

The Stages of Economic Growth Revisited

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Rethink economic development and economics history based on

Parente and Prescott (1994), “Barriers to Technology Adoption and Development,” *Journal of Political Economy*.

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

Kehoe and Ruhl (2010), “Why Have Economic Reforms in Mexico Not Generated Growth?” *Journal of Economic Literature*.

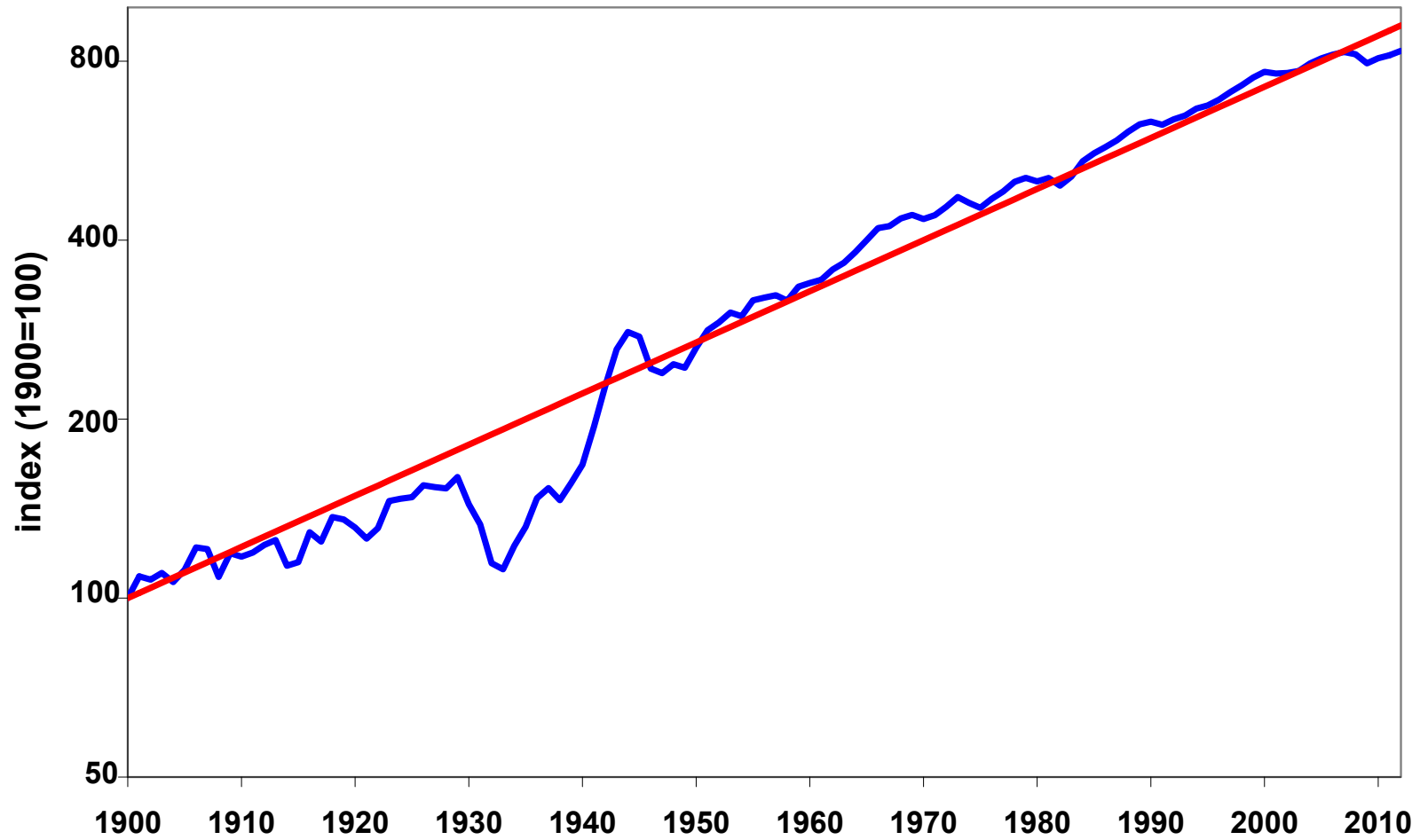
Kehoe and Meza (2011), “Catch-up Growth Followed by Stagnation: Mexico, 1950–2010,” *Latin American Journal of Economics*.

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.

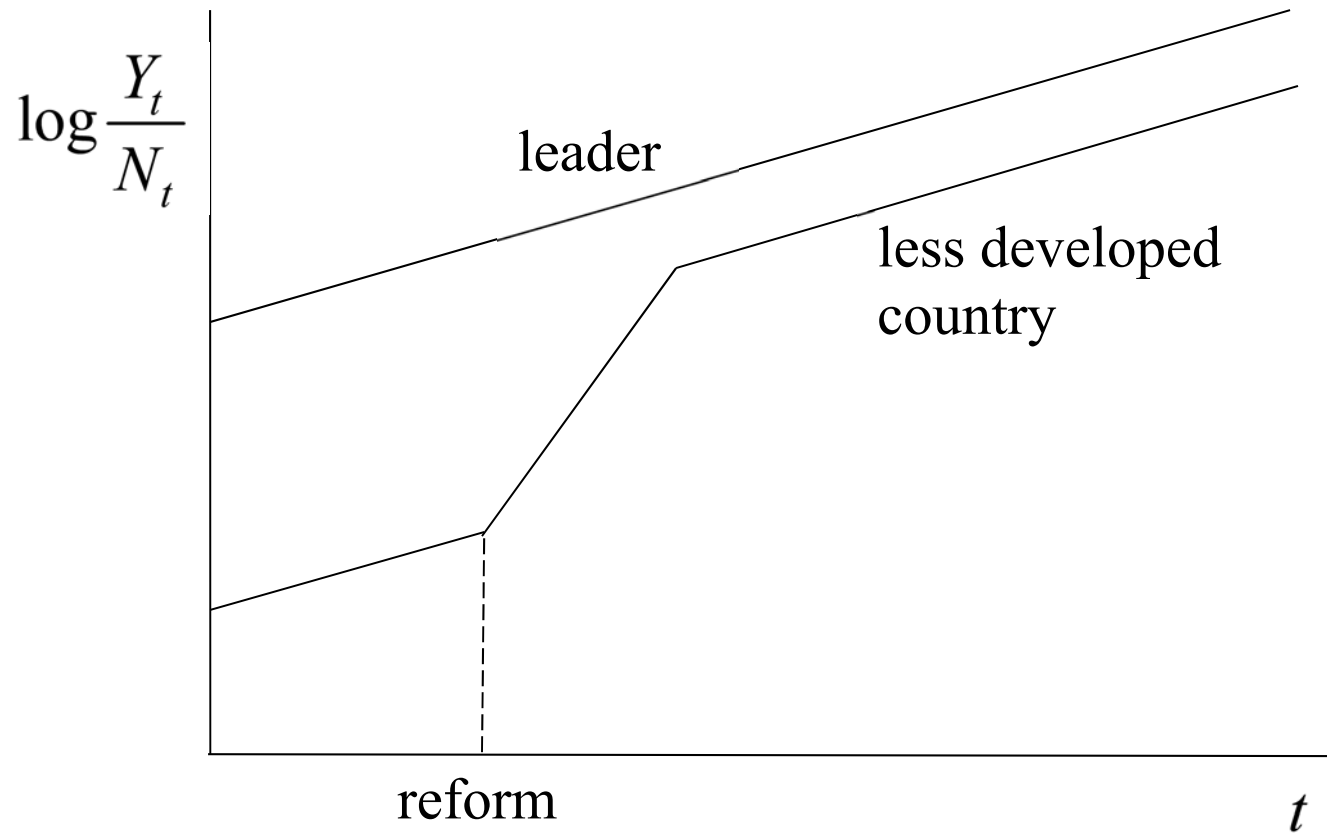
This growth is a combination of technological progress and improvements in management.

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

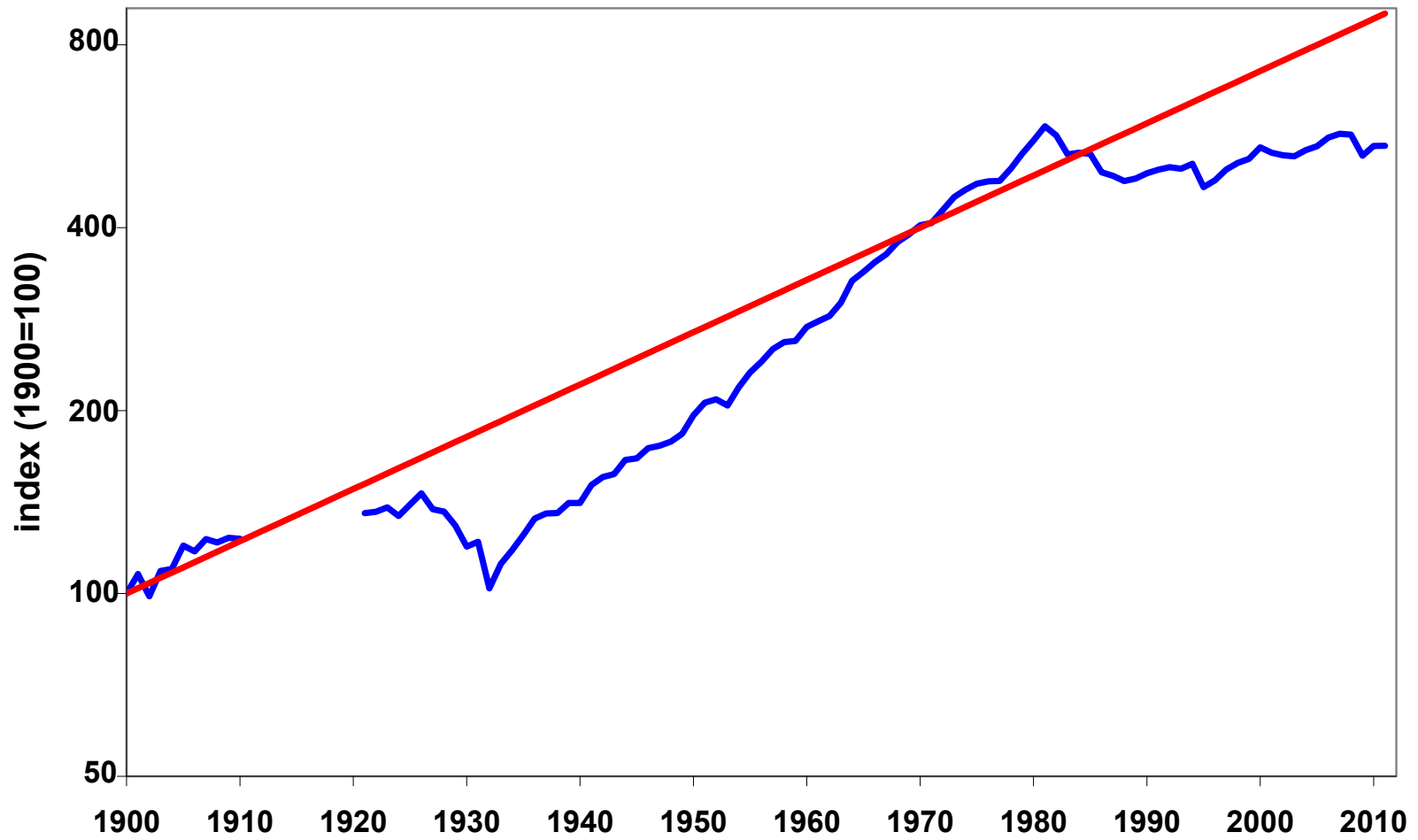
A country that improves its institutions and policies should grow faster, until it reaches a new balanced growth path.

A country whose institutions deteriorate or whose policies worsen...

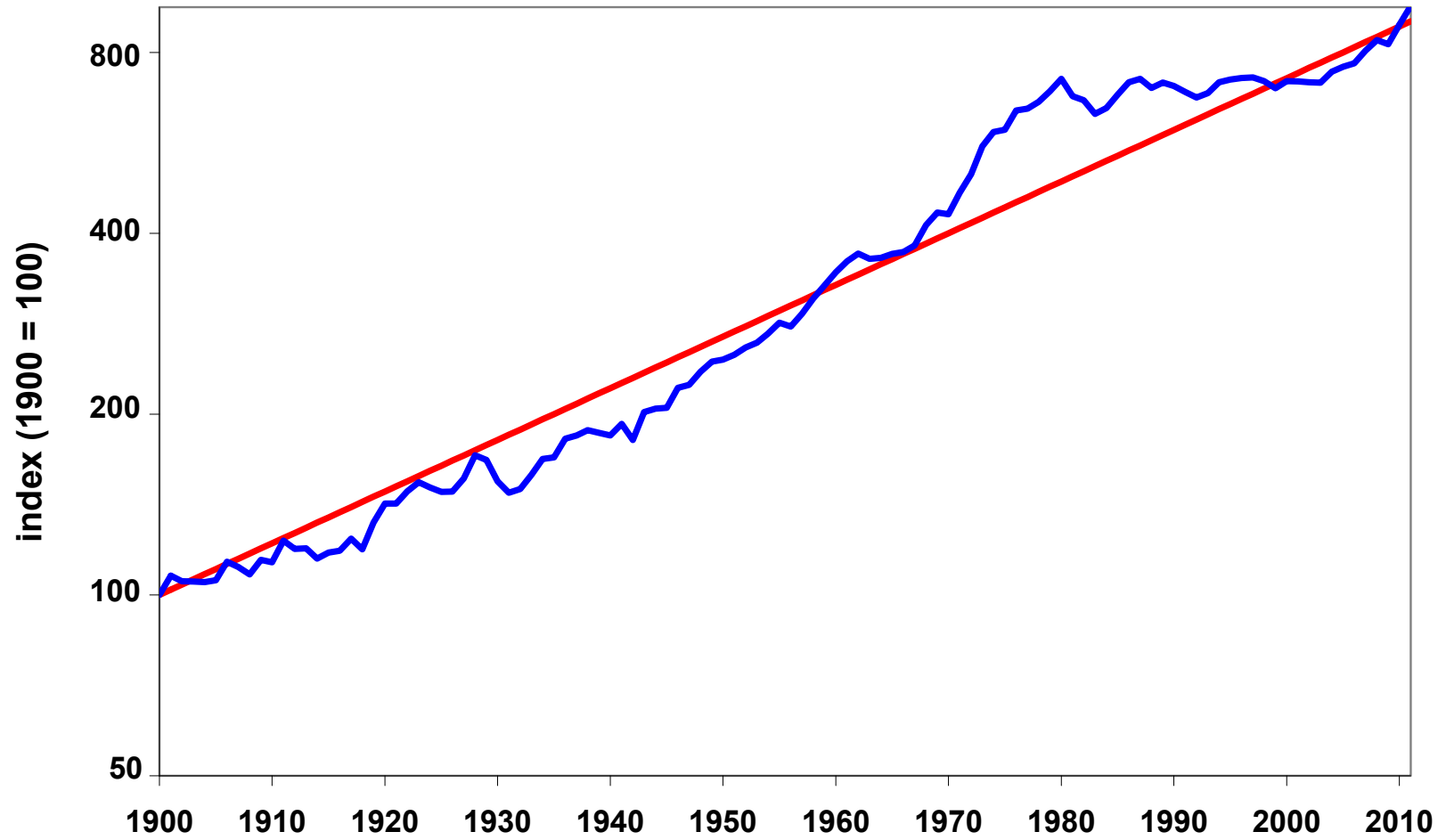
Follow-the-leader theory of growth



Real GDP per working-age person in Mexico



Real GDP per working-age person in Brazil



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

Rostow (1960), *The Stages of Economic Growth: A Non-Communist Manifesto*.

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

Reach 35 percent of GDP per capita of industrial leader (United Kingdom 1844–1903 and United States 1904–2010, excluding 1930–1940).

3. Joining the industrial leader

Reach 65 percent of GDP per capita relative to industrial leader and stay there.

Data

The Maddison Project:

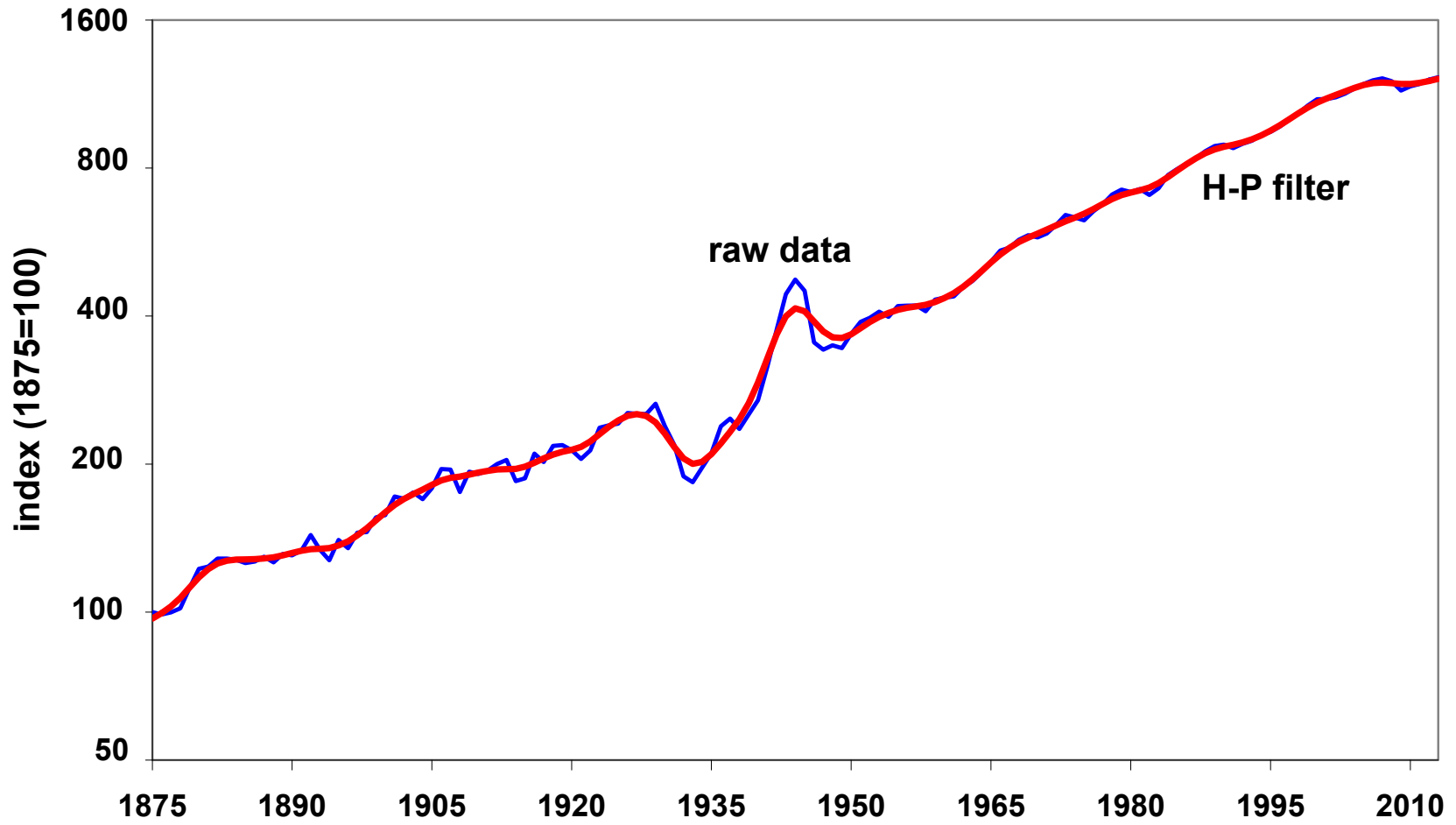
Bolt and van Zanden (2013), “The First Update of the Maddison Project: Re-Estimating Growth Before 1820.”

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



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

Rostow (1960), *The Stages of Economic Growth: A Non-Communist Manifesto*.

Hansen and Prescott (2002), “Malthus to Solow,” *American Economic Review*.

Clark (2007), *A Farewell to Alms: A Brief Economic History of the World*.

De Vries (2008), *The Industrious Revolution: Consumer Behavior and the Household Economy, 1650 to the Present*.

Deaton (2013), *The Great Escape: Health, Wealth, and the Origins of Inequality*.

Take-off into sustained growth is associated with

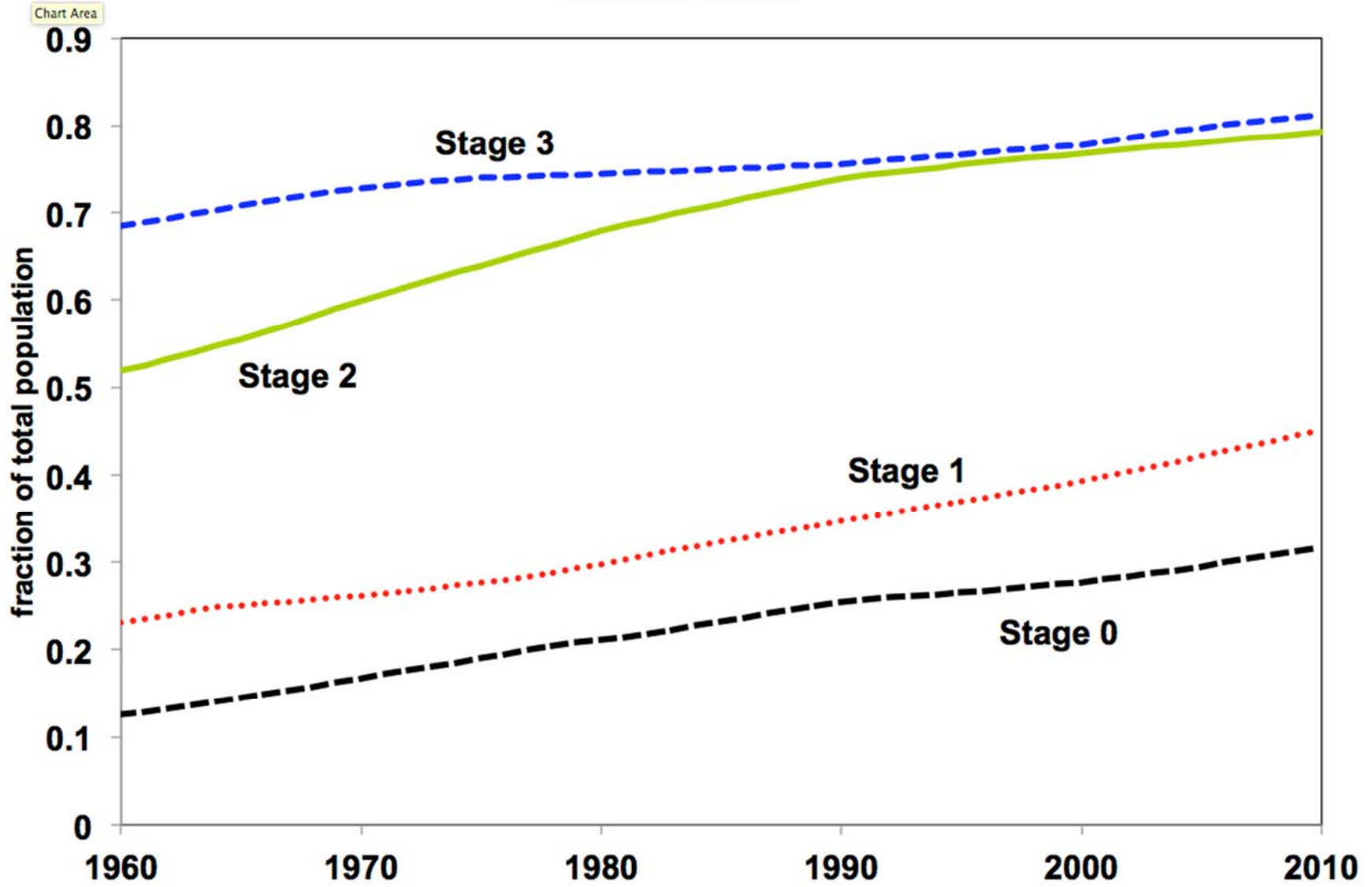
Urbanization

Industrialization

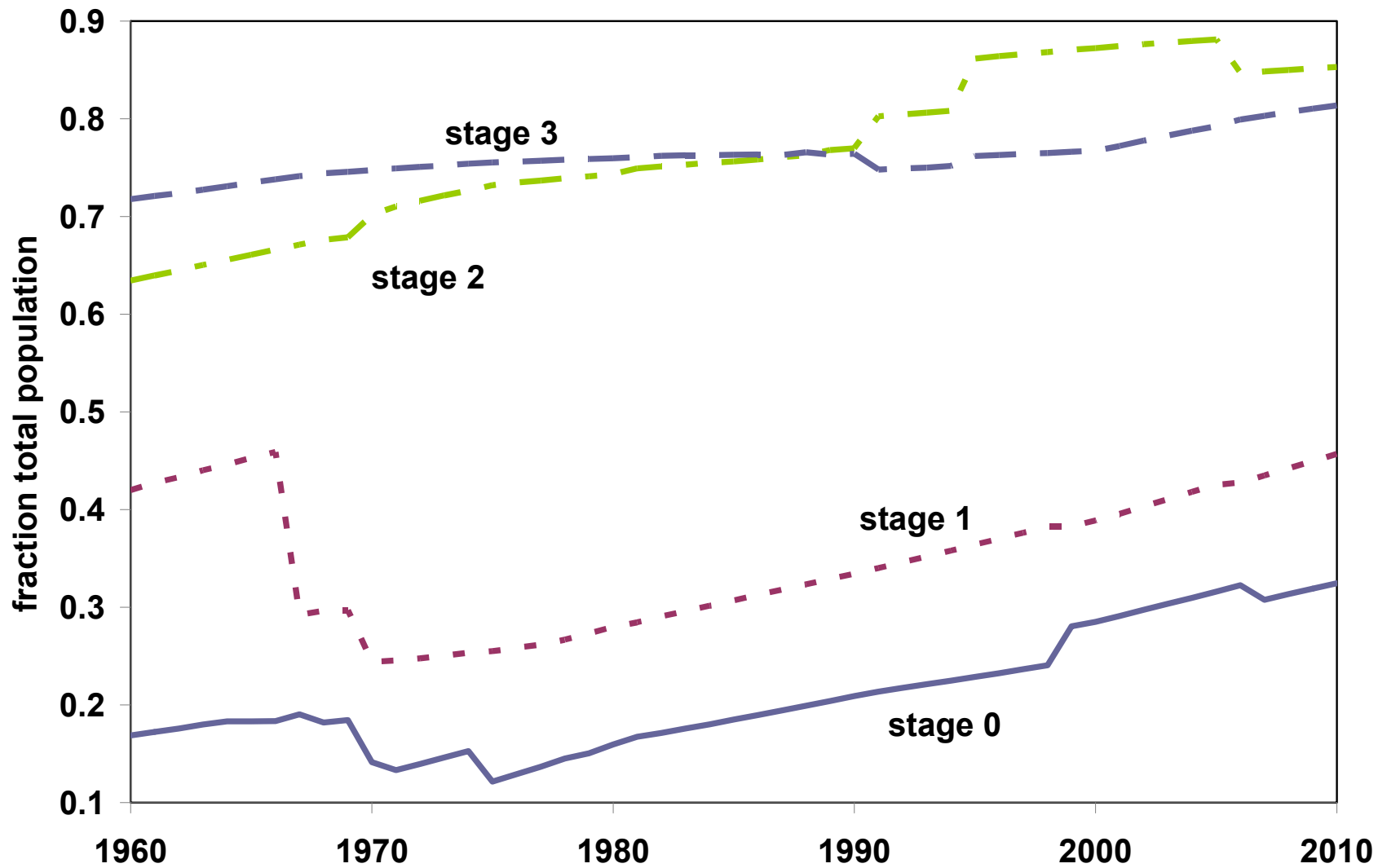
Education

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

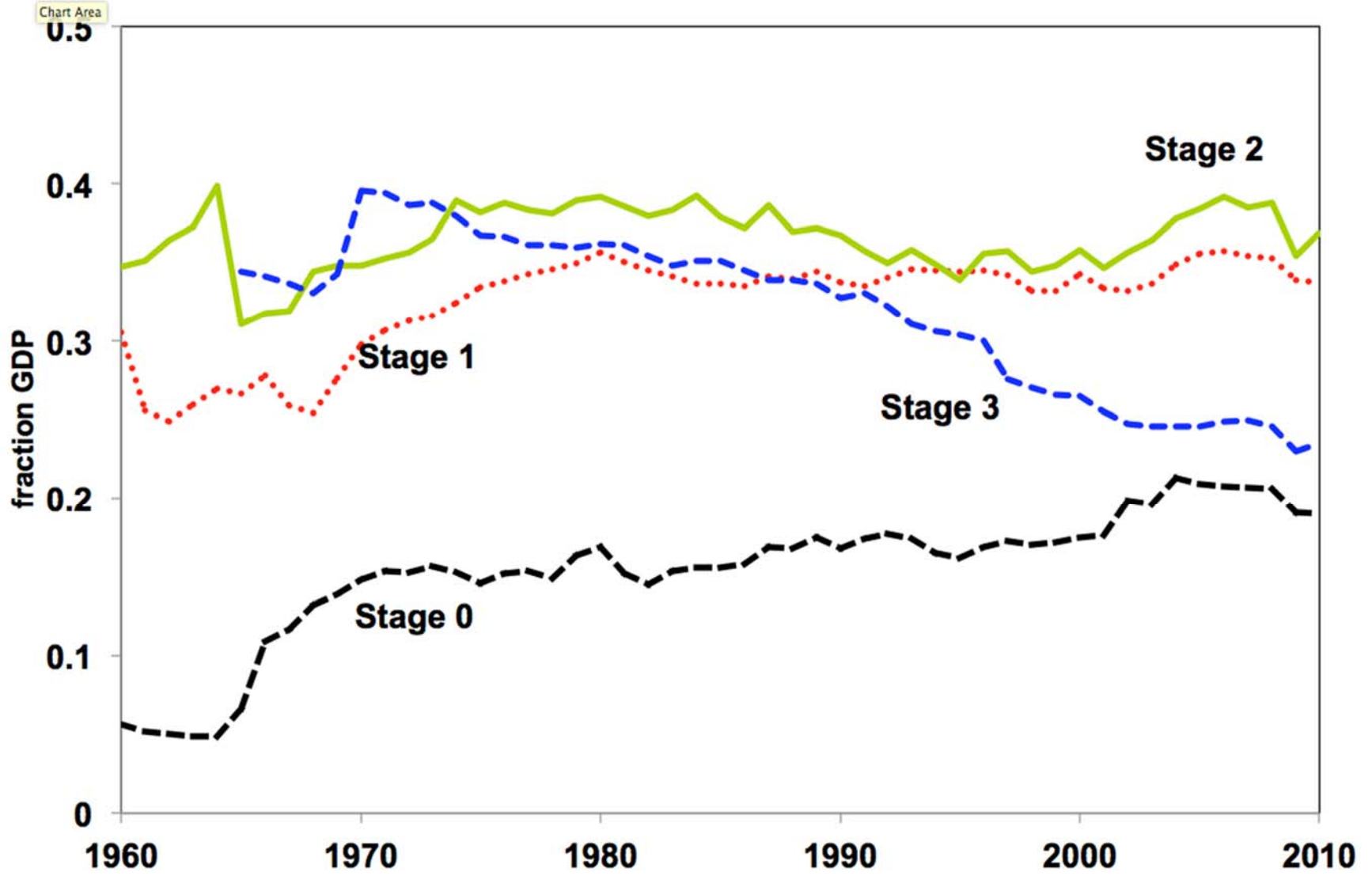
Urbanization



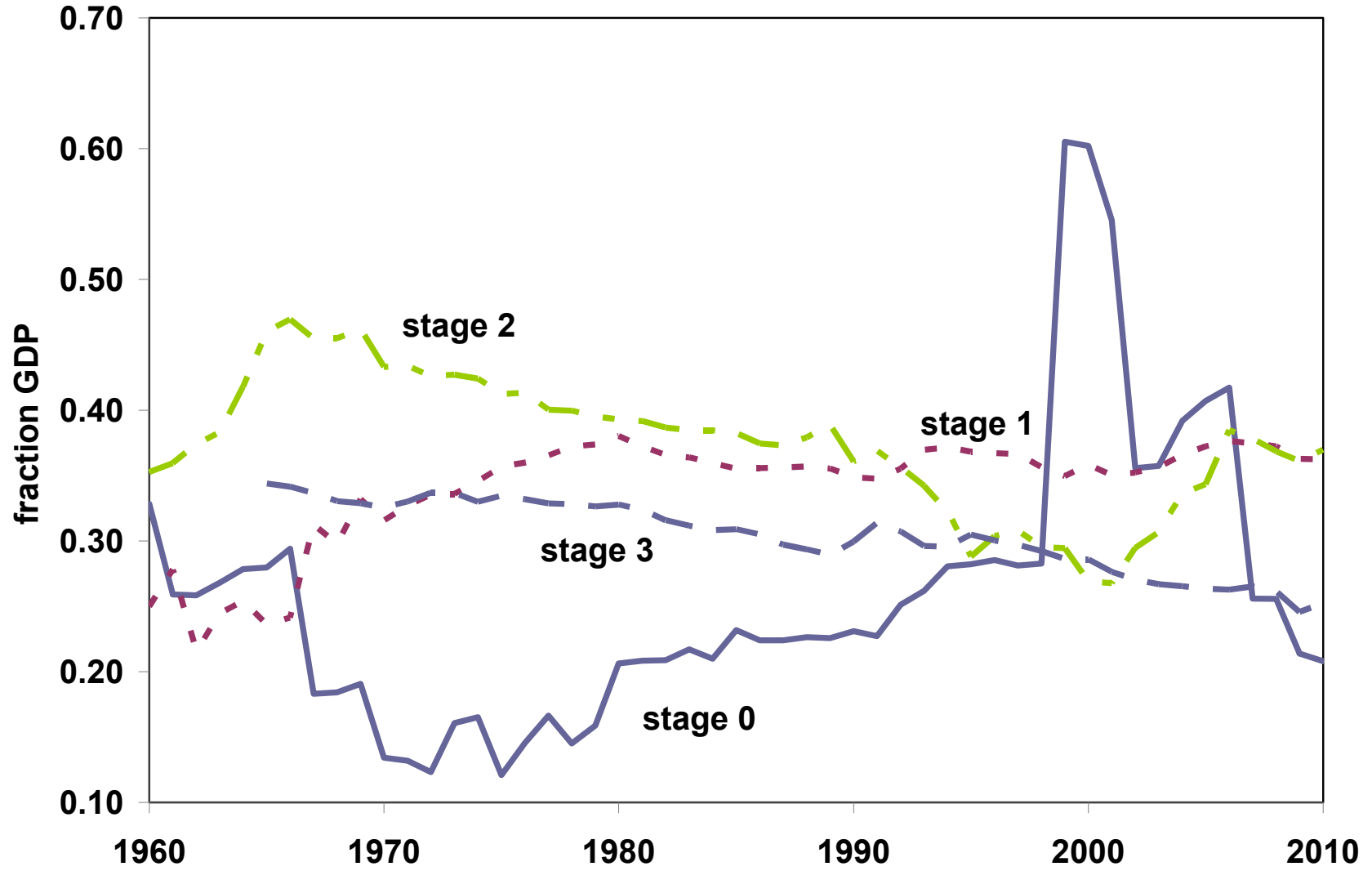
Urbanization



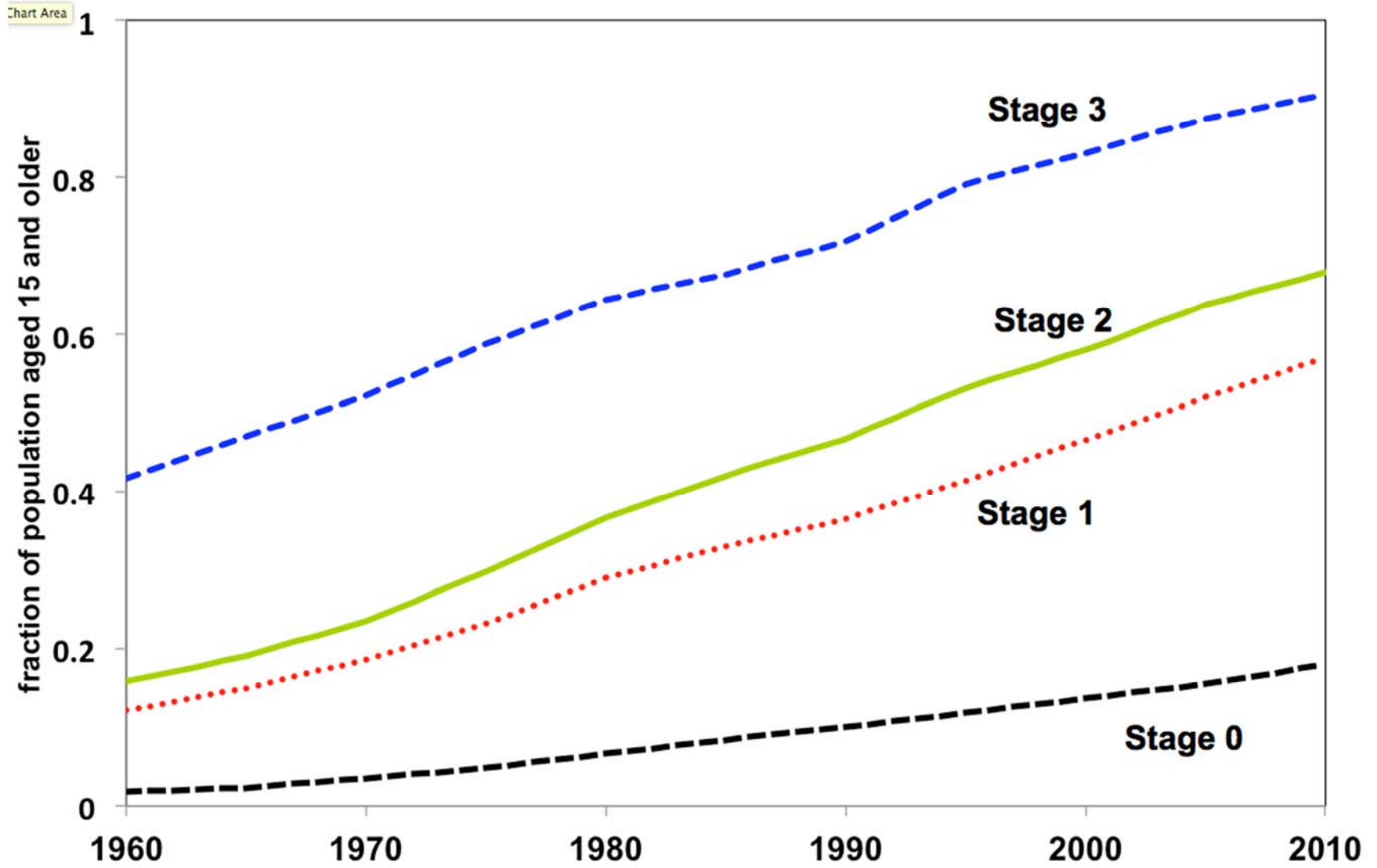
Industrialization



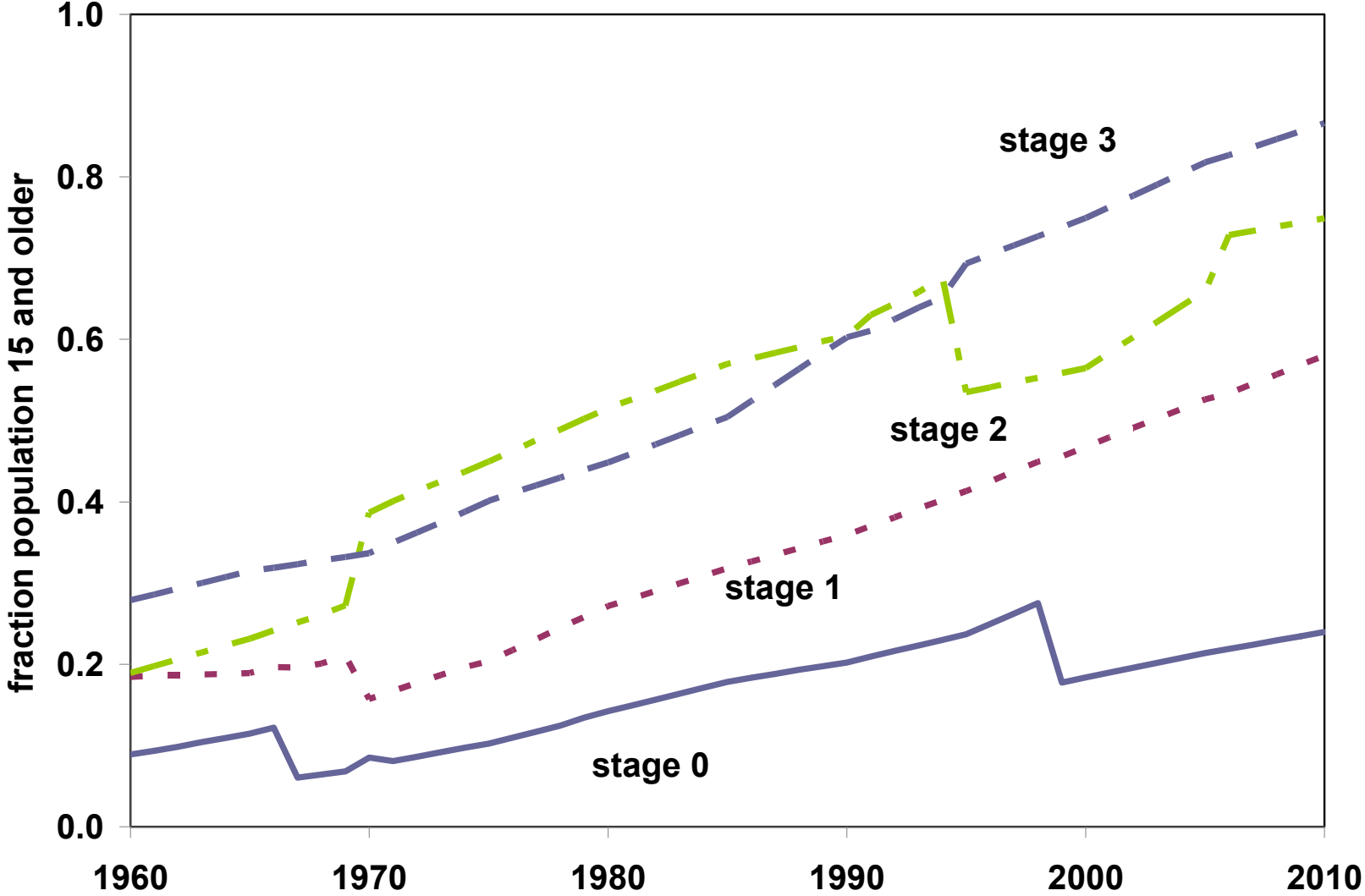
Industrialization



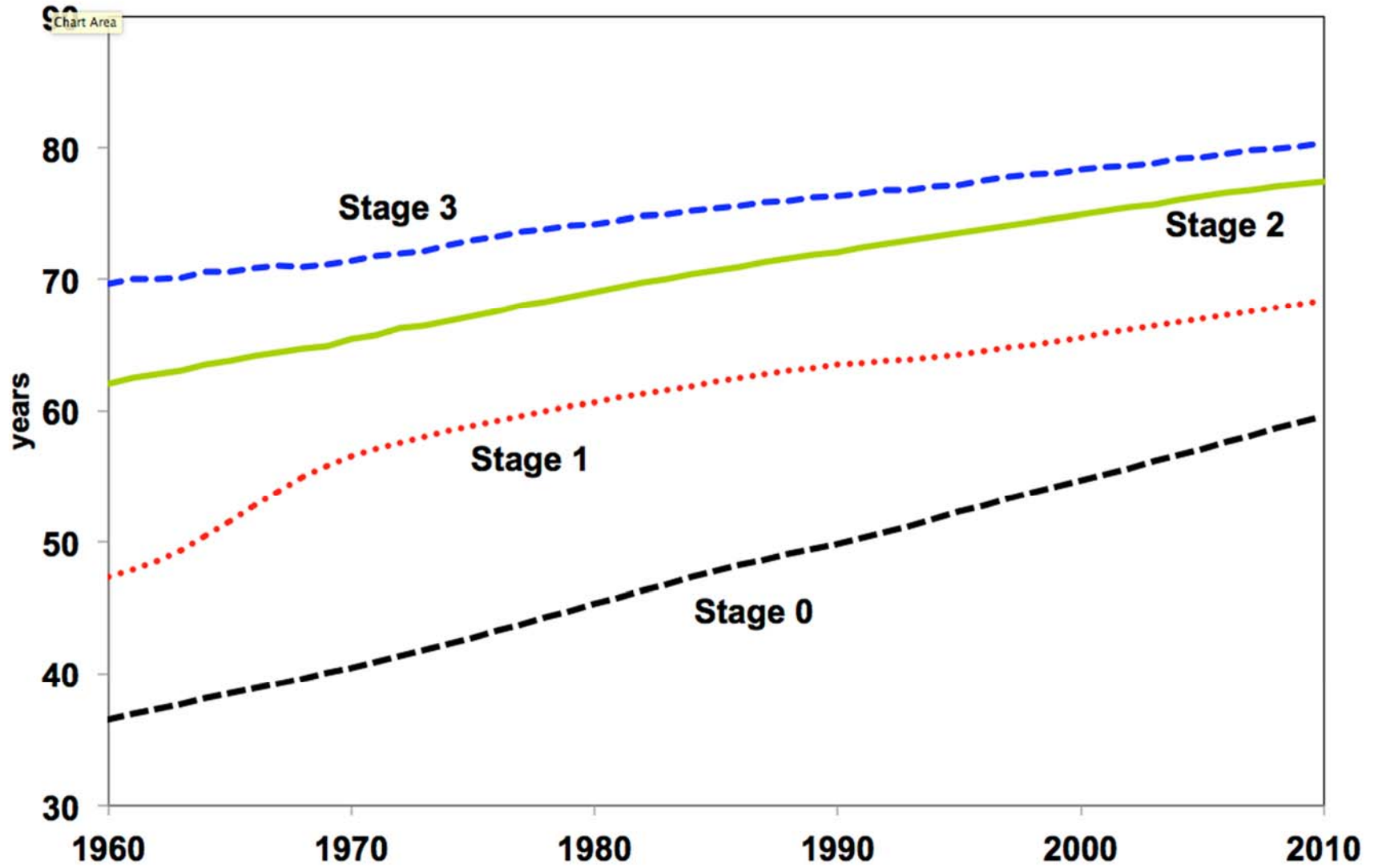
Population with secondary education



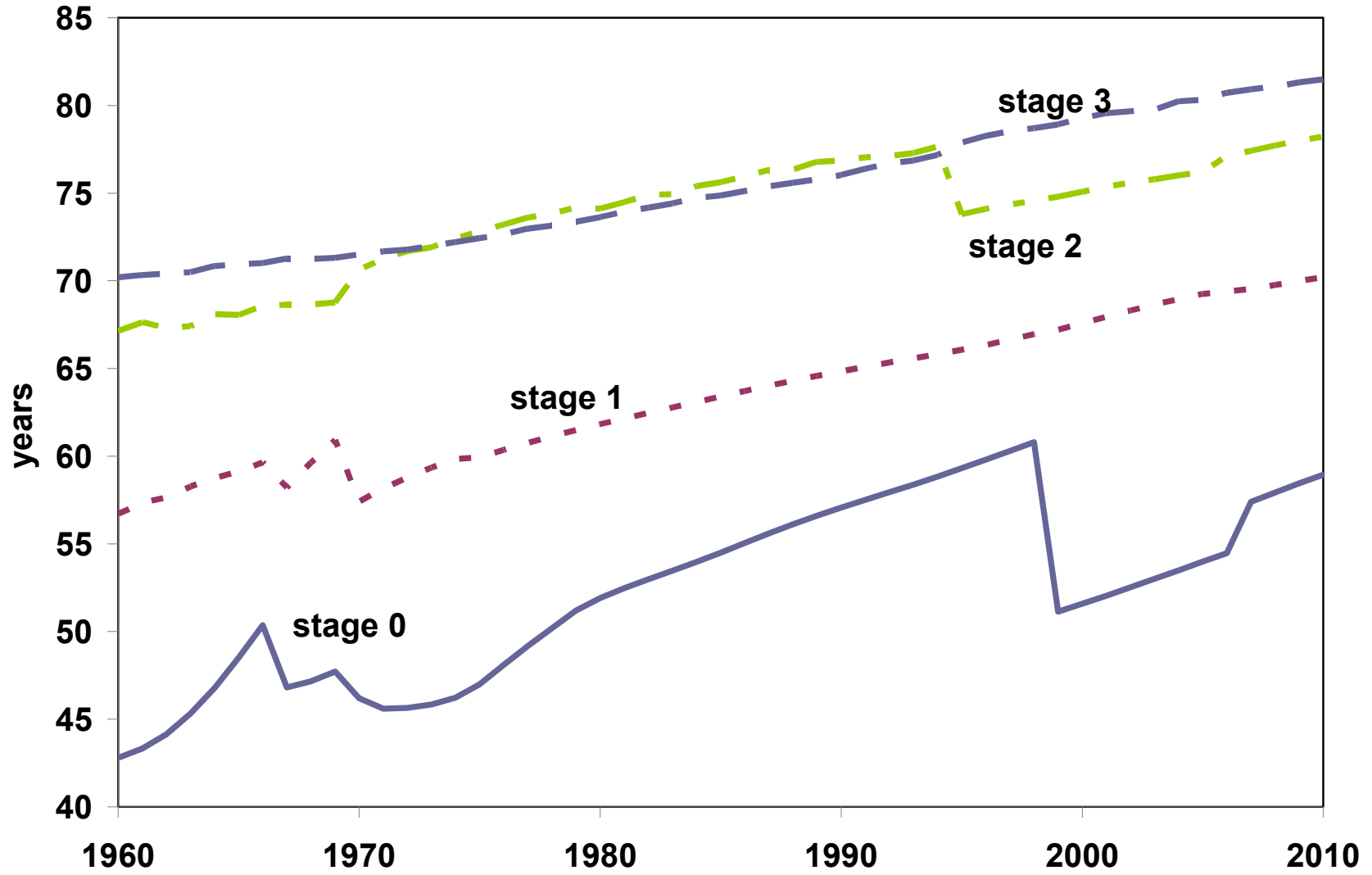
Population with secondary education



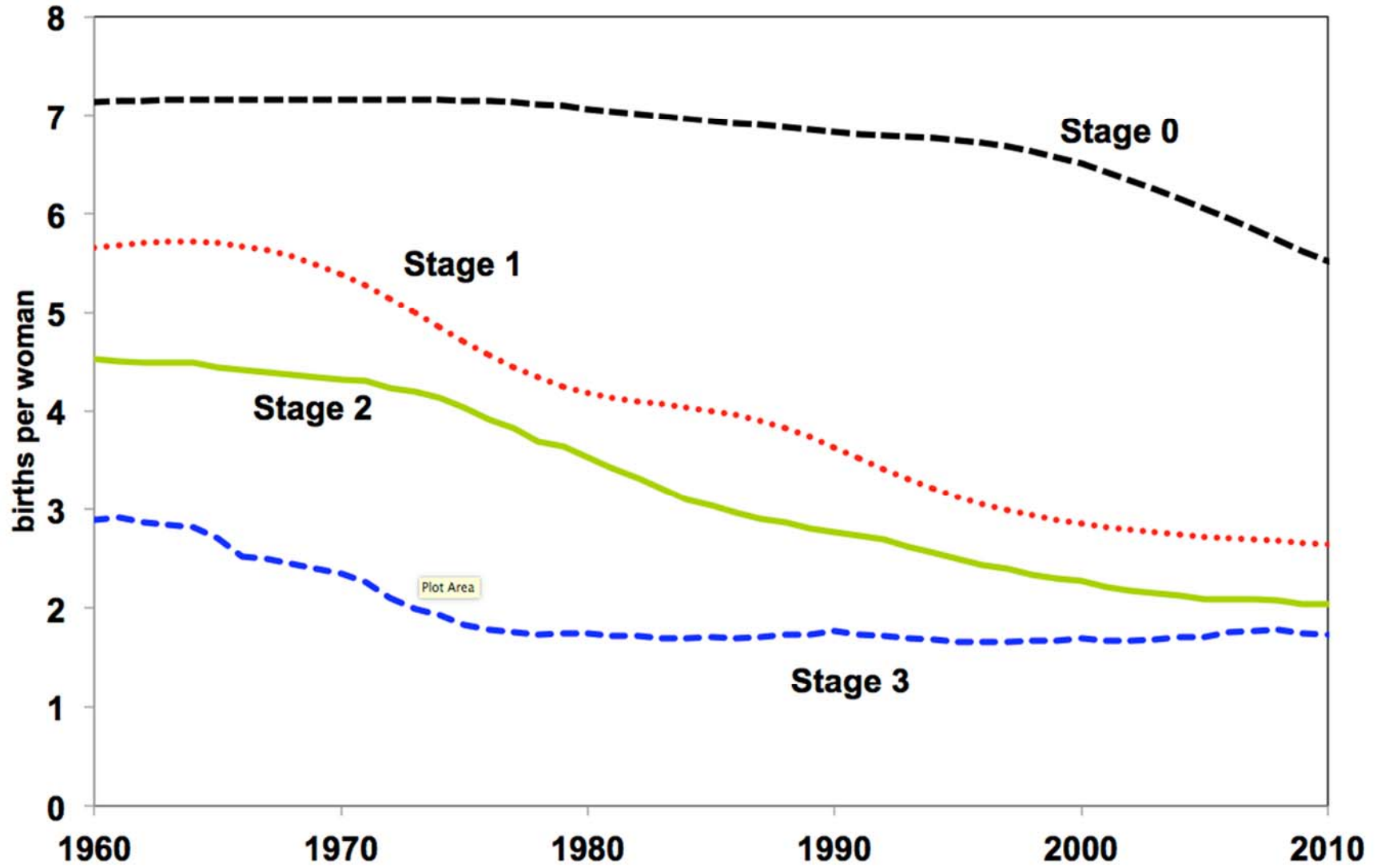
Life expectancy at birth



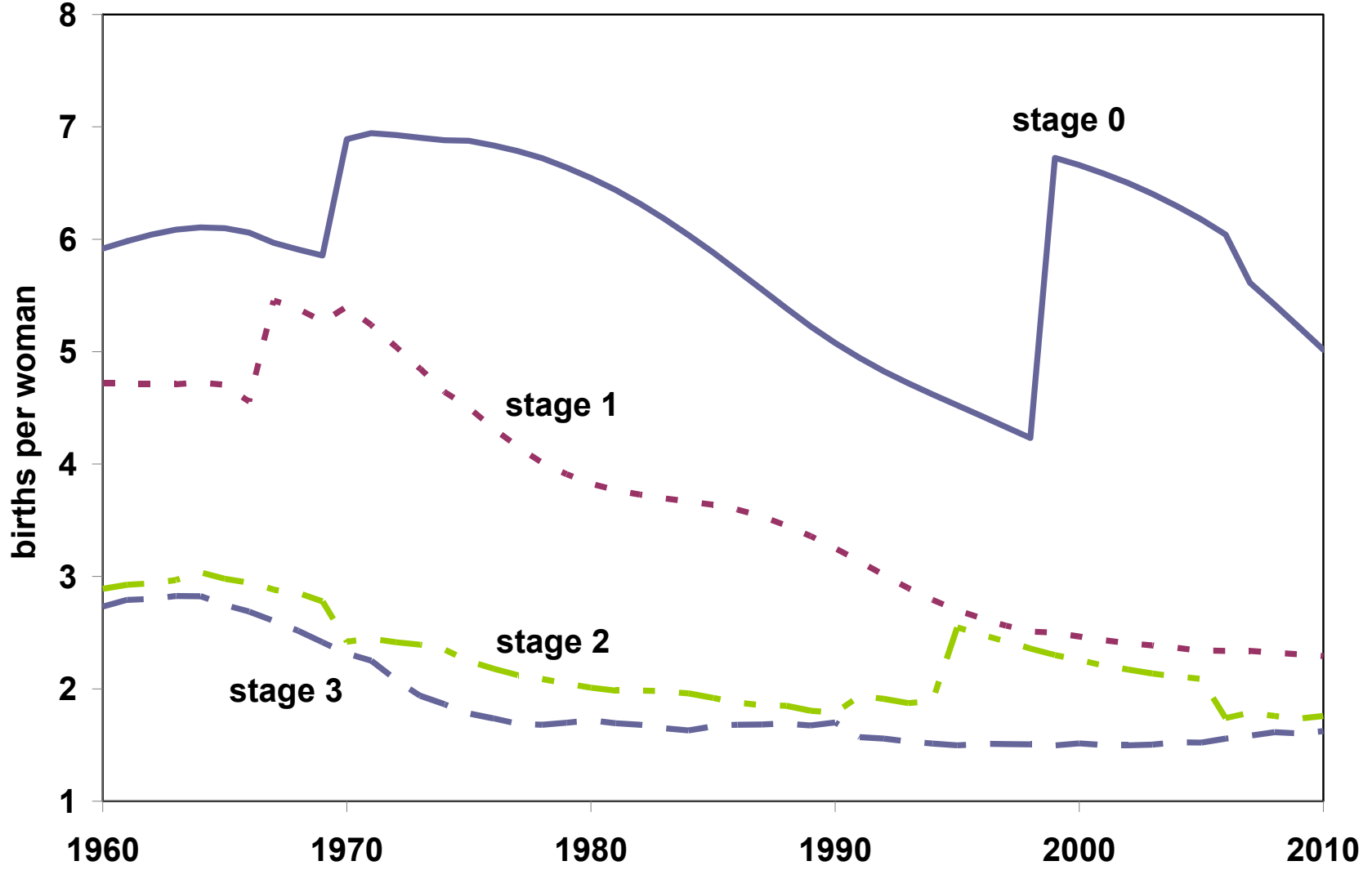
Life expectancy at birth



Fertility rate



Fertility rate



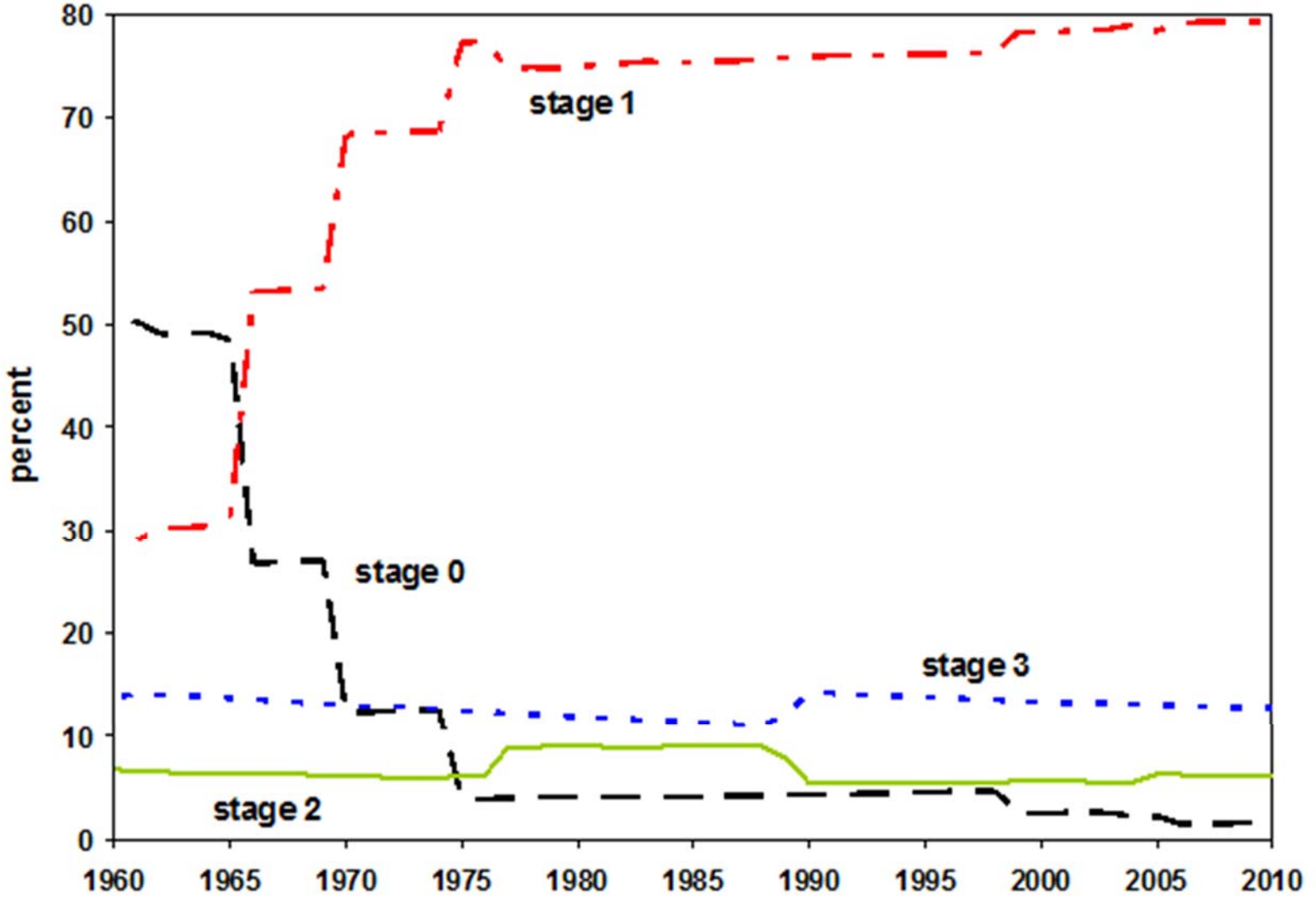
Lessons from Stages of Growth Project

Stage 1 — the take-off into sustained growth — has become easier over time.

As countries fail to pass at different stages, their socio-economic characteristics do not revert.

In terms of world population, most economic development has occurred since 1950.

World Population by Stage



Power of productivity

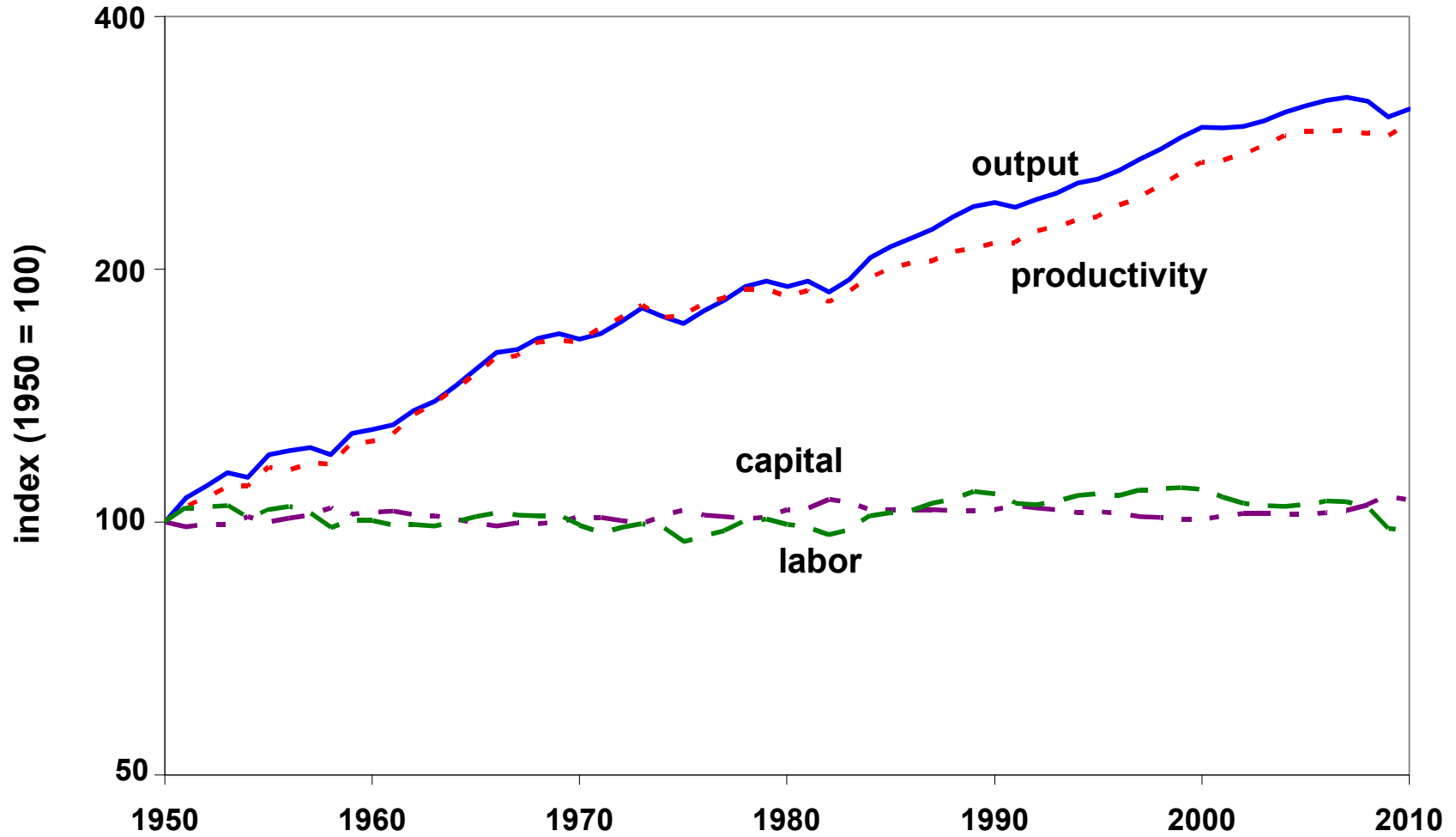
$$Y_t = A_t K_t^\alpha L_t^{1-\alpha}$$

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

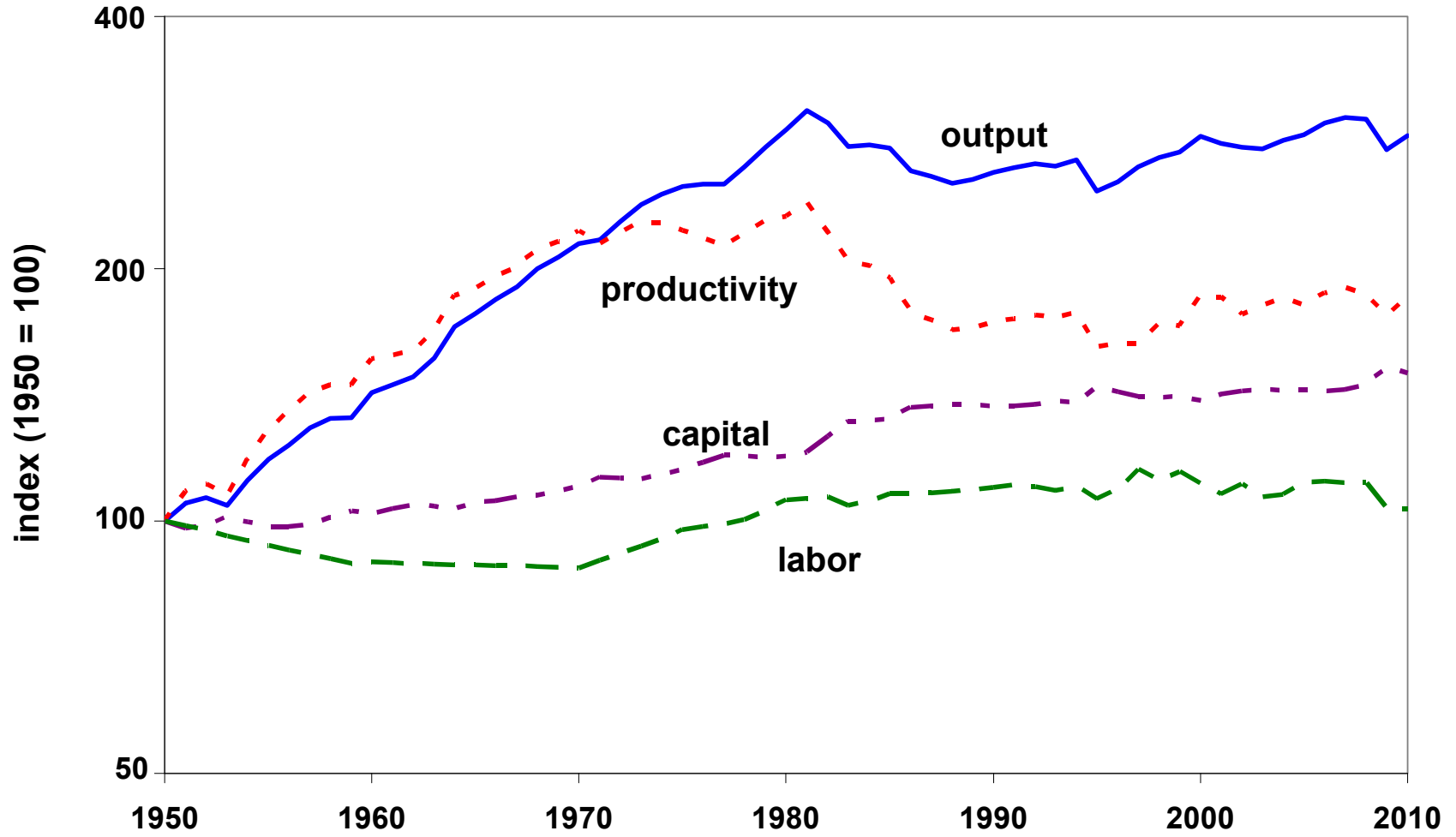
Lewis (2005), *The Power of Productivity: Wealth, Poverty, and the Threat to Global Stability*.

Best practice

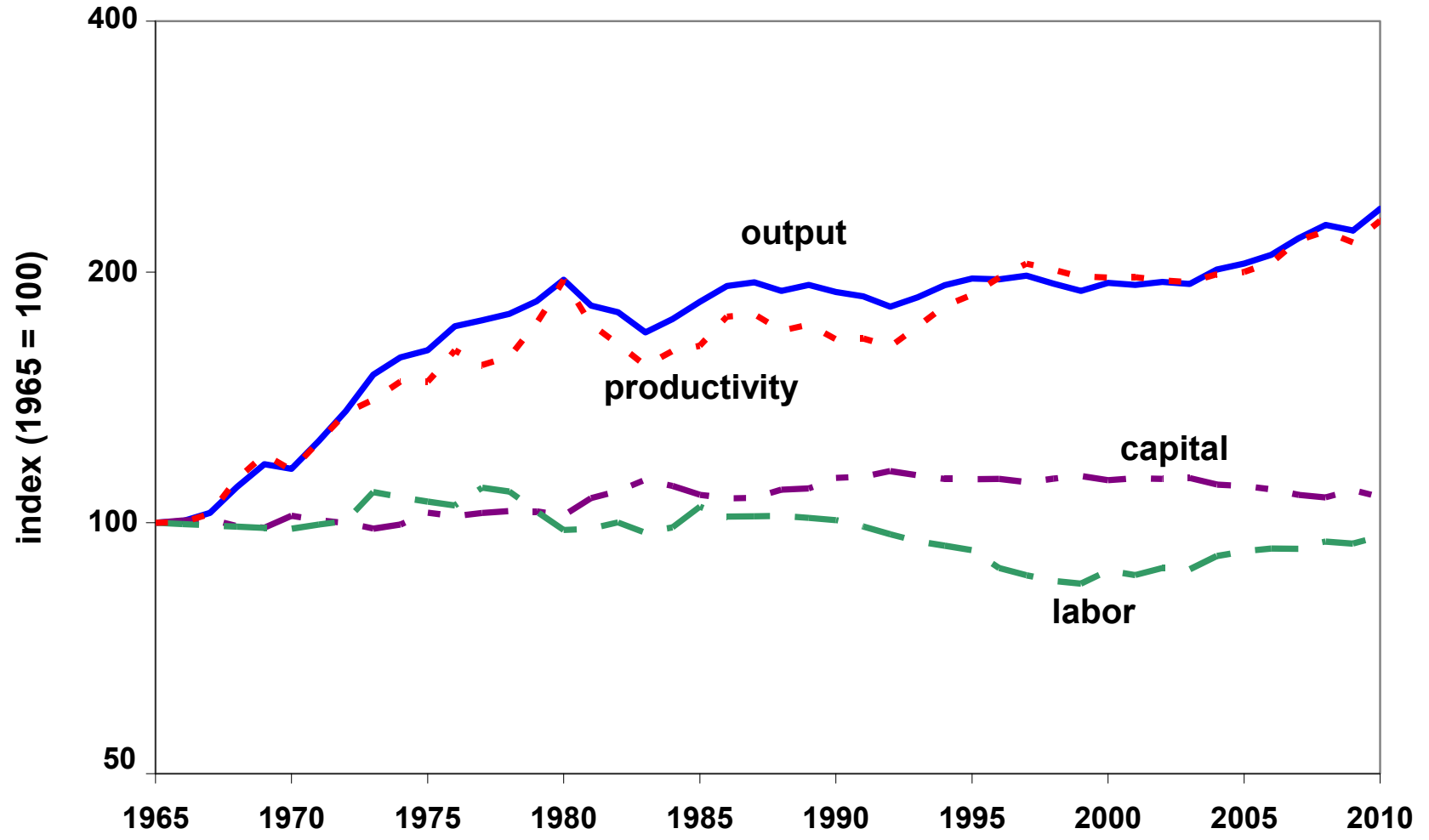
Growth accounting for the United States



Growth accounting for Mexico



Growth accounting for Brazil



Power of productivity

North (1968), “Sources of Productivity Change in Ocean Shipping, 1600-1850,” *Journal of Political Economy*.

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 joining stages

Asturias, Hur, Kehoe, and Ruhl (2014), “Firm Entry and Exit and Aggregate Growth.”

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?

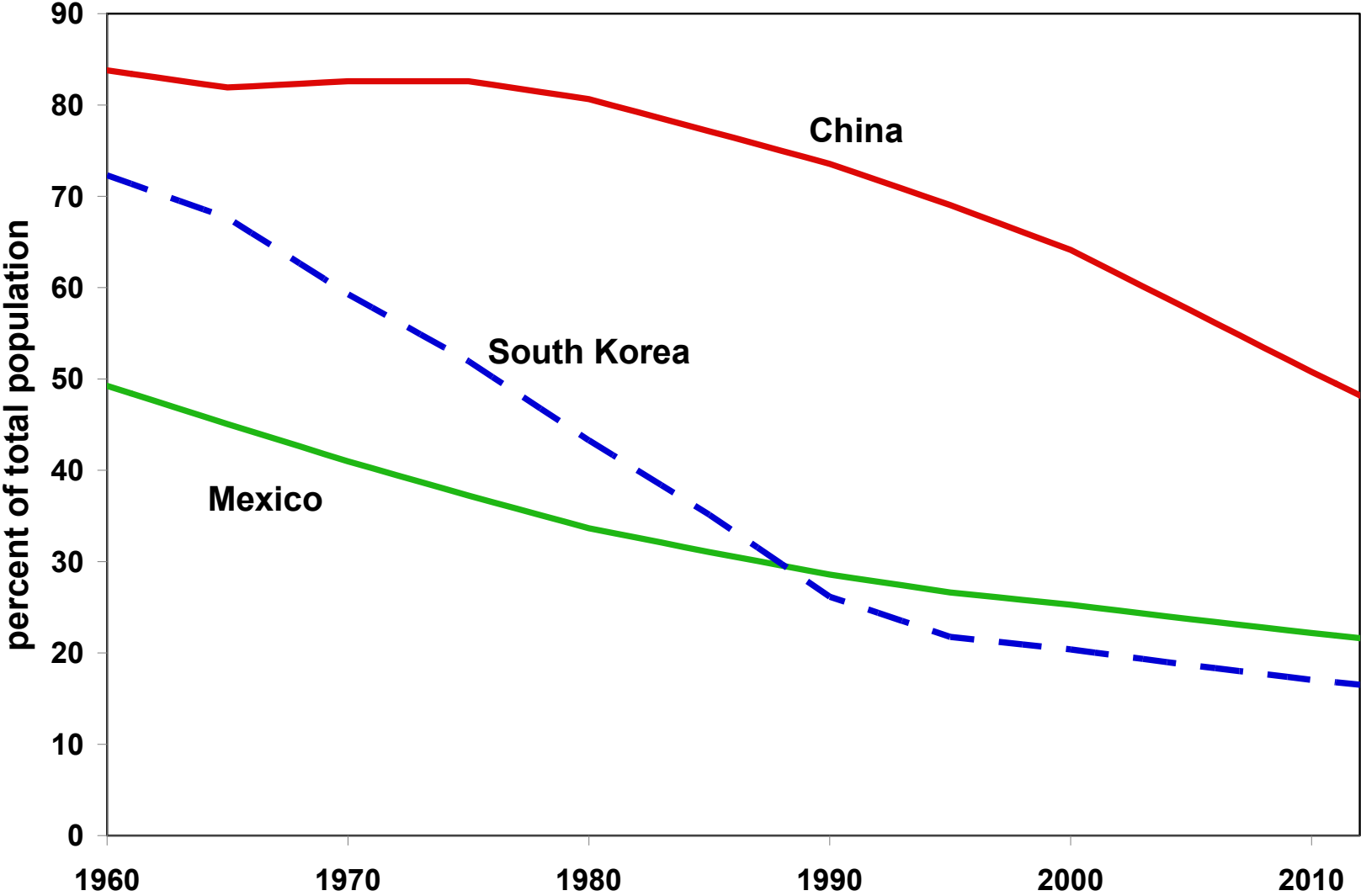
For the same reasons that Mexico grew rapidly between 1950 and 1980:

Urbanization

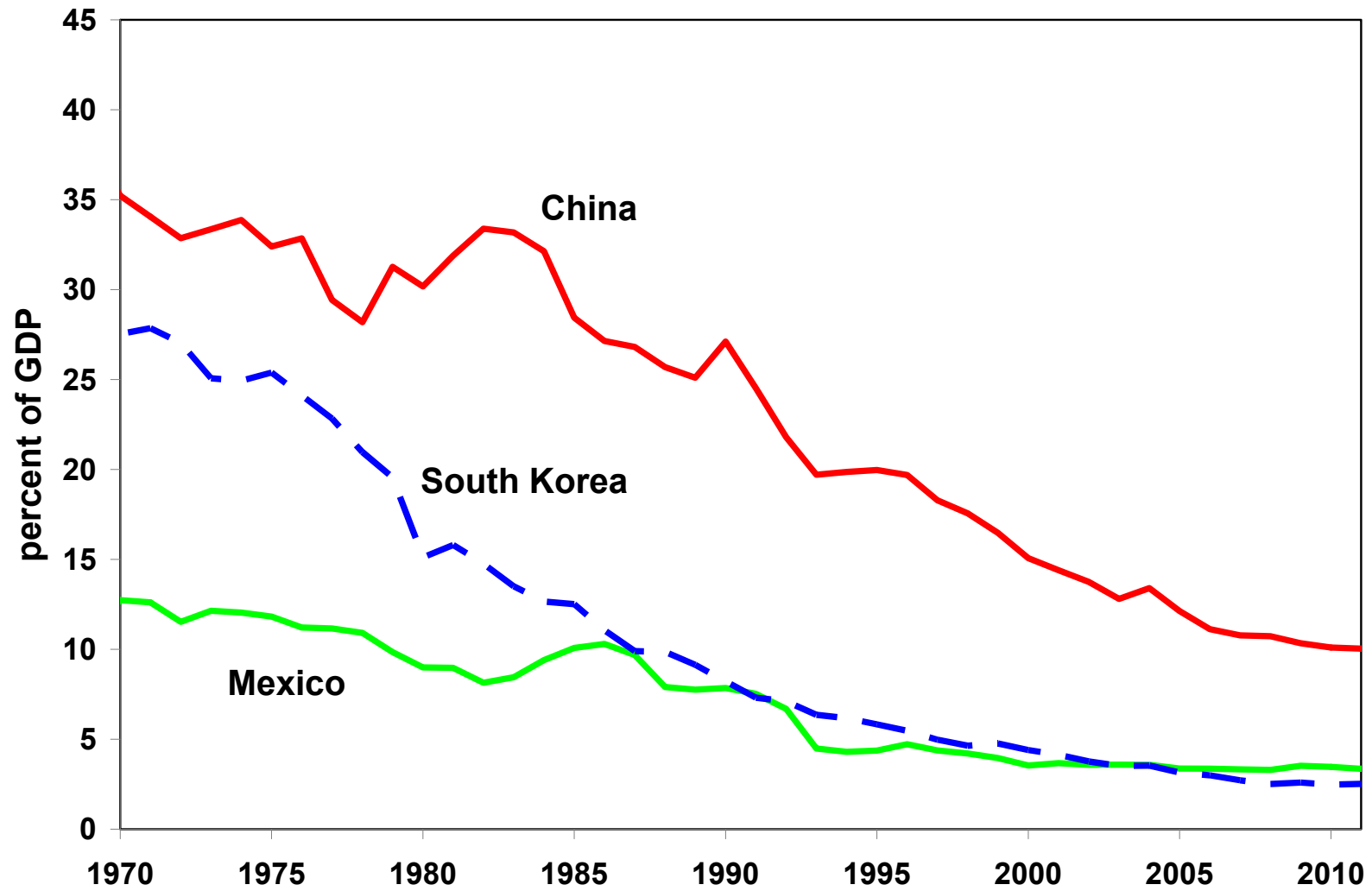
Industrialization

Education

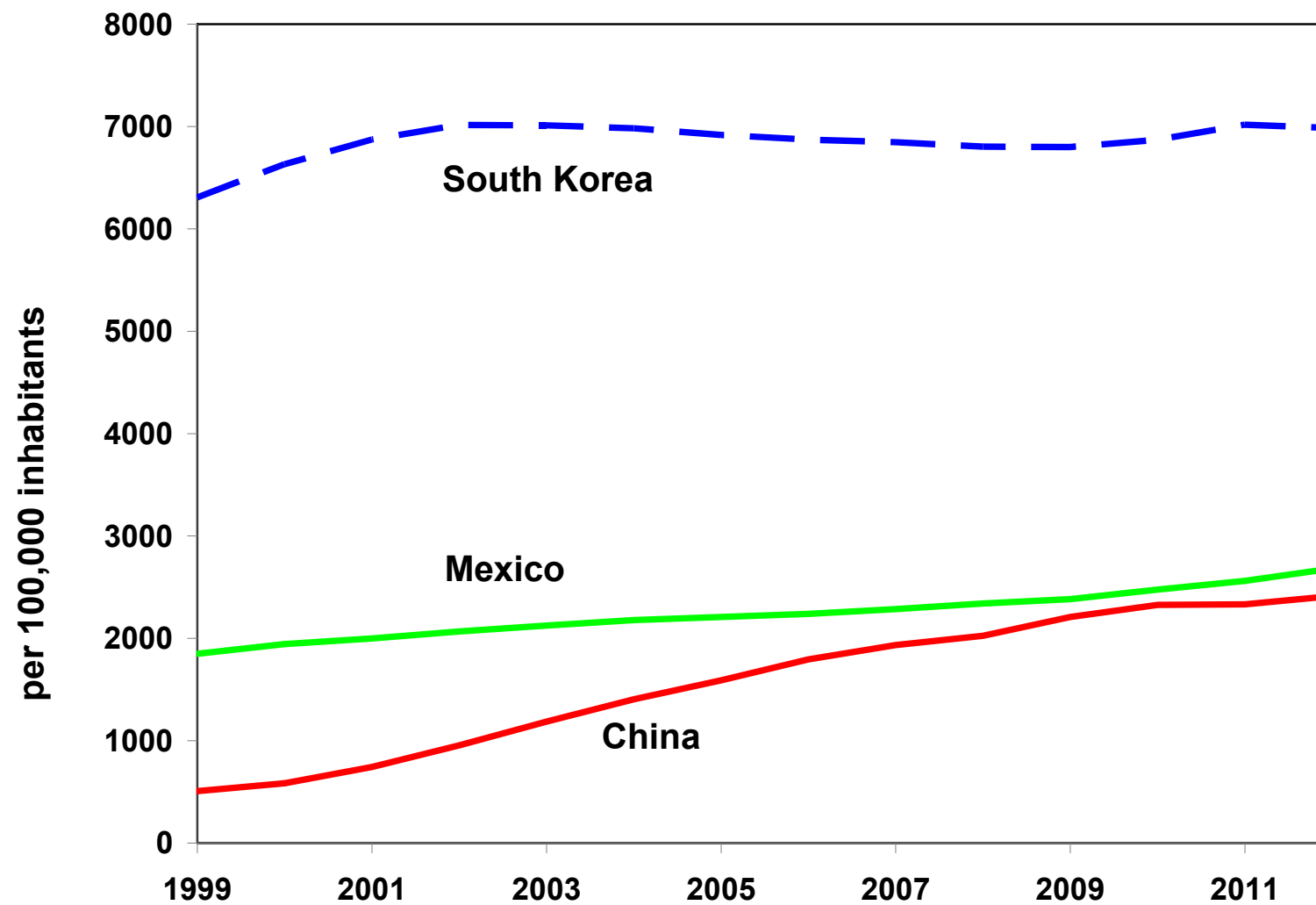
Rural population



Agriculture value added



Enrollment in tertiary education



But why is China growing so rapidly?

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

Urbanization

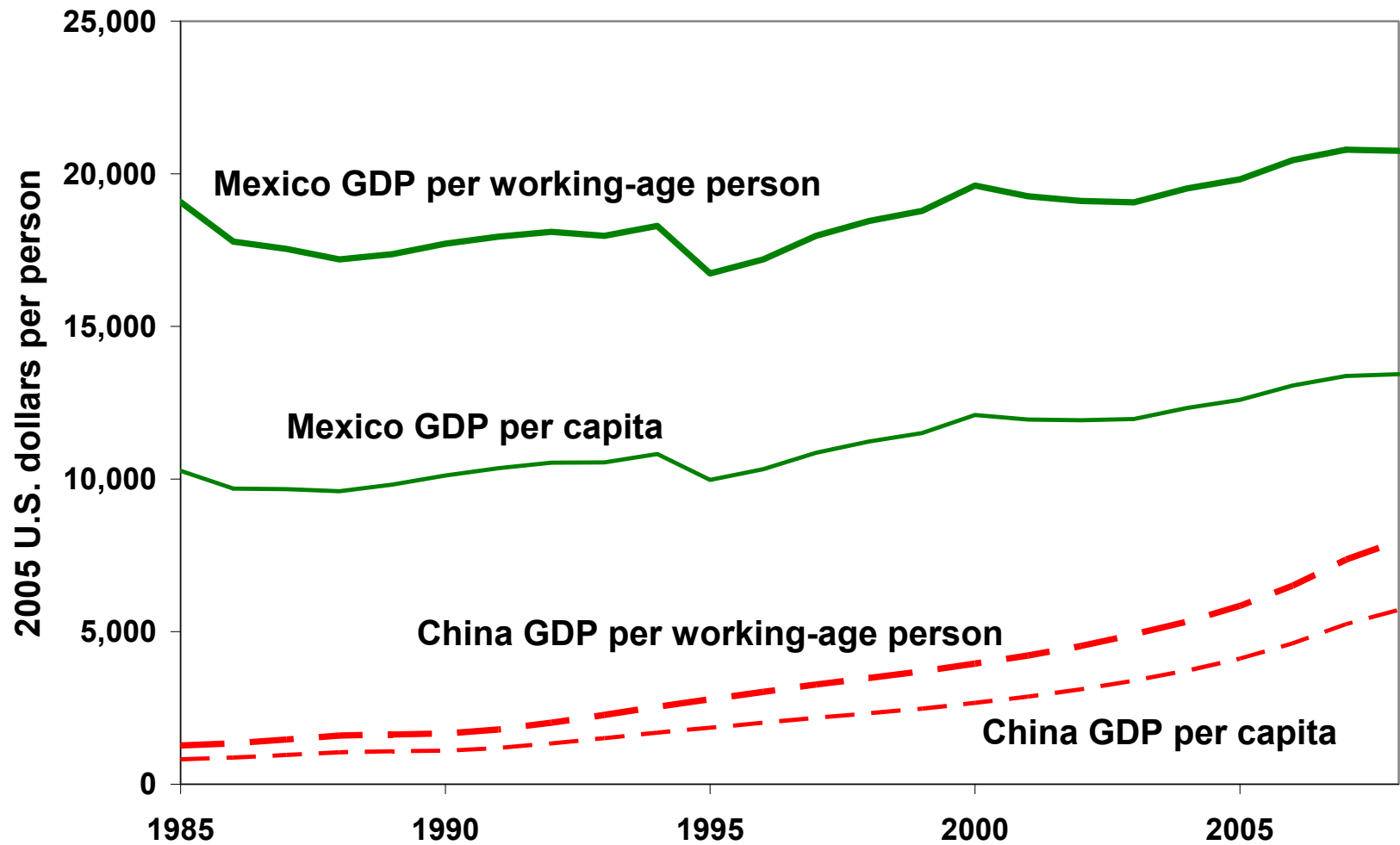
Industrialization

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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



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.