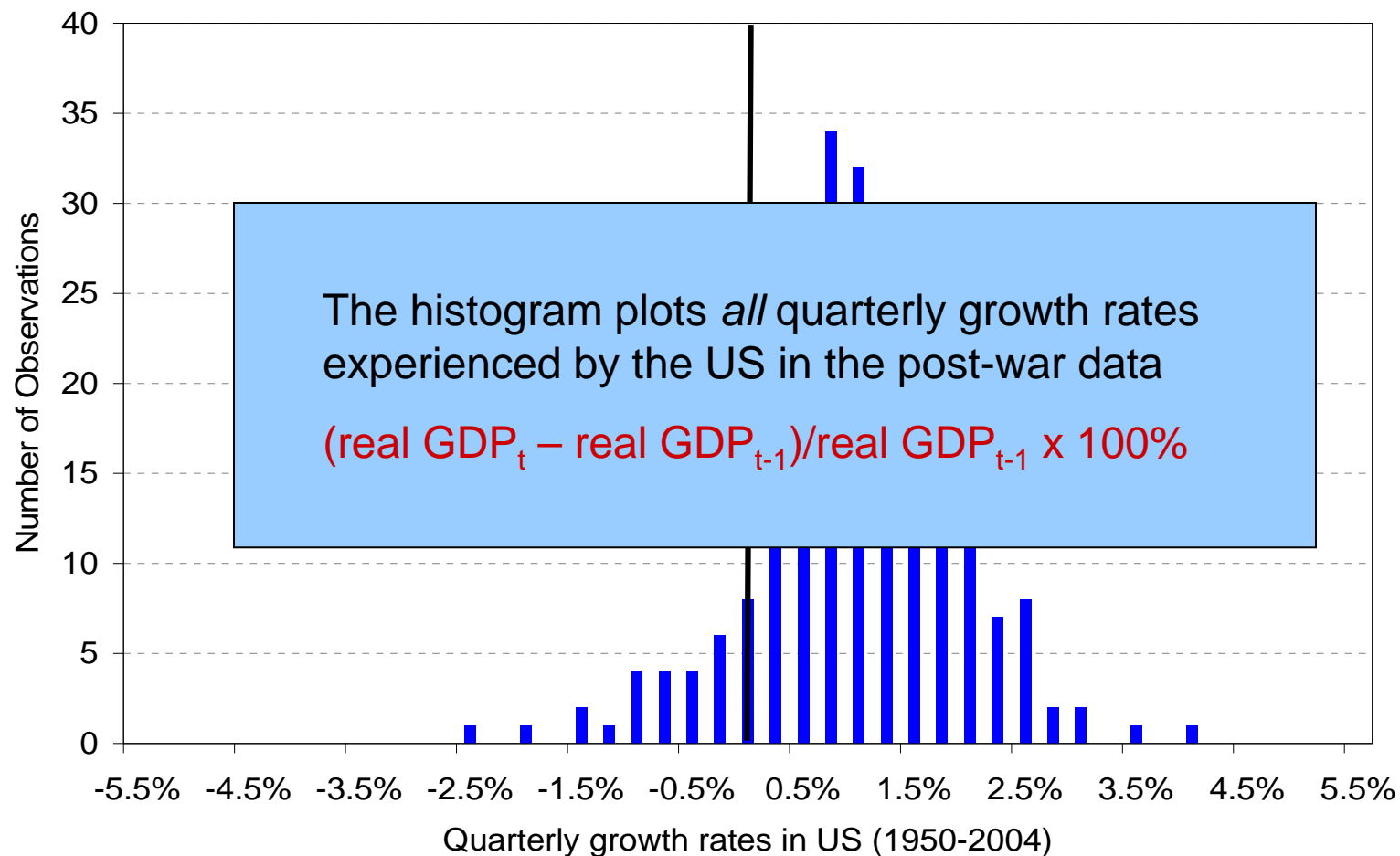
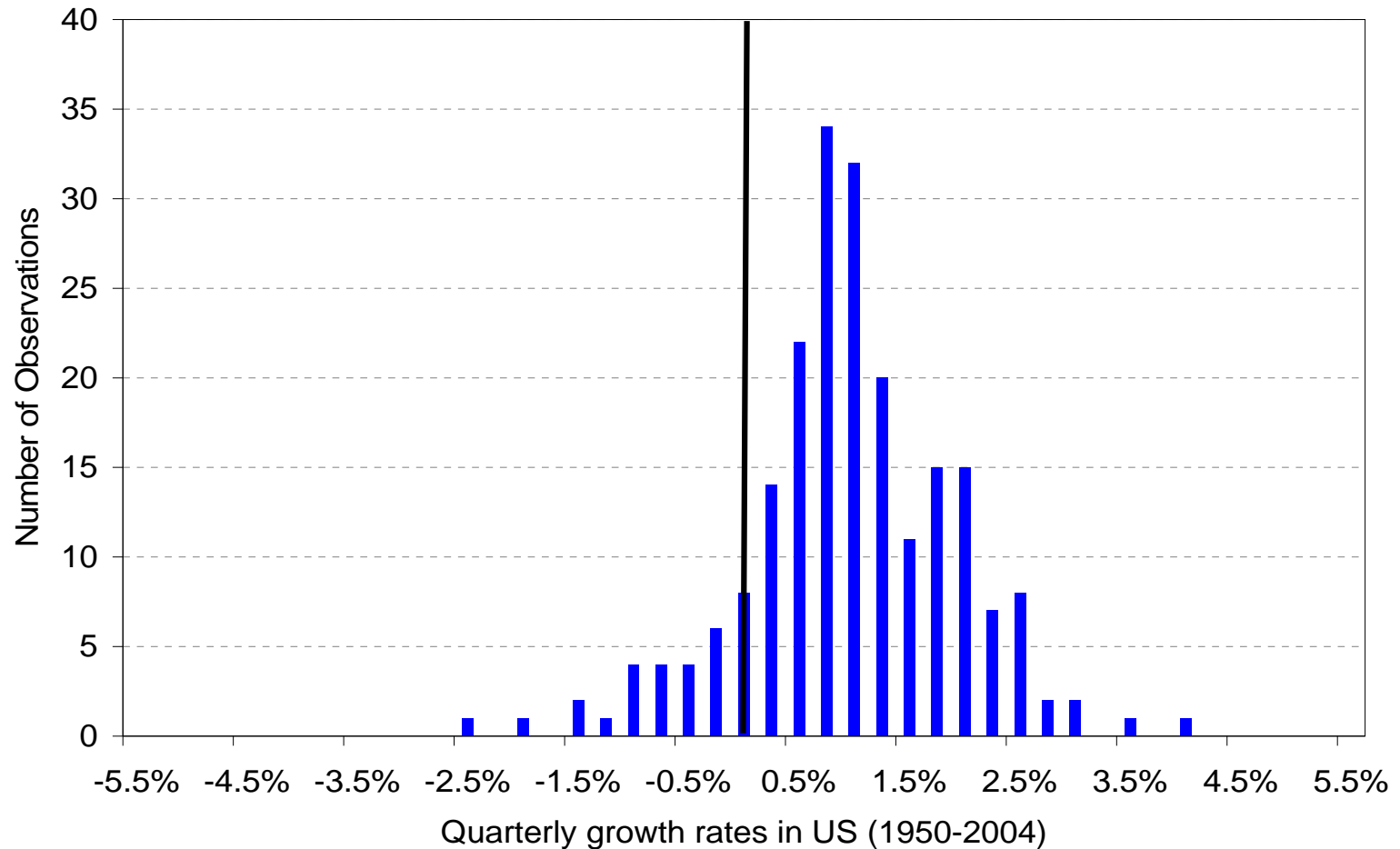

Introduction to Economic Fluctuations and Business Cycle Theory

Chapter 9

Quarterly Growth Rates in US, 1951-2004



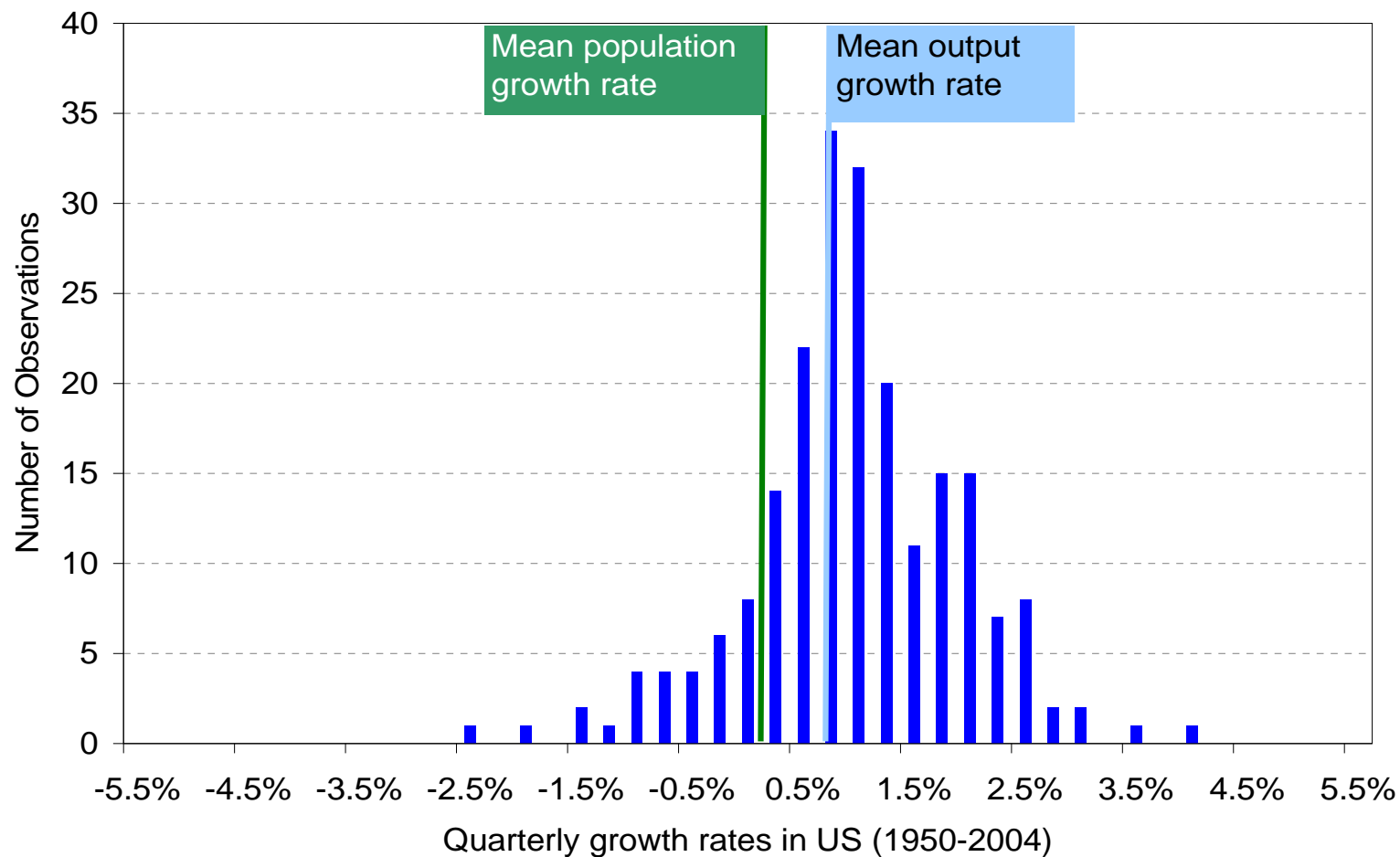
Quarterly Growth Rates in US, 1951-2004



Key Facts

- **Fact 1:** The mean growth rate of output is 0.8% per quarter, and it is above the population growth of 0.3% per quarter
 - Suggests possibly improving living standards, as per capita output grows at a positive rate
 - Growth of output per capita = growth of output – population growth

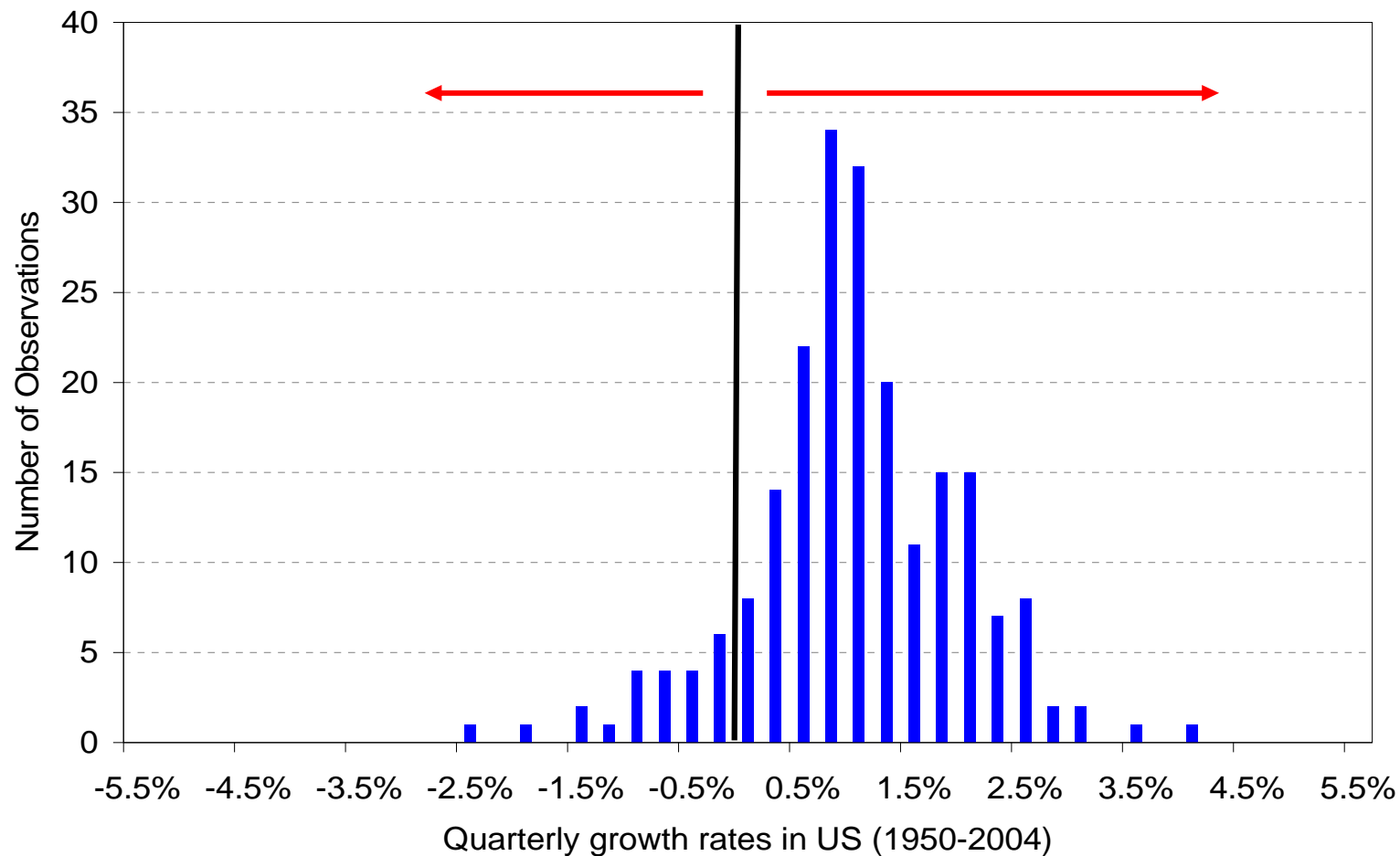
Illustration of Fact 1



Key Facts

- **Fact 2:** Growth rate varies widely from values as low as -2.2% to values as high as 4.1%

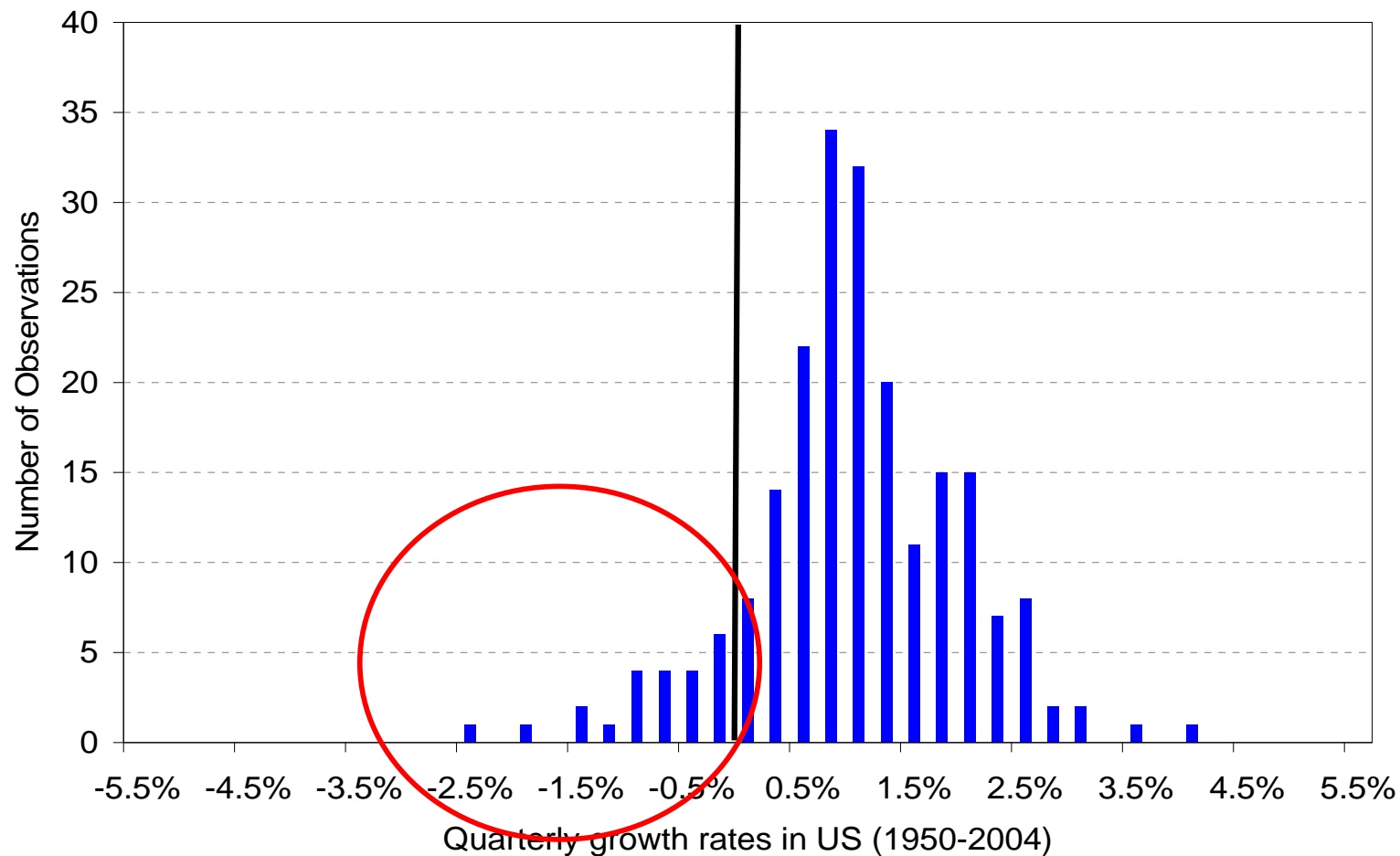
Illustration of Fact 2



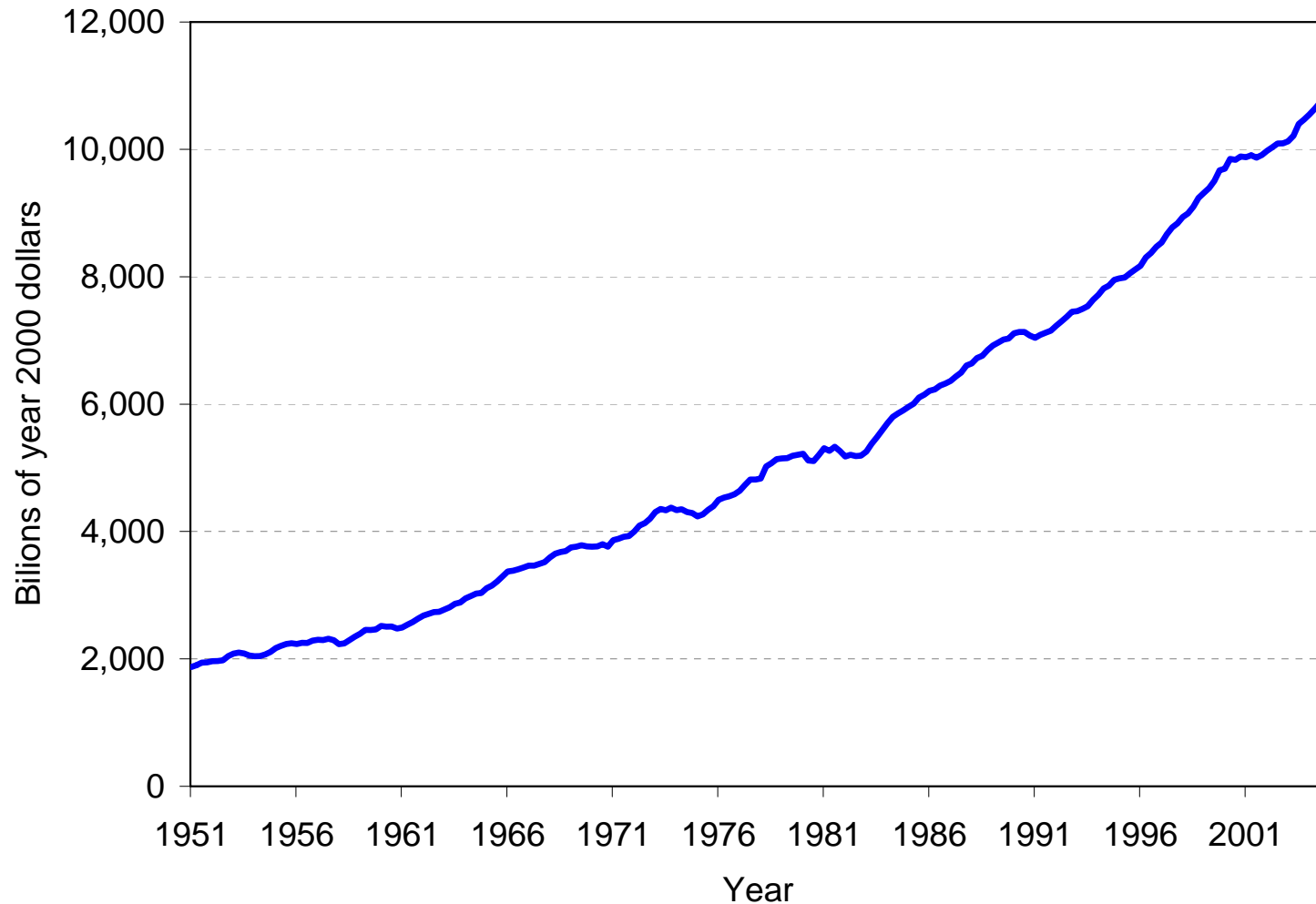
Key Facts

- **Fact 3:** There are periods during which output growth rate is negative

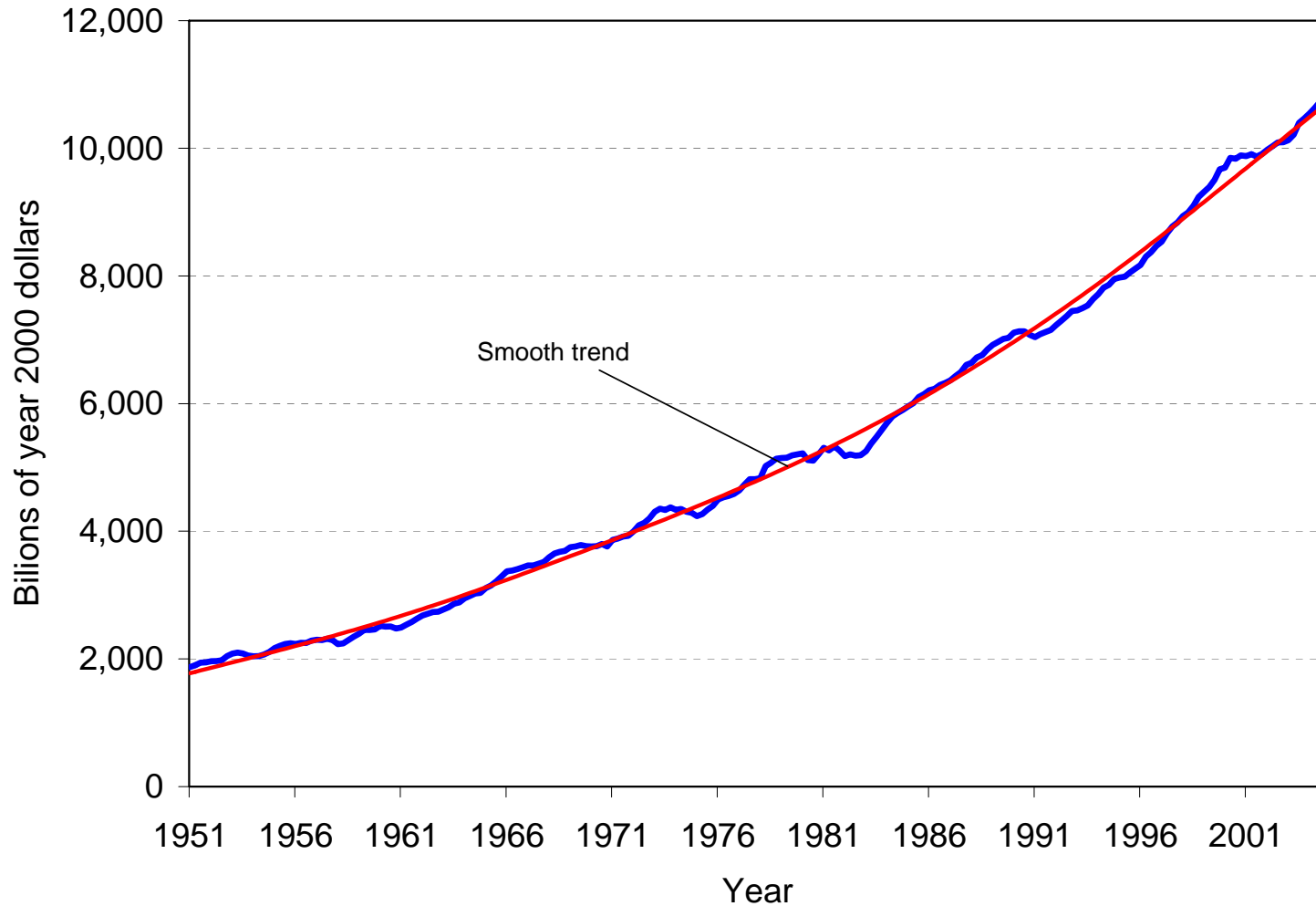
Illustration of Fact 3



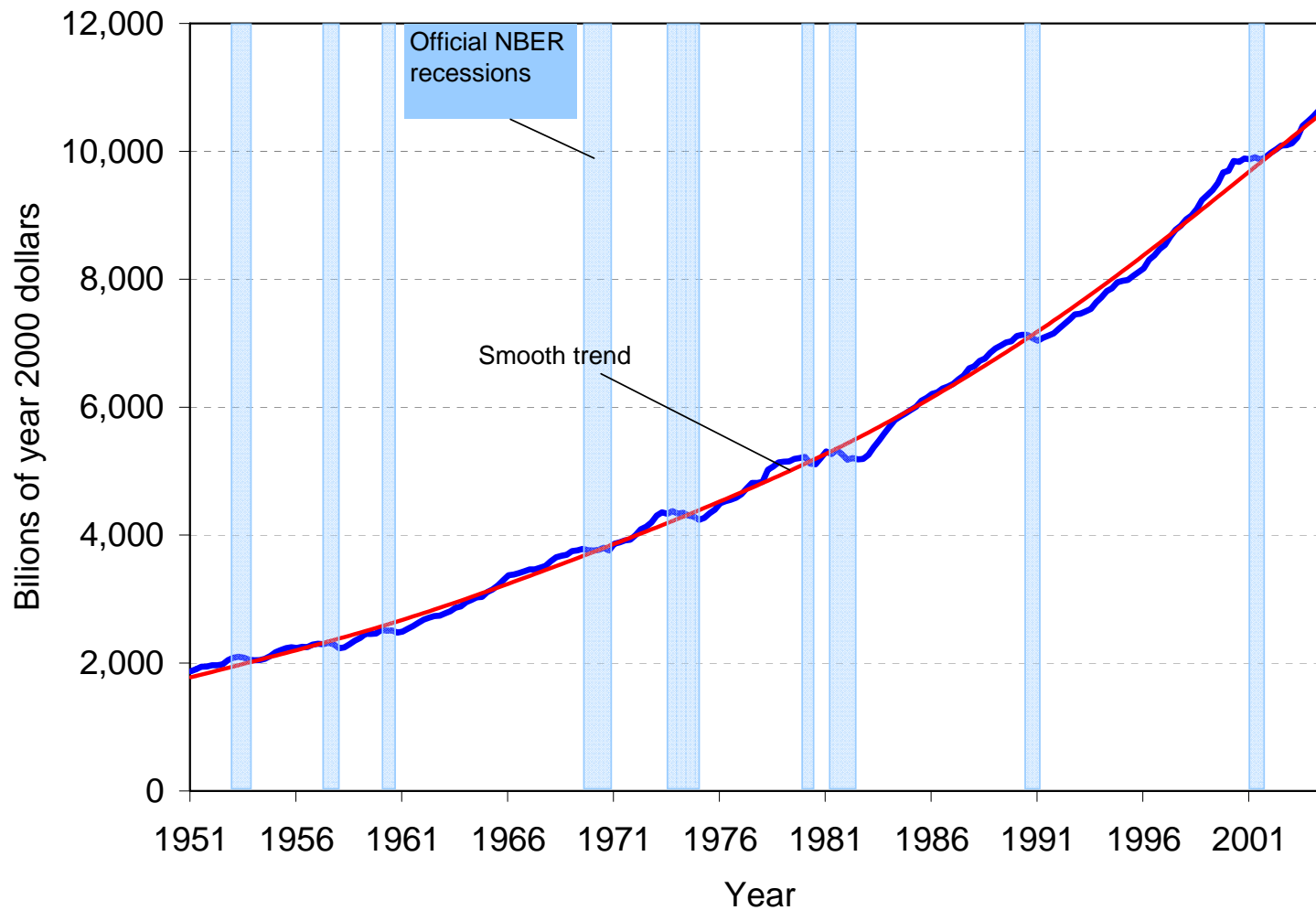
Resulting Real GDP in the US, 1951-2004



Resulting Real GDP in the US, 1951-2004



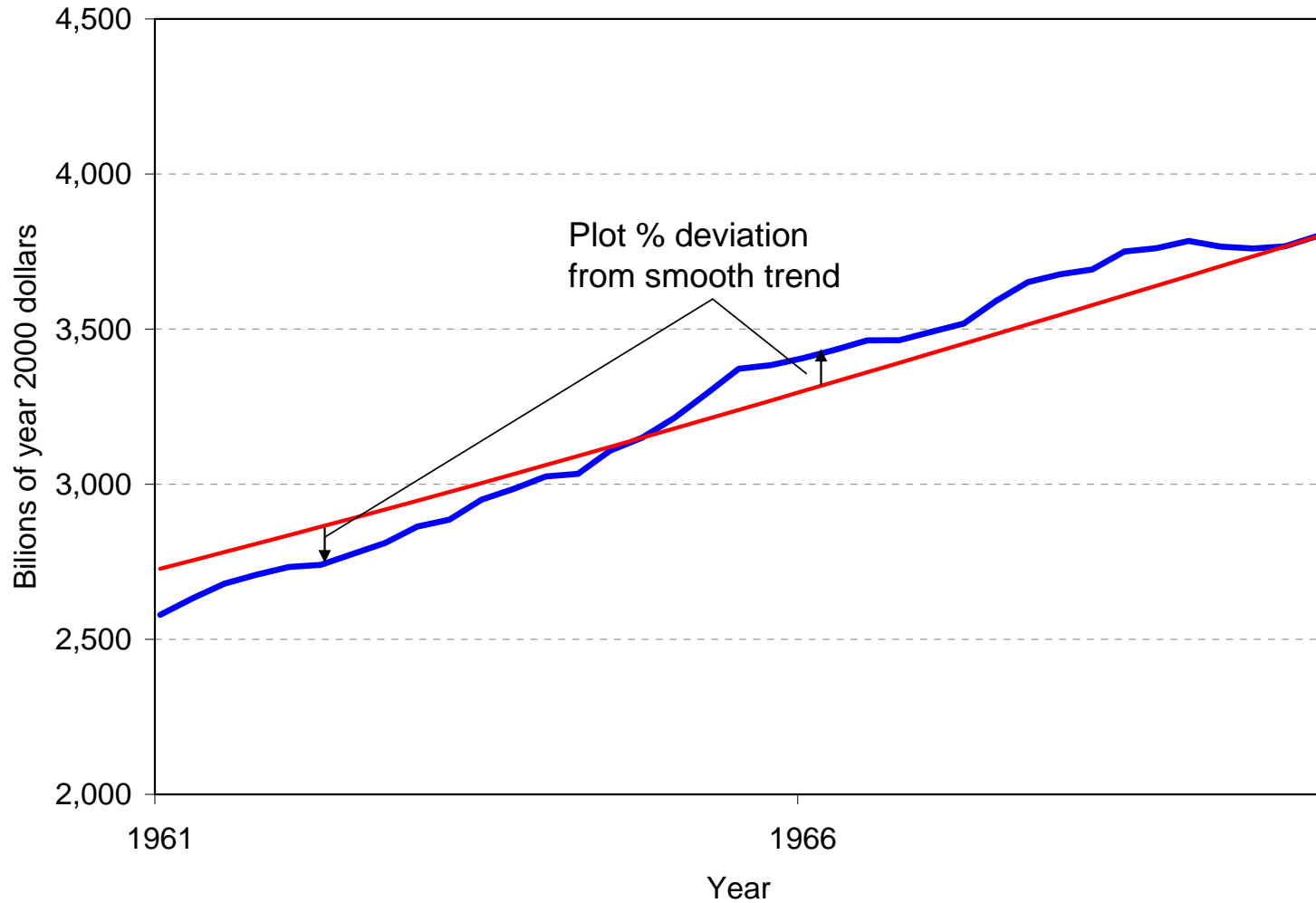
Resulting Real GDP in the US, 1951-2004



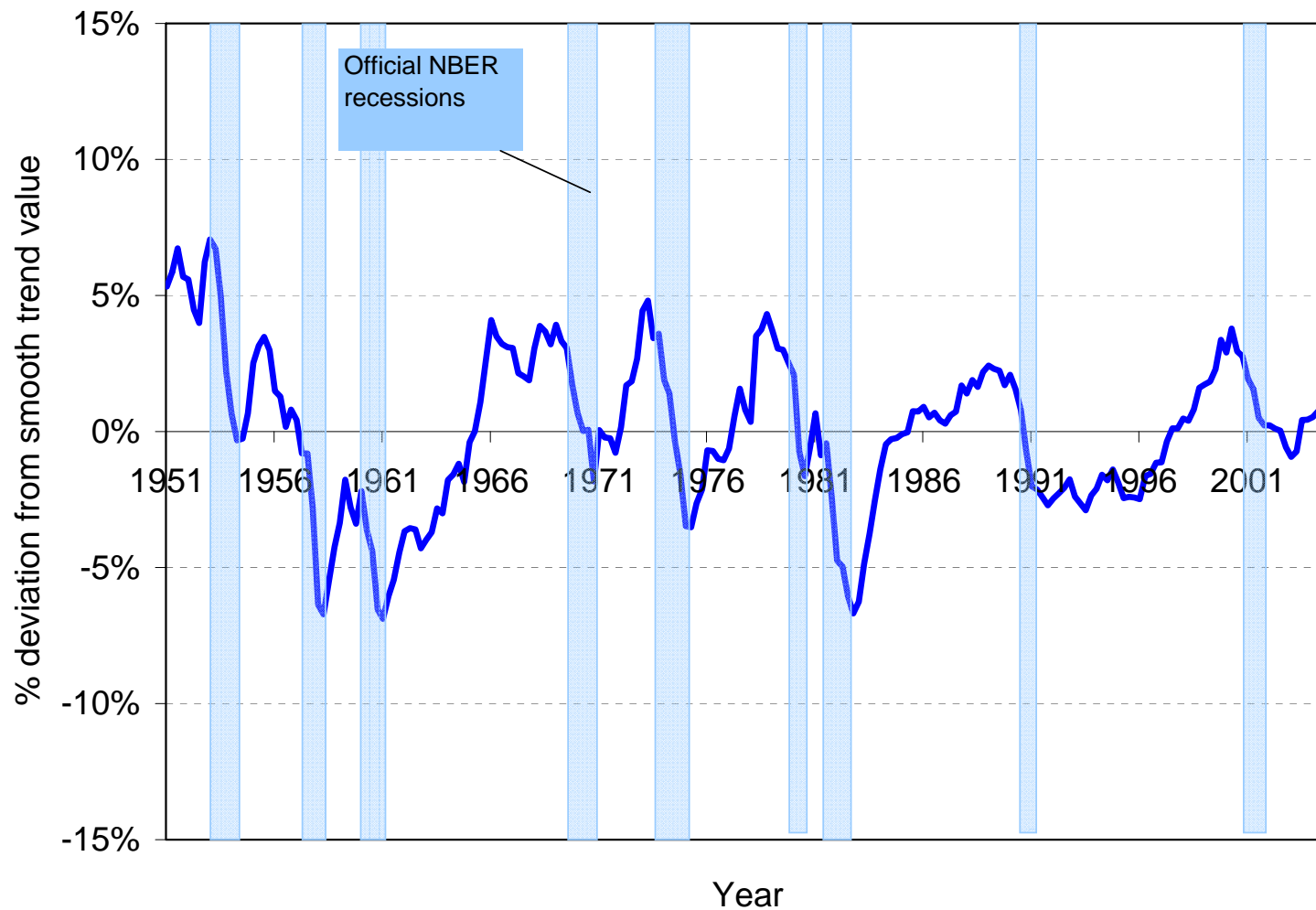
Zooming on Deviations From the Trend

- Deviations relative to trend = (actual output – trend output)/trend output

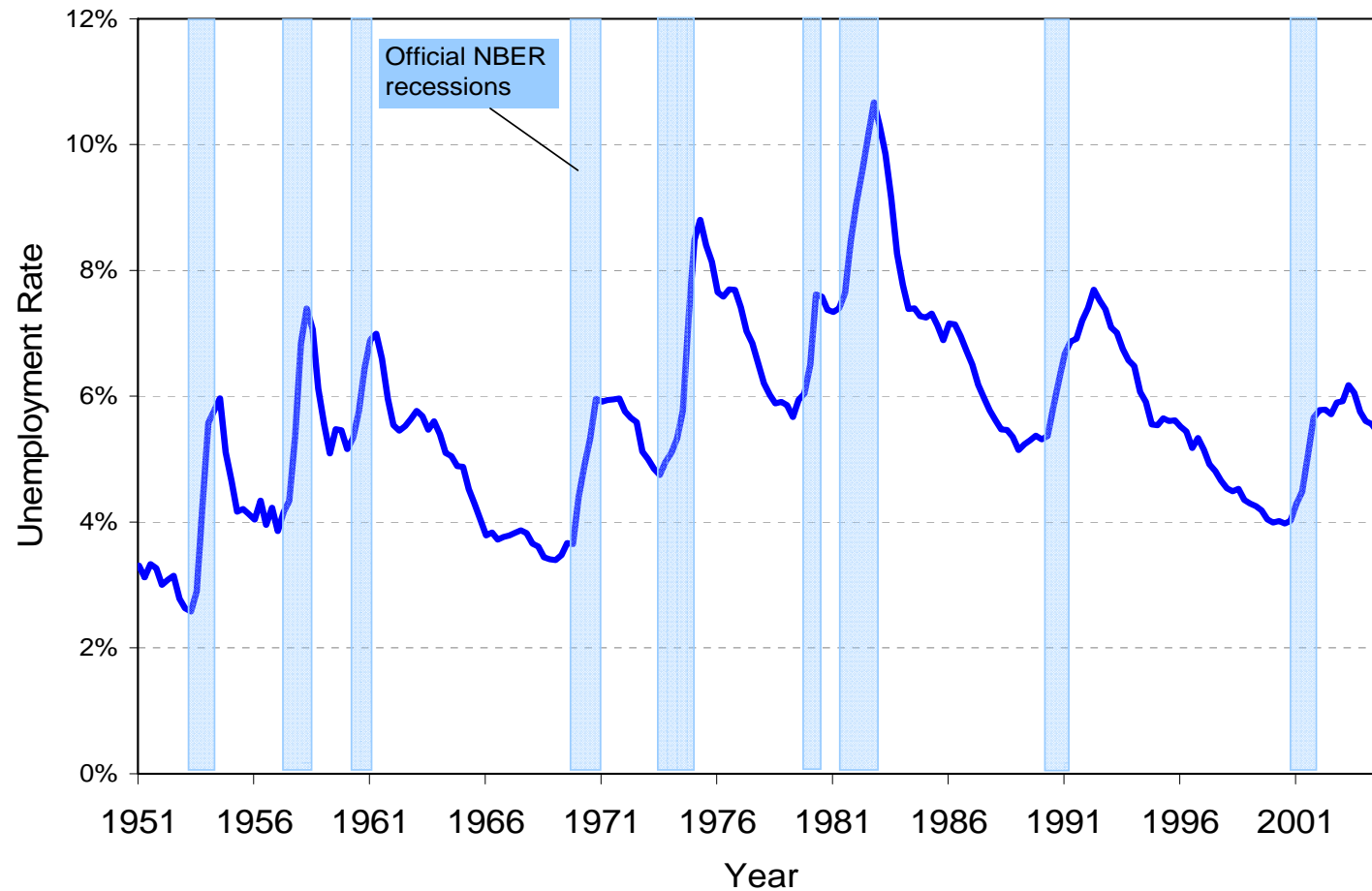
Zooming on Deviations From Trend



Deviations of Output From Smooth Trend



Associated Hikes in Unemployment



Aside

- For additional information about the official US recessions check the website of NBER (NBER officially calls recessions in the US)
- <http://www.nber.org/cycles/cyclesmain.html>

2 Fundamental Questions

- Why does output wiggle in the data?
- Can the classical Model help us account for this phenomenon?

2 Fundamental Questions

- Why does output wiggle in the data?
- Can the classical Model help us account for this phenomenon?
 - Yes, but only partially. Need more theory!

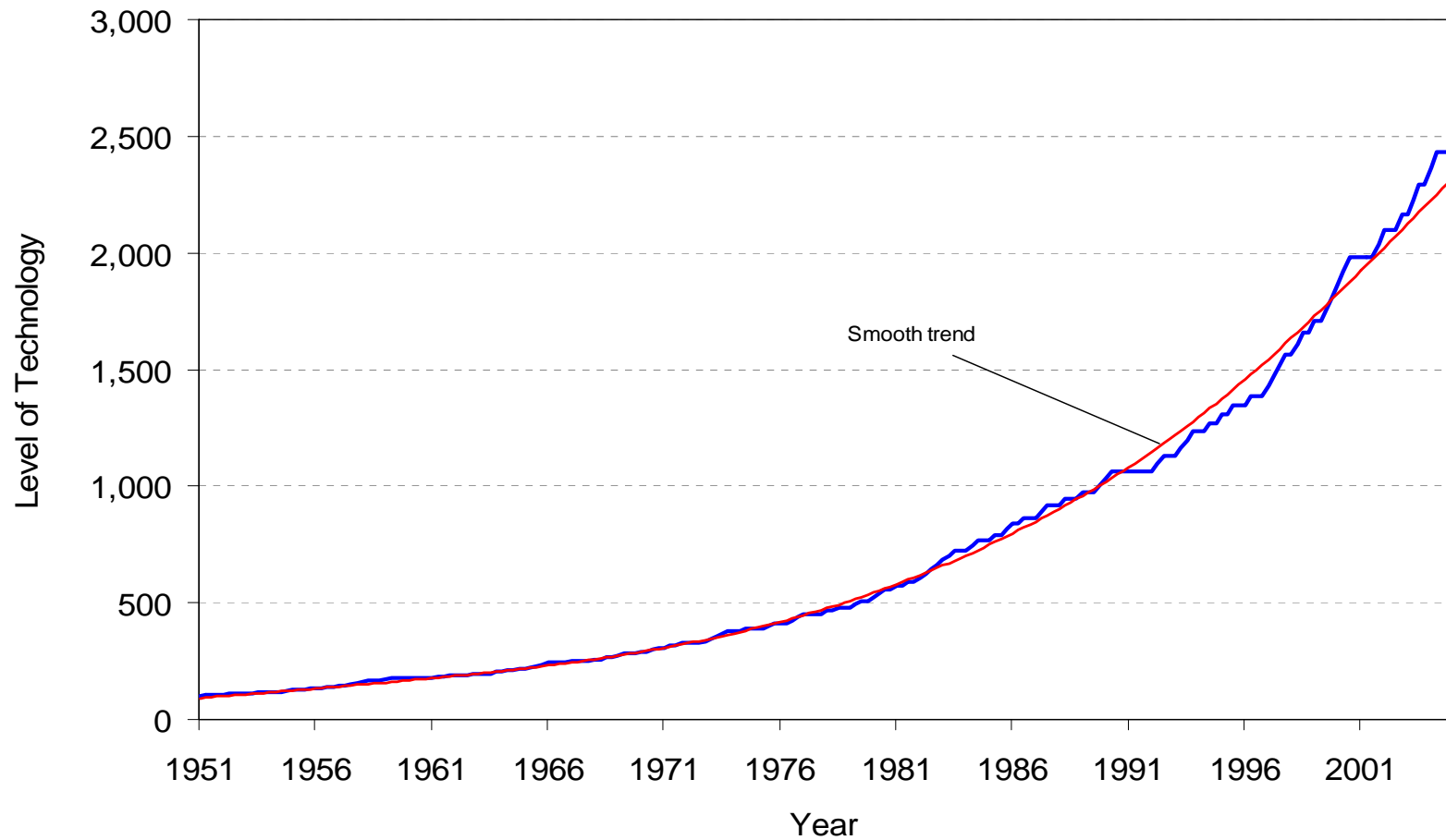
Classical Explanation of Wiggles

- Successful attempt due to Kydland and Prescott (1982) called *Real Business Cycle Theory (RBC)* shows that classical model can account for wiggles
- Key idea behind RBC
 - Output growth driven by technological progress
 - Technological progress does not occur smoothly

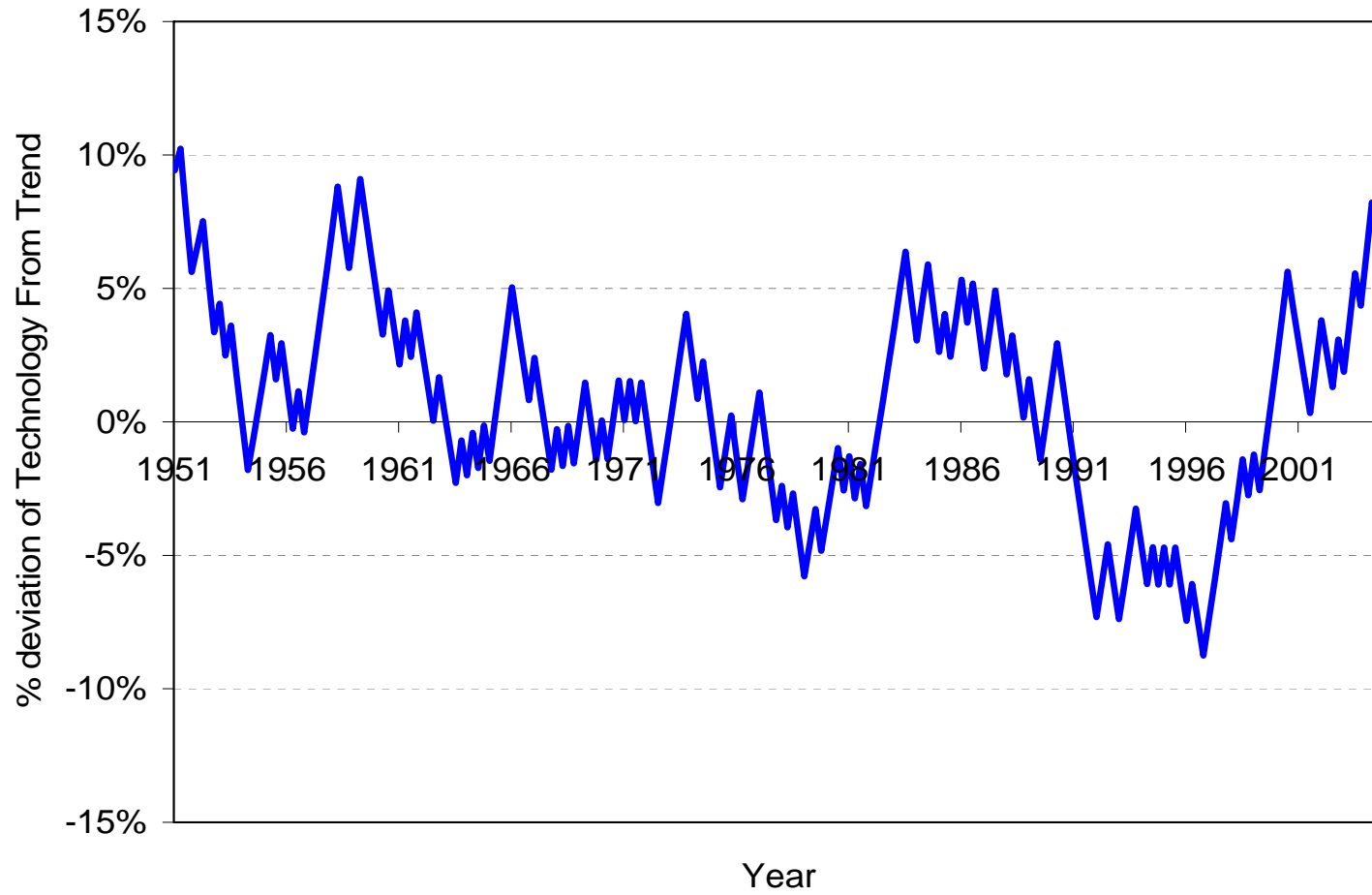
Illustrative Example

- Think about a coin flip
 - If heads comes out: we have technological progress of 2%
 - If tails comes out: we have technological progress of 0%
- Simulate 270 periods (number of quarters between 1951-2004), and plot the resulting level of technology (starting from initial value 100)

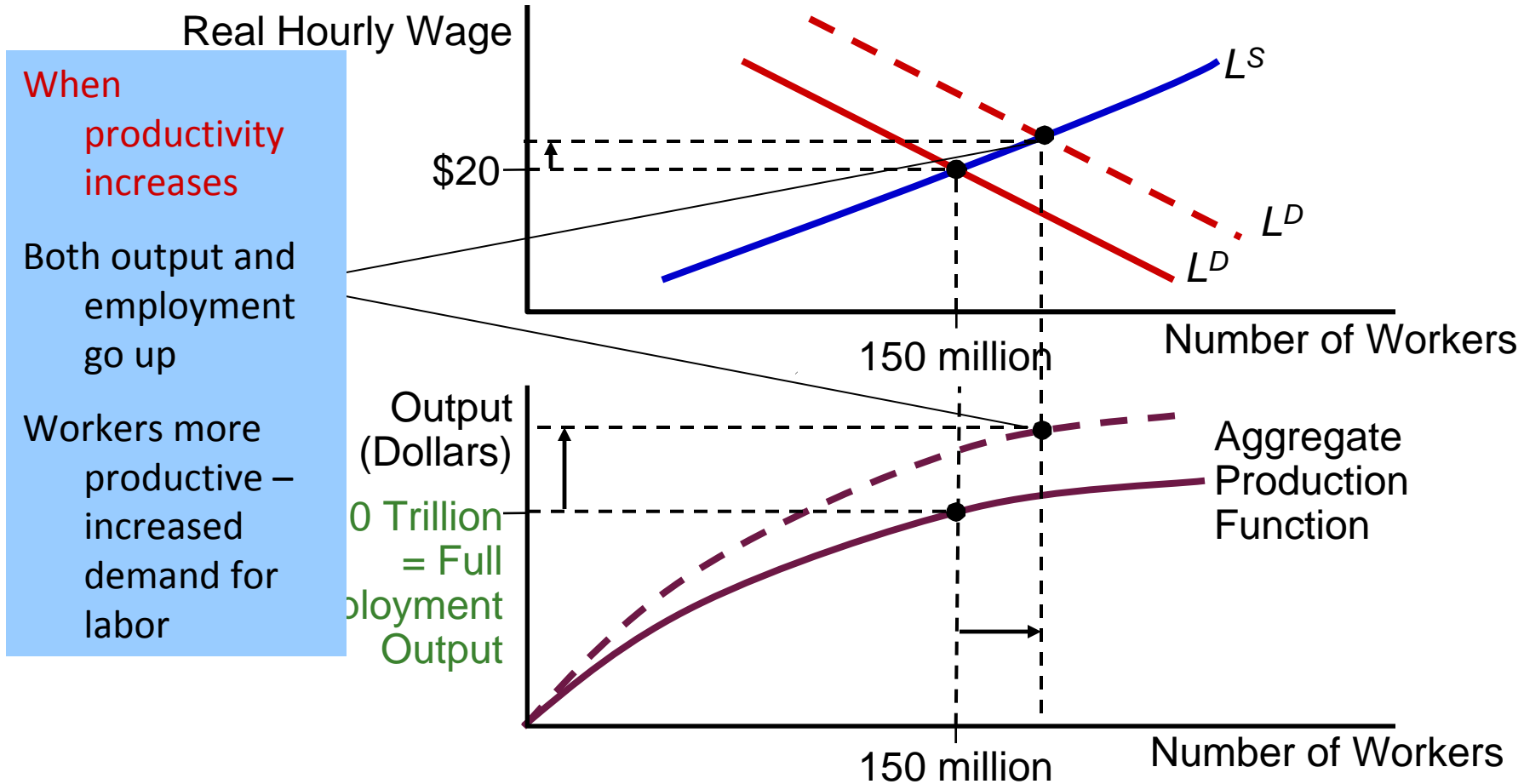
Implied Level of Technology



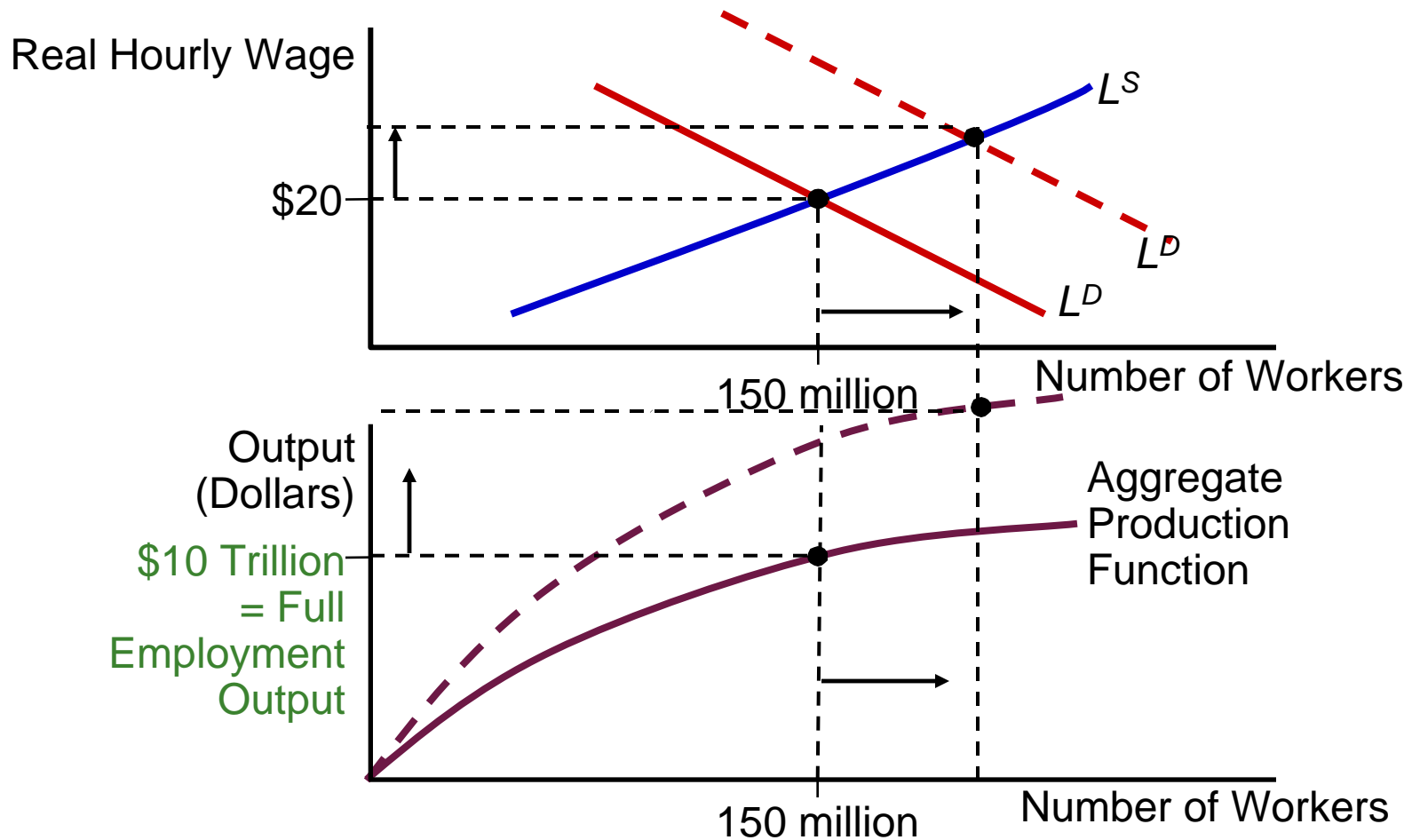
Implied % Deviations from Trend



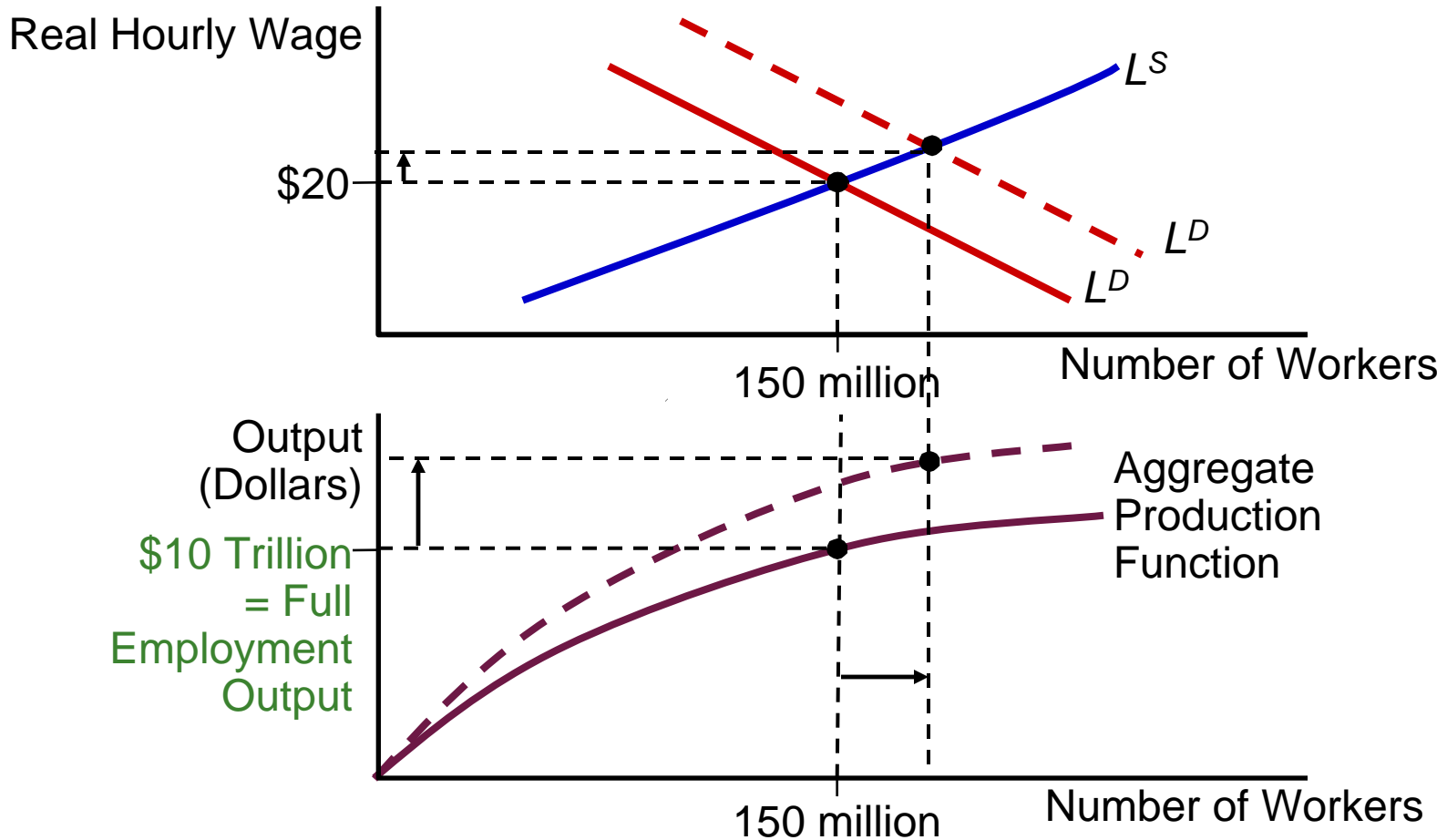
Basic Idea Behind RBC



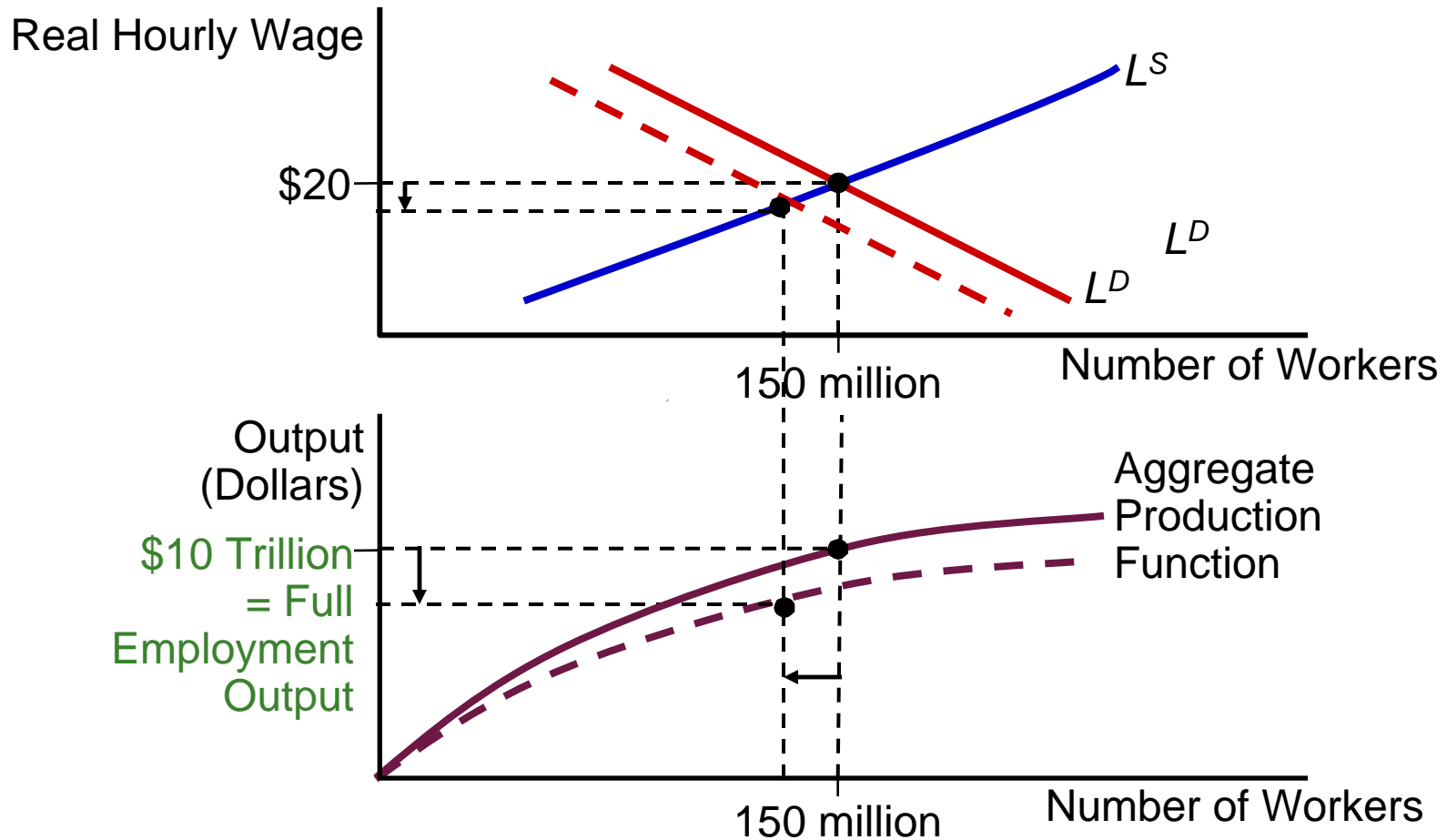
Large Expansion



Small Expansion



Recession



Conclusions

- Kydland and Prescott (1982) make a compelling scientific argument that this explanation can account for many salient features of the data
- They both got a Nobel Prize for their contribution in 2004
- Prescott's Nobel Prize lecture available at http://nobelprize.org/nobel_prizes/economics/laureates/2004/prescott-lecture.html

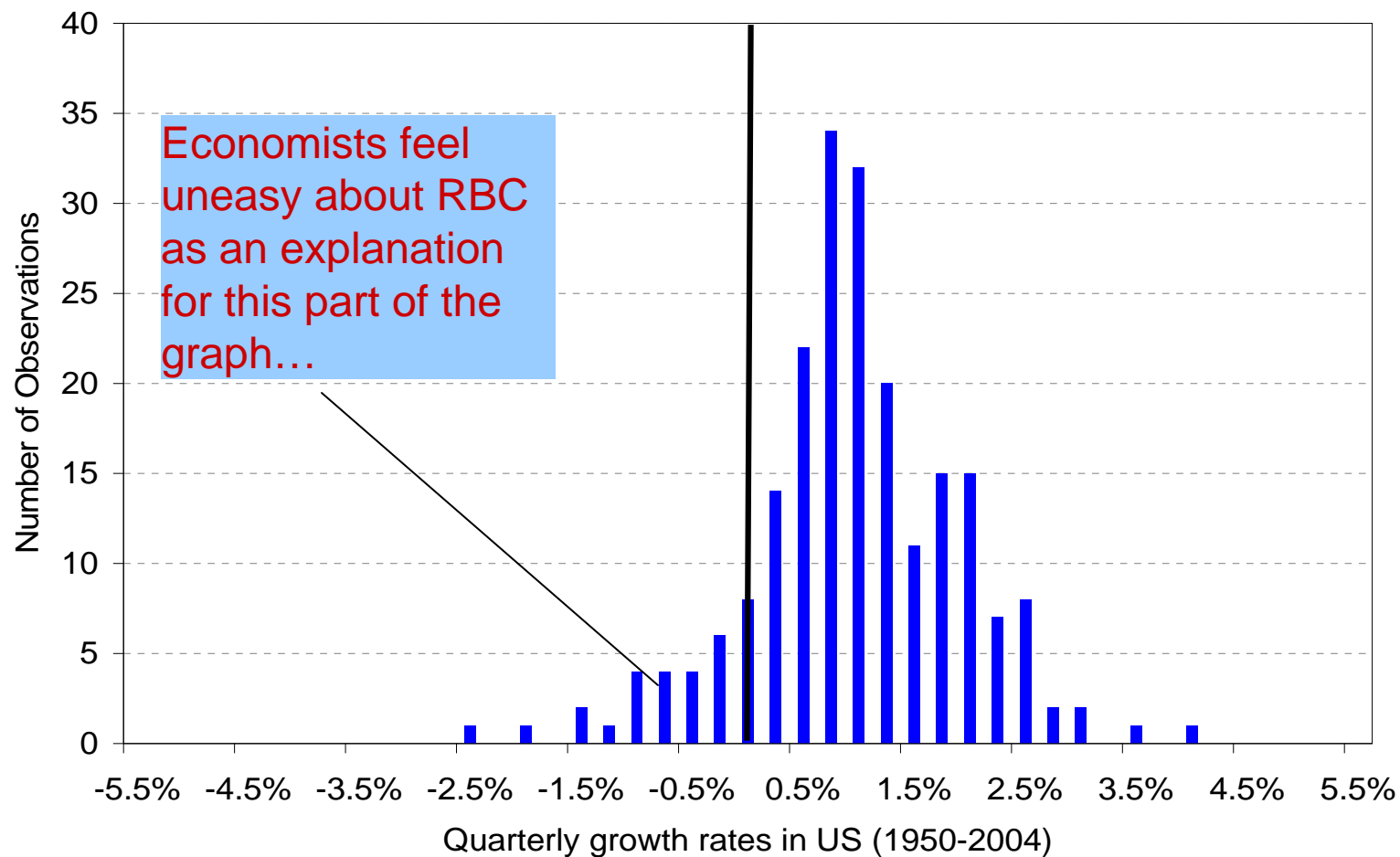
Finn Kydland (left) and Ed Prescott (right)



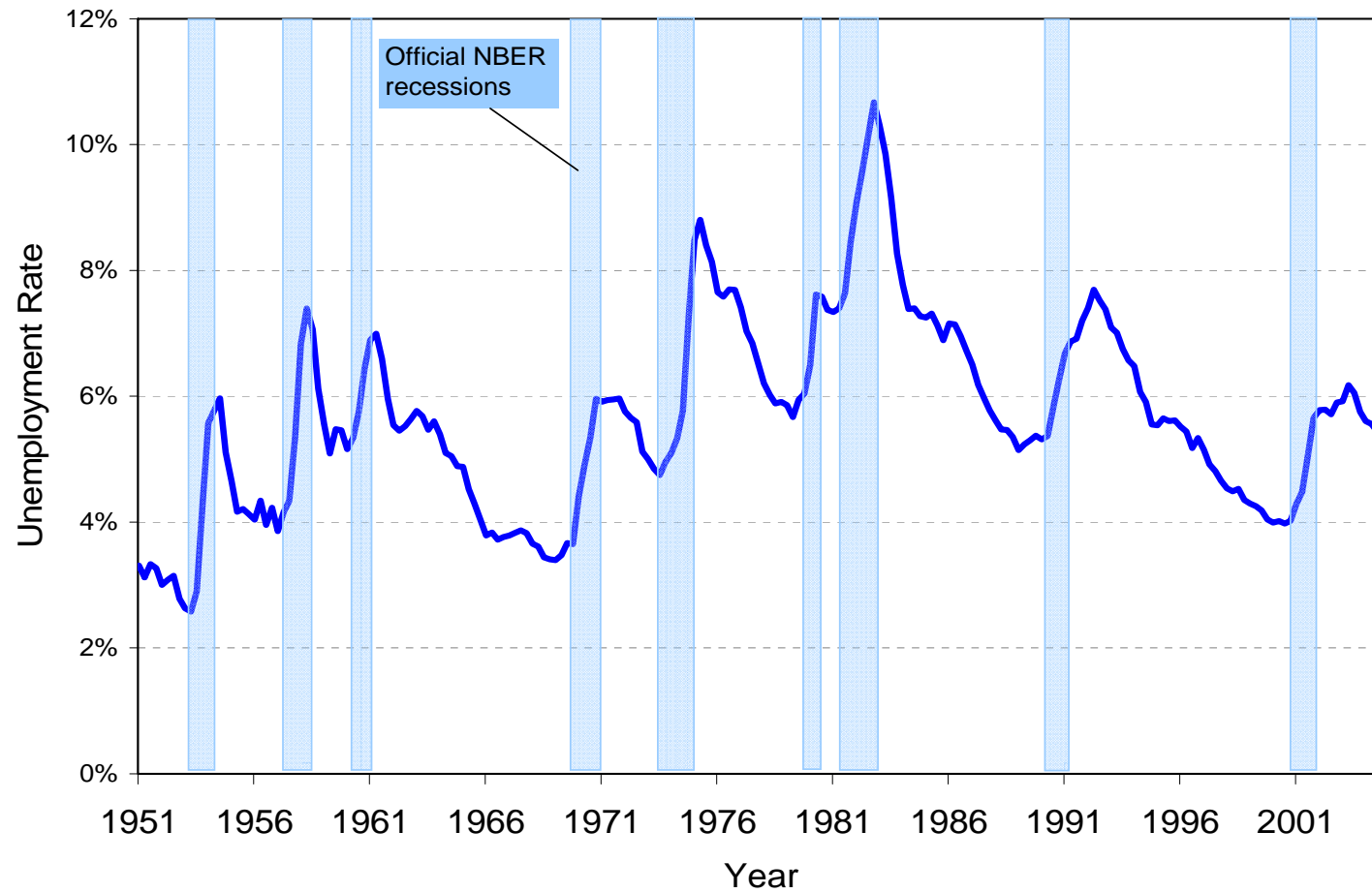
Criticism of RBC Theory

- Deep recessions raise the question what technological regress means
 - Economists feel uneasy about the idea that people simply forget how to produce output
- RBC does not fully satisfactorily account for cyclical unemployment during deep recessions
 - Anecdotal evidence suggests excess unemployment during deep recessions is not a *voluntary* choice of labor supply

Criticism of RBC Theory



Criticism of RBC Theory



Competing View

- Classical model explains output fluctuations from the supply-side
- Demand-side unimportant by Say's law
 - On aggregate level, everything that is produced automatically finds demand
- In 1936, as a response to Great Depression, John Maynard Keynes developed theory of demand-side driven model of economic fluctuations

John Maynard Keynes (on the right)



Modern View and Policy Debates

- Common view among economists on business cycles: a mix of Keynesian ideas and RBC theory
- Major problem: Difficulty to distinguish which force is responsible for a given recession
- Different policy implications of the two theories
 - RBC theory suggests that Fed should do nothing during recession
 - Keynesian theory suggests Fed can help