

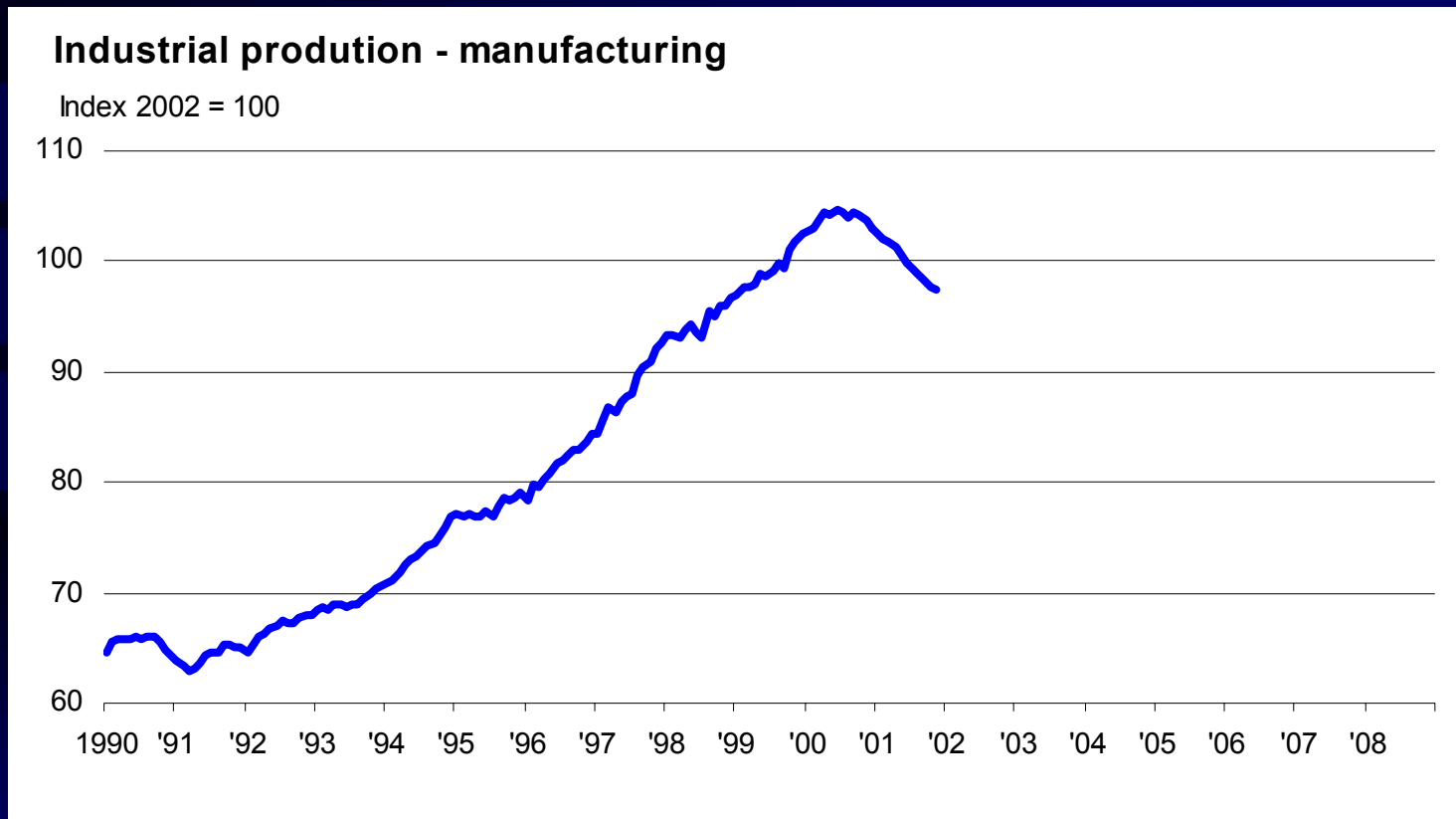
# Is the U.S. Losing Its Manufacturing Base?

**Georgia State University**  
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Atlanta, Georgia  
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Federal Reserve Bank of Chicago

# The Setup

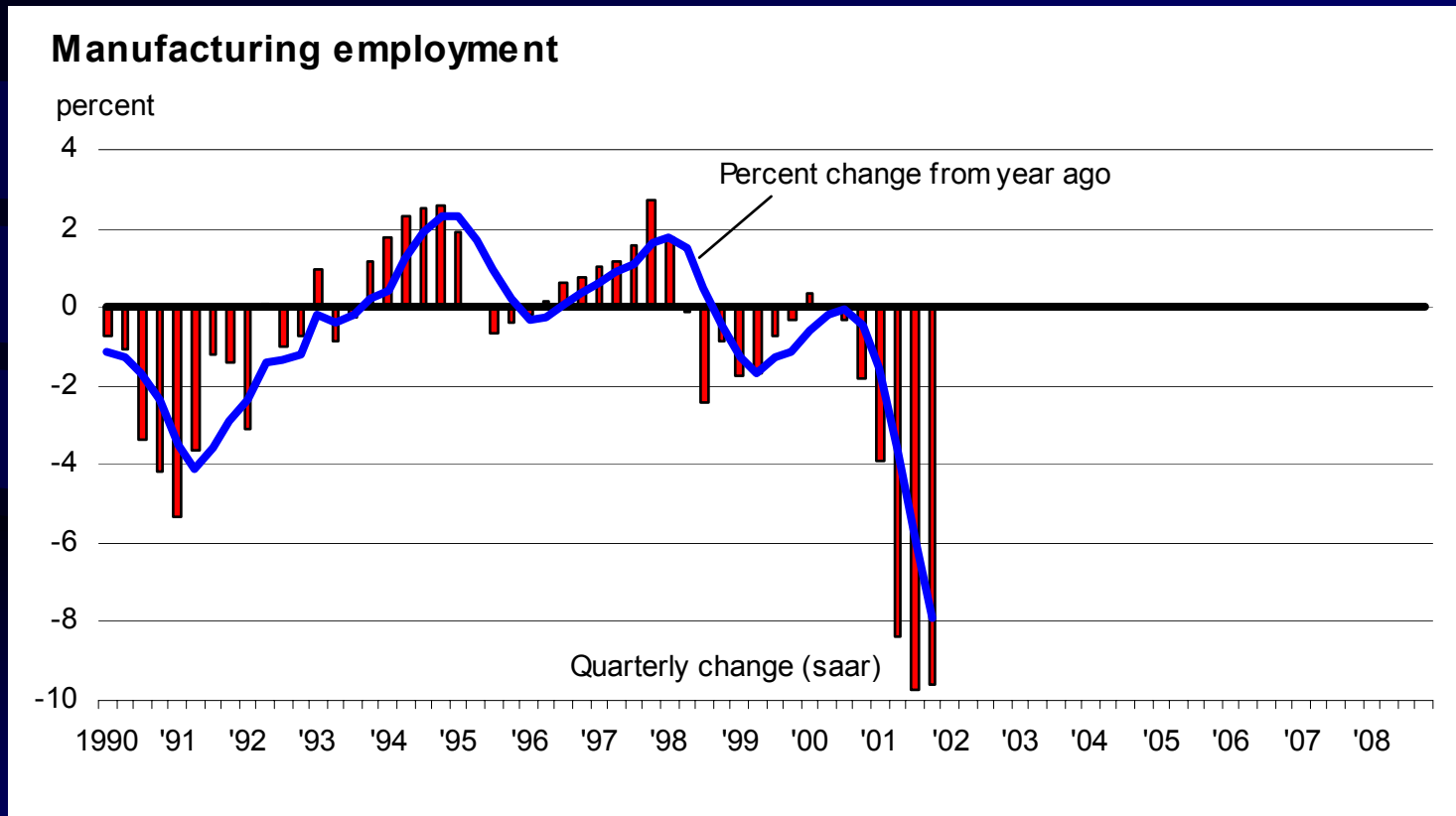
# Manufacturing output peaked in June 2000 and fell 6.8% over the following 18 months



# Manufacturing capacity utilization collapsed in the middle of 2000

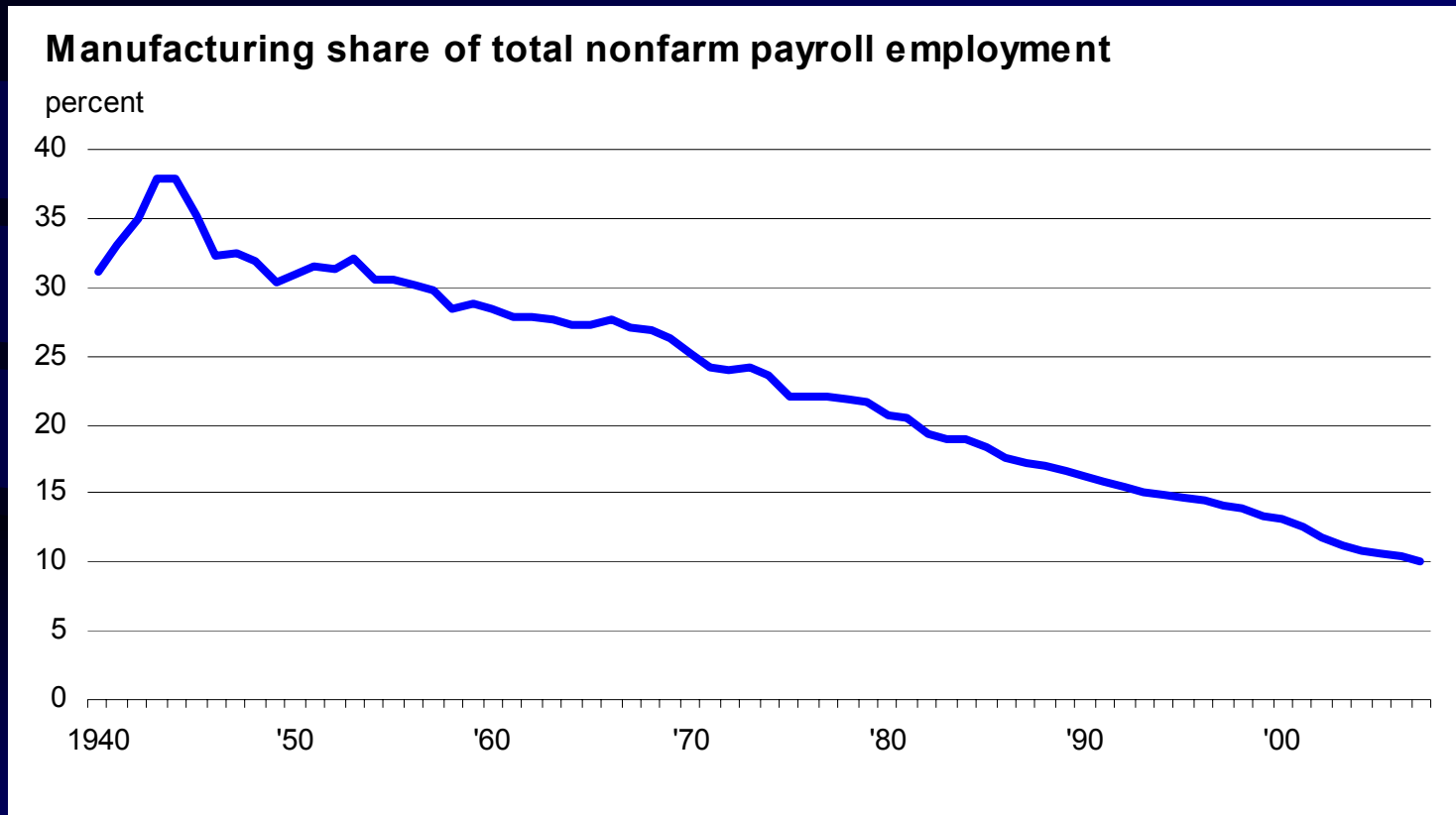


# Job declines in the manufacturing sector began to escalate, with nearly 1.5 million jobs lost

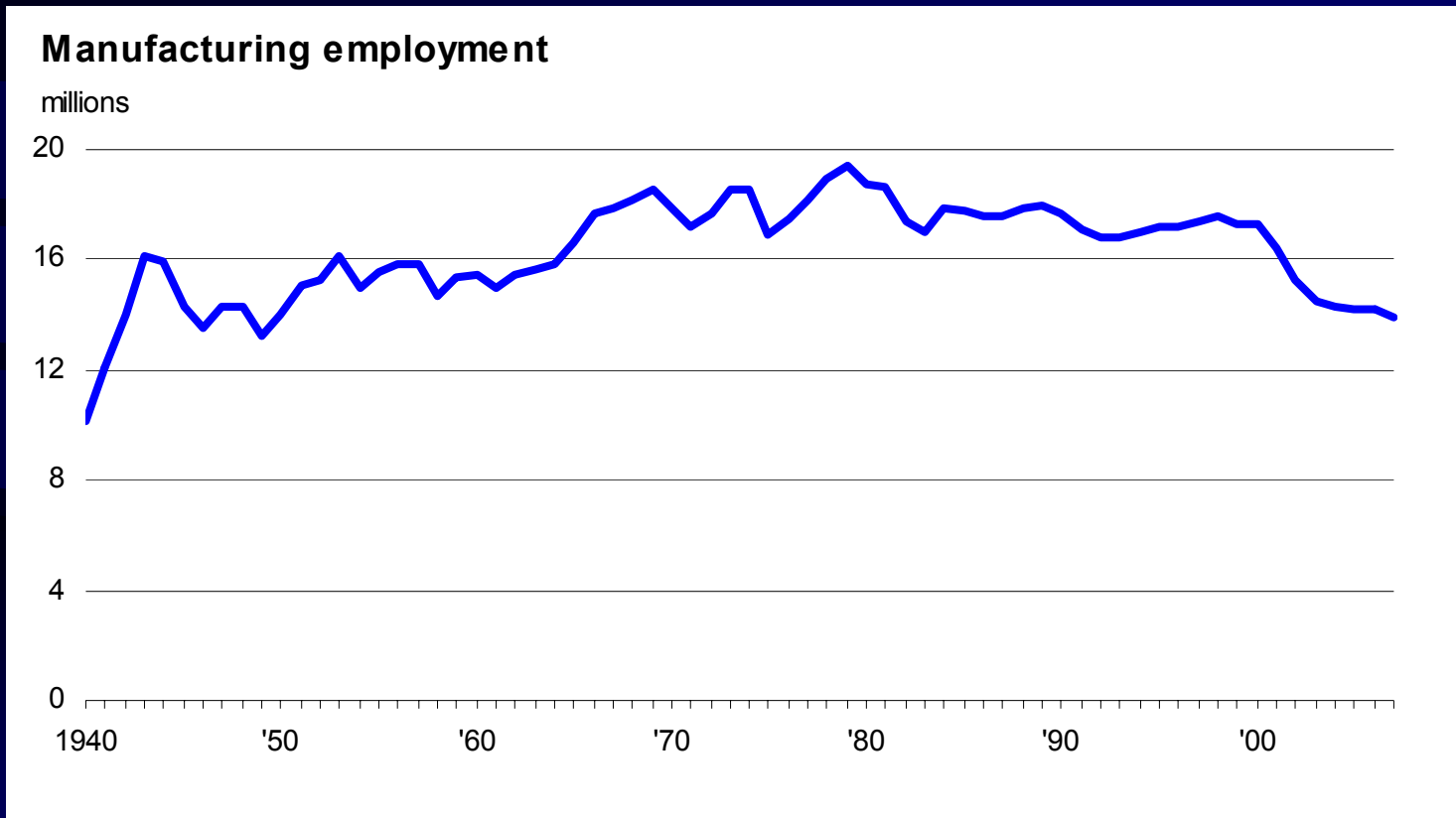


# **Is the U.S. Losing Its Manufacturing Base?**

# Manufacturing employment as a share of national employment has been declining for over 50 years

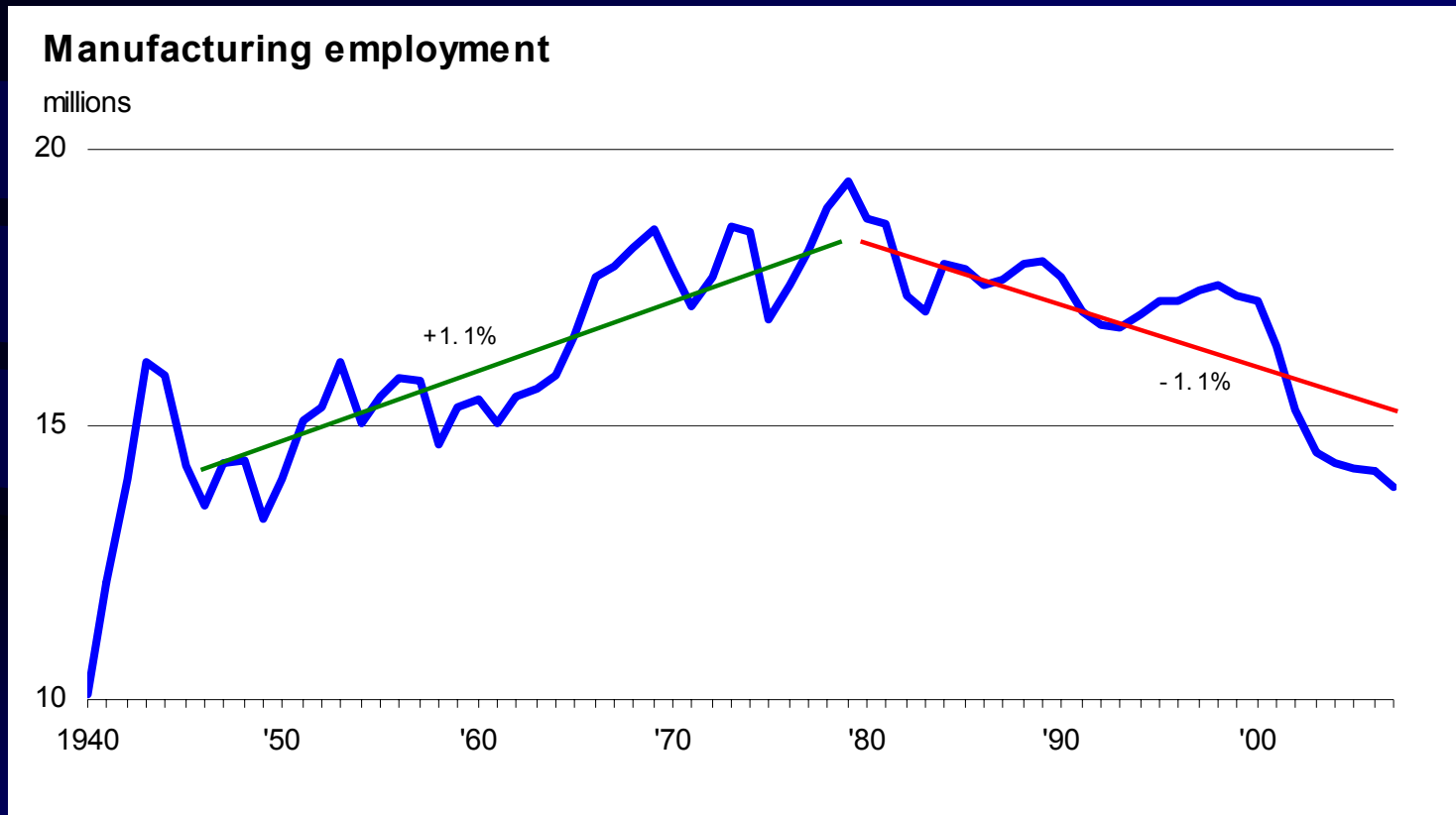


The number of jobs in manufacturing has been relatively stable over this period, averaging 0.1% growth per year since 1947

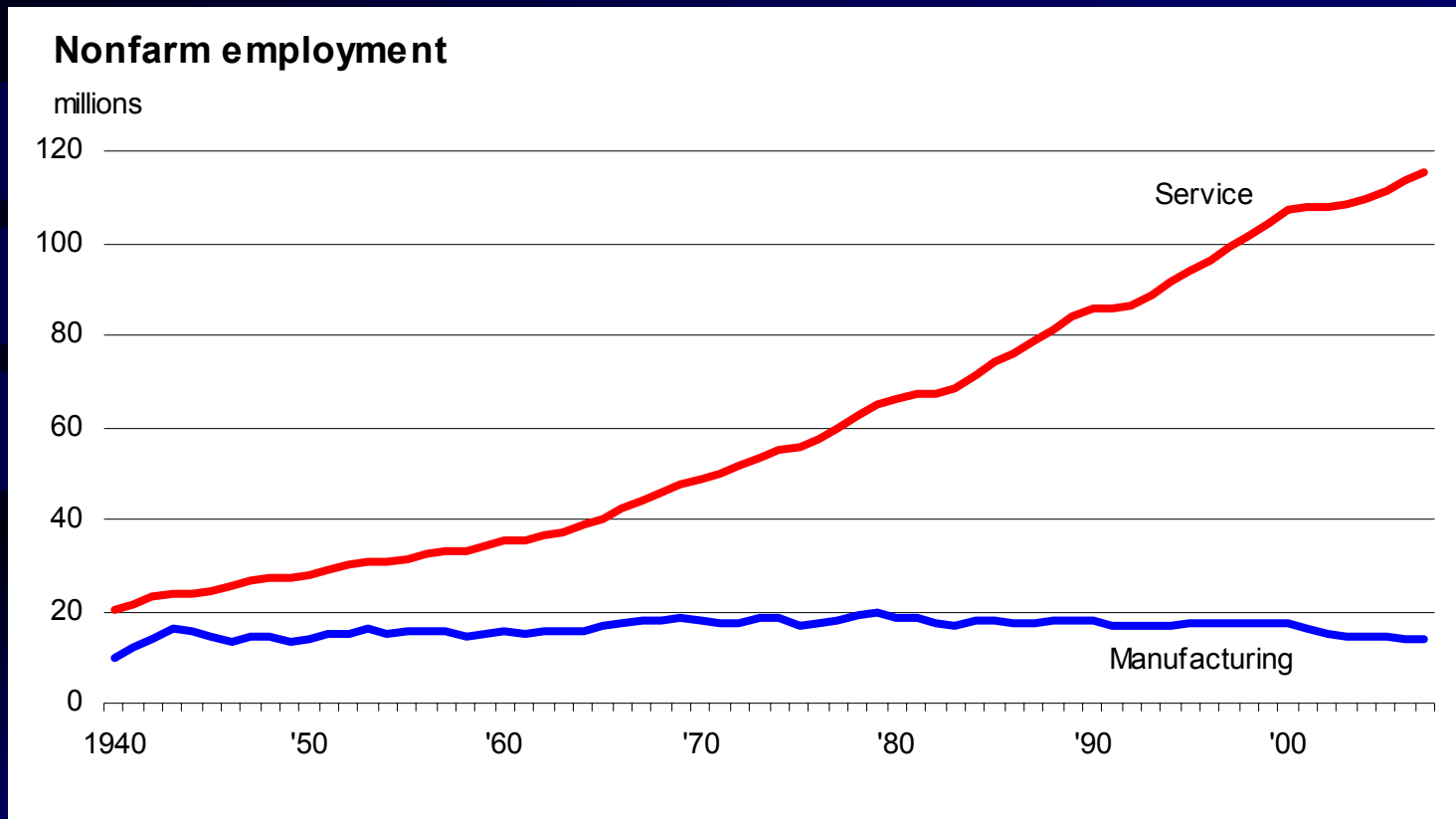




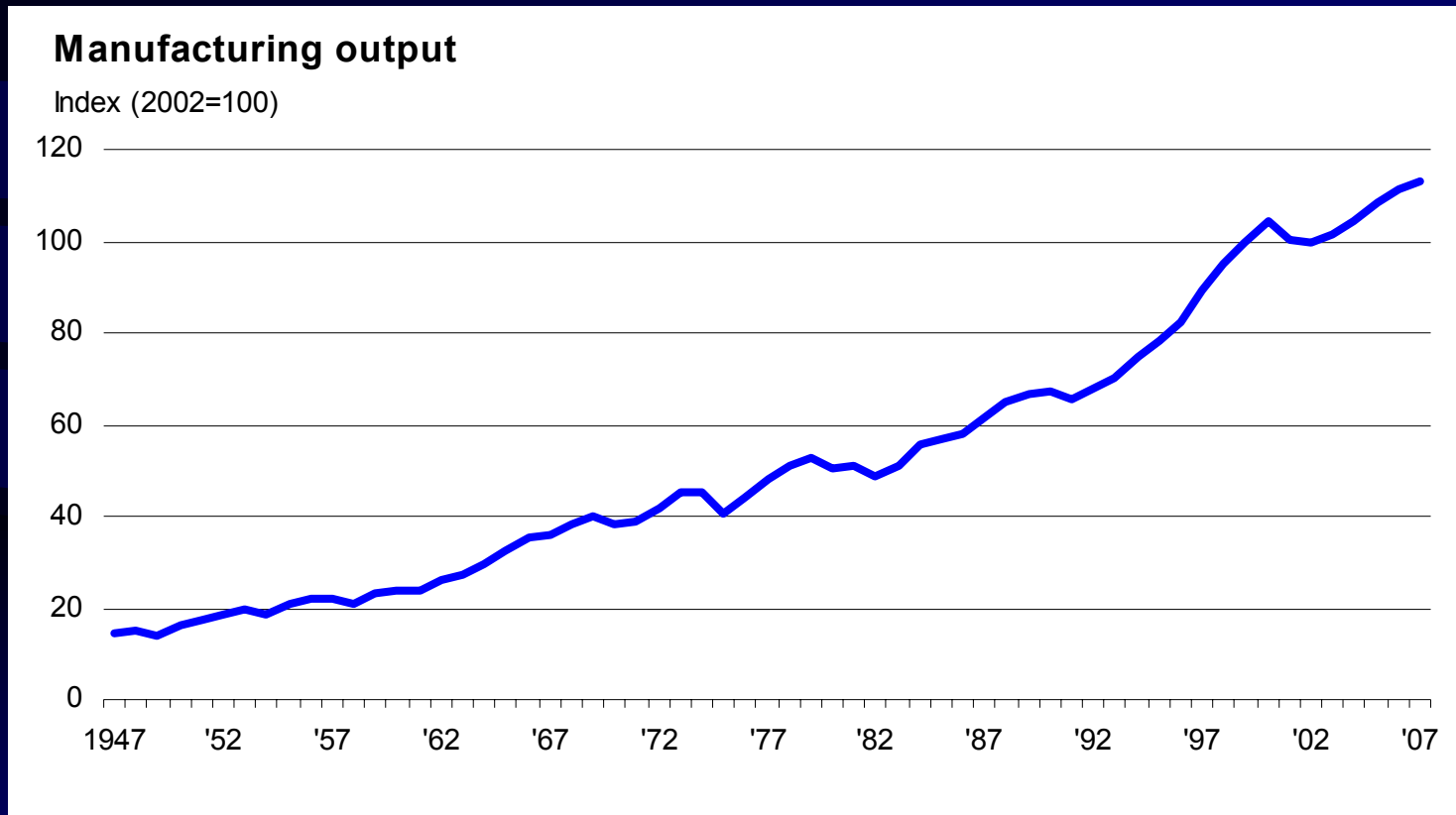
**Not to make a mountain out of a molehill,  
but manufacturing employment was increasing up until 1979  
and has been moving lower over the past 28 years**



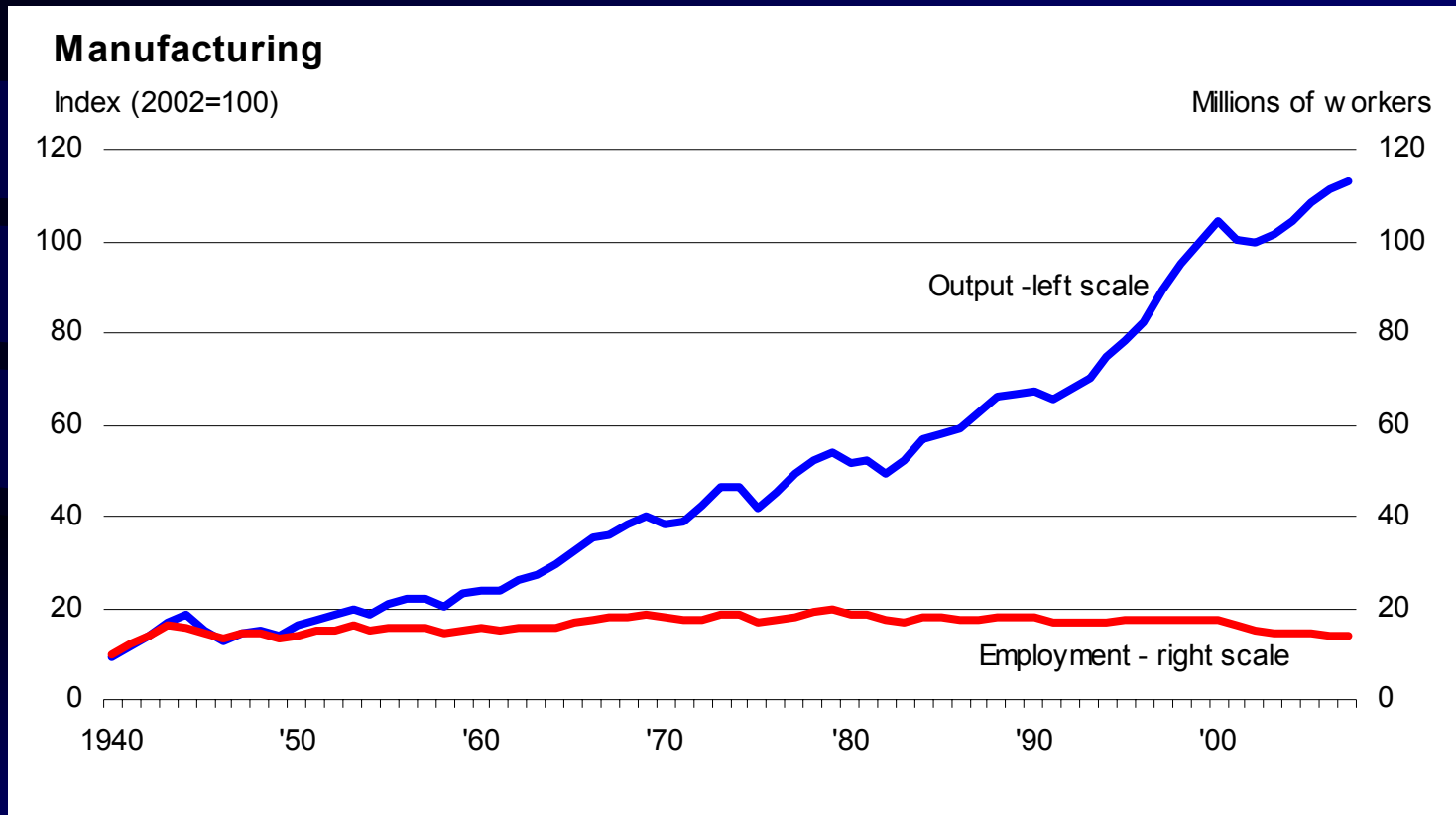
**However, service sector employment has grown more than fivefold over this period, averaging growth of 2.5% per year since 1947**



**While manufacturing employment growth was flat over the past 50 years, manufacturing output increased by 3.7% per year**



**This translated into an almost 700 percent increase in manufacturing output over this time period**



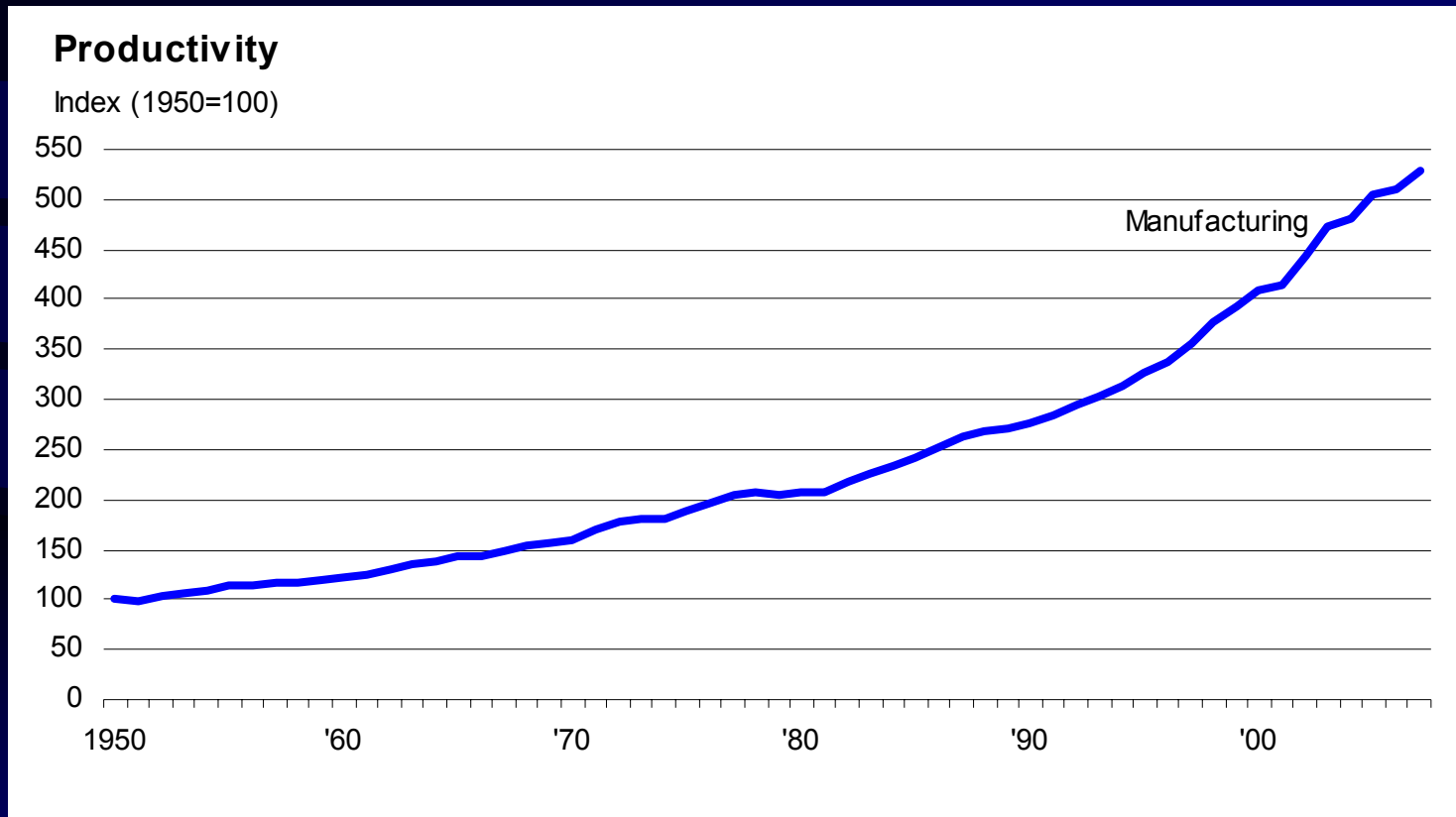
# The Caterpillar 797B costs over \$5,000,000



**The Caterpillar 797B costs over \$5,000,000**



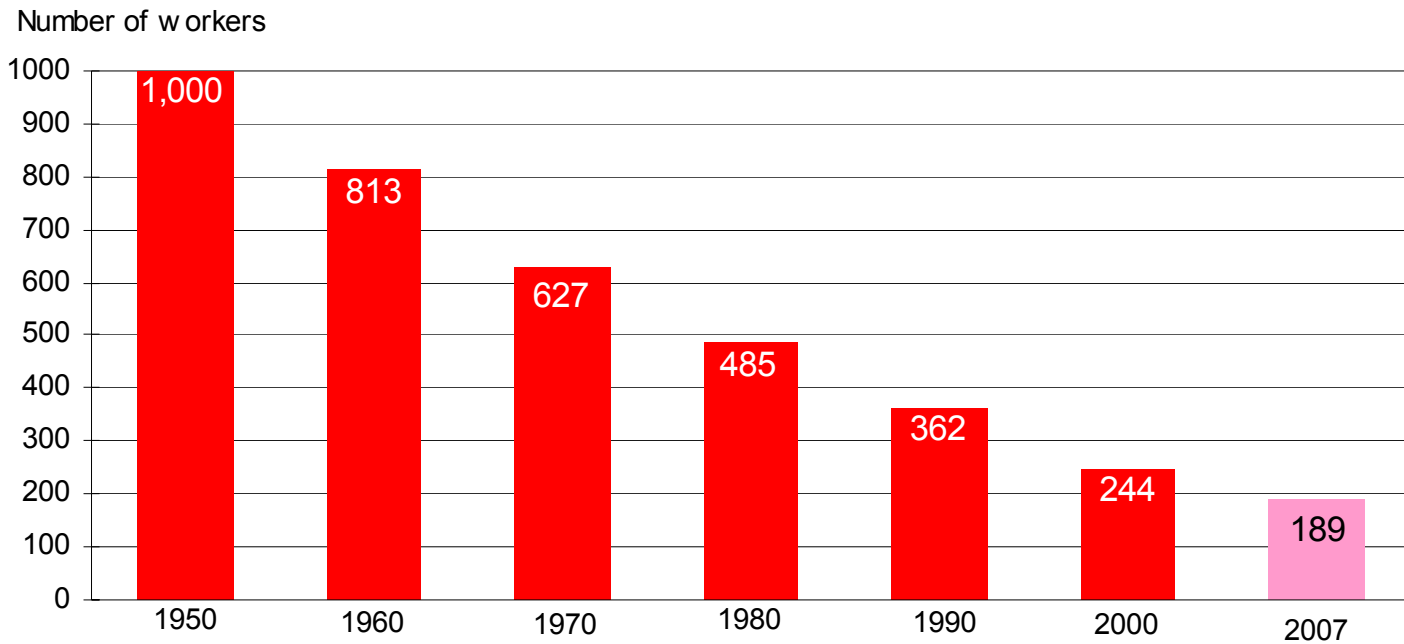
The increase in output can be attributed to strong productivity growth experienced by the manufacturing sector



# What took 1,000 workers to produce in 1950 takes less than 200 workers today

## Manufacturing Sector:

### Number of workers needed to do the work of 1,000 workers in 1950

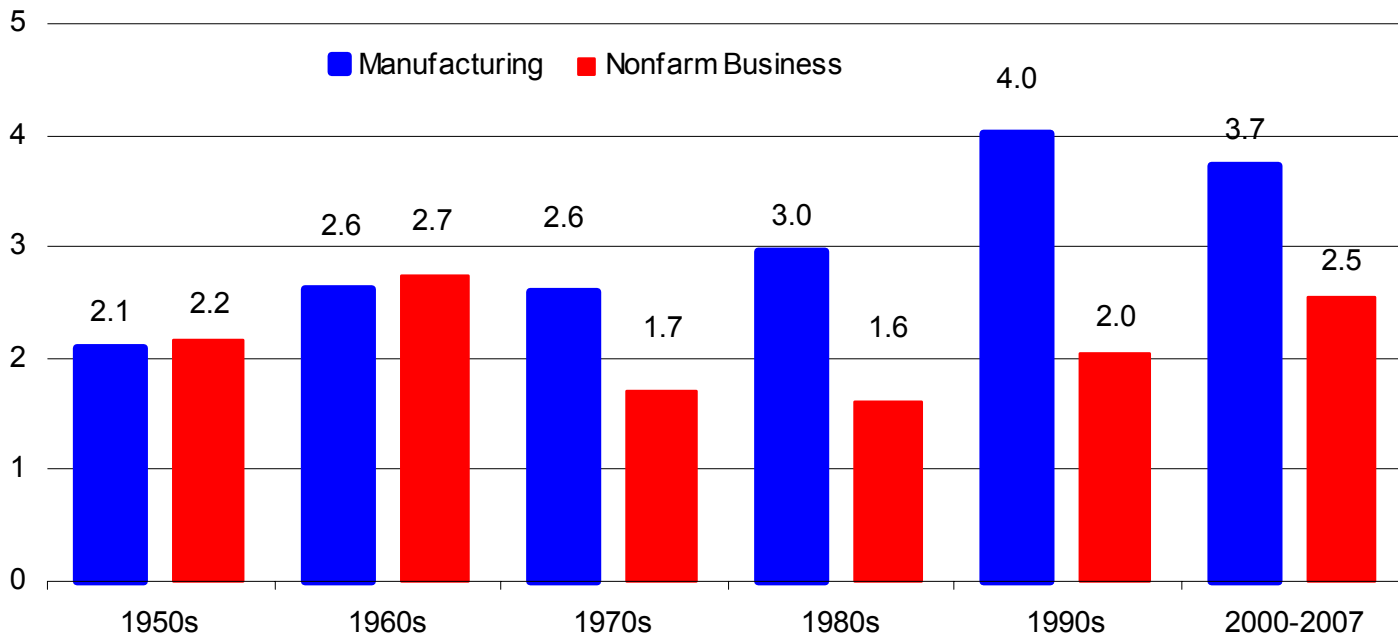




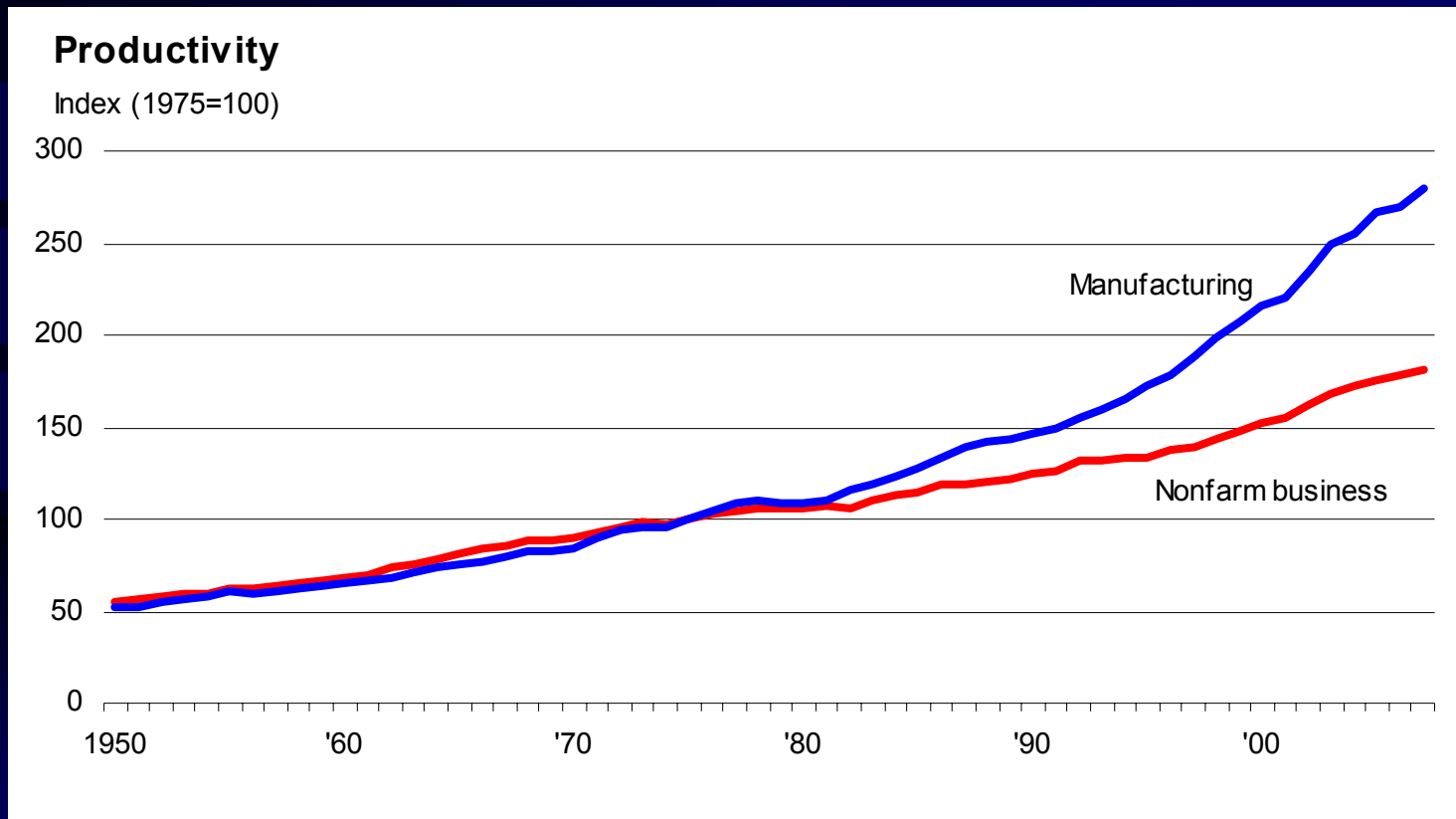
# Manufacturing productivity growing faster over the past 37 years

## Productivity

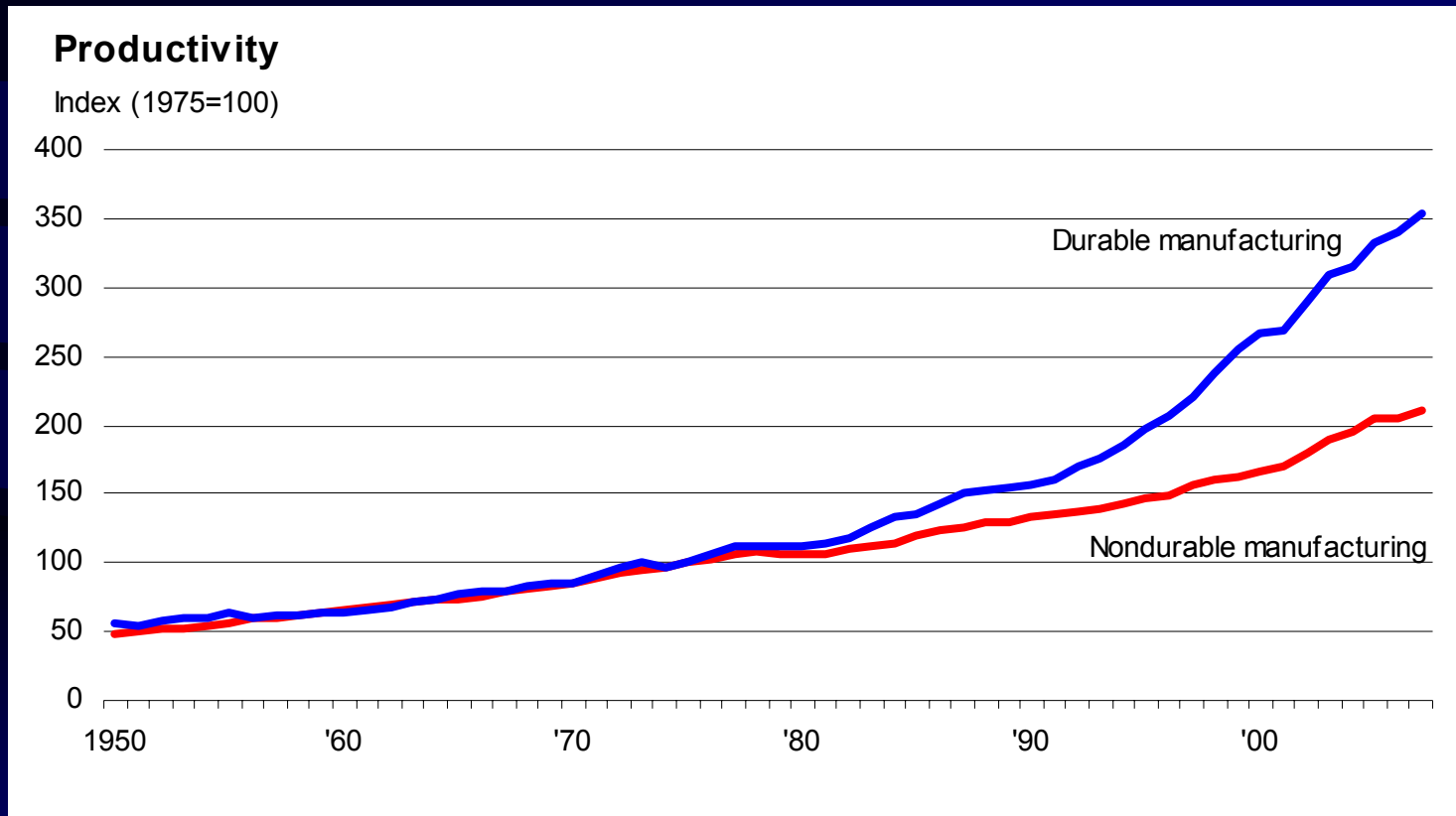
Average annual percent change



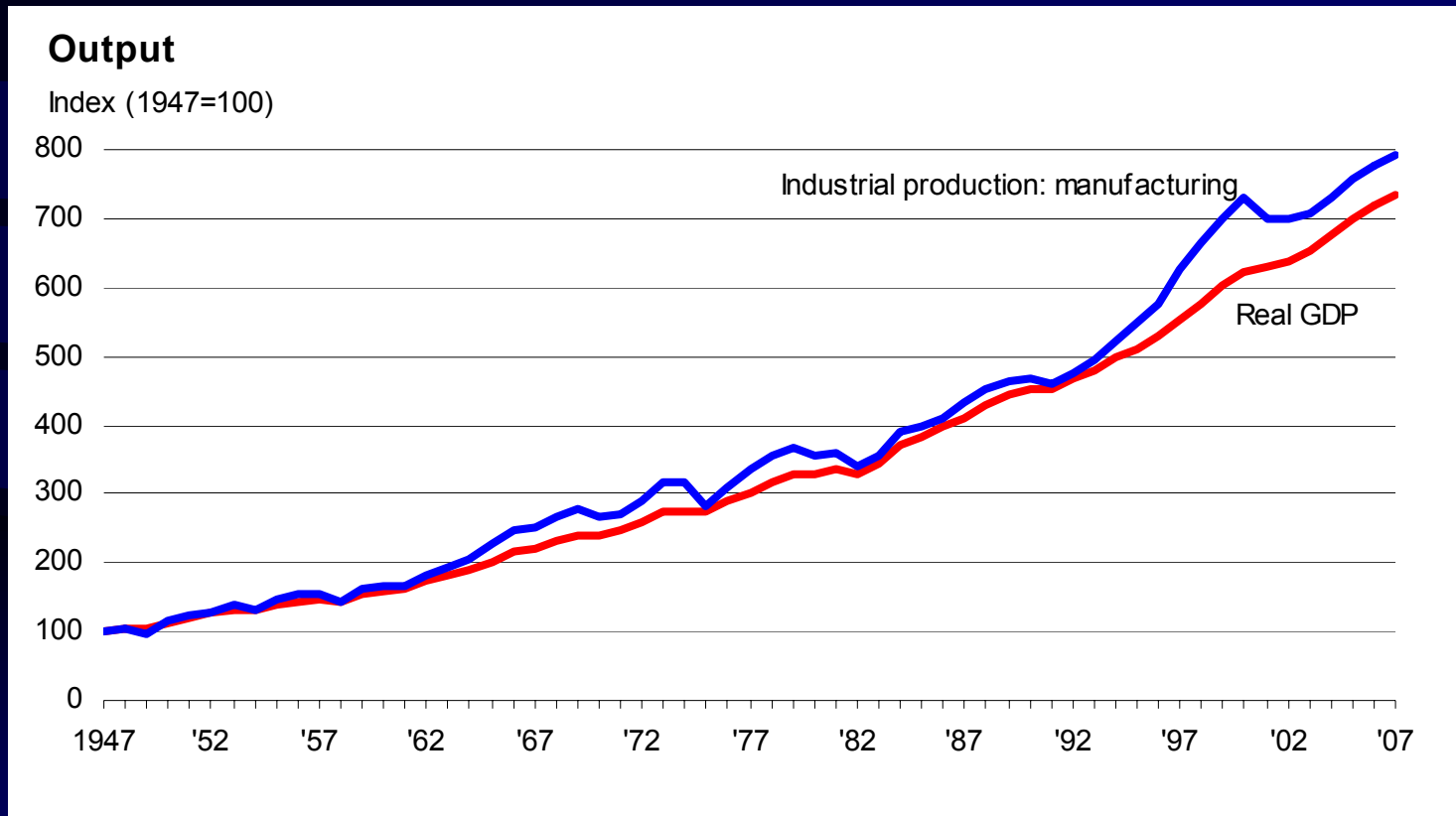
# The divergence in productivity appears to have occurred around the mid-70s



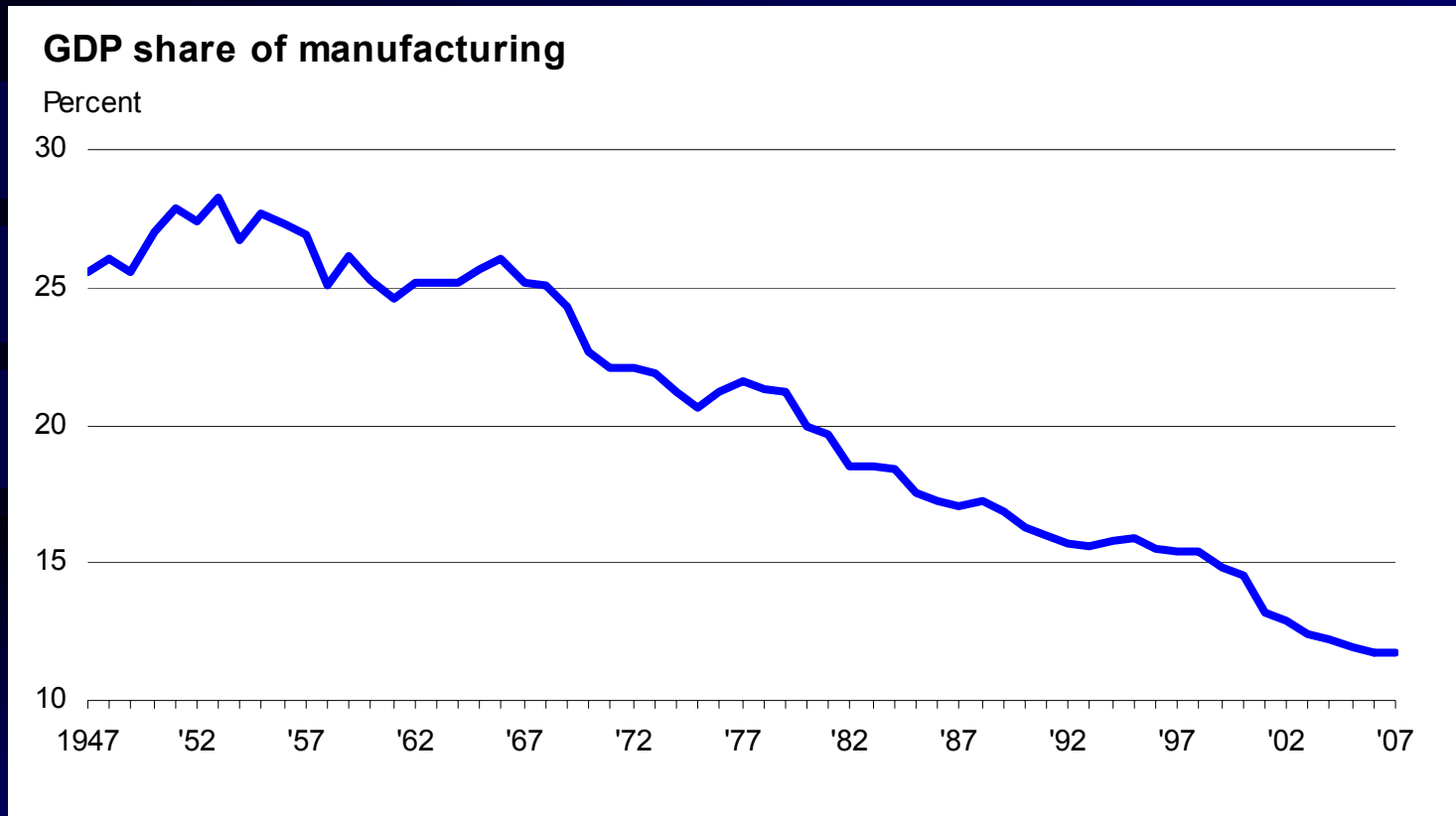
# This divergence is especially apparent in durable manufacturing



# Strong productivity growth has allowed the manufacturing sector to grow faster than the overall economy

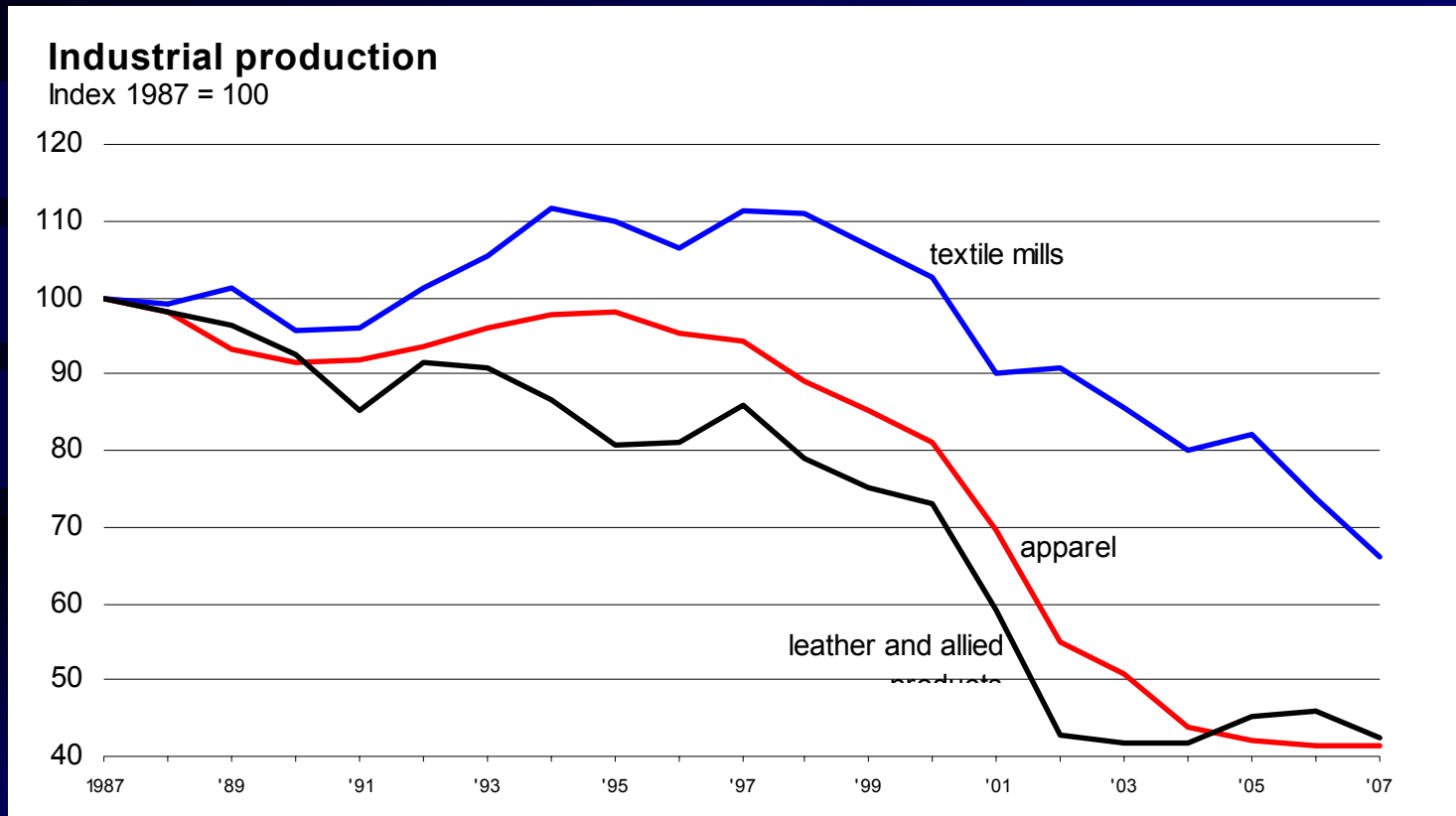


**However, lower relative prices in the manufacturing sector has lead to manufacturing comprising a smaller share of GDP over time**



# Winners and Losers Among Manufacturers

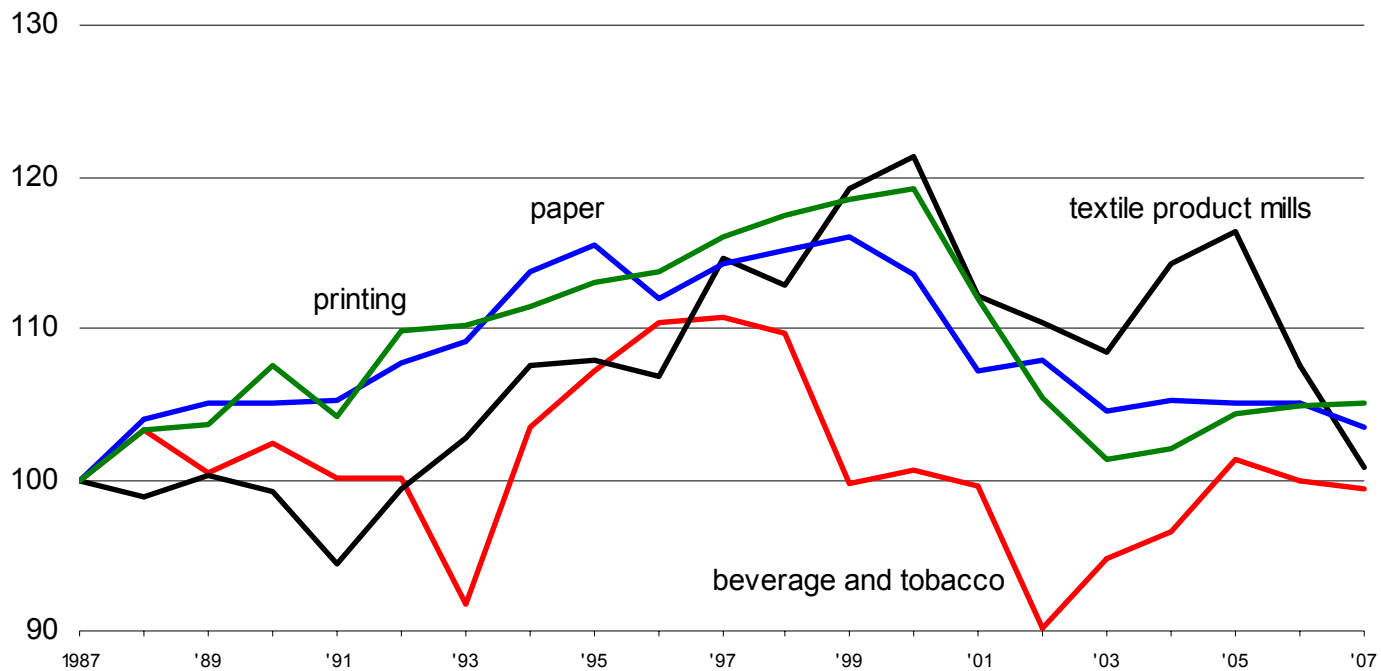
# These industries have experienced significant losses in production over the past twenty years



# These industries' production has been flat over the past twenty years

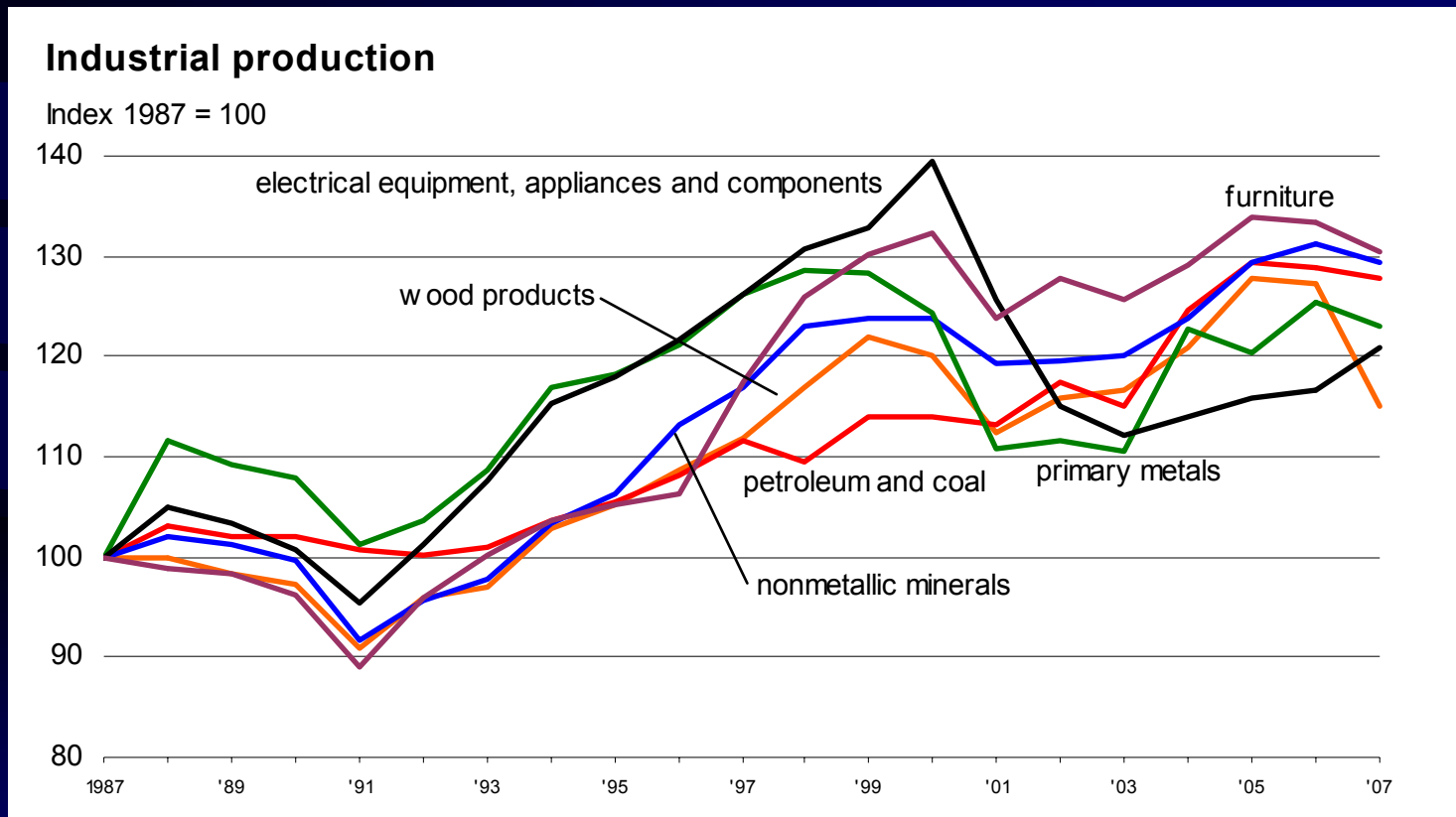
## Industrial production

Index 1987 = 100

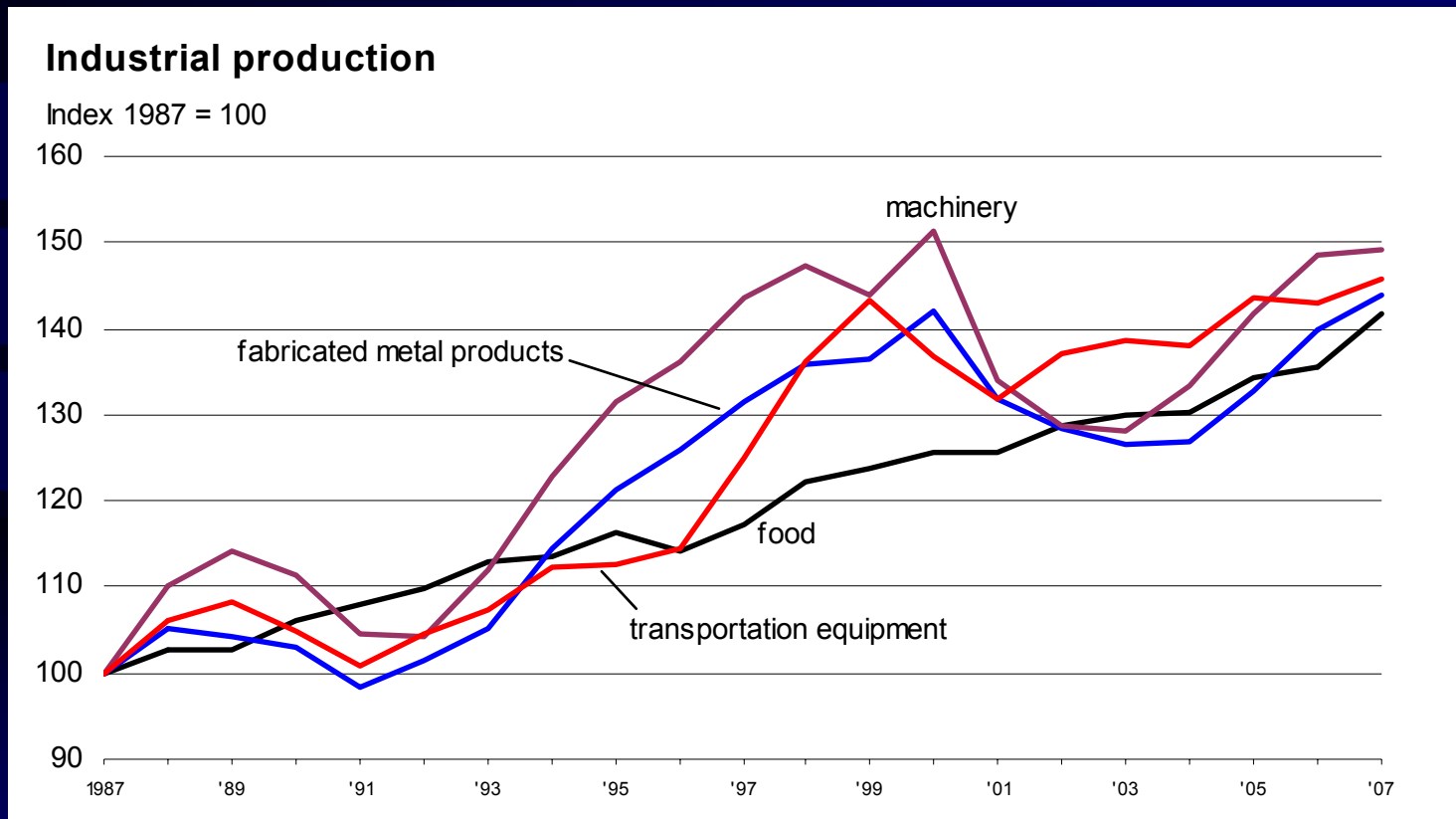




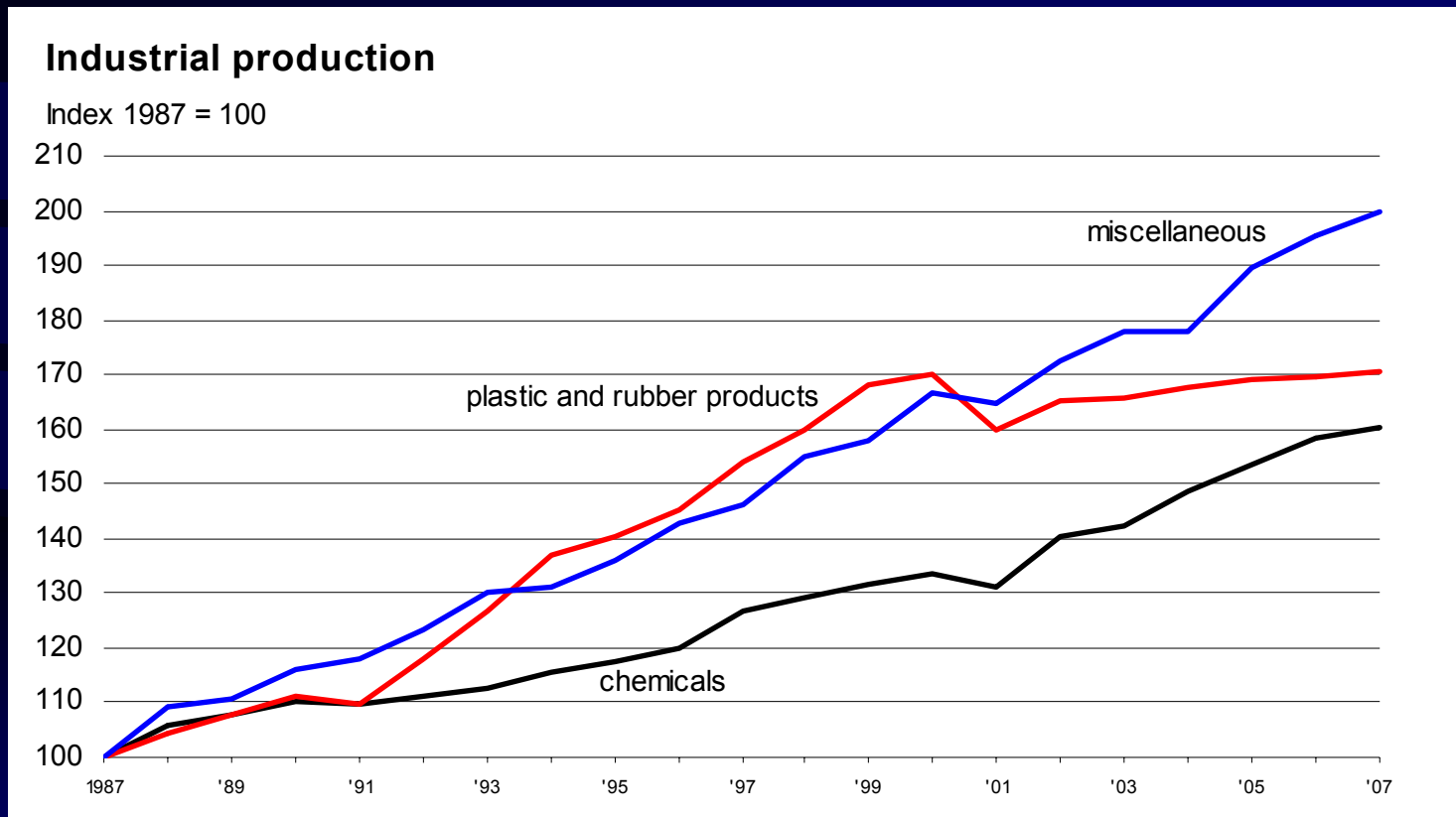
# These industries' production growth has been moderate over the past twenty years



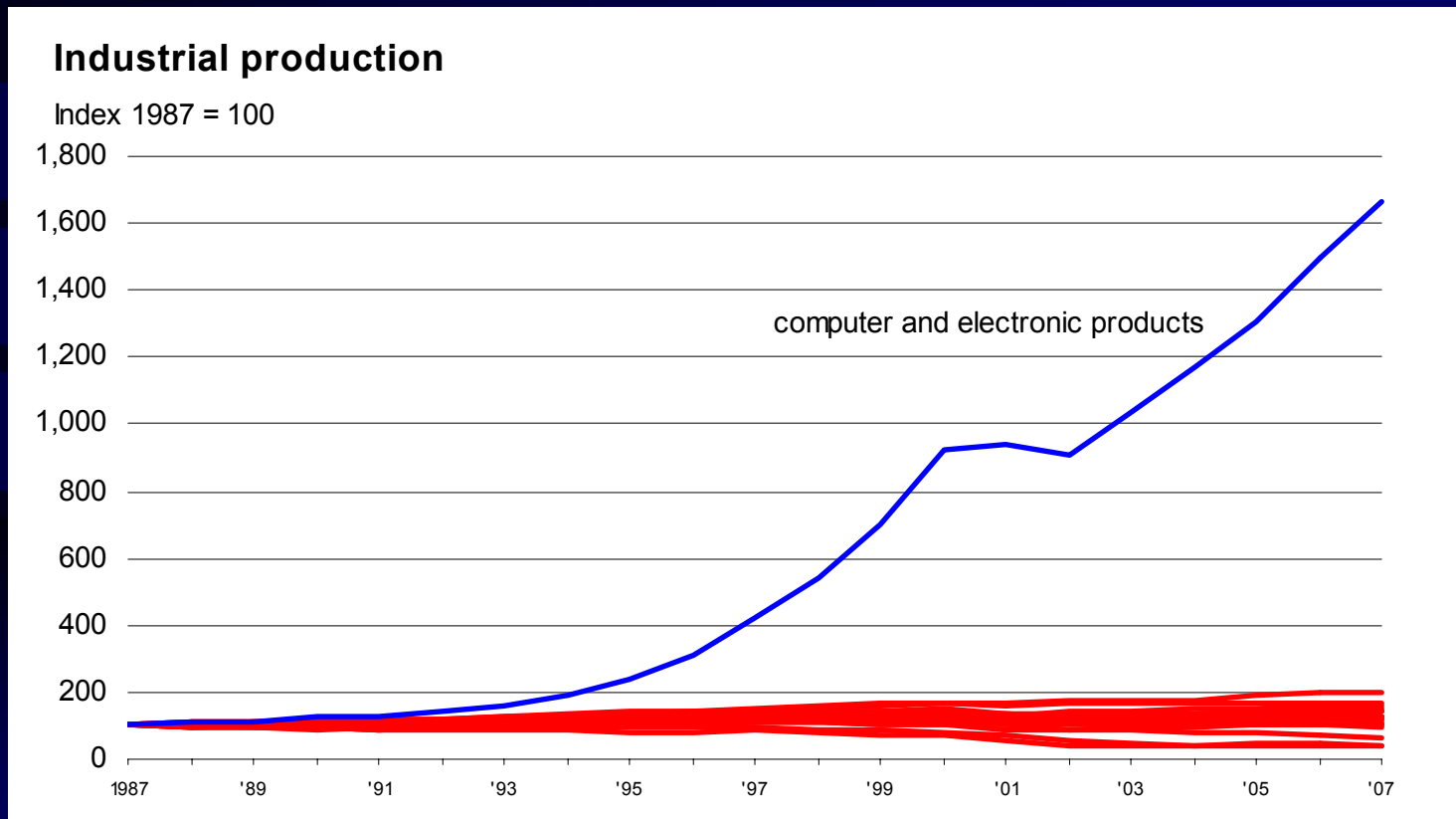
# These industries' production growth has been solid over the past twenty years



# These industries' production growth has been among the strongest over the past twenty years

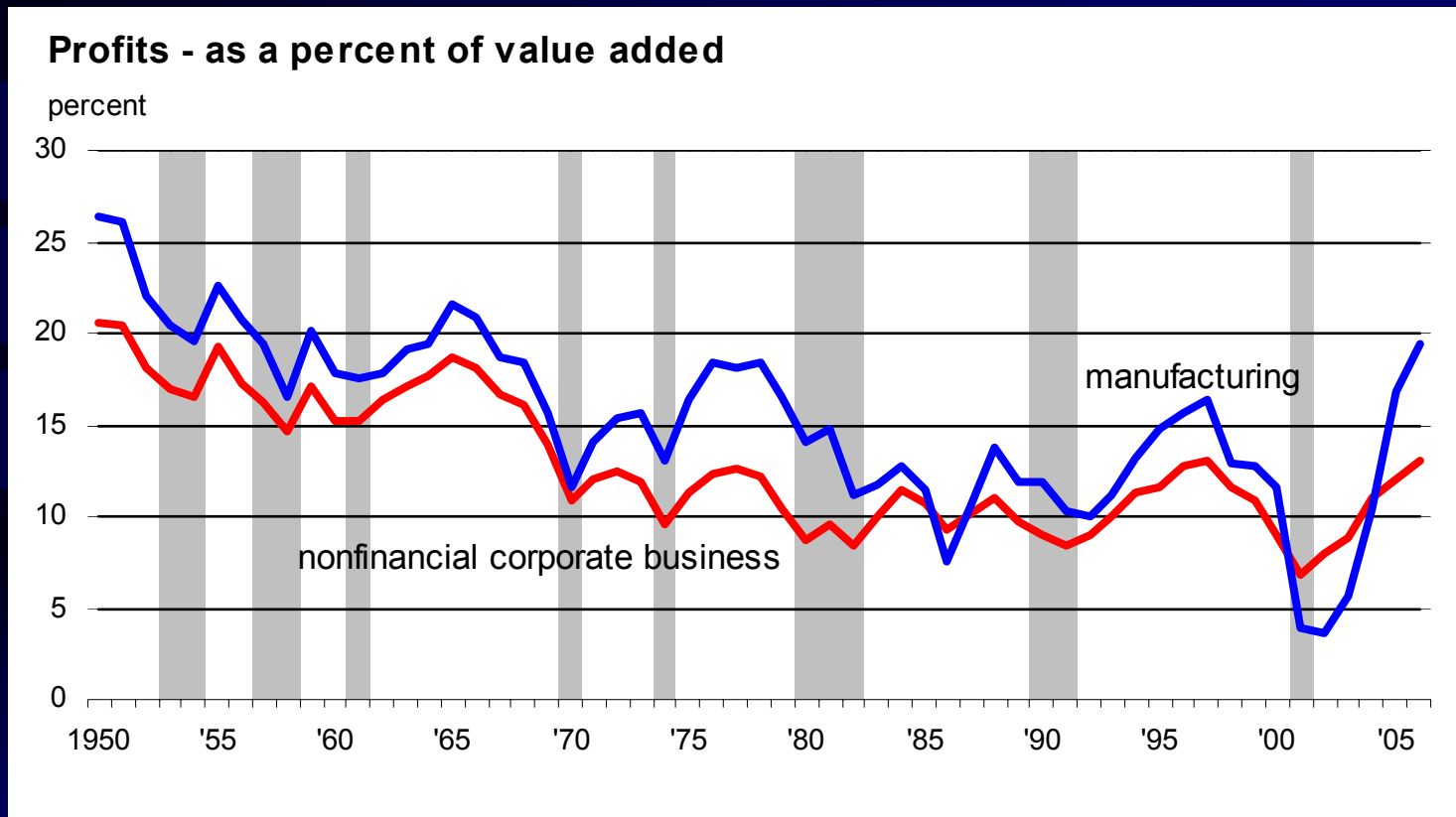


# Computer and electronic production growth has been in a league of its own



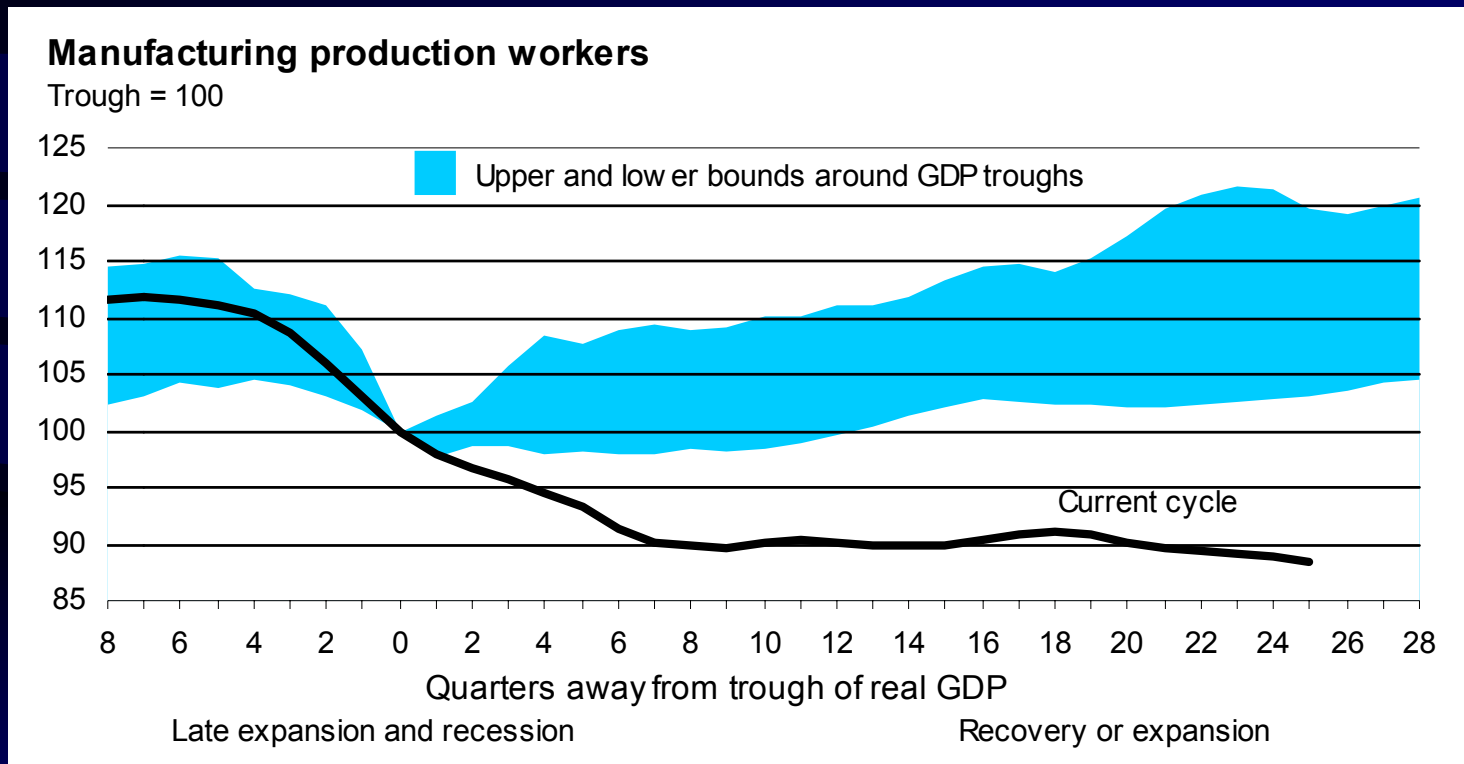
**How profitable  
is manufacturing?**

# While more cyclical, profits in manufacturing have out-performed returns in nonfinancial corporate businesses



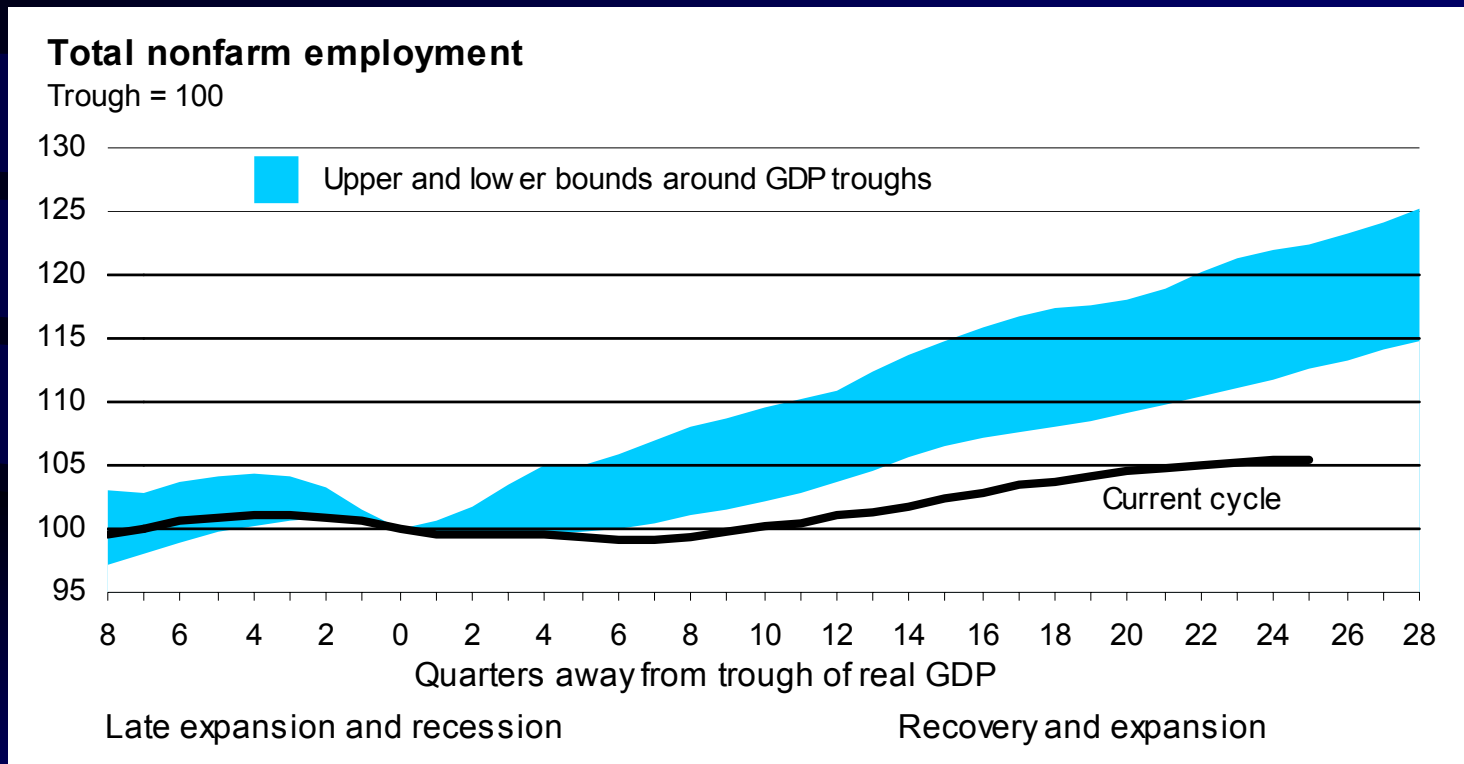
**The doldrums that manufacturing  
experienced in 2000-2003  
were closely linked with the  
economic recession**

# Manufacturing workers have suffered steep employment declines over the current cycle

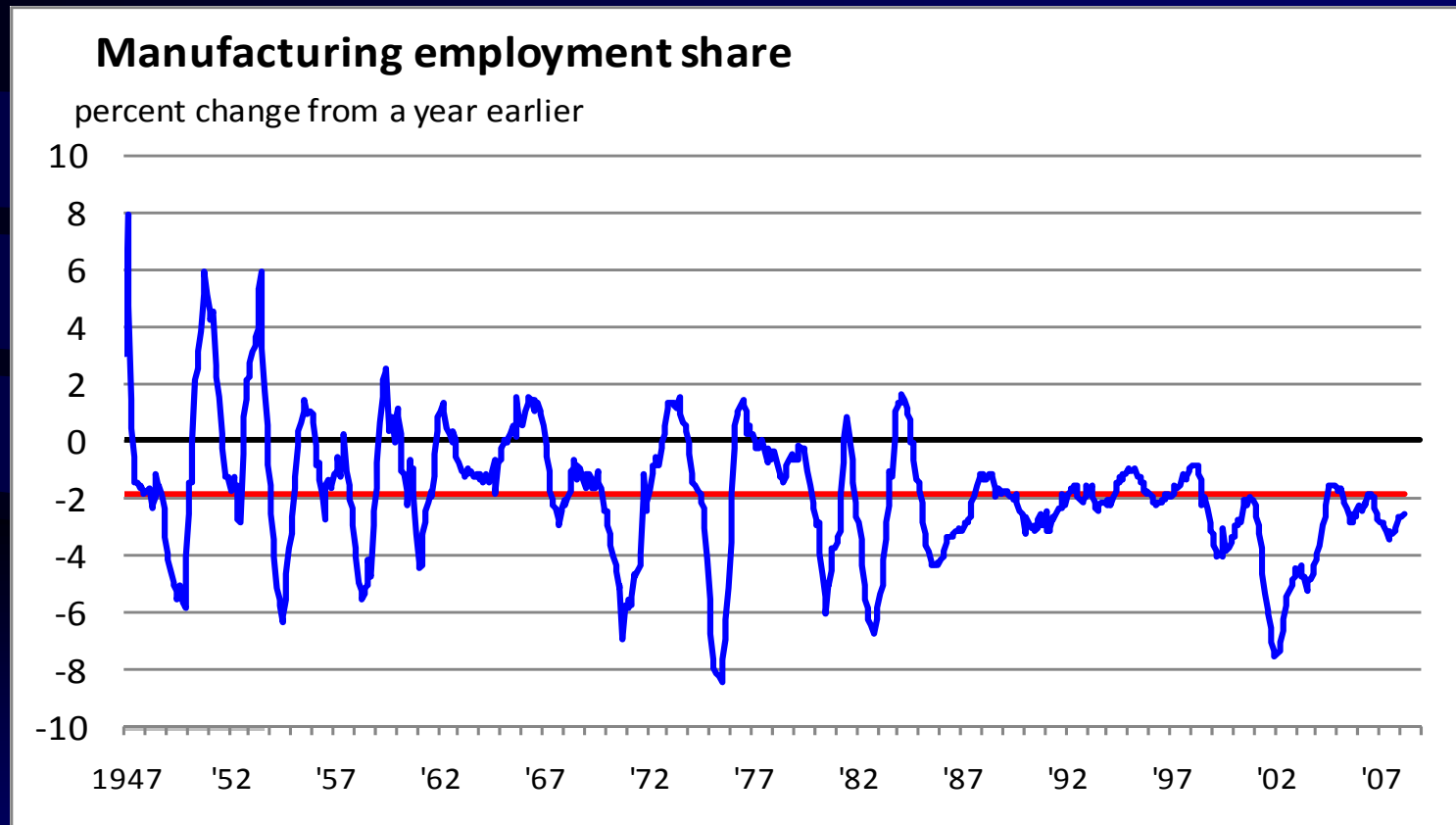




# But the overall economy's employment growth has also struggled



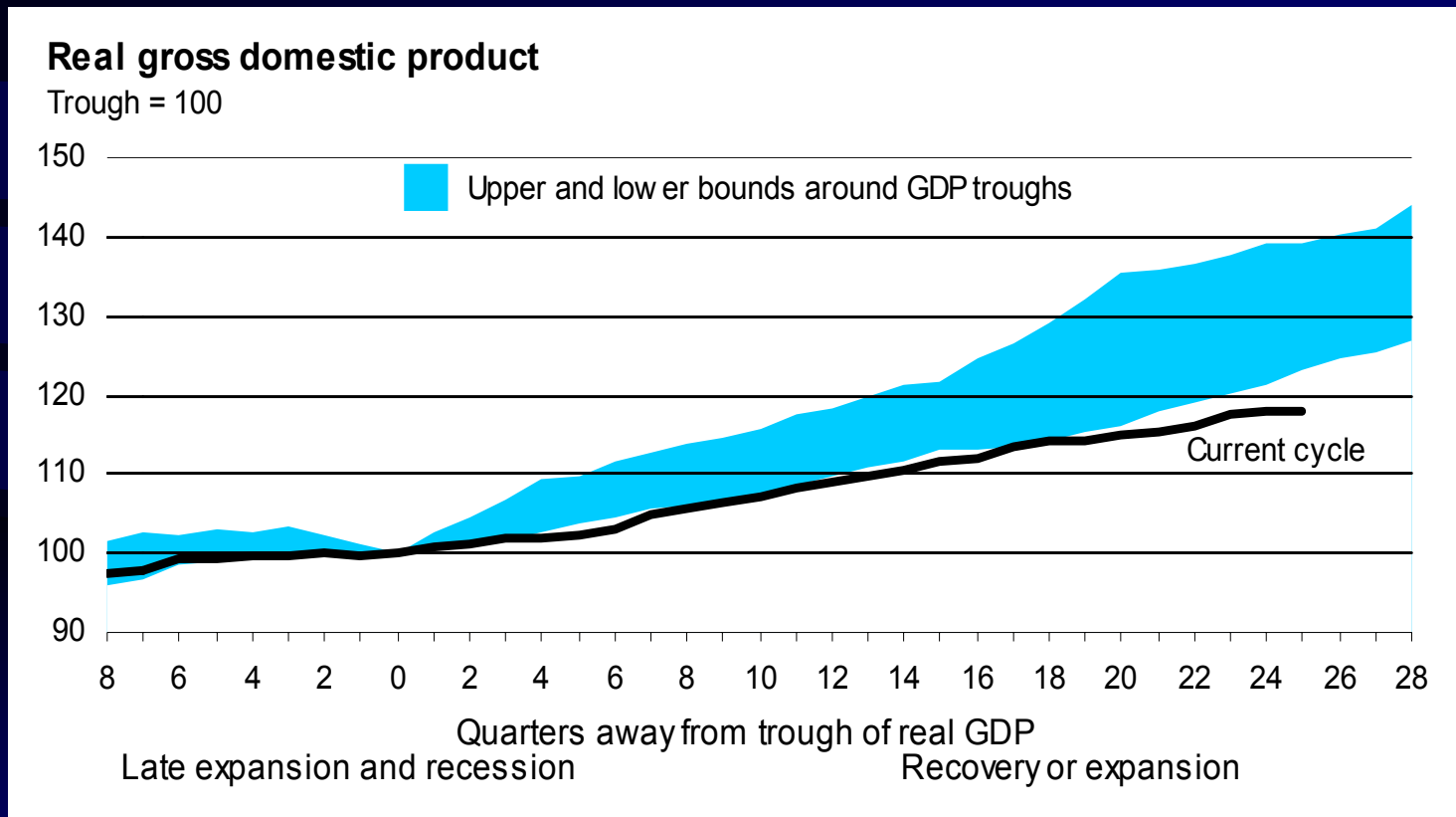
**When changes in nonfarm employment are considered,  
the most recent manufacturing employment downturn  
is not unprecedented**



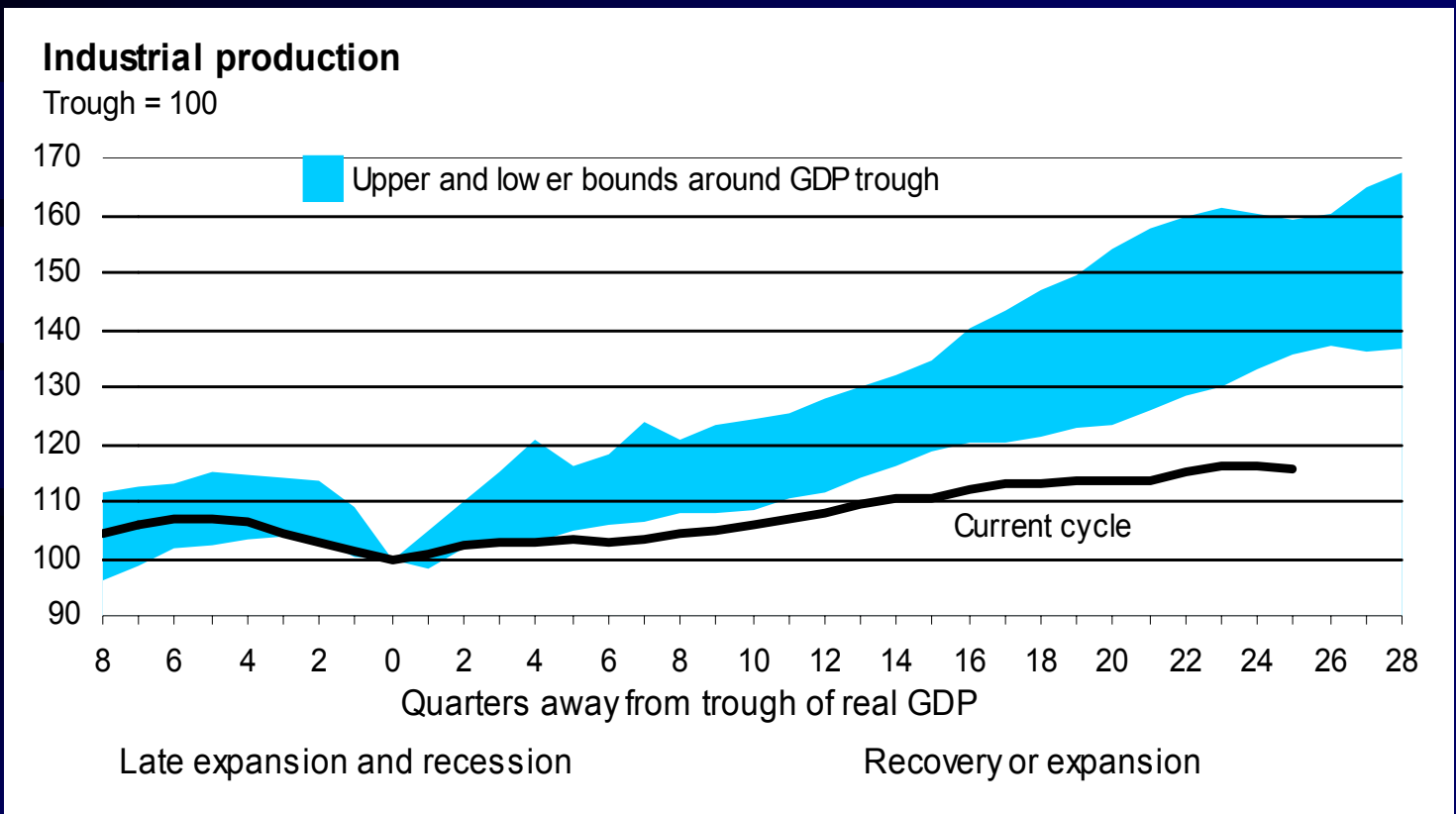
## **The economy has been hit hard by a number of negative economic shocks over the past years**

- The equity market collapse that began in early 2000
- Soaring energy prices
- The September 11, 2001 attack on the United States
- The corporate governance scandals that started in late 2001
- A war with Afghanistan in late 2001
- The geopolitical uncertainties regarding Iraq that began in the summer of 2002
- The hurricanes that hit the Gulf Coast in 2005
- The housing market correction that began in 2005

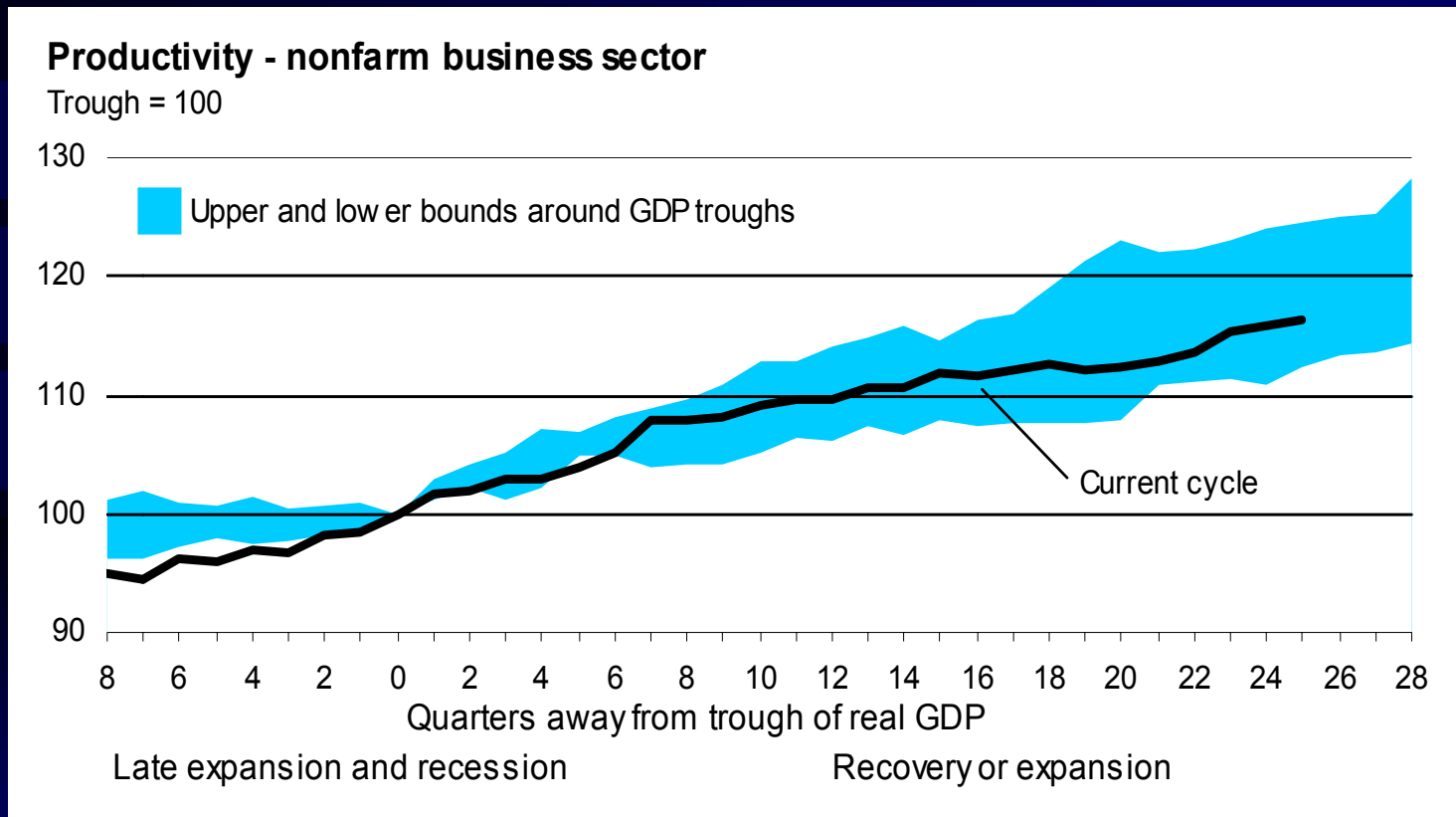
# These shocks hampered the current economic expansion



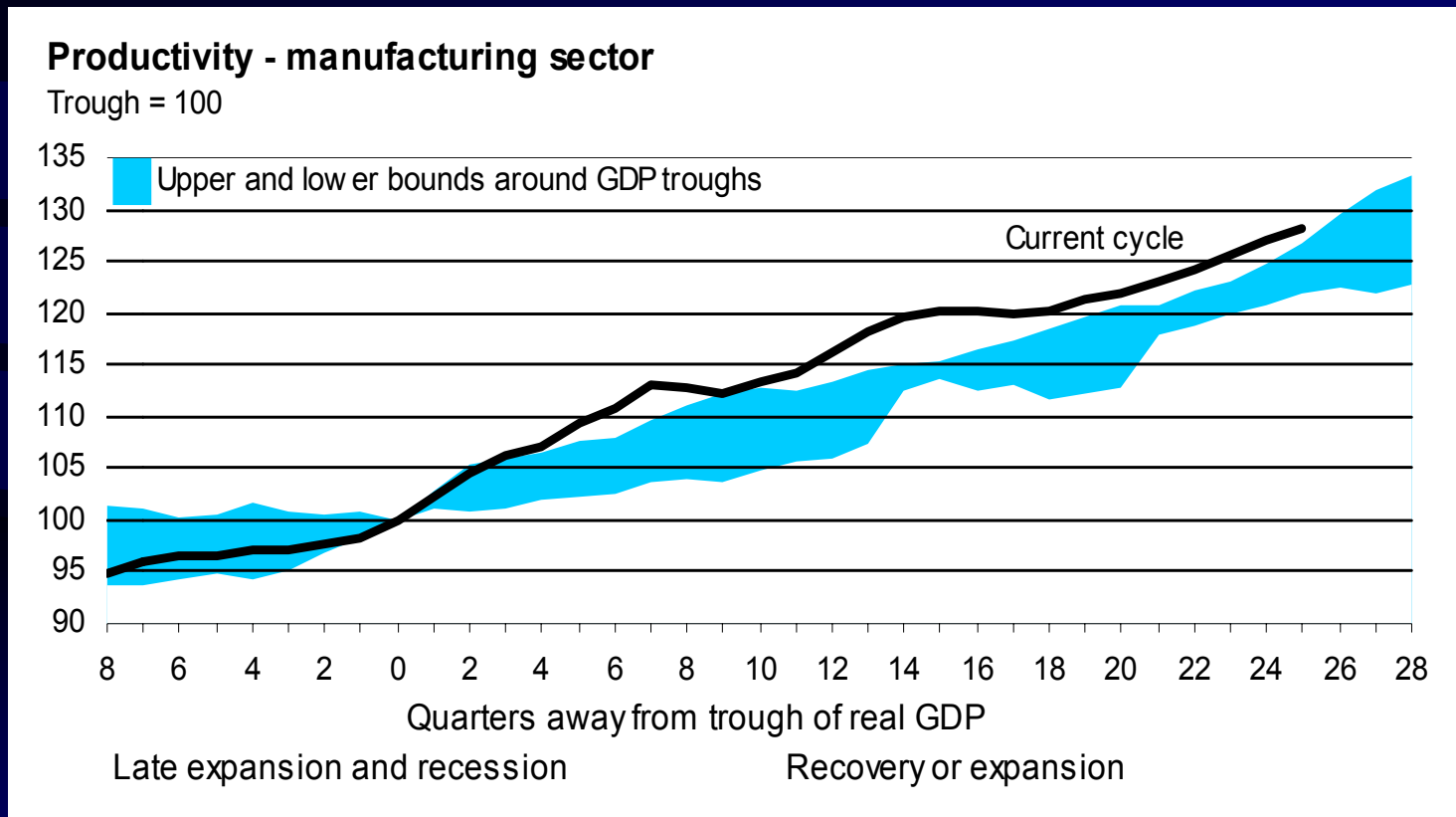
# The loss of manufacturing employment is consistent with the relatively sluggish performance of manufacturing production



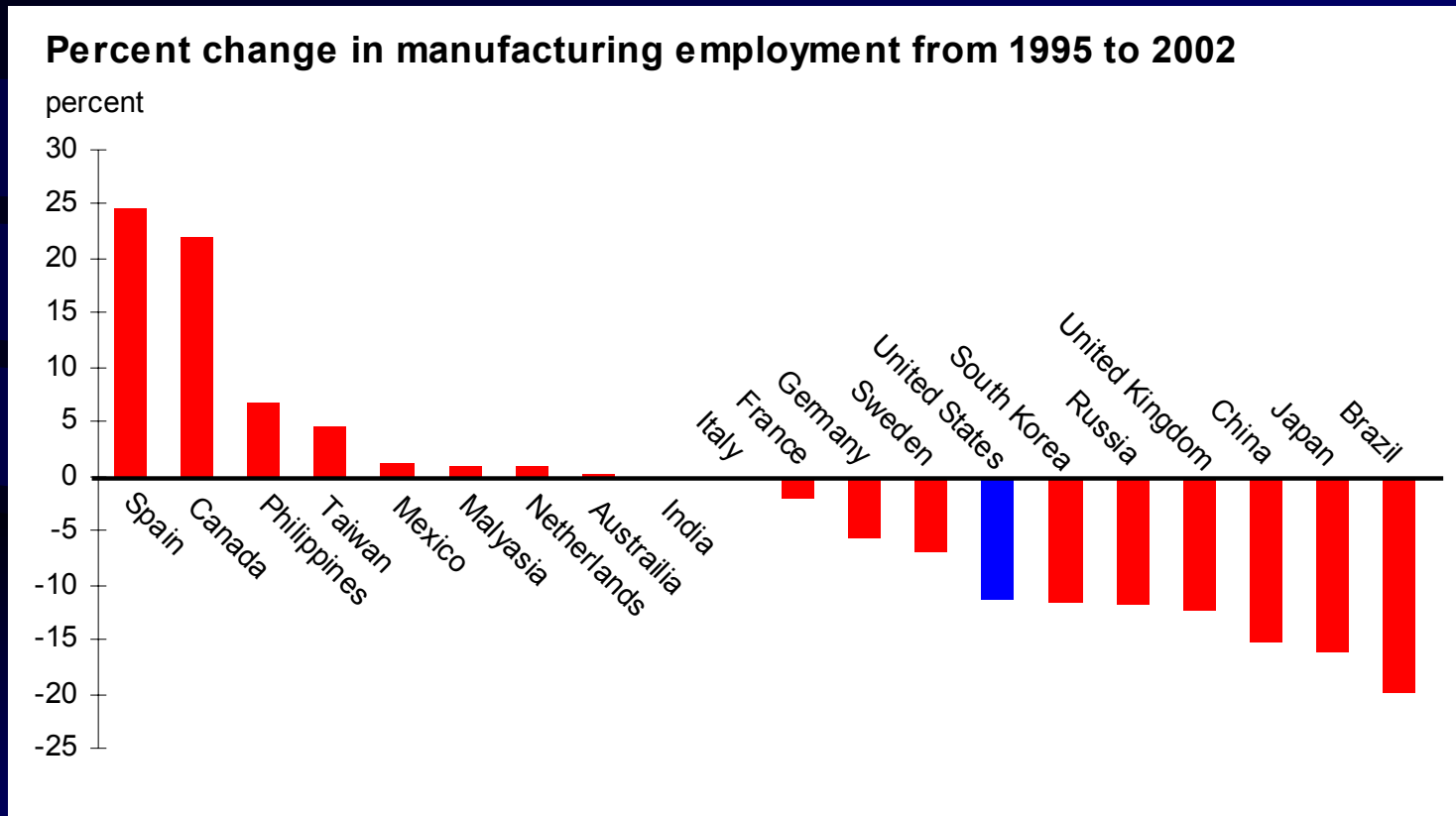
# Productivity in the overall economy has grown at a rate within the range of previous expansions



**However, productivity within the manufacturing sector has grown at a faster rate than during any previous expansion**



# Manufacturing employment losses have occurred across numerous countries – among 20 big economies, 22 million jobs were lost



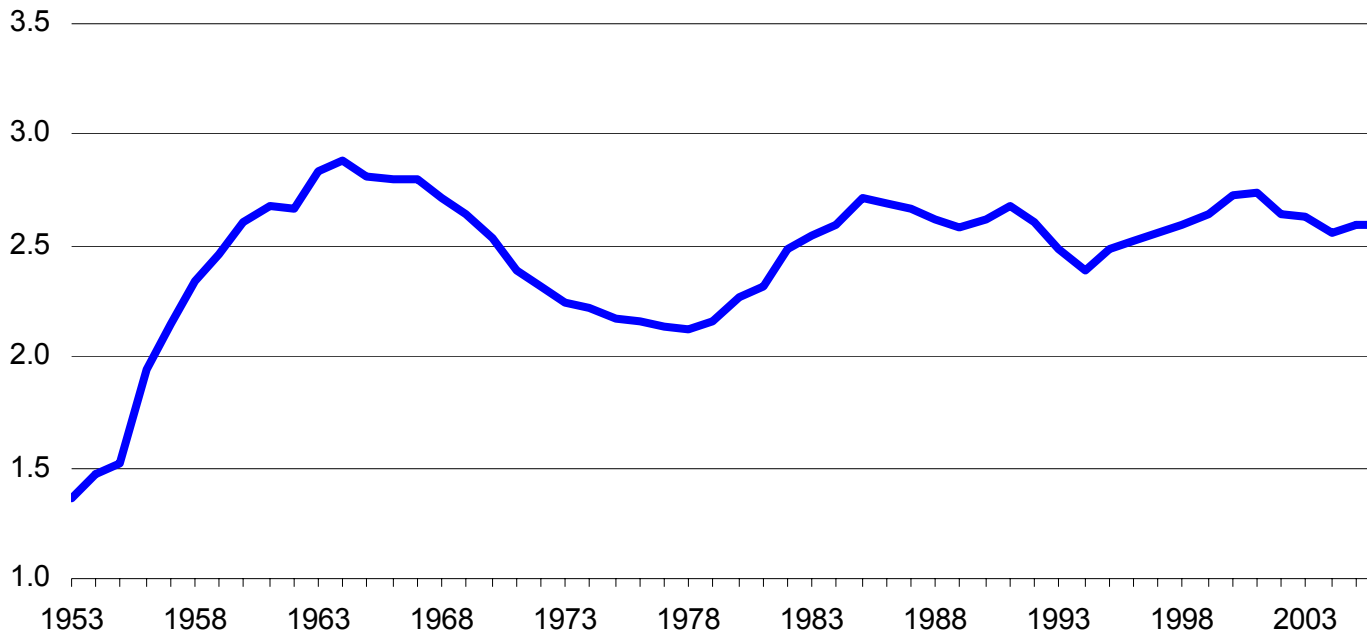


**Is the U.S. positioned to  
continue its strong  
productivity gains?**

# U.S. maintaining its commitment to research and development

Research and development expenditures share of GDP

percent

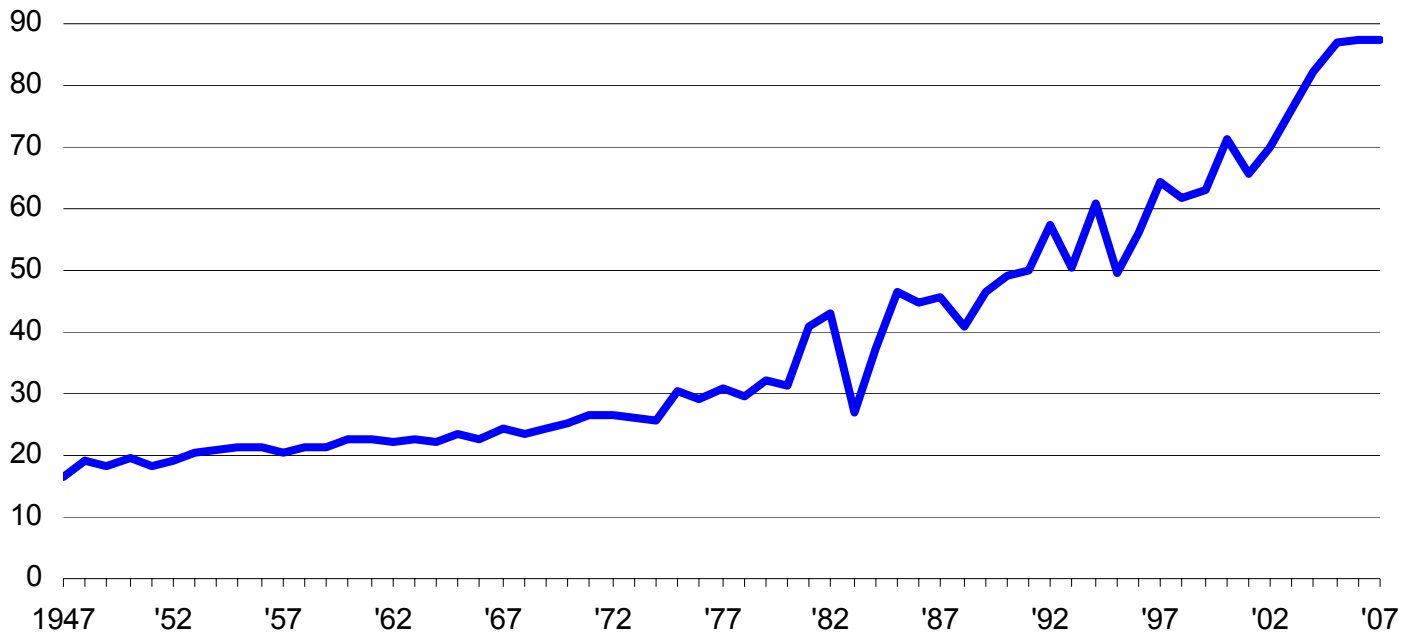


# Lessons from the farm sector

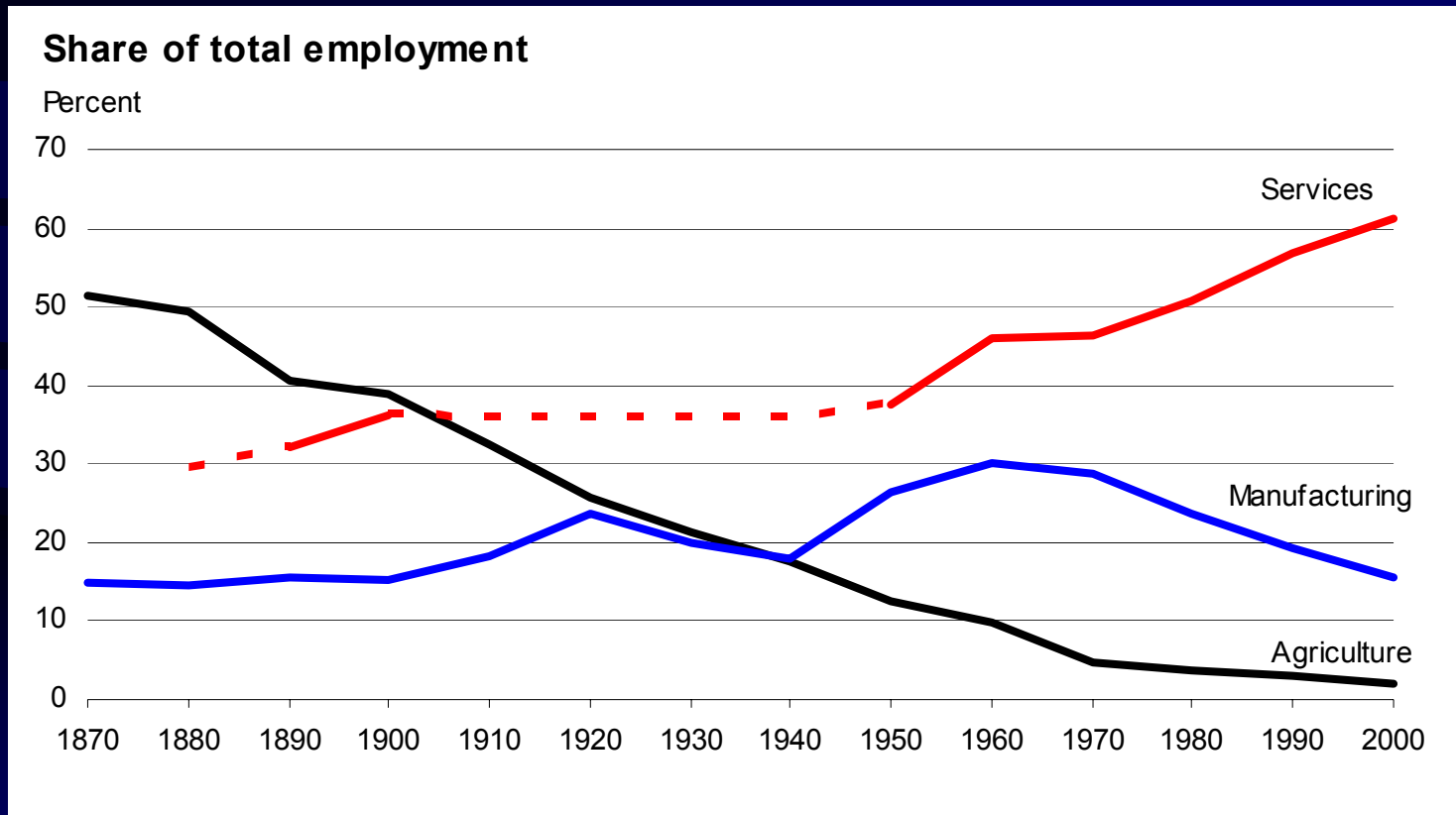
**We are producing more in our farm sector  
than at any time in our history**

### Real gross domestic farm business product

Billions of 2000 chained dollars

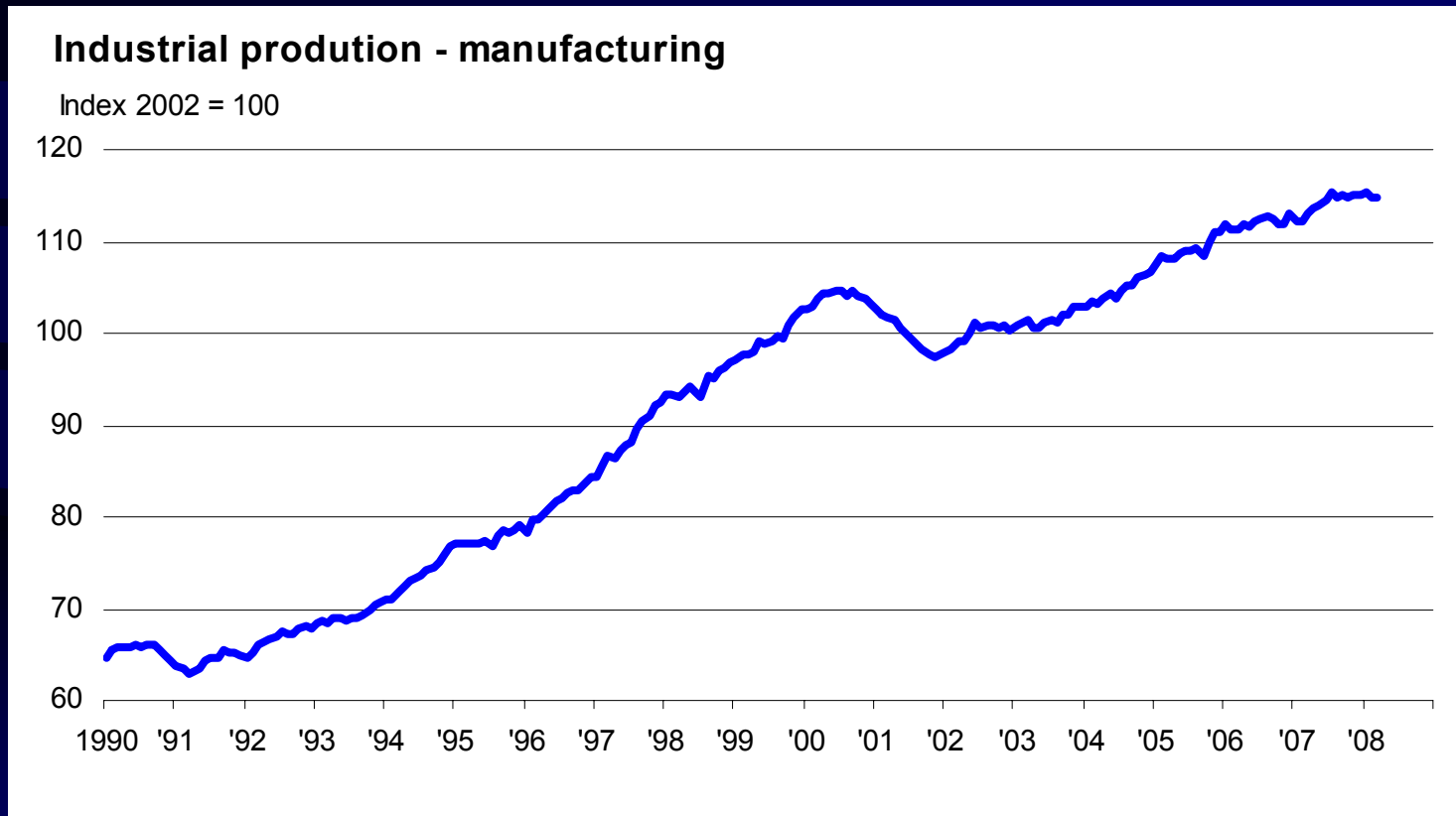


And we are accomplished this remarkable feat  
with just 2.0% of our employment devoted to farming



# The Current Expansion

**Manufacturing output in the United States is at an all-time record high, nearly 18% higher than at the end of 2001**

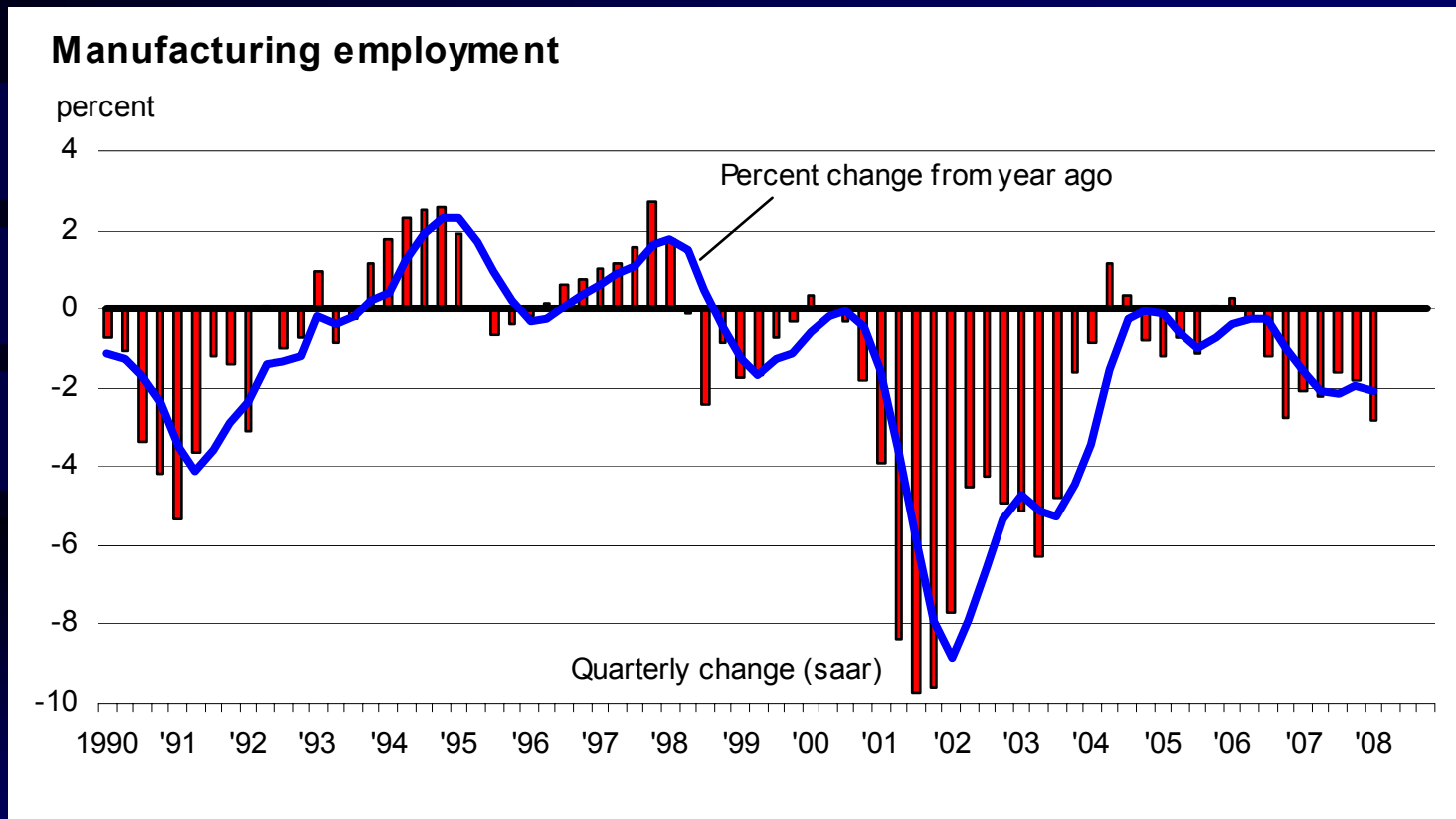


# Manufacturing capacity utilization recovered back-up to its historical average





# Job losses in manufacturing have moderated



# Summary

- Manufacturing output in the U.S. has never been higher
- The success of manufacturing has been driven by productivity
- Manufacturing employment has shown little change over the past 60 years
- The most recent decline in manufacturing was cyclical, not structural
- Profits in manufacturing have outperformed profits for the rest of the nation
- The trends that have dominated manufacturing for the past 60 years are suggestive of the future for U.S. manufacturing: ever increasing output with employment representing a smaller share of total employment

# *Chicago Fed Letter* - June 2003

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# Questions