The Stages of Economic Growth Revisited

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Kehoe and Prescott (2007), *Great Depressions of the Twentieth Century*.


Two crucial ingredients to our theory:

Follow-the-leader theory of growth

Different stages of economic growth
Real GDP per working-age person in the United States
Follow-the-leader theory of growth

Real GDP per working-age person has grown by 2 percent per year in the United States since 1875.

This growth is a combination of technological progress and improvements in management.

Any country with stable institutions and policies should grow at roughly 2 percent per year.

A country that improves its institutions and policies should grow faster, until it reaches a new balanced growth path.

A country whose institutions deteriorate or whose policies worsen…
Follow-the-leader theory of growth

\[ \log \frac{Y_t}{N_t} \]

leader

less developed country

reform

\( t \)
Stages of economics growth

0. Malthusian society

1. Take-off into sustained growth

2. Catch-up to the industrial leader

3. Joining the industrial leader

Influenced by

Stages of economics growth

0. Malthusian society

1. Take-off into sustained growth
   Average more than 1 percent per year growth in real GDP per capita for 25 consecutive years — U.K. experience 1819–1844.

2. Catch-up to the industrial leader

3. Joining the industrial leader
   Reach 65 percent of GDP per capita relative to industrial leader and stay there.
**Data**

The Maddison Project:


Annual data on real GDP per capita in 1990 Geary-Khamis dollars

Hodrick-Prescott filter of raw data with smoothing parameter 6.25 when years are consecutive

160 countries with 25 years or more of data — of 25 countries with less than 25 years of data, 15 were formally part of Soviet Union
Real GDP per capita in the United States

index (1875=100)


raw data

H-P filter
Take-off into sustained growth (industrial revolution) is well studied (although perhaps not well understood):


Take-off into sustained growth is associated with

Urbanization
Industrialization
Education

Catch-up and stay-up with industrial leader is associated with adoption of best practices from abroad
Power of productivity

\[ Y_t = A_t K_t^\alpha L_t^{1-\alpha} \]

\[
\frac{Y_t}{N_t} = A_t^{1-\alpha} \left( \frac{K_t}{Y_t} \right)^{\frac{\alpha}{1-\alpha}} \left( \frac{L_t}{N_t} \right)
\]


**Best practice**
Growth accounting for the United States

index (1950 = 100)


output
productivity
capital
labor
Growth accounting for Mexico

index (1950 = 100)

output
productivity
capital
labor

Growth accounting for Brazil

Index (1965 = 100)

- Output
- Productivity
- Capital
- Labor
Power of productivity


A decline in piracy and an improvement in economic organization account for most of the productivity change observed.
High levels of productivity are the result of allocating resources — labor and capital — to efficient firms.

Increases in productivity are the result of birth and growth of newer, more productive firms and death of older, less productive firms.

A useful data source for data on ease of allocating resources across firms and creating new firms: World Bank, *Doing Business*

The Doing Business project provides objective measures of business regulations for local firms in 185 economies and selected cities at the subnational level.
Ease of Doing Business Rankings, *Doing Business 2015*

Singapore 1
Hong Kong 4
United States 7
Germany 14
Spain 33
Mexico 39
Kazakhstan 77
China 90
Egypt 112
Brazil 120
Argentina 124
Mozambique 127
Venezuela 182
Afghanistan 183
Libya 188
Modeling catch-up and stay-up stages


Dynamic model with firms that are heterogeneous in productivity.

Existing firms’ productivities grow every period and new firms draw from a more productive productivity distribution every period.

In balance growth path, economy grows at 2 percent per year.

Policies and institutions determine levels.
Policies that reduce restrictions on entry and exit lead to rapid growth to new balanced growth path.

With a calibrated model, results are consistent with both cross-country macro data and firm-level panel data for a number of countries:

- When an economy is in a balanced growth path (growing approximately 2 percent per year), the majority of productivity growth is due to within-firm productivity growth.

- When an economy is in a transition path to a higher balanced growth path (grow much faster than 2 percent per year), the majority of productivity growth is due to entry of more productive firms and exit of less productive firms.
What are the barriers to growth in Mexico?

Poor financial institutions
Lack of contract enforcement
Problems in labor markets
…also problems with crime

But China has many of these same sorts of problems

Poor financial institutions
Lack of contract enforcement
Problems in labor markets
…also problems with the political system
But why is China growing so rapidly?
But why is China growing so rapidly?

For the same reasons that Mexico grew rapidly between 1950 and 1980:

Urbanization
Industrialization
Education
This diagram illustrates the trend of rural population as a percentage of the total population over the years 1960 to 2010 for China, South Korea, and Mexico. The data shows a consistent decline in rural population percentages for all three countries, with China having the highest percentages at the beginning and Mexico showing the lowest. The years 1970, 1980, 1990, 2000, and 2010 are highlighted on the x-axis, while the percentage of the total population is shown on the y-axis.
Enrollment in tertiary education

per 100,000 inhabitants

South Korea

Mexico

China
But why is China growing so rapidly?

For the same reasons that Mexico grew rapidly between 1950 and 1980:

Urbanization
Industrialization
Education

Hypothesis: Mexico would have grown more rapidly between 1950 and 1980 if it had been open to foreign trade and investment.
When will the barriers to growth that are limiting Mexico’s growth start to bind on China?
Purchasing power parity GDP in Mexico and China

Mexico GDP per working-age person

Mexico GDP per capita

China GDP per working-age person

China GDP per capita

2005 U.S. dollars per person
When will the barriers to growth that are limiting Mexico’s growth start to bind on China?

Hypothesis:Absent major reforms, China’s growth will slow to about 2 percent per year within the next 10 years, perhaps before China reaches the level of real GDP per working-age person of Mexico.
What reforms does Mexico need to resume rapid growth?

Eliminate barriers to growth:
Reform financial institutions
Improve contract enforcement and rule of law
Make labor markets more flexible
What reforms does Mexico need to resume rapid growth?

Eliminate barriers to growth:
Reform financial institutions
Improve contract enforcement and rule of law
Make labor markets more flexible

Also

Reduce monopoly and inefficiencies in nonmanufacturing sectors like electricity, telecommunications, transportation, and petroleum extraction.

Reduce violence related to drug trafficking.