of such policies are:
 - Supplying physical, social and technology infrastructure
 - Creating public research and training institutes

Correcting Market Failures

- Market failures are present in all countries
- They are more prevalent and severe in developing and emerging market countries
- Two of the most important are:
 - Information externalities
 - Coordination problems

Information Externalities

- Knowledge generated by research and development often has a public goods character:
 - Actors who have not contributed to the creation of knowledge may gain access to it because of spillovers
 - Consequently, knowledge may be undersupplied to the detriment of society
- The government may address this by providing R&D subsidies

Coordination Problems

- Infrastructure is undersupplied by private markets
 - Physical: transportation and communication systems
 - Social: education and health systems
 - Legal: property rights
- Development requires simultaneous improvements in all these areas
- The state can coordinate the provision of these goods

2. Develop Networks

- Promote exports
 - Bring national firms into contact with international best practice
 - Insert firms into supply chains
- Enter into public-private partnerships, especially in support of clusters
- Support collaborative R&D
- Encourage foreign direct investment

CLUSTERS



Clustering

- Many efforts to foster networks focus on clustering
- Clustering is the sectoral and spatial concentration of firms
- A dominant feature of developed country and increasingly emerging and developing country industry
- Often critical in the incipient stages of industrialization

Agglomeration Economies

- Spatially- and sectorally-concentrated increasing returns
- Sources of agglomeration economies
 - Access to suppliers of specialized inputs and services
 - Labor market pooling
 - Spillover of knowledge
- Threshold barriers are high – difficult to get started in a new industry or location
 - Coordination failure

Government's Role

- Increase confidence of investors to:
 - Envision future benefits by signaling a commitment to growth
 - Have secure property rights
 - Have access to credit
- Internalize any external benefits that entrants create
 - Large developers
 - Subsidies
- Temporary support through an industrial policy

Industrial Policy for Clusters

- Construct a new urban infrastructure
- Foster advanced and specialized factor development
- Develop a science and technology policy
- Promote foreign direct investment and exports
- Undertake regulatory reform
- Collect and disseminate economic information

Fostering Clusters and Networks

- Traditional approach: foster clusters in a top-down fashion, focusing on a single cluster
- Recent approach: a collaborative process at the regional level
 - Involves governments as well as firms, universities, and other actors
 - Several clusters may be promoted simultaneously
- The most successful clusters feature substantial cooperation among firms and other actors

Risks of Clustering

- Exacerbate regional and income inequality
- May damage other regions if not complementary
- Possible negative externalities
 - Congestion
 - Pollution
 - Strain on government services
- High levels of rent seeking, particularly due to efforts to internalize externalities



° Building Competitiveness

NATIONAL CASE STUDIES OF UPGRADING

Upgrading to Sustain Growth

Costa Rica

Develop as an exporter of knowledge and skill-intensive products, especially electronics, by attracting FDI to jump start the process (the “Intel strategy”)

Malaysia

Move into high-tech sectors such as nanotechnology in an effort to avoid getting stuck in the middle

Costa Rica

- In the mid 1990s, Costa Rica's economy was primarily based on agriculture, textile and tourism
- By Latin American standards, the country's physical and social infrastructure was quite developed
- The country's chief virtue was its stable political system and well functioning institutions

Objective

- Goal was to move up the value-added chain:
 - Shift from labor-intensive and commodity agriculture to technology- and knowledge-based activities
- To reach this goal, the Figueres administration sought to create an “*electronics and information technology cluster*” capable of competing globally

Key Elements of the Strategy

- Established an economic development agency
 - Modeled after Singapore's Economic Development Board
- Created an export processing zone
- Provided incentives to companies exporting non-traditional products
- Designed focused training programs
- Developed infrastructure to facilitate international trade
- Implemented a social investment program to prepare the population for global competition

Courting

- Proactively marketed Costa Rica as a desirable location for Intel to build an assembly and testing plant
- Believed Intel's investment would signal credibility
- The chief elements of the approach included:
 - Improving existing education, transportation, energy and tax structures
 - Streamlining bureaucratic processes and procedures
 - Personal commitment of the president

Results

- Intel invested \$770 million
- Costa Rica became a key operation accounting for about one quarter of all its sales
 - Intel employed 2,900 workers and created about 2,000 indirect jobs
- The “signaling” effect worked:
 - FDI in high tech sectors increased
 - Included diverse sectors such as medicine and call centers
- Exports diversified dramatically, with non-traditional exports comprising 80% of the total by 2003
- Local supplier of services but not inputs flourished

Lessons Learned

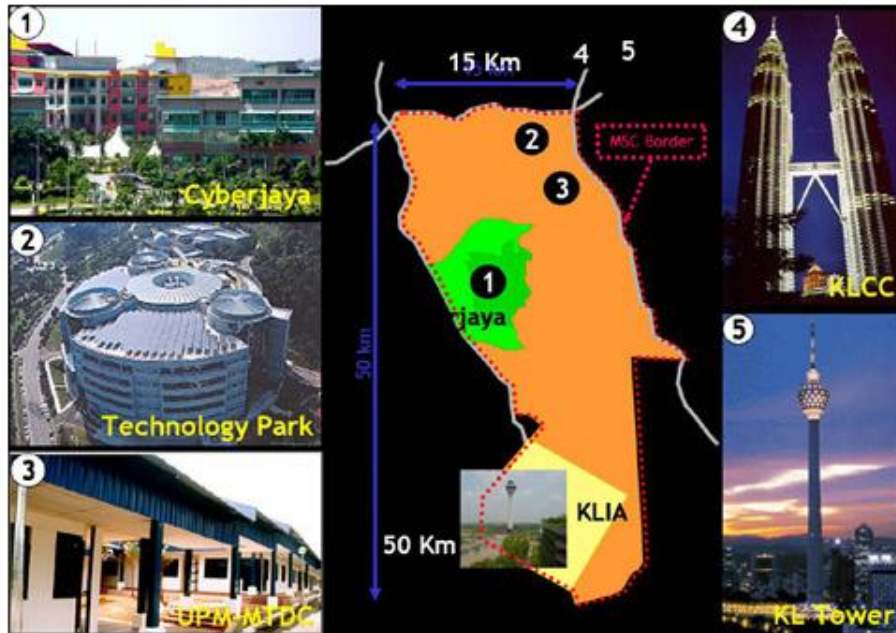
1. Leverage the strategic project as a “flagship” investment
2. Stay abreast of investor requirements and continually adapt the investment climate
3. Coordinate support among existing investors and the highest levels of government
4. Develop a strategy to establish service and supply networks for priority sectors

Malaysia

- Malaysia experienced rapid growth – nearly 4 percent annual real growth in GDP/capita
- FDI used to create domestic industries in more advanced sectors such as electronics
- Part of complex supply chains spanning Southeast Asia
- The country was afraid of getting “stuck in the middle”
 - Unable to compete at the low end with China and emerging Southeast Asian countries
 - Unable to move into the higher end with Singapore or Korea

Vision 2020

- Created a national plan to become a developed country by 2020
 - Improve physical infrastructure
 - Provide better and faster information technology
 - Enhance education to foster a knowledge-based economy
 - Strengthen the banking sector
 - Improve regulation
 - Increase the efficiency and quality of public services, especially reduce corruption
 - Alleviate poverty
- Encouraged the development of newer industries, such as biotechnology and nanotechnology



- **Multimedia Super Corridor**

Turn Malaysia into the information technology hub of Asia

Creation, distribution and integration of products and services

Government committed \$12 billion to build infrastructure

Incentives to Foreign Firms

- Exemption from local ownership rules
- Unlimited foreign workers
- 10 years tax holiday or 100% investment tax allowance
- Duty free imports on telecomm equipment
- Special telecommunication rates
- Secure intellectual property rights

Multimedia Development Corp

- Established to promote the corridor
 - Marketer
 - One-stop shop for investing firms
 - Facilitate relations between domestic and foreign firms
 - Advisor to the government
- Micro-manager approach
- Preference granted to “web-shapers”

Challenges


- Limited experience in IT
- Poor intellectual property laws
- Insufficient number of workers with the requisite skills
- Perception that benefits to most Malays are small
- Cross border issues concerning cyberlaws, censorship and standards
- Competing clusters in other Asian cities

Mixed Results

- Banks did not fund IT enterprises
- Limited entrepreneurship due to lack of a risk-taking culture
- MDC unsuccessful in attracting cutting-edge firms
- MDC shifts focus to labor-intensive IT activities at low end of value-added chain
 - Data processing and customer service centers
 - Generated lots of jobs

Lessons Learned

- Need realistic ambitions
- Government capacity is critical
 - Micro-managing does not work
- Need a match of worker skills and investment type
 - Or a plan to develop adequately
- Intellectual property is key



**What can Colombia do to
experience productivity
improvements and industrial
upgrading?**