

# ECONOMIC GROWTH

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September 19, 2005

# ANNOUNCEMENTS

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- Homework due on Wednesday
  - Next Two Weeks: Economic Growth
  - OUTLINE FOR TODAY
    - What is economic growth?
    - Why is it important
    - The Solow Model
      - The set up
      - Evolution of capital
      - Deriving the steady state
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# WHAT IS ECONOMIC GROWTH?

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- Economic Growth is concerned with the long run performance of countries; delving into the question of why some countries are so rich and others so poor
  - The mechanisms by which these performance differences arise (the source of these differences) are what growth economists research
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# WHY IS GROWTH IMPORTANT?

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- Translated over several decades, a small difference in growth rates of GDP per capita can translate into enormous differences in GDP levels
    - *Simple example: bank account @ 10%*
    - *Rule of 72:  $72/g = \text{doubling time}$*
  - Recall that GDP is a 'rough and ready' measure of economic well-being...this is okay because we are speaking on MAJOR differences & we are speaking of changes over time (consistent biases eliminated)
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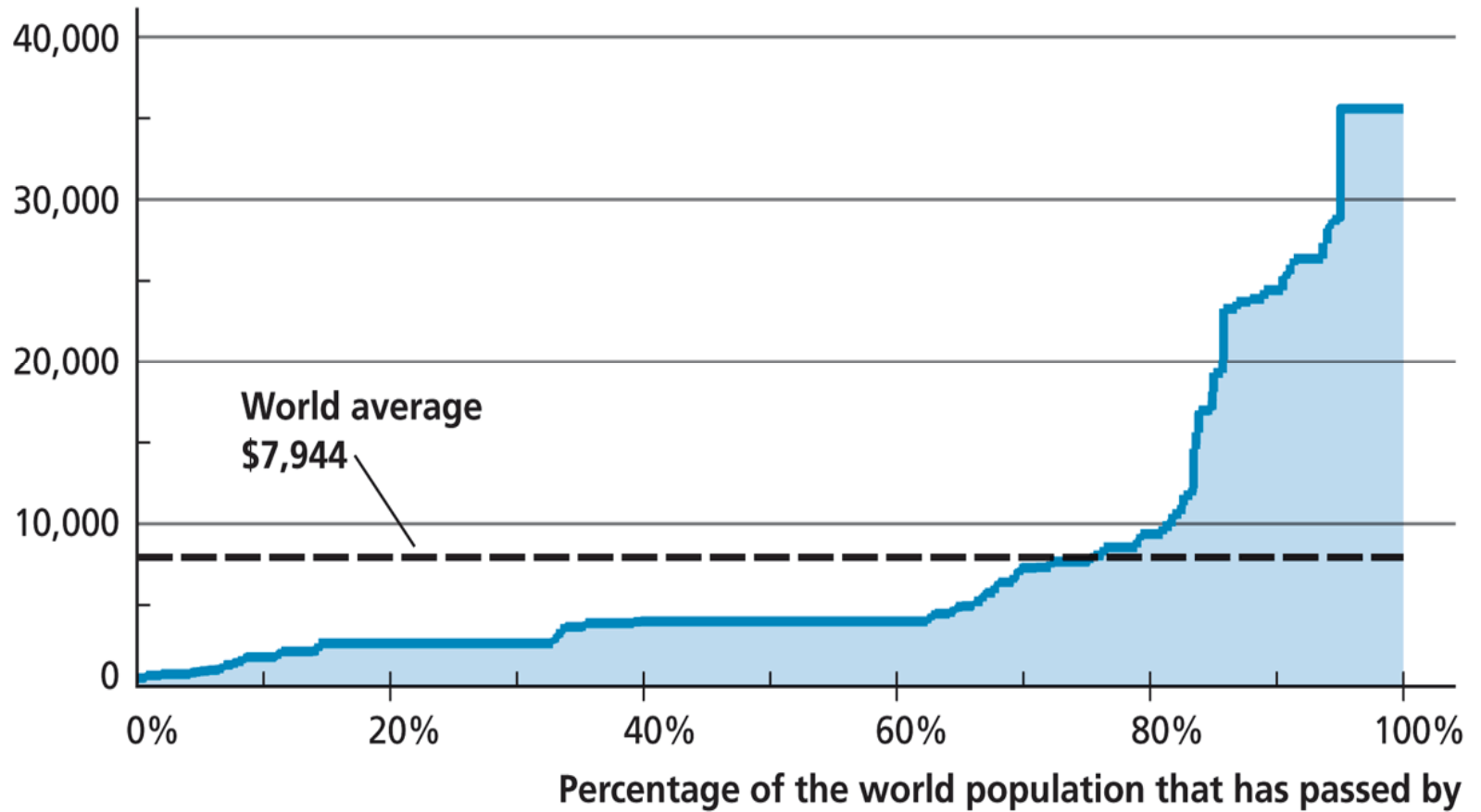
# Aspects of GDP...

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- Controlled for price levels
    - Purchasing Power Parity
    - Inflation
    - Think that everything is in real terms
  - Don't think output or income; Think about the overall standard of living
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# The Parade of World Income

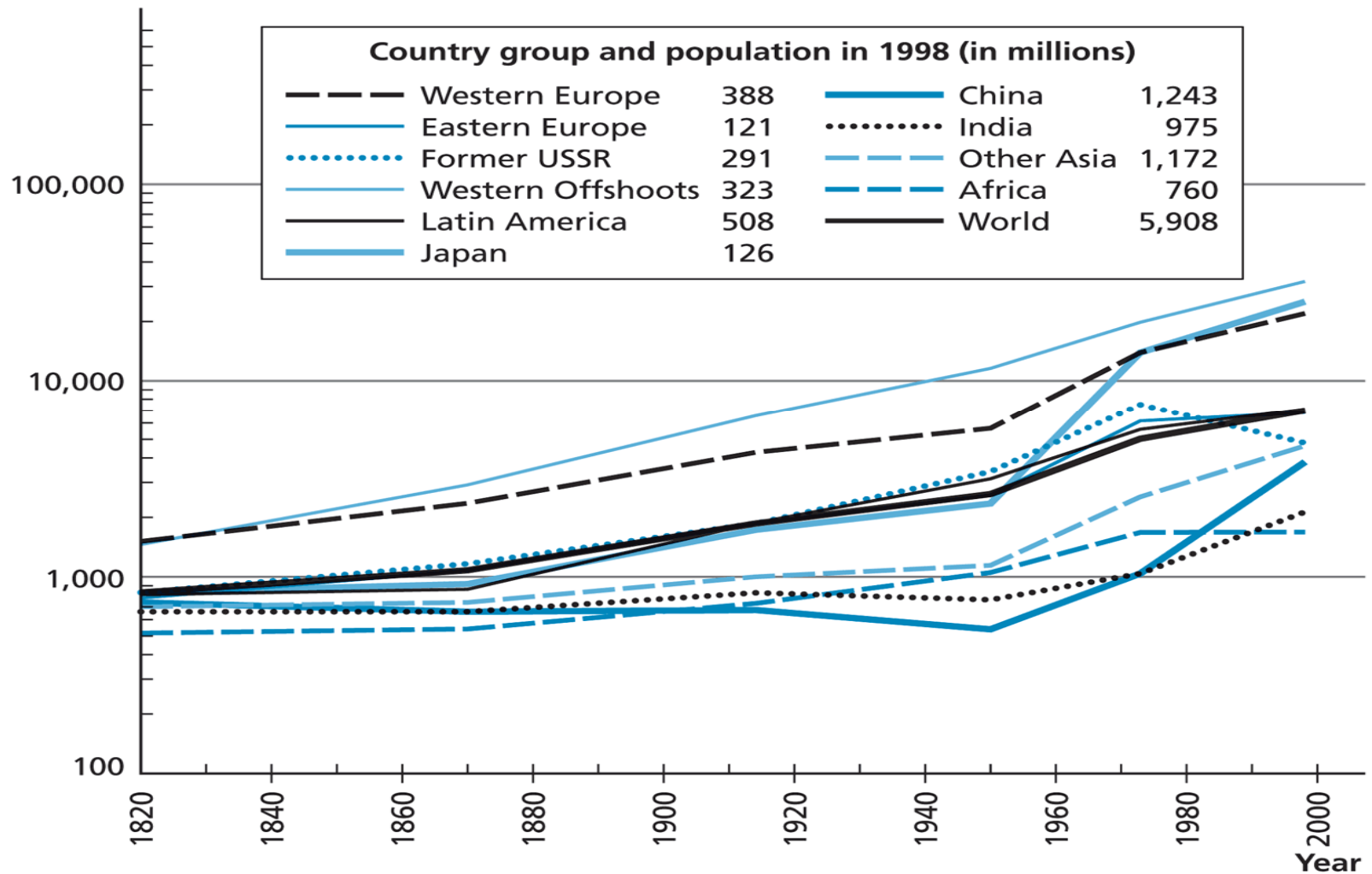
GDP per capita



Source: Heston, Summers, and Aten (2002).

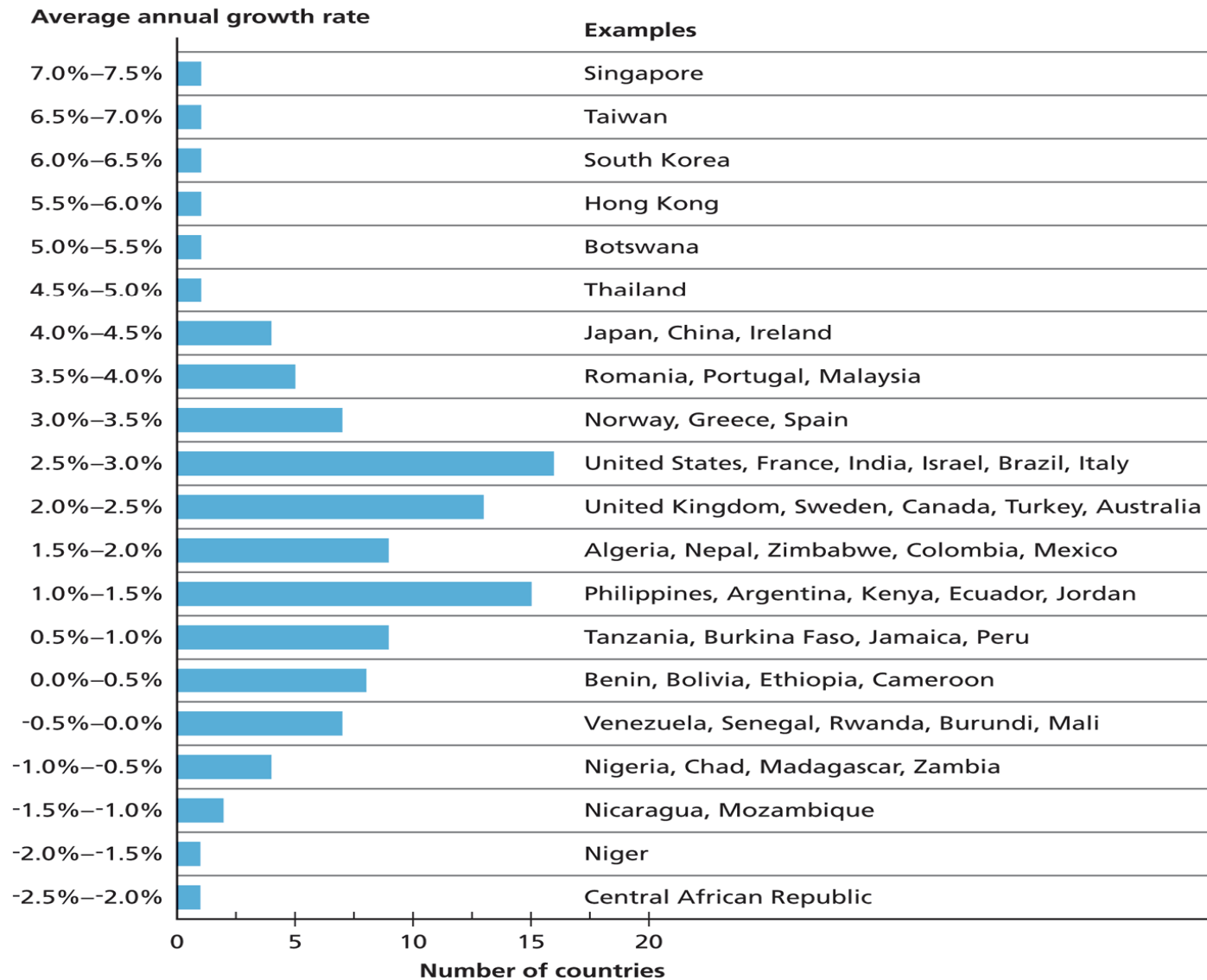
# GDP per Capita by Country Group, 1820–1998

GDP per capita (2000 dollars)



Source: Maddison (2001).

## The Distribution of Growth Rates, 1960–2000



Source: Heston, Summers, and Aten (2002).

# The Production Function

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- $Y = F(K, L)$  ;  $y = f(k)$
  - $Y$  is output;  $y$  is output per worker
  - $K$  is capital;  $k$  is capital per worker
  - $L$  is labor
  - If  $F(K, L) = AK^\alpha L^\beta$  what is alpha?
  - (boardwork...why Cobb Douglas)
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# The Production Function

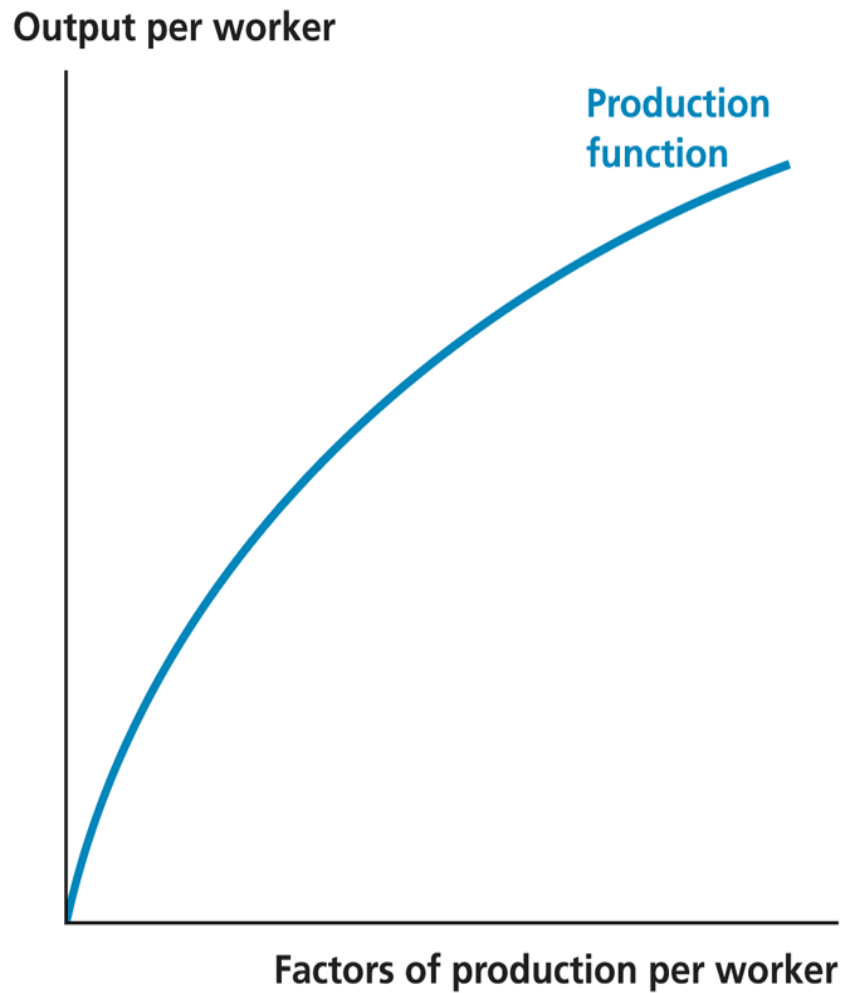
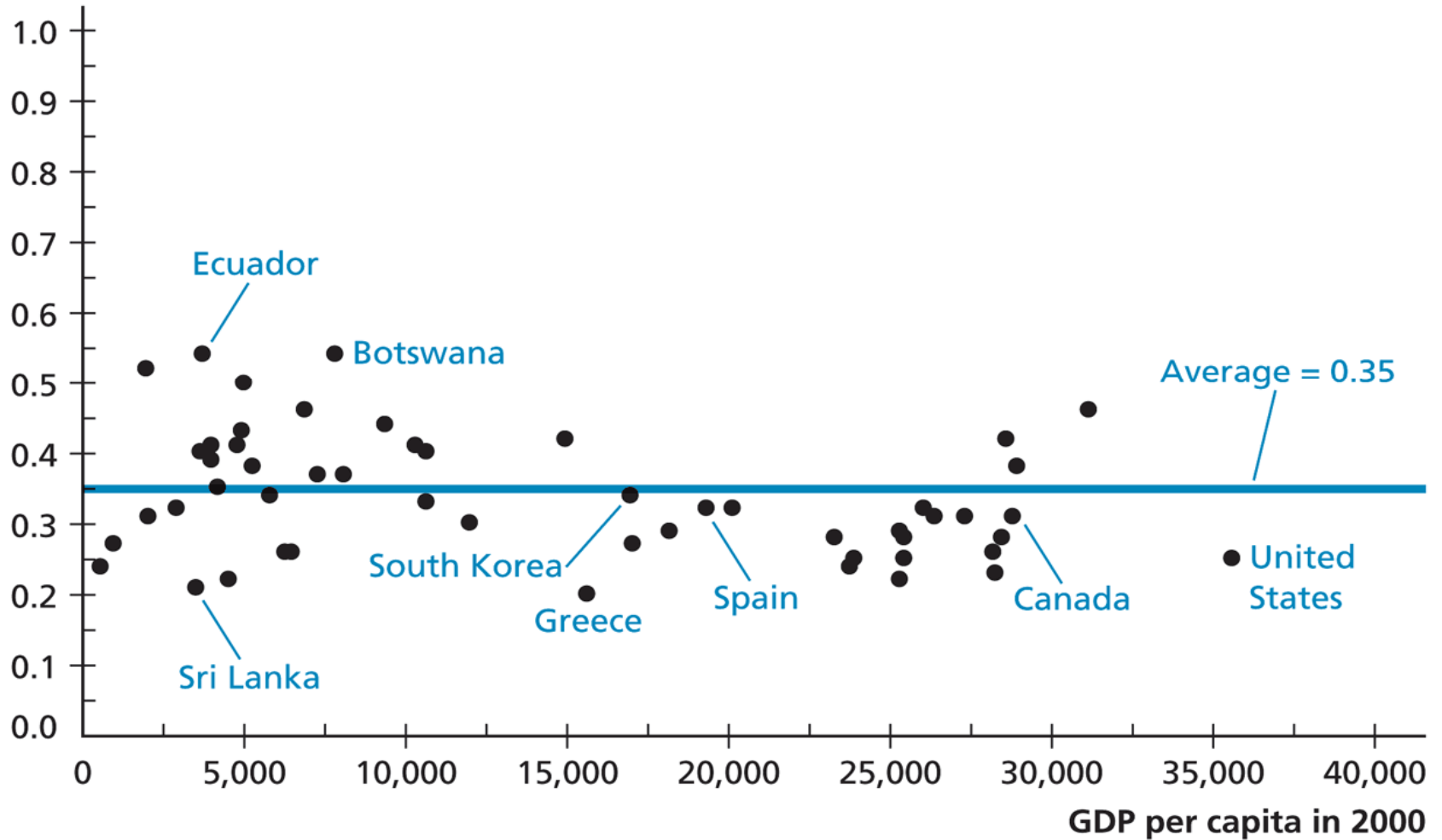


FIGURE 3.3

# Capital's Share of Income in a Cross-Section of Countries

## Capital's share of national income



Source: Bernanke and Gürkaynak (2002), table 10 and note 18.

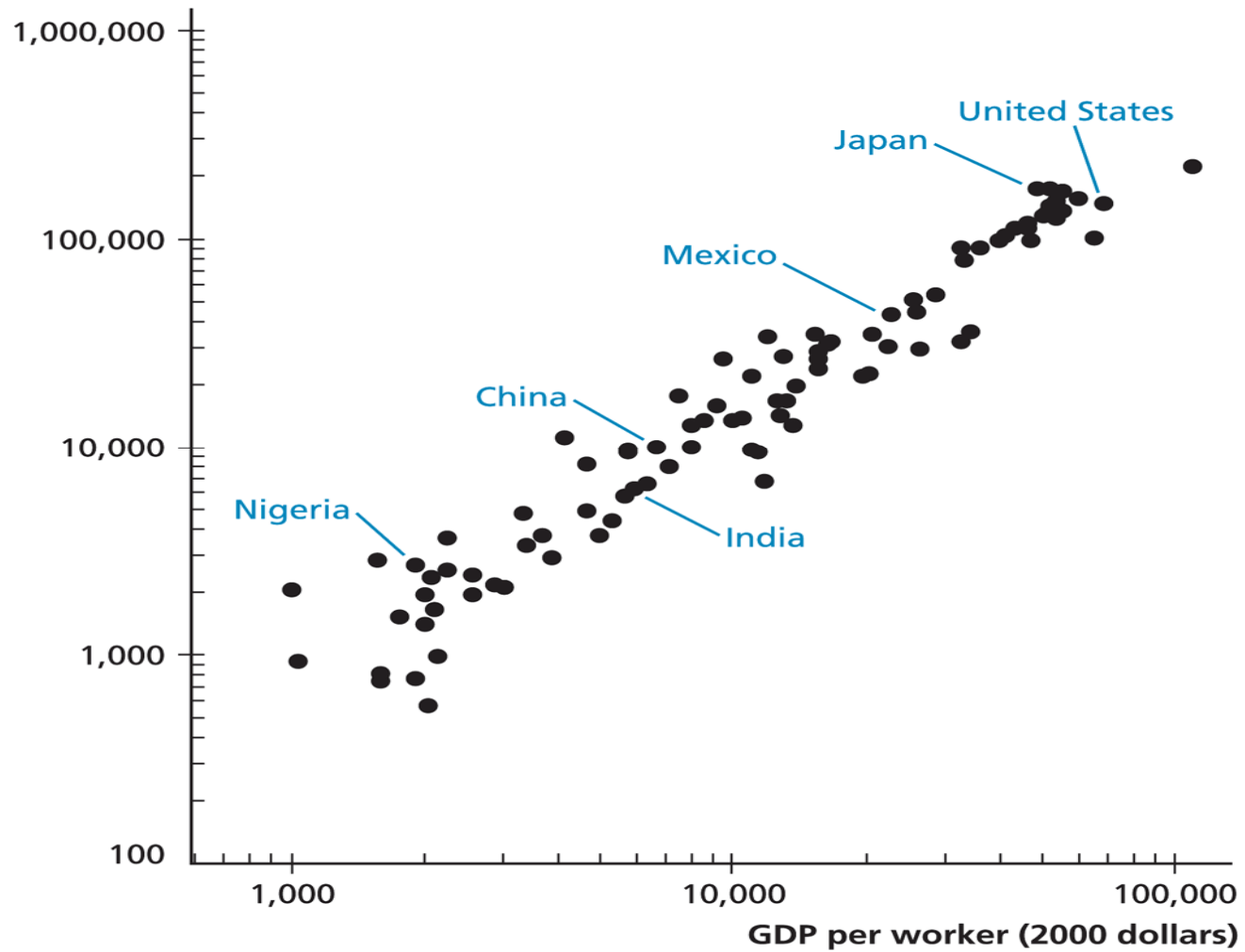
# Physical Capital

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- ❑ The physical objects that extend our ability to do work (ie. produce output)
  - ❑ Buildings, machines, roads, computers, etc...
  - ❑ Productive, Produced, Use is limited (rival and excludable), It can earn a return, and It wears out
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## GDP and Capital per Worker, 2000

Capital per worker (2000 dollars)



Source: Calculations based on Heston et al. (2002).

# Evolution of Physical Capital

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- Investment is the process of building capital ( $s$ )
    - save part of your income today to  
and invest in capital
  - Depreciation is the process of the wearing out of capital ( $\delta$ )
    - each period, capital wears out  
(boardwork)
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# Summary

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- Capital and Labor are major inputs into determining long run growth
  - The Solow model provides a theoretical prediction as to how incomes will be distributed and determined
  - Wednesday, more about growth
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