


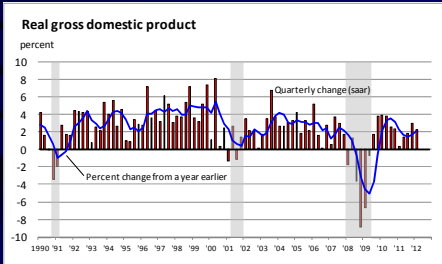
## Economic and Manufacturing Outlook

**Kentwood-Wyoming Business Forum**  
 Grand Rapids, MI  
 May 11, 2012

**William Strauss**  
 Senior Economist and Economic Advisor  
 Federal Reserve Bank of Chicago



**The "Great Recession" ended in June 2009, but the economy expanded by just 2.1% over the past year**




**Real gross domestic product**

percent

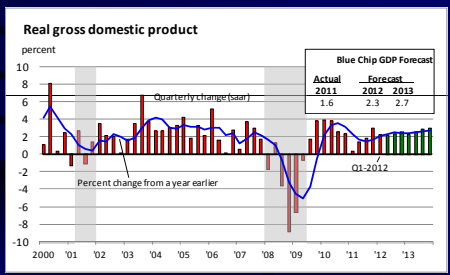
Quarterly change (saar)

Percent change from a year earlier

1990 '91 '92 '93 '94 '95 '96 '97 '98 '99 '00 '01 '02 '03 '04 '05 '06 '07 '08 '09 '10 '11 '12



**GDP is forecast to grow near trend in 2012 and slightly above trend in 2013**



**Real gross domestic product**

percent


Quarterly change (saar)

Percent change from a year earlier

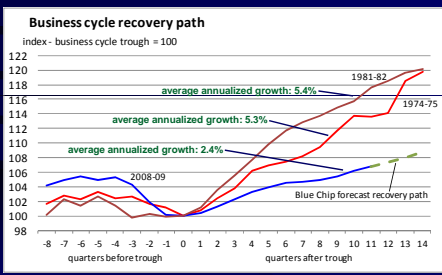
Blue Chip GDP Forecast		
Actual	Forecast	
2011	2012	2013
1.6	2.3	2.7

Q1-2012

2000 '01 '02 '03 '04 '05 '06 '07 '08 '09 '10 '11 '12 '13



**The forecast path of the current recovery is relatively muted compared with past deep recession recovery cycles**



**Business cycle recovery path**

Index - business cycle trough = 100

average annualized growth: 5.4% — 1981-82


average annualized growth: 5.3% — 1974-75

average annualized growth: 2.4% — 2008-09

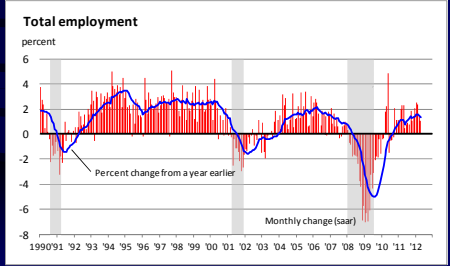
Blue Chip forecast recovery path

quarters before trough

quarters after trough



**Employment fell by over 8.7 million jobs between December 2007 and February 2010, but began to rise and has added 1.8 million jobs over the past 12 months**




**Total employment**

percent

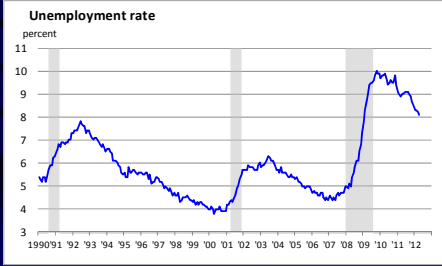
Percent change from a year earlier

Monthly change (saar)

1990'91 '92 '93 '94 '95 '96 '97 '98 '99 '00 '01 '02 '03 '04 '05 '06 '07 '08 '09 '10 '11 '12




**After peaking in October 2009, the unemployment rate has fallen by 1.9 percentage points**

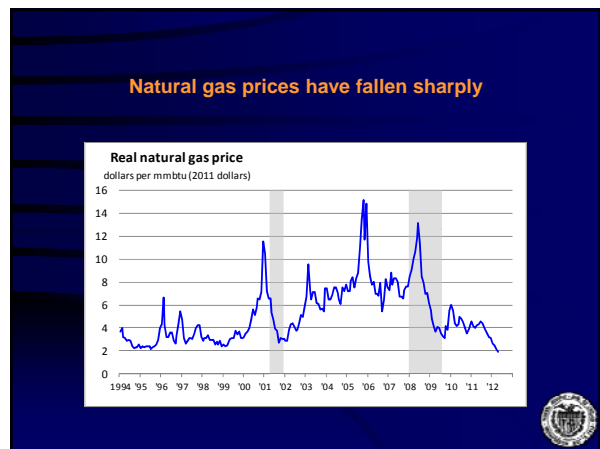
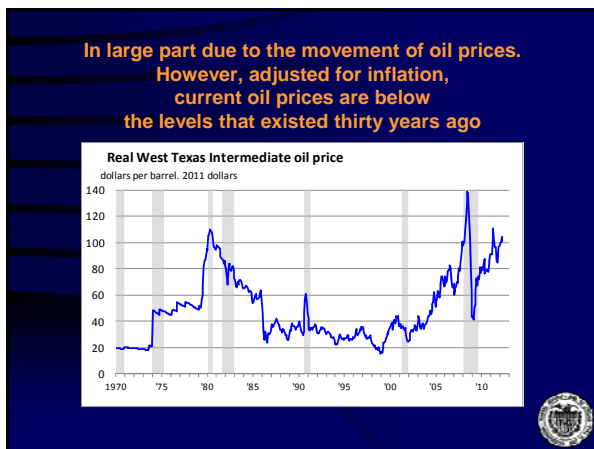
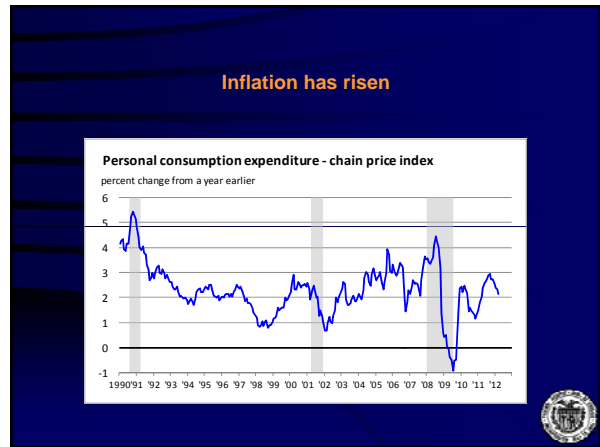
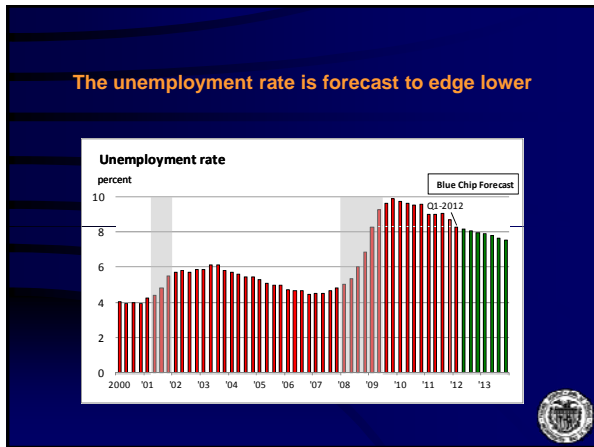
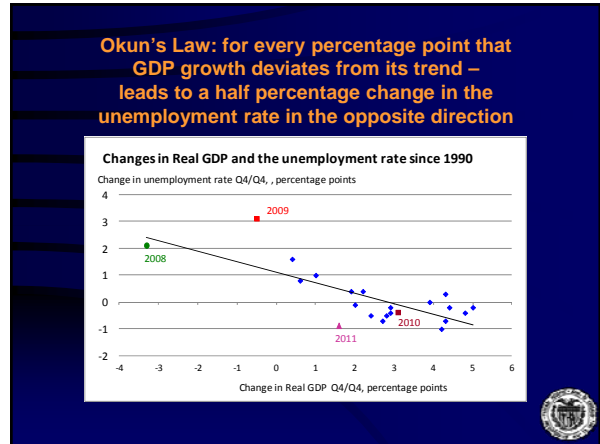
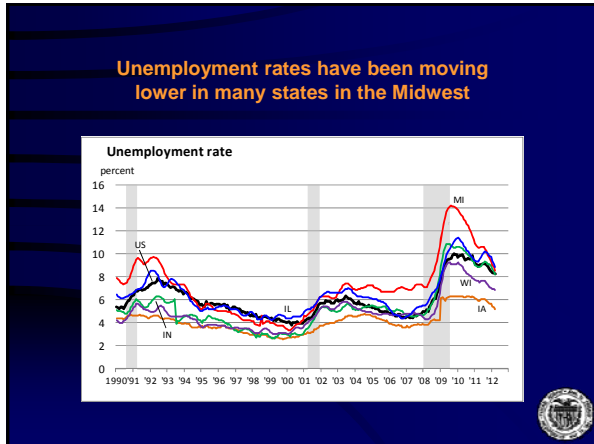


**Unemployment rate**

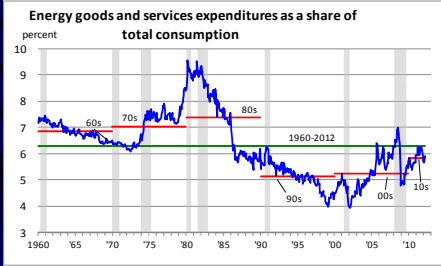
percent

1990'91 '92 '93 '94 '95 '96 '97 '98 '99 '00 '01 '02 '03 '04 '05 '06 '07 '08 '09 '10 '11 '12

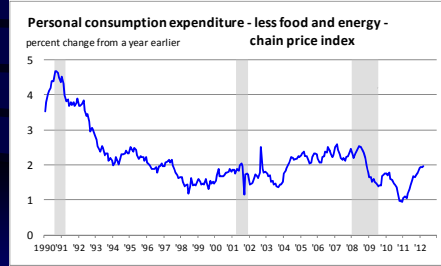




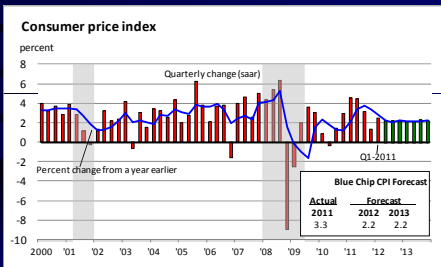
**Expenditures on energy are below the historical average**



**Removing the volatile food and energy components from the PCE, "core" inflation remains contained**



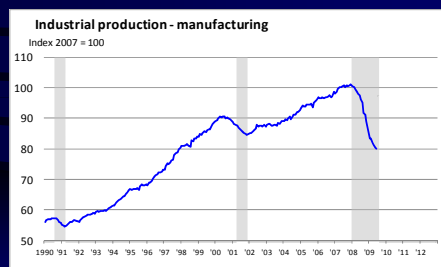
**Inflation is anticipated to rise 2.2 percent this year and next year**

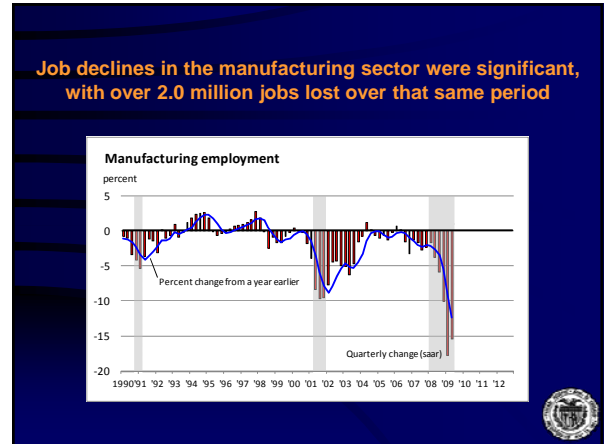
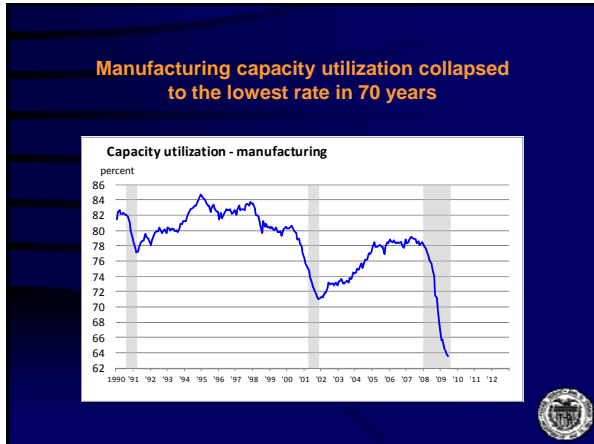


**Is the U.S. Losing Its Manufacturing Base?**

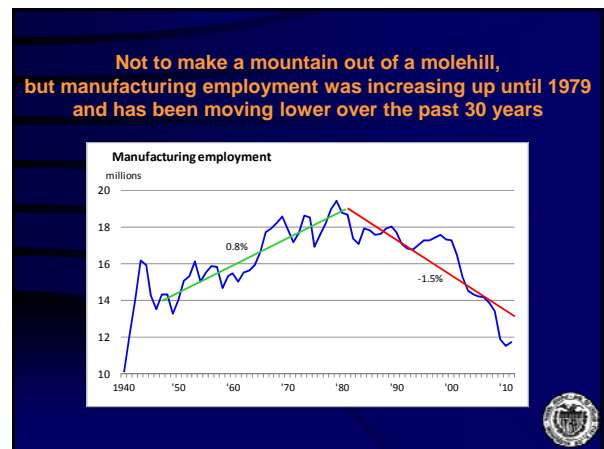
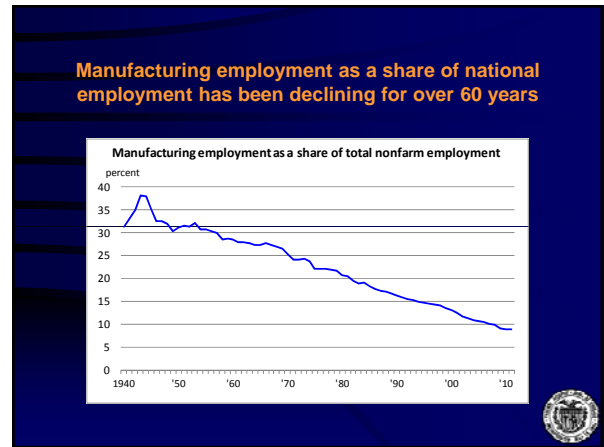
**The Setup**

**Manufacturing output peaked in December 2007 and fell 20.4% over the following 18 months**

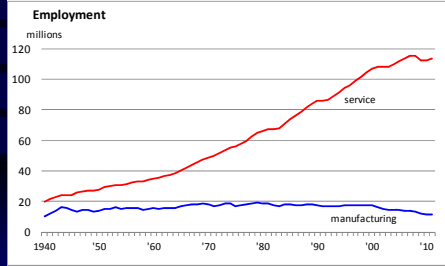




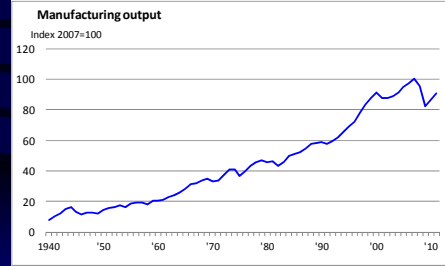
**How has Manufacturing Performed Over the Past Sixty Years?**



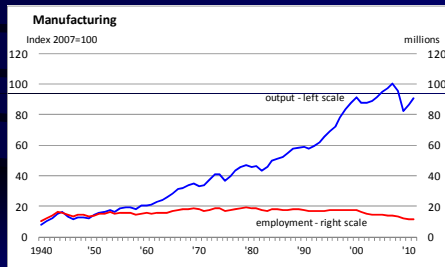
However, service sector employment has grown more than fourfold over this period, averaging growth of 2.3% per year since 1947



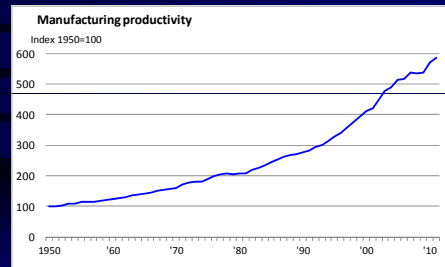
While manufacturing employment growth has been edging lower over the past 63 years, manufacturing output increased by 3.1% per year



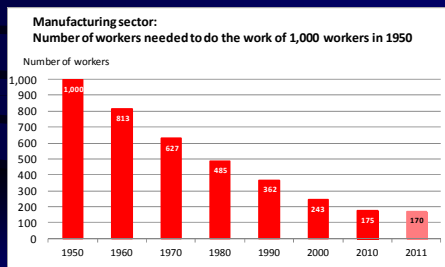
This translated into an almost 600 percent increase in manufacturing output over this time period



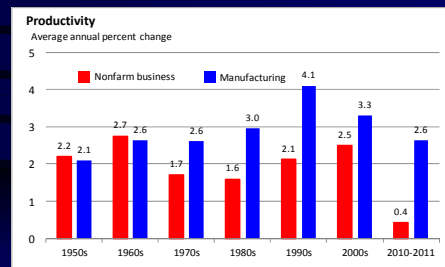
The increase in output can be attributed to strong productivity growth experienced by the manufacturing sector



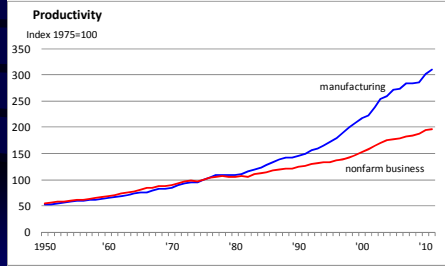
What took 1,000 workers to produce in 1950 takes 170 workers today



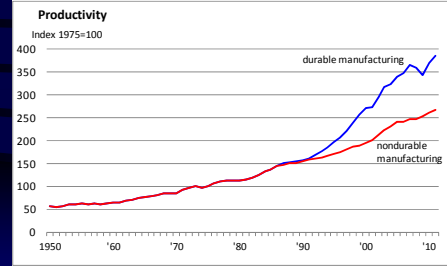
Manufacturing productivity growing faster over the past 40 years



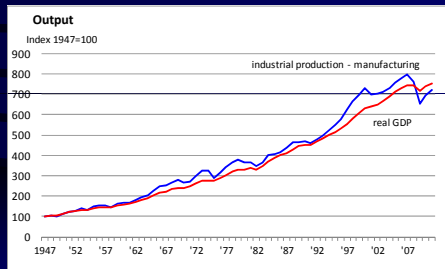
The divergence in productivity appears to have occurred around the mid-1970s



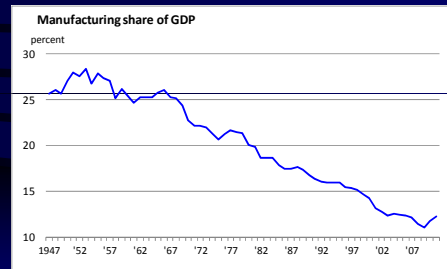
This divergence is especially apparent in durable manufacturing



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

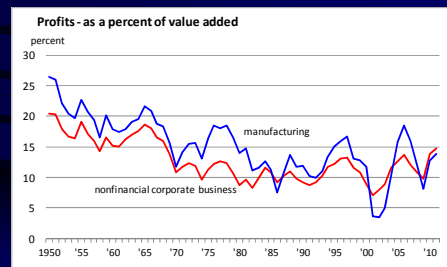


However, lower relative prices in the manufacturing sector has led to manufacturing comprising a smaller share of GDP over time



How profitable is manufacturing?

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

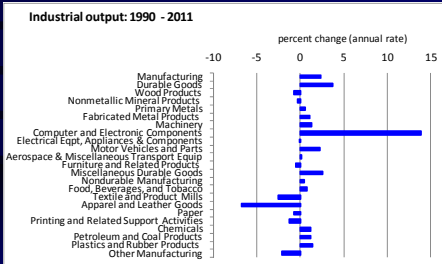


## The Manufacturing Sector Continues to Re-invent Itself




**Over the last twenty years the fastest growing sector, not surprisingly, has been computer and electronic components**

**Industrial output: 1990 - 2011**



Sector	Percent Change (Annual Rate)
Manufacturing	~3.5
Durable Goods	~2.5
Wood Products	~1.5
Nonmetallic Mineral Products	~1.5
Fabricated Metal Products	~1.5
Primary Metals	~1.5
Machinery	~1.5
Computer and Electronic Components	~11.5
Electrical Eqpt, Appliances & Components	~10.5
Motor Vehicles and Parts	~10.5
Aerospace & Miscellaneous Transport Equip	~10.5
Furniture and Related Products	~10.5
Miscellaneous Durable Goods	~10.5
Nondurable Manufacturing	~10.5
Food, Beverages, and Tobacco	~10.5
Textile and Product Mills	~10.5
Apparel and Leather Goods	~10.5
Paper	~10.5
Printing and Related Support Activities	~10.5
Chemicals	~10.5
Petroleum and Coal Products	~10.5
Plastics and Rubber Products	~10.5
Other Manufacturing	~10.5



**There has been a large number of industrial sectors that have risen and fallen over the past twenty years**


**Industrial output: 1990 - 2011**



Sector	Percent Change (Annual Rate)
Manufacturing	~3.5
Durable Goods	~2.5
Wood Products	~1.5
Nonmetallic Mineral Products	~1.5
Fabricated Metal Products	~1.5
Primary Metals	~1.5
Machinery	~1.5
Electrical Eqpt, Appliances & Components	~10.5
Motor Vehicles and Parts	~10.5
Aerospace & Miscellaneous Transport Equip	~10.5
Furniture and Related Products	~10.5
Miscellaneous Durable Goods	~10.5
Nondurable Manufacturing	~10.5
Food, Beverages, and Tobacco	~10.5
Textile and Product Mills	~10.5
Apparel and Leather Goods	~10.5
Paper	~10.5
Printing and Related Support Activities	~10.5
Chemicals	~10.5
Petroleum and Coal Products	~10.5
Plastics and Rubber Products	~10.5
Other Manufacturing	~10.5

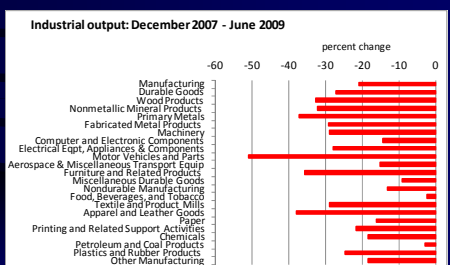


**The collapse in manufacturing experienced in 2008-2009 is closely linked with the economic recession**




**Declines in manufacturing output were broad-based during the Great Recession – especially in vehicle and primary metals manufacturing**

**Industrial output: December 2007 - June 2009**

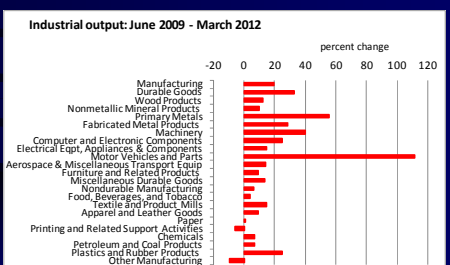


Sector	Percent Change
Manufacturing	~-15
Durable Goods	~-25
Wood Products	~-10
Nonmetallic Mineral Products	~-15
Fabricated Metal Products	~-20
Primary Metals	~-35
Machinery	~-15
Computer and Electronic Components	~-10
Electrical Eqpt, Appliances & Components	~-15
Motor Vehicles and Parts	~-45
Aerospace & Miscellaneous Transport Equip	~-25
Furniture and Related Products	~-15
Miscellaneous Durable Goods	~-15
Nondurable Manufacturing	~-10
Food, Beverages, and Tobacco	~-15
Textile and Product Mills	~-15
Apparel and Leather Goods	~-15
Paper	~-15
Printing and Related Support Activities	~-15
Chemicals	~-15
Petroleum and Coal Products	~-15
Plastics and Rubber Products	~-15
Other Manufacturing	~-15




**The recovery has also been broad-based with motor vehicles and primary metals manufacturing leading the way**

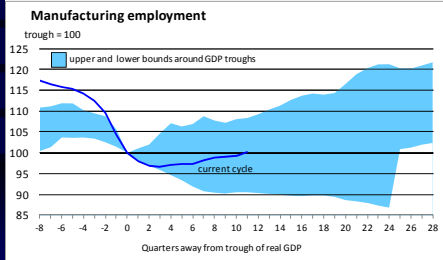
**Industrial output: June 2009 - March 2012**



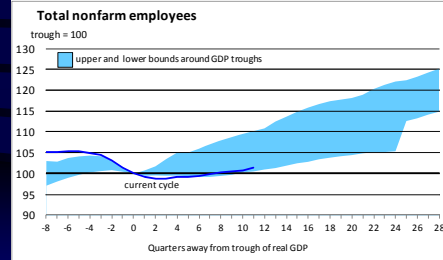
Sector	Percent Change
Manufacturing	~15
Durable Goods	~25
Wood Products	~10
Nonmetallic Mineral Products	~15
Fabricated Metal Products	~20
Primary Metals	~45
Machinery	~15
Computer and Electronic Components	~10
Electrical Eqpt, Appliances & Components	~15
Motor Vehicles and Parts	~105
Aerospace & Miscellaneous Transport Equip	~25
Furniture and Related Products	~15
Miscellaneous Durable Goods	~15
Nondurable Manufacturing	~10
Food, Beverages, and Tobacco	~15
Textile and Product Mills	~15
Apparel and Leather Goods	~15
Paper	~15
Printing and Related Support Activities	~15
Chemicals	~15
Petroleum and Coal Products	~15
Plastics and Rubber Products	~15
Other Manufacturing	~15



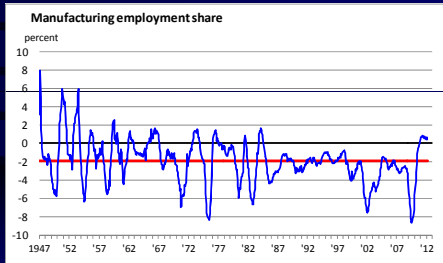
**Manufacturing workers have suffered steep employment declines over the current cycle**



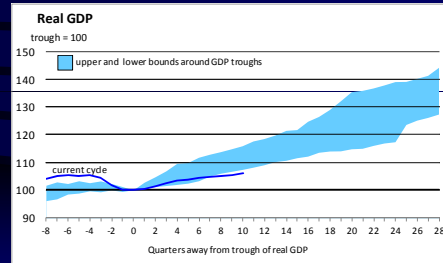
**But the overall economy's employment growth also struggled**



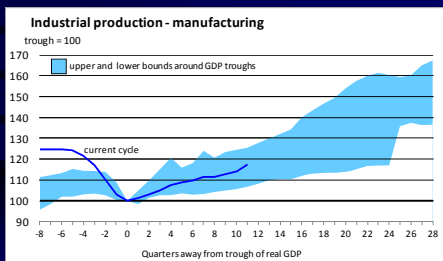
**When changes in nonfarm employment are considered, the most recent manufacturing employment downturn is not unprecedented**



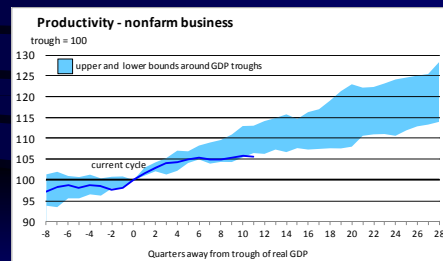
**The financial crisis and its aftermath has hampered the current economic expansion**



**The recovery in manufacturing output is in-line with past industrial recoveries**

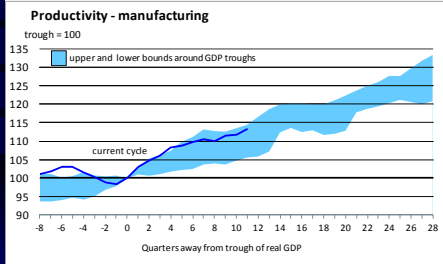


**Productivity in the overall economy has grown at a rate near the low-end of previous expansions**

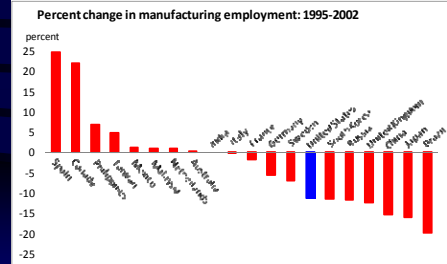




However, productivity within the manufacturing sector has grown at a much faster pace

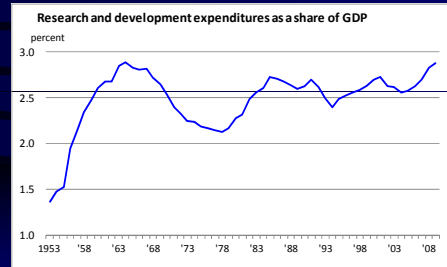


Manufacturing employment losses have occurred across numerous countries – among 20 big economies, 22 million jobs were lost

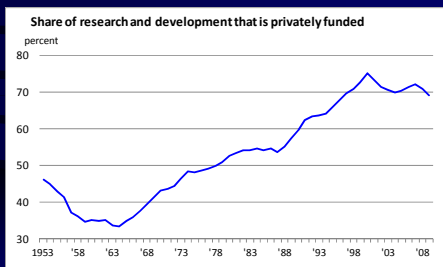


Is the U.S. positioned to continue its strong productivity gains?

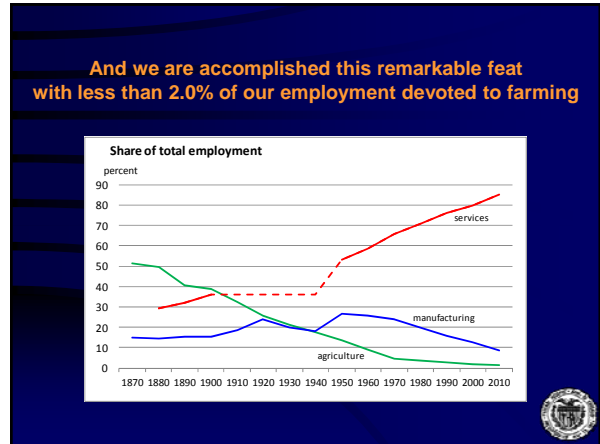
U.S. maintaining its commitment to research and development



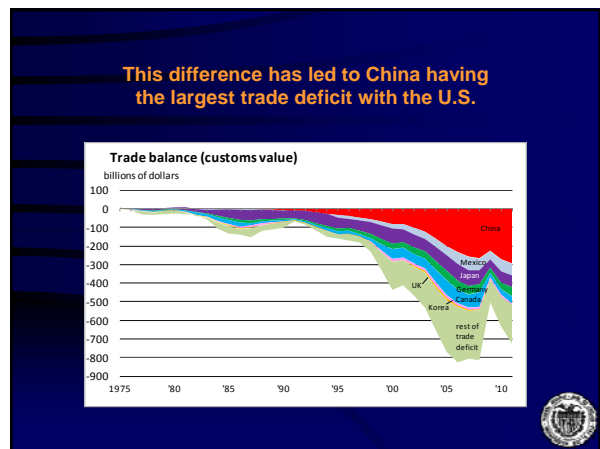
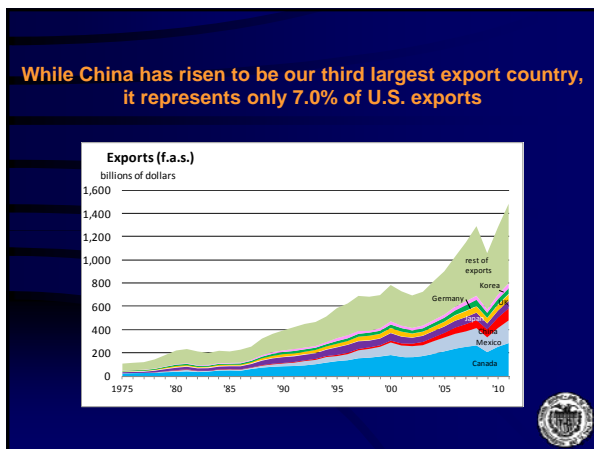
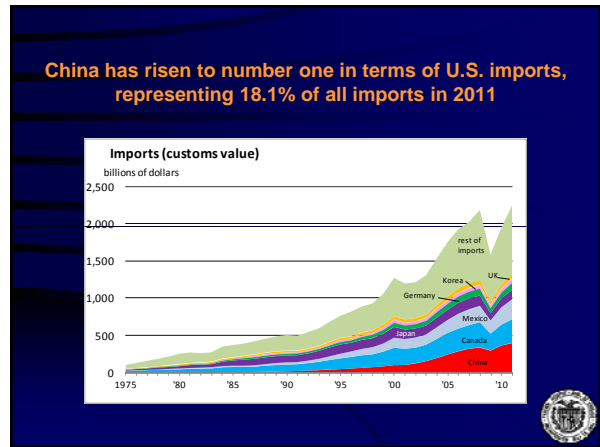
The vast majority of U.S. research and development is being privately funded

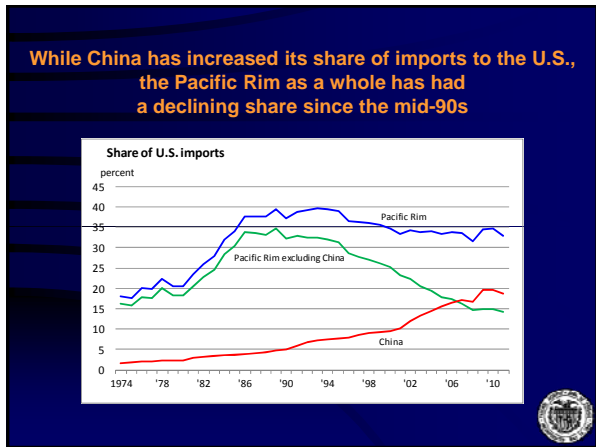
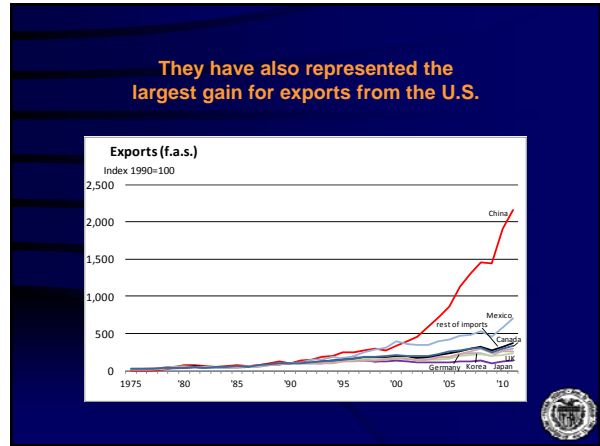
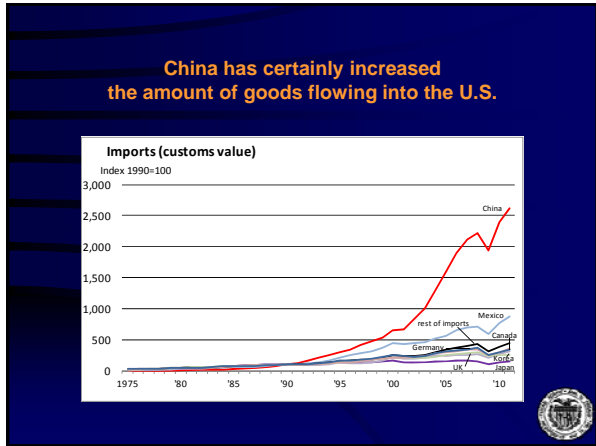


Lessons from the farm sector

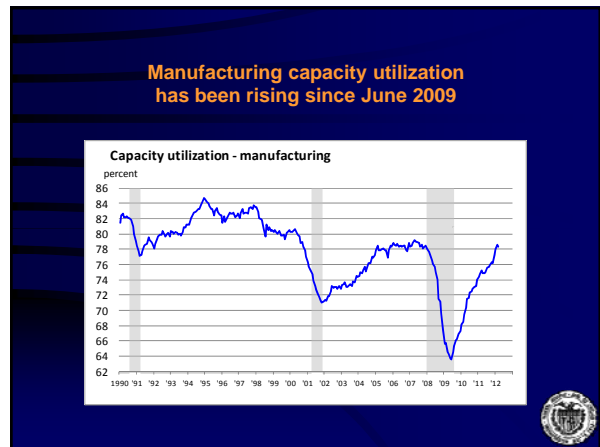
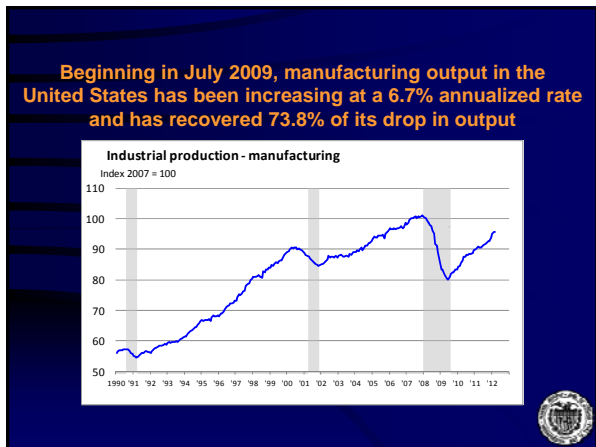


**Trade with China**

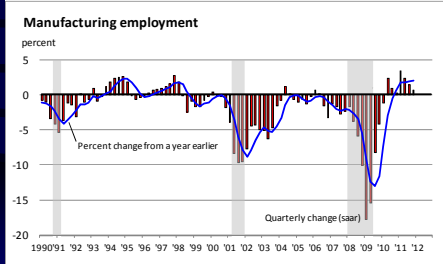




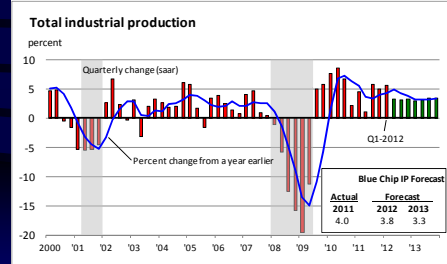
**The Current Expansion**



And while manufacturing jobs have been rising, they have only recovered 21.1% of the jobs lost during the downturn



Industrial production is forecast to rise at a solid pace



### Summary

- Manufacturing output is in the process of recovering its losses
- The success of manufacturing has been driven by productivity
- Manufacturing employment has shown little change over the past 70 years – with a steady decline over the past 30 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 70 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  
[www.chicagofed.org](http://www.chicagofed.org)

