

Announcement

Course Evaluation Information

- Course Evaluations are now done on-line. Look for a message.
- Course Title: Elements of Macroeconomics
- Course Number: 180.101
- Instructor: Louis J. Maccini

Section Meeting This Week & Review Sessions Before the Final Exam

- Review Problem Set #5
- Review:
 - Debt Finance & Crowding Out
 - Money Finance
 - Unemployment & Inflation
 - Economic Growth & Productivity

Economics Department

Majors & Minors

- Major in Economics
- Minor in Economics
- **Minor in Financial Economics**
 - A New Minor!
 - Blends Economics & Finance
 - Sponsored by the Center for Financial Economics
- See Department website for more information:
<http://www.econ.jhu.edu/courses.html>

Some Macro & Finance Courses

- 200 Level Courses
 - Monetary Analysis
 - International Monetary Economics
 - Financial Markets and Institutions

- 300 Level Courses

- Macro Theory

- Investments

- Corporate Finance

- Art & Science of Economic Forecasting

- Global Financial Crisis

- Financial Market Microstructure

- Financial Econometrics

- Corporate Restructuring

- Managerial Economics & Business Strategy

- Research in the Economics of Financial
Markets

Economic Growth and Productivity

Required Reading

Chapter 6, pp. 103-109

Chapter 7, pp. 129-132 &
pp. 134-139

TABLE

The Variety of Growth Experiences

Source: Robert J. Barro and Xavier Sala-i-Martin, *Economic Growth* (New York: McGraw-Hill, 1995), tables 10.2 and 10.3; *World Development Report 2005*, Table 1; and author's calculations.

Country	Period	Real GDP per Person at Beginning of Period ^a	Real GDP per Person at End of Period ^a	Growth Rate (per year)
Japan	1890–2003	\$1,280	\$28,620	2.79%
Brazil	1900–2003	663	7,480	2.38
Mexico	1900–2003	987	8,950	2.16
China	1900–2003	610	4,990	2.06
Germany	1870–2003	1,859	27,460	2.05
Canada	1870–2003	2,022	29,740	2.04
United States	1870–2003	3,412	37,500	1.82
Argentina	1900–2003	1,952	10,920	1.69
India	1900–2003	575	2,880	1.58
United Kingdom	1870–2003	4,094	27,650	1.45
Indonesia	1900–2003	759	3,210	1.41
Pakistan	1900–2003	628	2,060	1.16
Bangladesh	1900–2003	531	1,870	1.16

^aReal GDP is measured in 2003 dollars.

Facts

- Wide gaps in Income Per Capita across countries
- US, Western Europe & Japan
 - High Levels of Income Per Capita
 - Higher Standards of Living
- Reason: Relatively high growth rates of Income Per Capita over the past 100 years

Question

- How does a Society raise the **Level** of Income Per Capita?
- Needs to achieve **Steady Growth** in GDP per capita
- How is this goal achieved?
- A Key Factor: Stimulate Steady & Healthy Growth in **Labor Productivity**

Labor Productivity & Income Per Capita

* Income per capita = $\frac{Y}{Pop}$

* $\frac{Y}{Pop} = \underbrace{\frac{Y}{L}}_{\text{Labor Productivity}} \times \underbrace{\frac{L}{Pop}}_{\text{Labor/Population Ratio}}$

* Growth Rate of $\frac{Y}{Pop} = \text{Growth Rate of } \frac{Y}{L}$
+ Growth Rate of $\frac{L}{Pop}$

Productivity and Growth

- * Formula \Rightarrow Higher Labor Productivity
 \Rightarrow Higher Income per capita
- * Higher Income per Capita \Rightarrow Higher Consumption per capita
 \Rightarrow Standards of Living

Higher Labor Productivity

- Meaning: Workers Produce More Output with the Same Number of Hours Worked
- How?

Higher Labor Productivity: Causes

- More & Better Private Capital—Plant & Equipment
- Technological Progress & Innovation
- Higher “Human Capital”—Better Education & Training of the Workforce
- More & Better “Public Capital”—Infra-Structure
- Improved Work Ethic

Model: Growth

$$Y^d = D(P, \bar{I}, \bar{C}, A_0, \bar{G}, \bar{TX}, \bar{TR}, t, OMO)$$

$$Y^s = S(P, W_0, Z_0, K_0, TE_0, t, ST_0, IFR_0)$$

$$Y^d = Y^s$$

New Variables:

ST = Skills & Training of the Labor Force

IFR = Infra-Structure or Public Capital

Balanced Growth

- **Potential Output** (Y^{Pot}): Level of Real Output consistent with Full Employment
- **Balanced Growth**: Steady Growth in Potential Output (Y^{Pot}) with approximately Stable Prices (or Stable Inflation)
- **Objective**: Balanced Growth can be achieved with roughly comparable shifts to the right of AD & AS

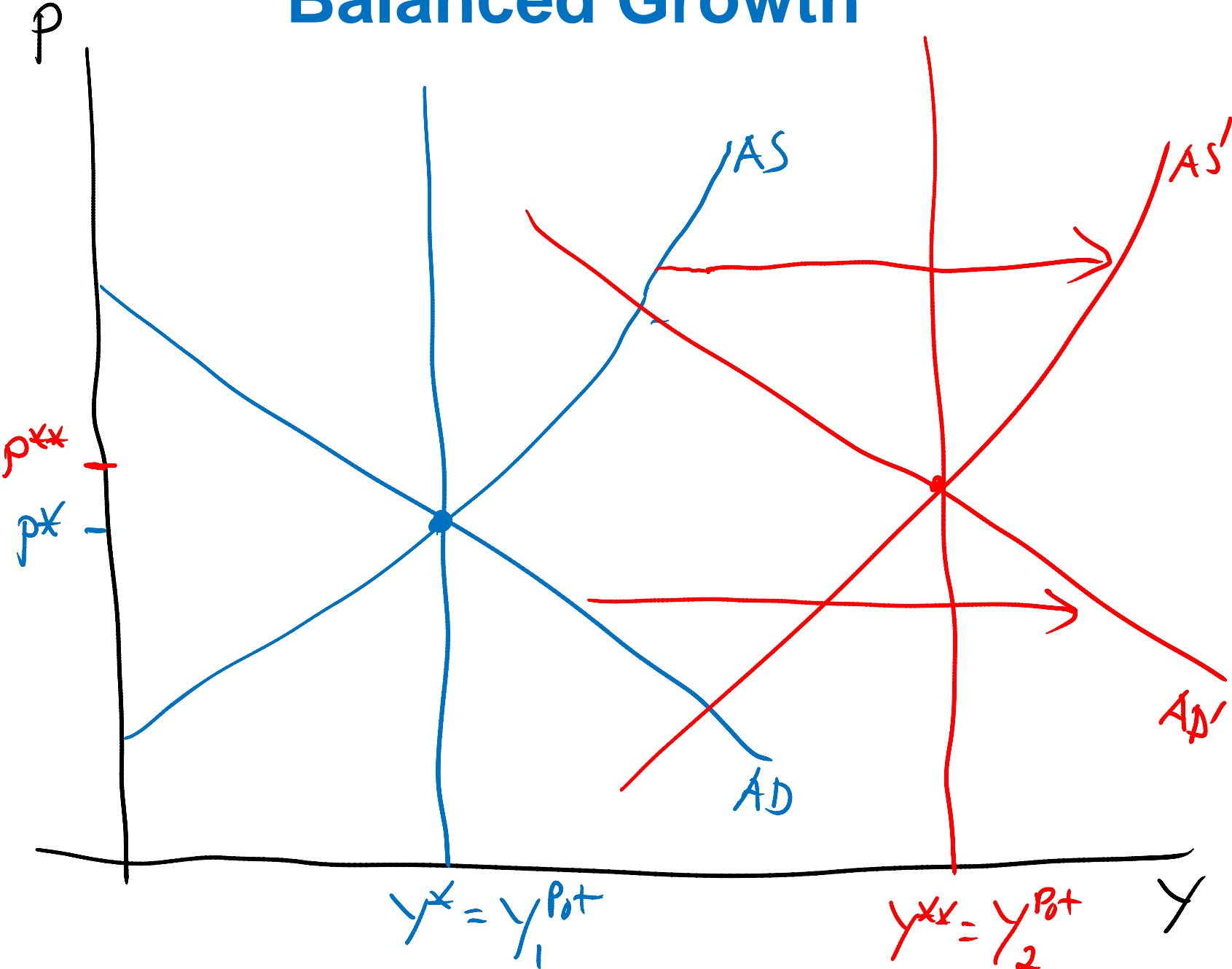
Causes of Shifts In Aggregate Demand & Aggregate Supply in the Long-Run

- **AD: Shifts Outward** (i.e, to the Right)
 - Population Growth Raises Consumption
 - Higher Investment Spending by Firms
 - Higher Government Expenditure due to Larger Population

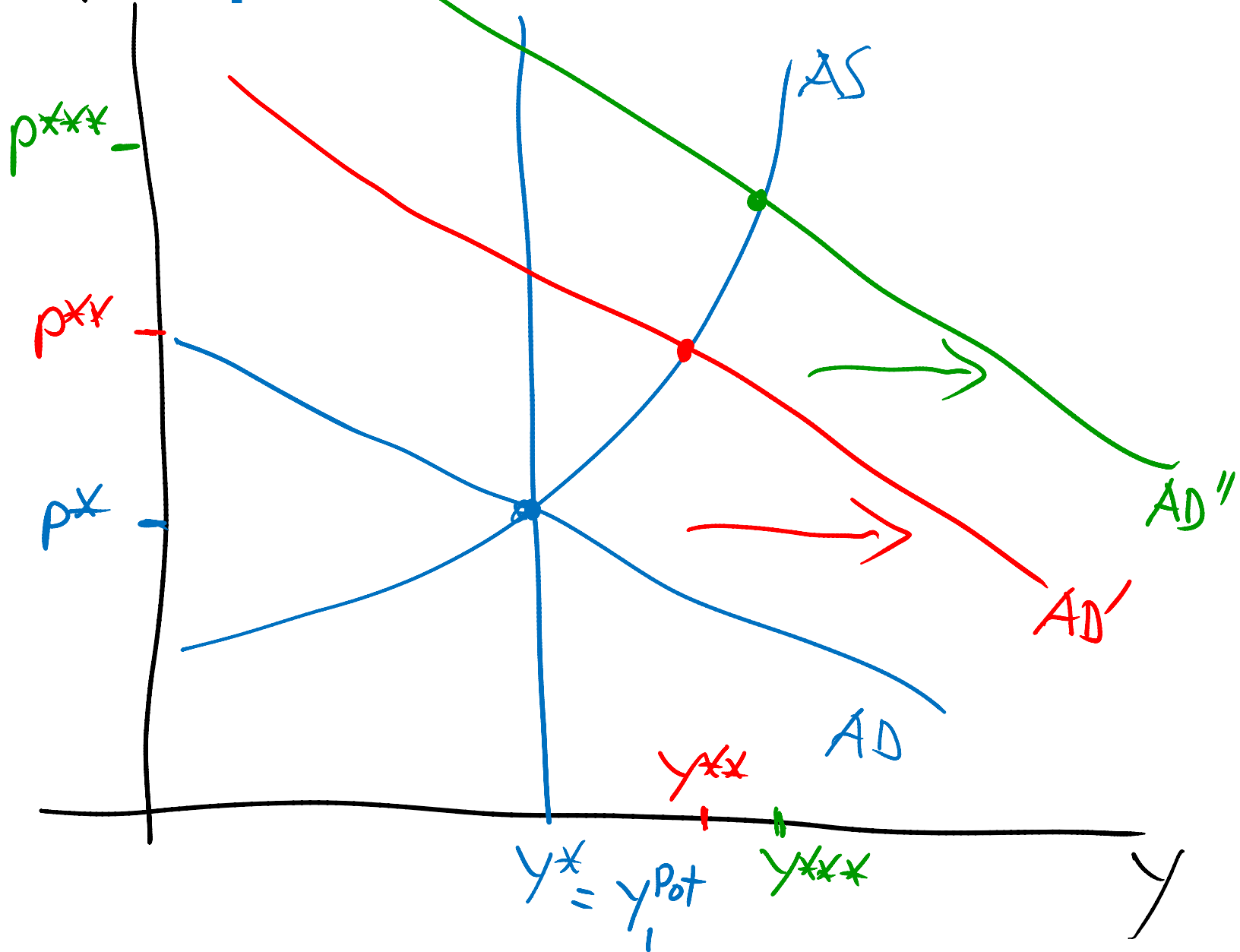
- **AS: Shifts Outward** (i.e, to the Right)

- Larger Capital Stock: Larger Stocks of Plant & Equipment of Business Firms
- Technological Advances & Innovation
- Higher Levels of Skills & Training of the Labor Force
- Higher levels of Infra-structure or Public Capital
- Tax Policies

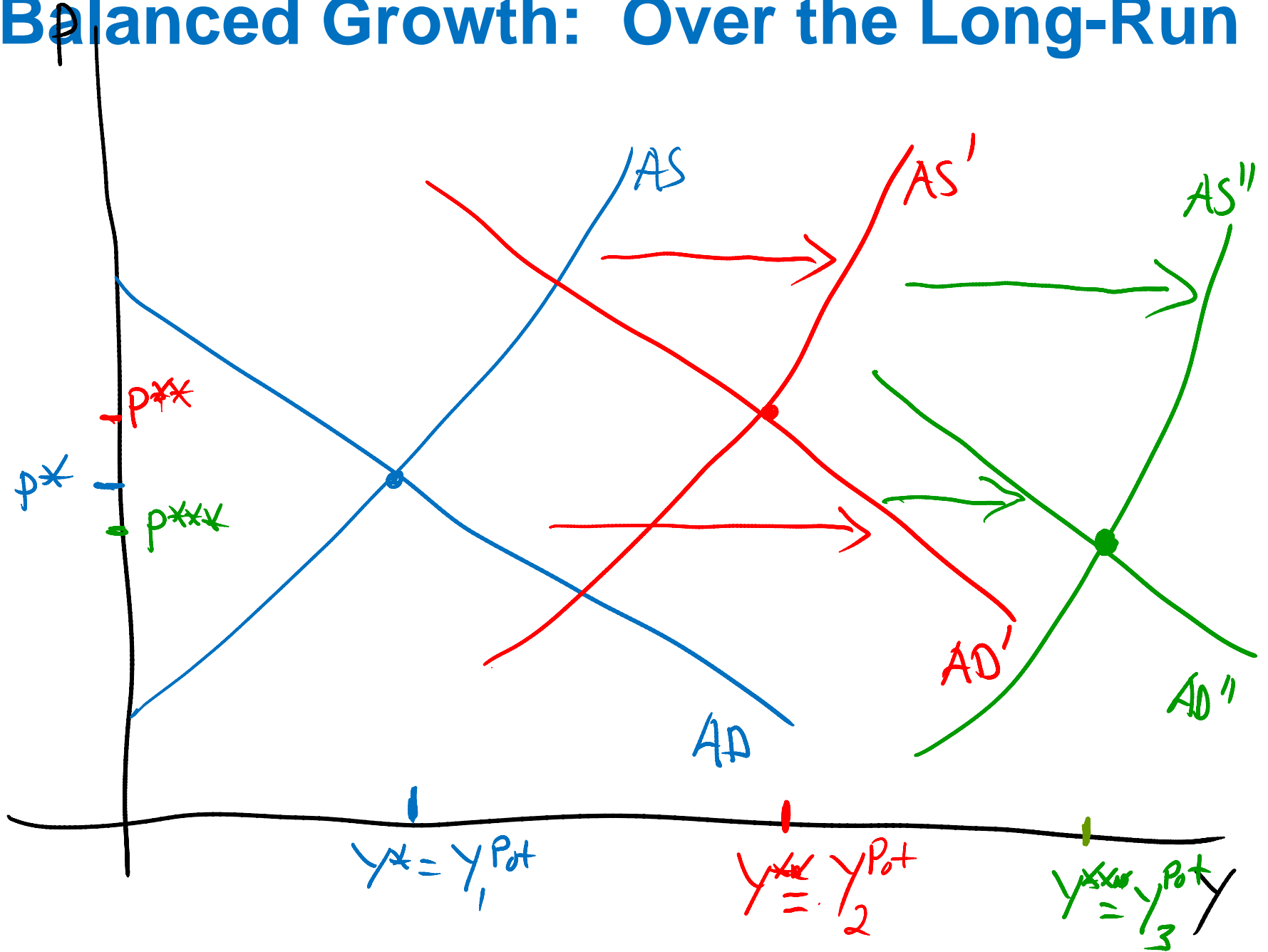
Balanced Growth



P Importance of Shifts in AS



Balanced Growth: Over the Long-Run



Short-Run & Long-Run Government Policies

- **Stabilization Policies:** Use of Monetary & Fiscal Policy to keep Actual Output Close to Potential Output in the Short-Run
- **Growth Policies**
 - Use of Government Policies to achieve Balanced Growth in Potential Output in the Long-Run
 - Key Mechanism: Policies that stimulate Labor Productivity Growth

Labor Productivity Growth: Policies

- **Capital Accumulation**
 - Low Real Interest Rates
 - Tax Measures:
 - Investment tax credits
 - Capital gains tax rates
 - Profits tax rates
 - Steady Growth in Demand for Output
 - Property Rights and Rule of Law

- **Technological Progress**

- Research & Development

- Government Support

- ❖ Tax code

- ❖ Government R&D

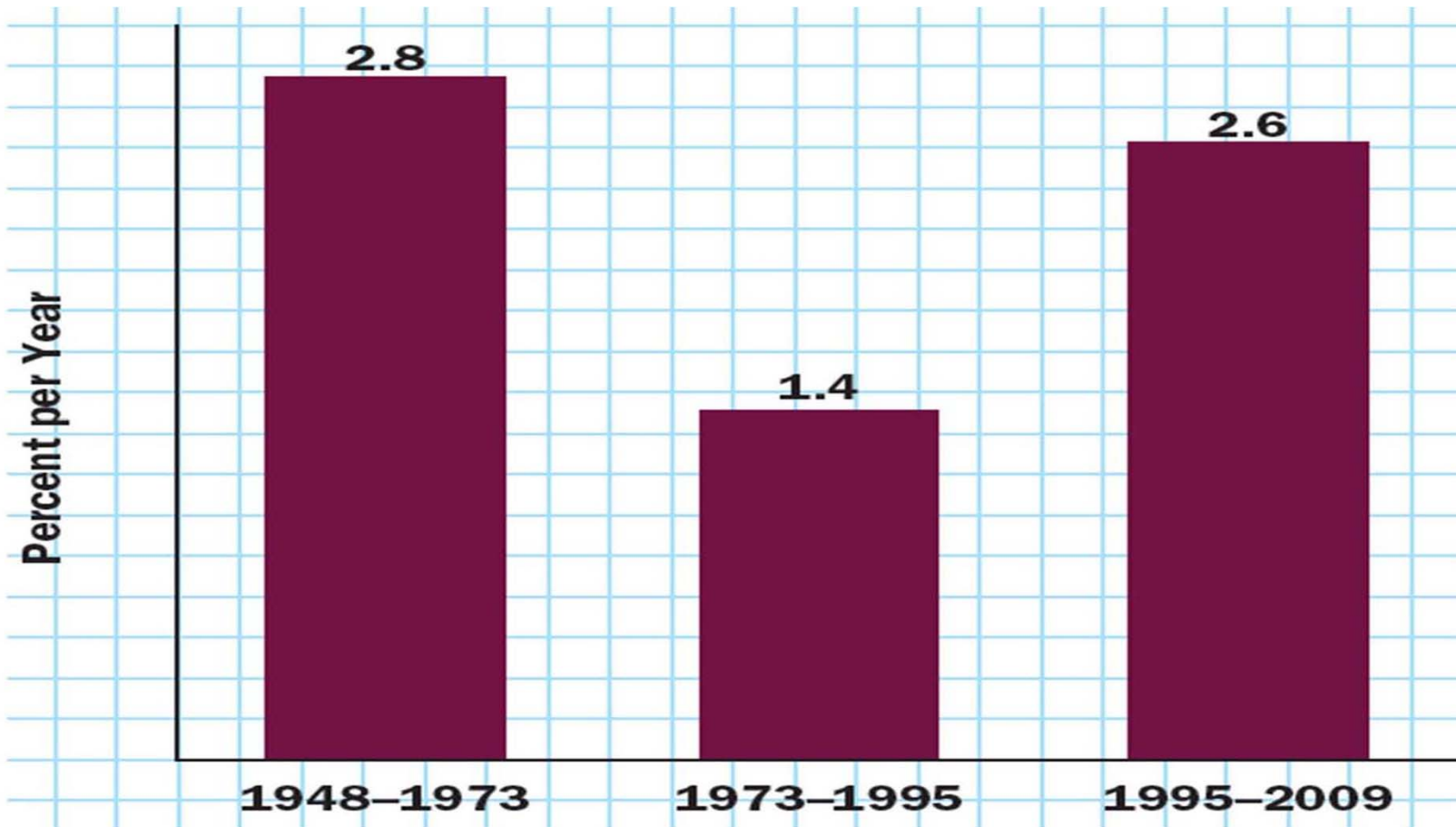
- ❖ Government and Private Sector Joint Ventures

- **Investment in Educational & Training**

- **Government Investment in Infra-structure Improvements**

Not on Final Exam

Productivity Growth in the U.S. 1948-2009



Not on Final Exam

Reasons for the Productivity Growth Slowdown: 1973-1995

- Big jumps in Oil Prices in the 70's made the existing Capital Stock inefficient (Not energy efficient)
- Shift away from Manufacturing to Services. Service Industries are more difficult to generate high productivity growth
- Certain Technological Advances occurred (e.g., the microchip), but computerization did not get substantially incorporated into the production process until the 1990's

Not on Final Exam

Reasons for the Productivity Growth Speed-up: 1995-2009

- **Computer Innovations**
 - Many New computer hardware & software products were developed
 - Computers became faster & cheaper
 - Development & Expansion of the Internet
- **Computers & Computer Techniques were integrated into the production process**