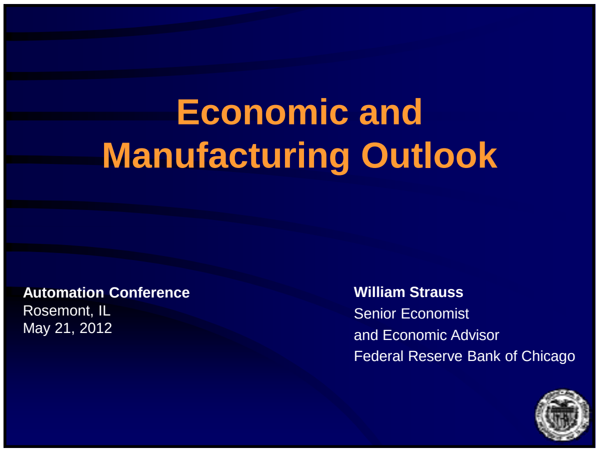
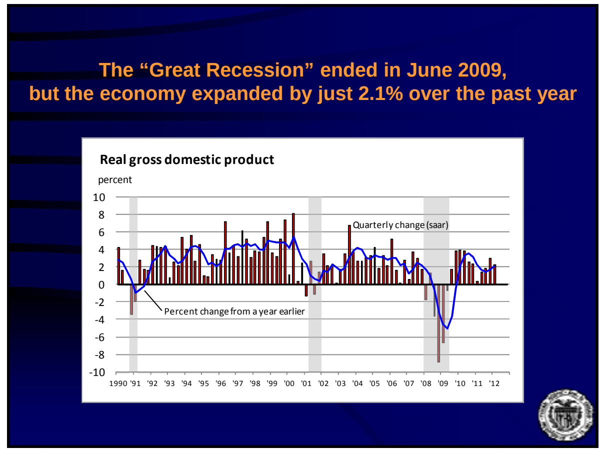
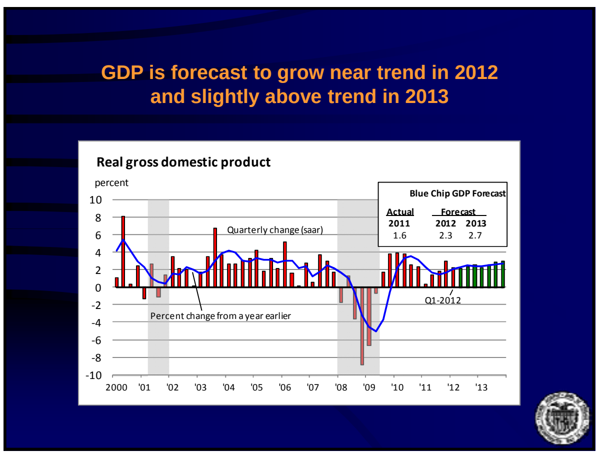
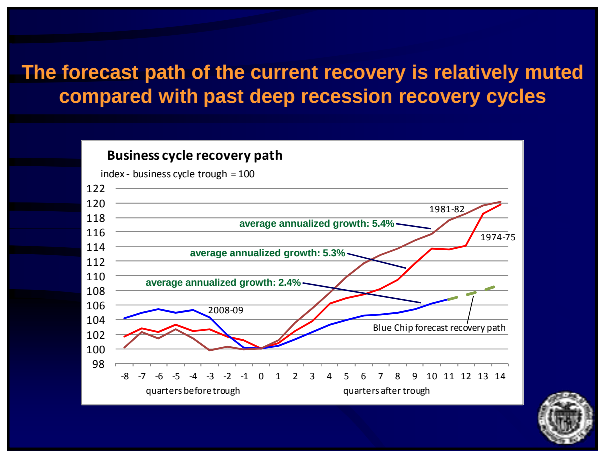
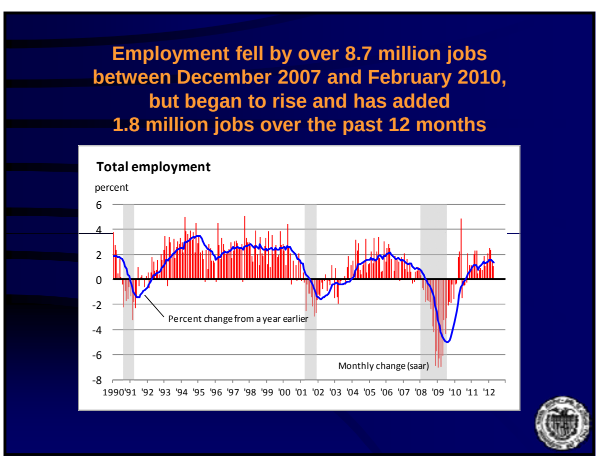
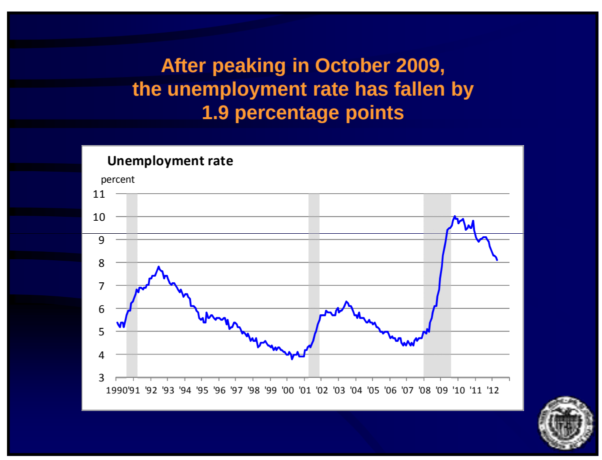

Economic and
Manufacturing Outlook
Automation Conference
Rosemont, IL
May 21, 2012
William Strauss
Senior Economist
and Economic Advisor
Federal Reserve Bank of Chicago


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

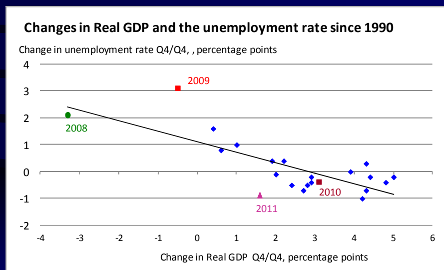

GDP is forecast to grow near trend in 2012
and slightly above trend in 2013
Real gross domestic product
percent
Blue Chip GDP Forecast
Actual 2011 1.6
Forecast 2012 2.3 2013 2.7
Quarterly change (saar)
Percent change from a year earlier
Q1-2012


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%
average annualized growth: 5.3%
average annualized growth: 2.4%
1981-82
1974-75
2008-09
Blue Chip forecast recovery path
quarters before trough
quarters after trough

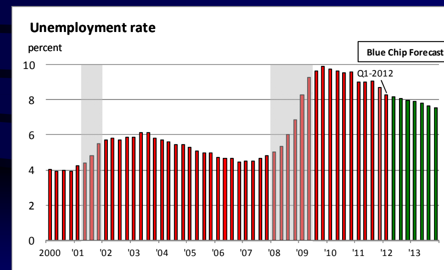

Employment fell by over 8.7 million jobs
between December 2007 and February 2010,
but began to rise and has added
1.8 million jobs over the past 12 months
Total employment
percent
Percent change from a year earlier
Monthly change (saar)


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

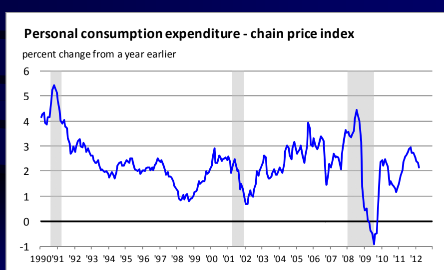
Okun's Law: for every percentage point that GDP growth deviates from its trend – leads to a half percentage change in the unemployment rate in the opposite direction



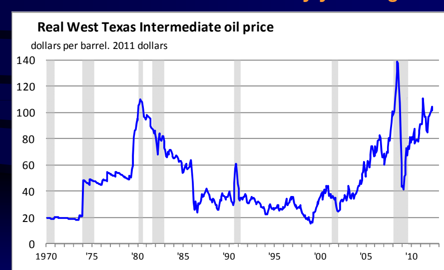
The unemployment rate is forecast to edge lower



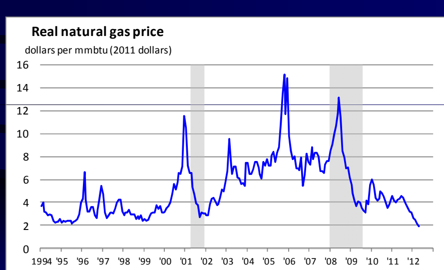
Inflation has risen



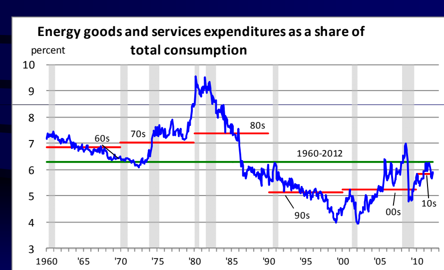
In large part due to the movement of oil prices. However, adjusted for inflation, current oil prices are below the levels that existed thirty years ago



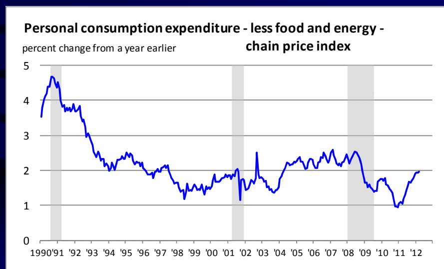
Natural gas prices have fallen sharply



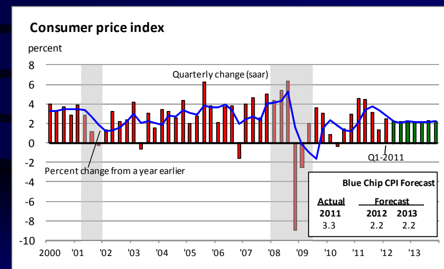
Expenditures on energy are below the historical average



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

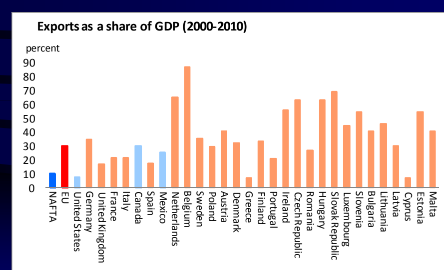


Inflation is anticipated to rise 2.2 percent this year and next year



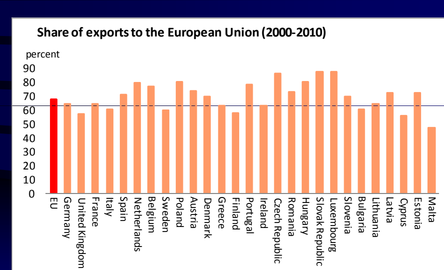
European vs. U.S. Exports (What Happens in Europe Stays in Europe)

European countries tend to export a larger share of their GDP (countries ranked by GDP)

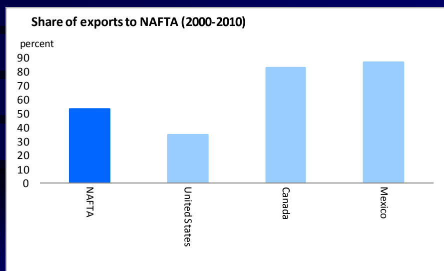


But trade that takes place within the United States is not counted as an export

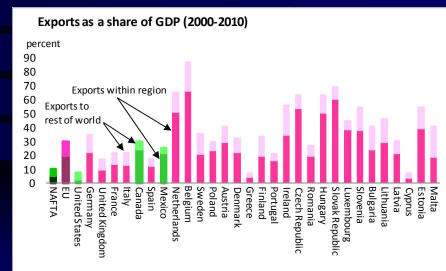
Trade that remains within the EU is counted as an export – 67% of EU exports remain within the EU



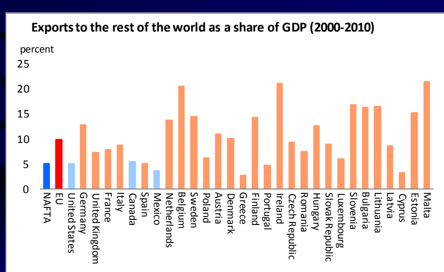
Most of the exports of the United States go beyond NAFTA



Excluding exports to trade-zone countries leads to a very different view



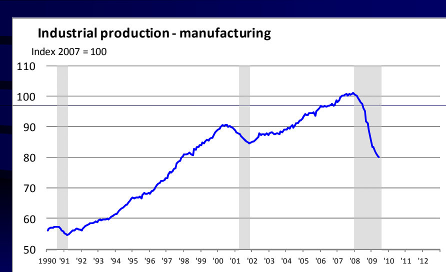
The export comparison between the U.S. and other countries is not as extreme

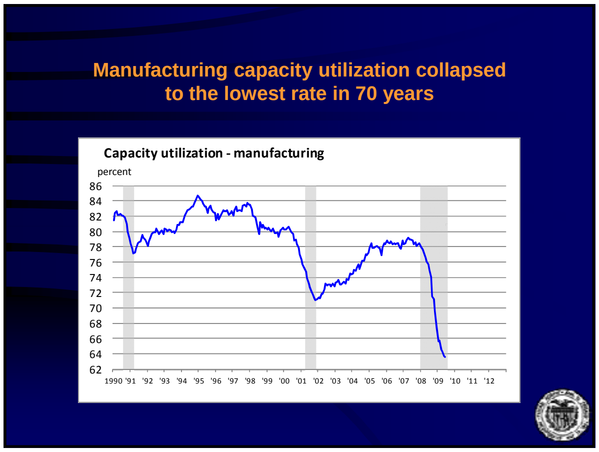


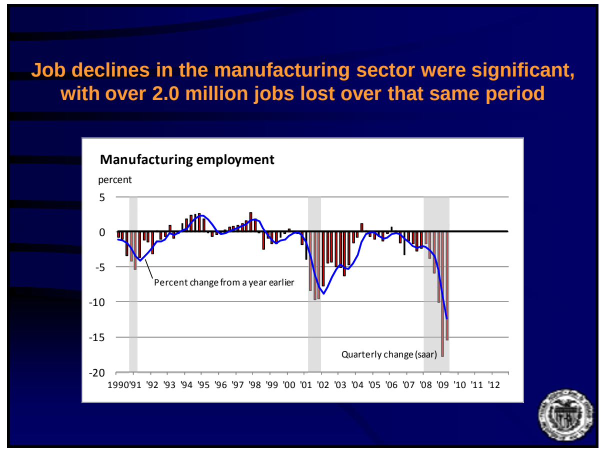
Is the U.S. Losing Its Manufacturing Base?

The Setup

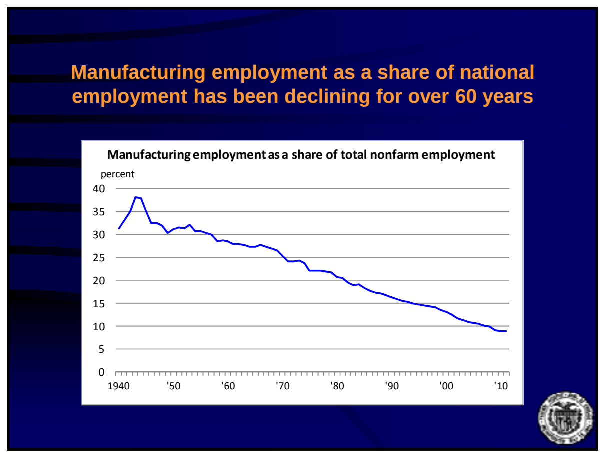
Manufacturing output peaked in December 2007 and fell 20.4% over the following 18 months

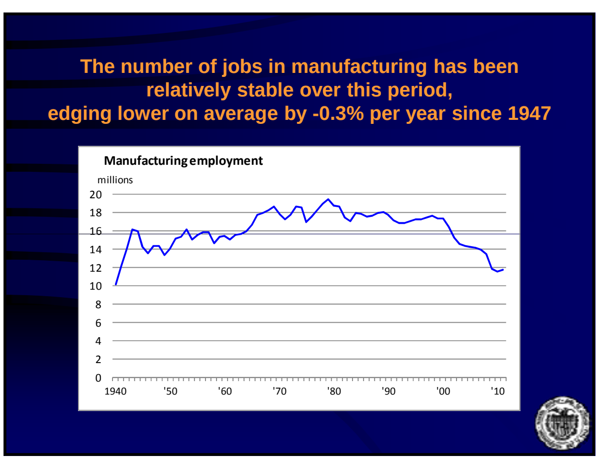


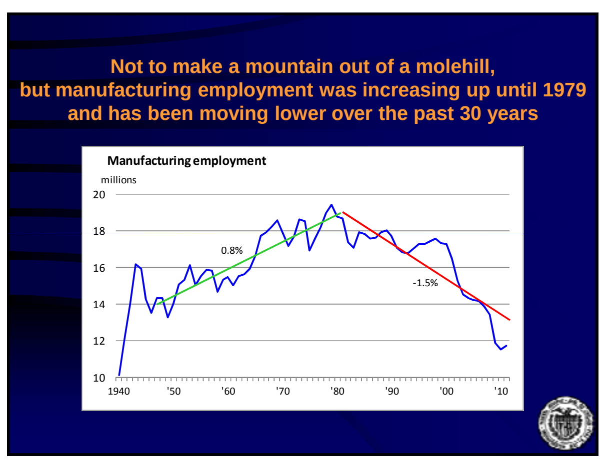

Manufacturing capacity utilization collapsed
to the lowest rate in 70 years
Capacity utilization - manufacturing
percent
86
84
82
80
78
76
74
72
70
68
66
64
62
1990 '91 '92 '93 '94 '95 '96 '97 '98 '99 '00 '01 '02 '03 '04 '05 '06 '07 '08 '09 '10 '11 '12


Job declines in the manufacturing sector were significant,
with over 2.0 million jobs lost over that same period
Manufacturing employment
percent
5
0
-5
-10
-15
-20
Percent change from a year earlier
Quarterly 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

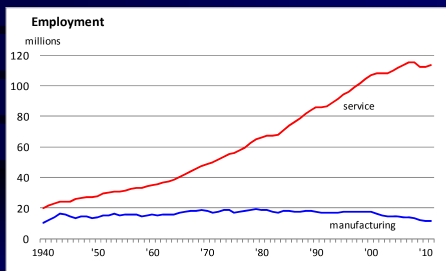

How has Manufacturing Performed
Over the Past Sixty Years?


Manufacturing employment as a share of national
employment has been declining for over 60 years
Manufacturing employment as a share of total nonfarm employment
percent
40
35
30
25
20
15
10
5
0
1940 '50 '60 '70 '80 '90 '00 '10

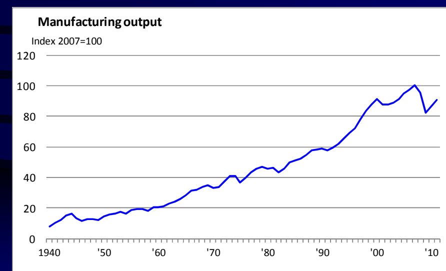

The number of jobs in manufacturing has been
relatively stable over this period,
edging lower on average by -0.3% per year since 1947
Manufacturing employment
millions
20
18
16
14
12
10
8
6
4
2
0
1940 '50 '60 '70 '80 '90 '00 '10


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 30 years
Manufacturing employment
millions
20
18
16
14
12
10
0.8%
-1.5%
1940 '50 '60 '70 '80 '90 '00 '10

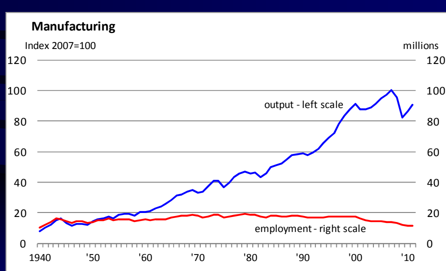
However, service sector employment has grown more than fourfold over this period, averaging growth of 2.3% per year since 1947



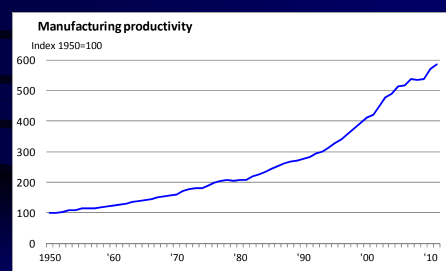
While manufacturing employment growth has been edging lower over the past 63 years, manufacturing output increased by 3.1% per year



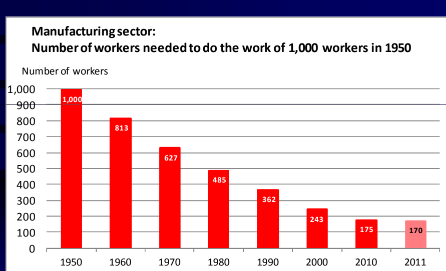
This translated into an almost 600 percent increase in manufacturing output over this time period



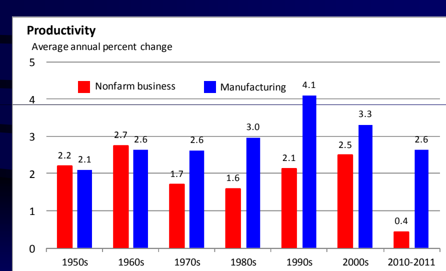
The increase in output can be attributed to strong productivity growth experienced by the manufacturing sector



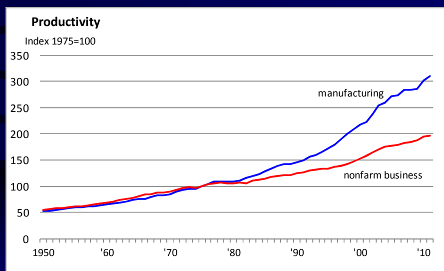
What took 1,000 workers to produce in 1950 takes 170 workers today



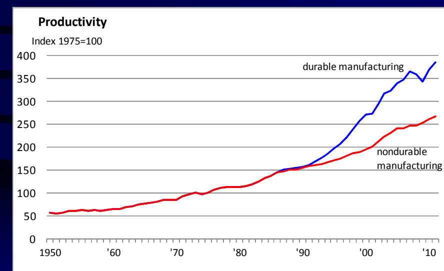
Manufacturing productivity growing faster over the past 40 years



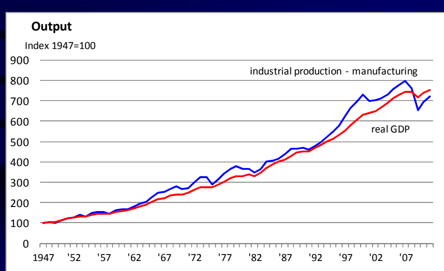
The divergence in productivity appears to have occurred around the mid-1970s



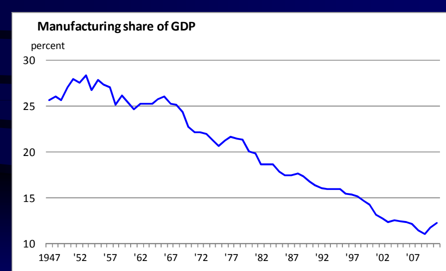
This divergence is especially apparent in durable manufacturing



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

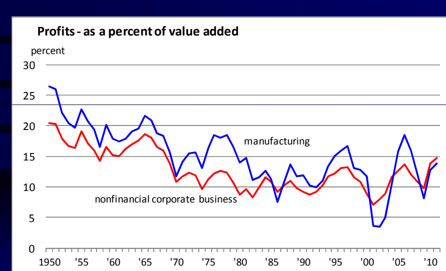


However, lower relative prices in the manufacturing sector has lead to manufacturing comprising a smaller share of GDP over time

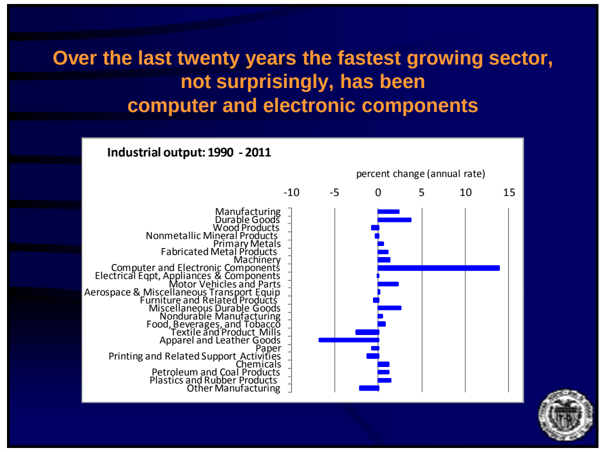


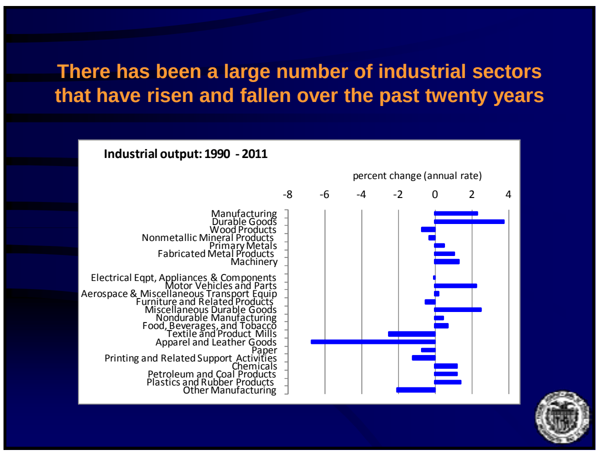
How profitable is manufacturing?

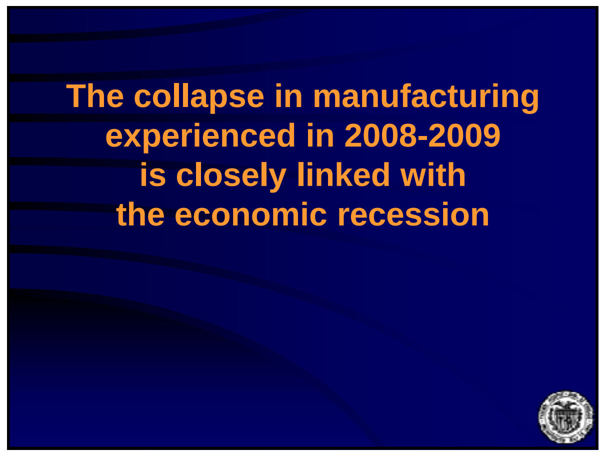
While more cyclical, profits in manufacturing have out-performed returns in nonfinancial corporate businesses

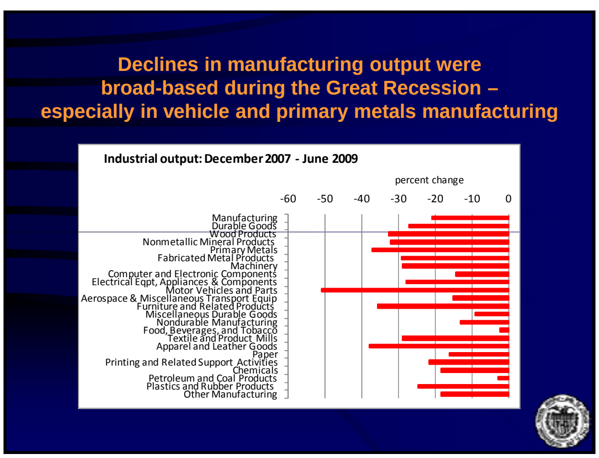


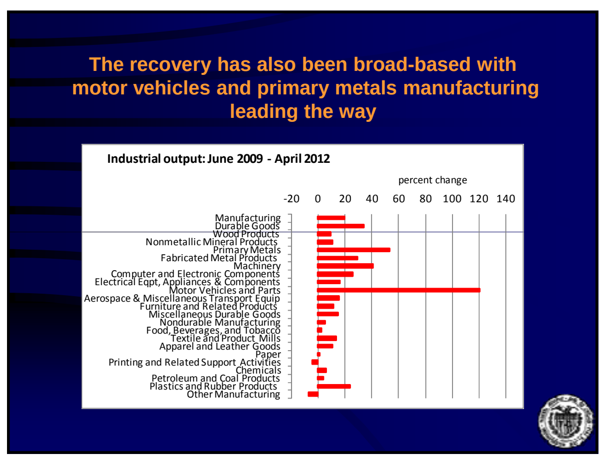
William Strauss, Senior Economist and Economic Advisor
Federal Reserve Bank of Chicago

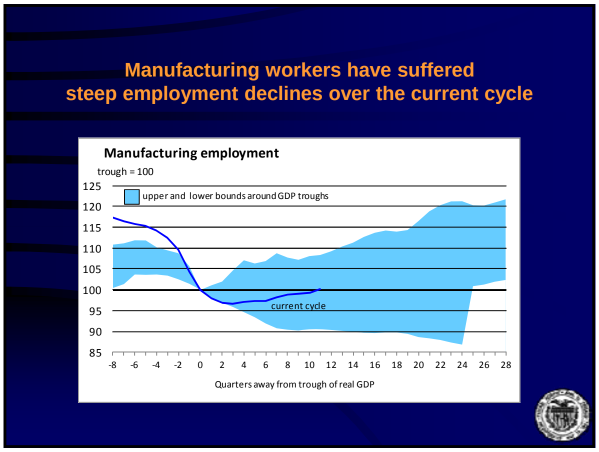


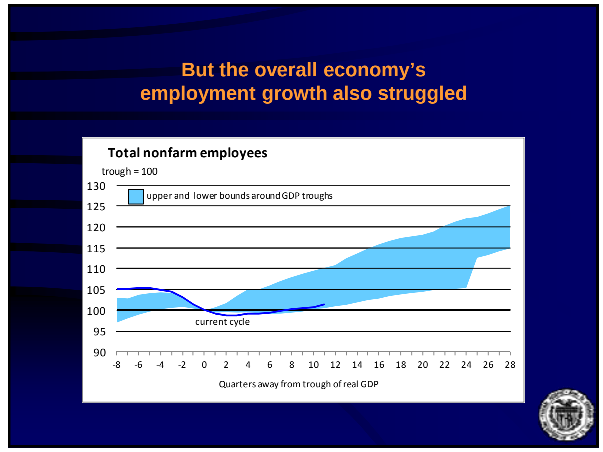


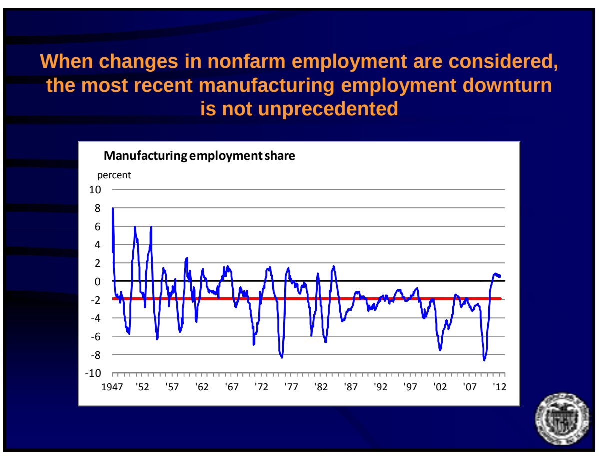


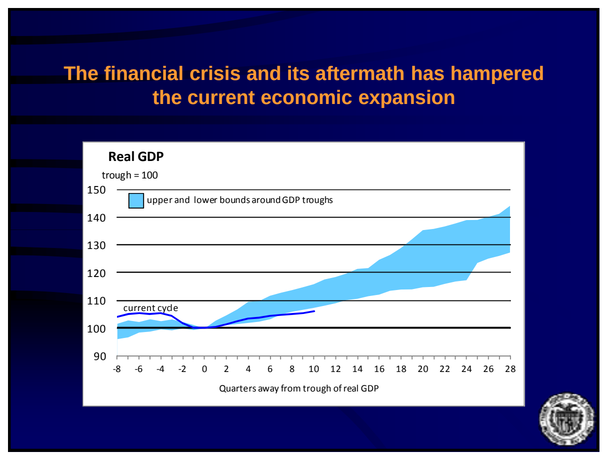


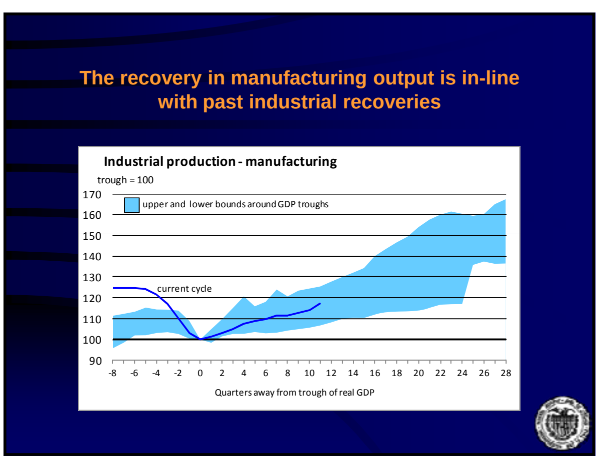


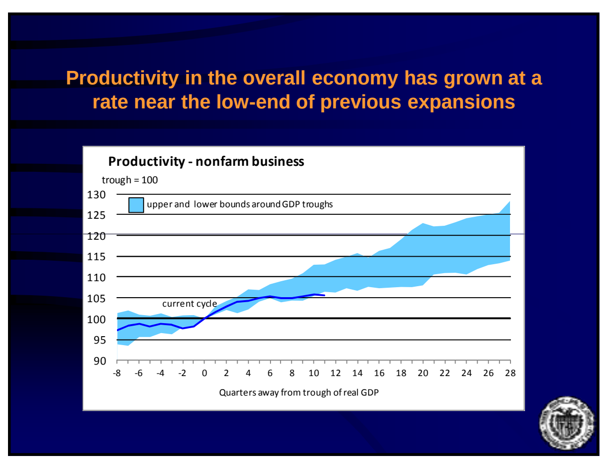

Manufacturing workers have suffered steep employment declines over the current cycle
Manufacturing employment
trough = 100
upper and lower bounds around GDP troughs
current cycle
Quarters away from trough of real GDP


But the overall economy's employment growth also struggled
Total nonfarm employees
trough = 100
upper and lower bounds around GDP troughs
current cycle
Quarters away from trough of real GDP


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

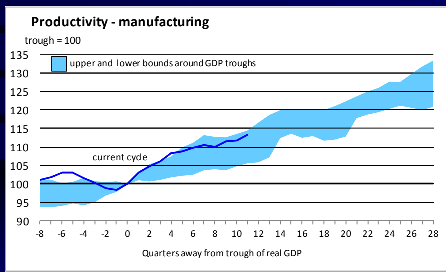

The financial crisis and its aftermath has hampered the current economic expansion
Real GDP
trough = 100
upper and lower bounds around GDP troughs
current cycle
Quarters away from trough of real GDP


The recovery in manufacturing output is in-line with past industrial recoveries
Industrial production - manufacturing
trough = 100
upper and lower bounds around GDP troughs
current cycle
Quarters away from trough of real GDP

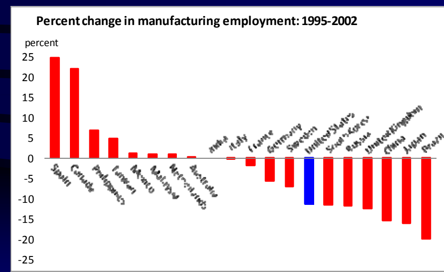

Productivity in the overall economy has grown at a rate near the low-end of previous expansions
Productivity - nonfarm business
trough = 100
upper and lower bounds around GDP troughs
current cycle
Quarters away from trough of real GDP

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

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

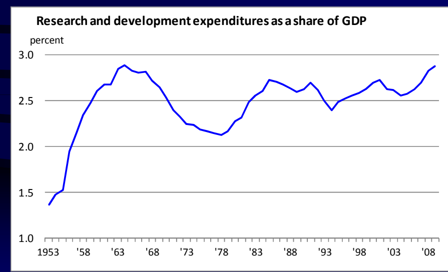


Manufacturing employment losses have occurred across numerous countries – among 20 big economies, 22 million jobs were lost

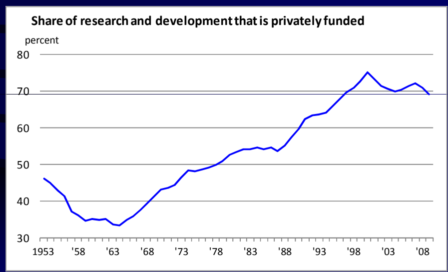


Is the U.S. positioned to continue its strong productivity gains?

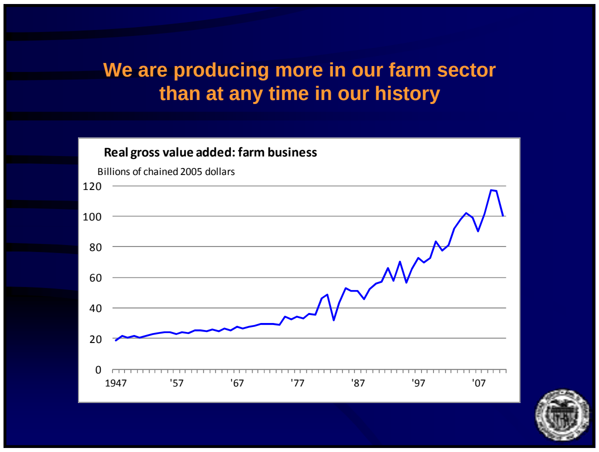
U.S. maintaining its commitment to research and development

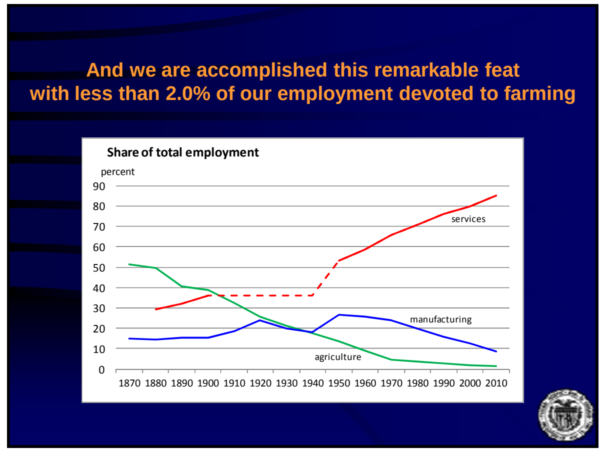


The vast majority of U.S. research and development is being privately funded

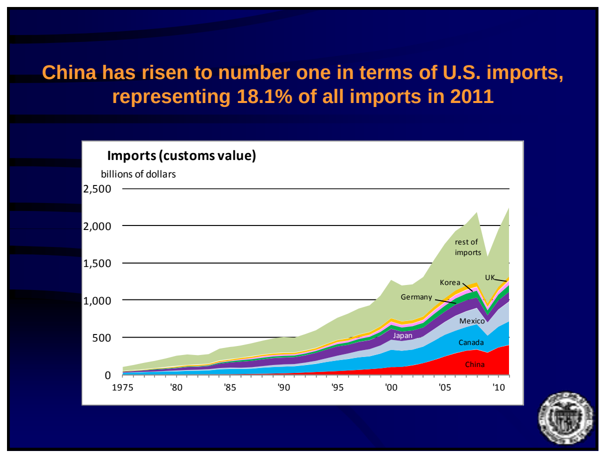


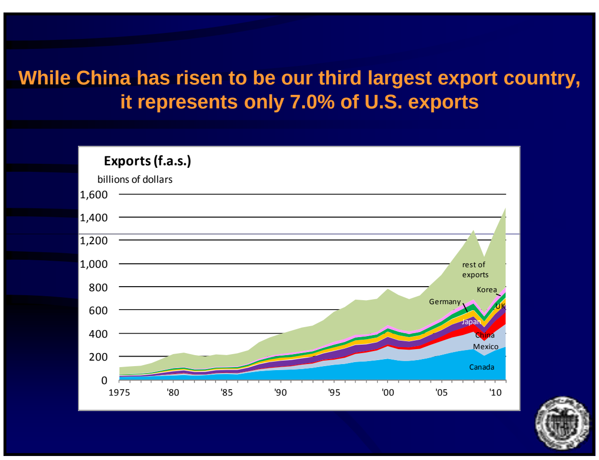
Lessons from the farm sector

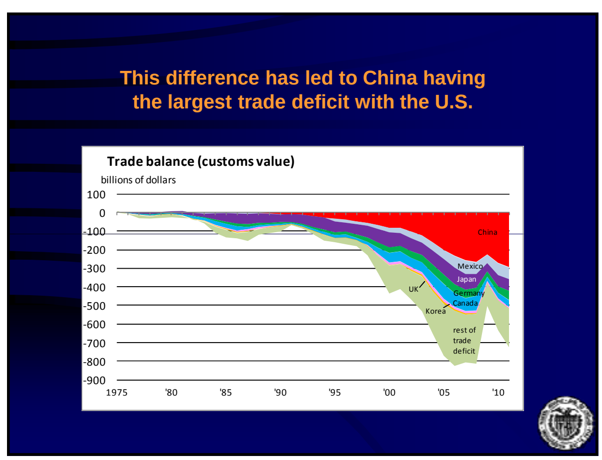

We are producing more in our farm sector
than at any time in our history
Real gross value added: farm business
Billions of chained 2005 dollars
120
100
80
60
40
20
0
1947
'57
'67
'77
'87
'97
'07

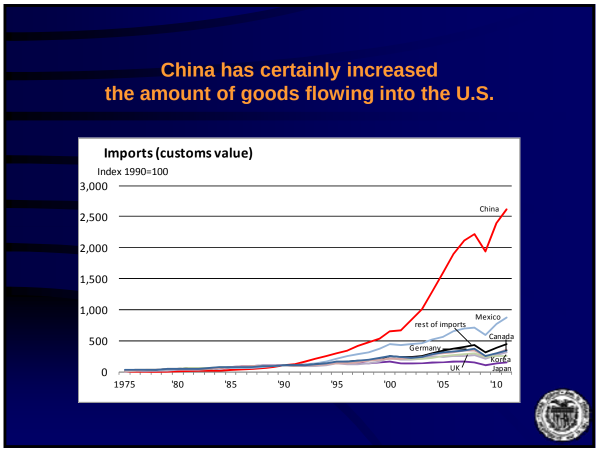

And we are accomplished this remarkable feat
with less than 2.0% of our employment devoted to farming
Share of total employment
percent
90
80
70
60
50
40
30
20
10
0
services
manufacturing
agriculture
1870 1880 1890 1900 1910 1920 1930 1940 1950 1960 1970 1980 1990 2000 2010

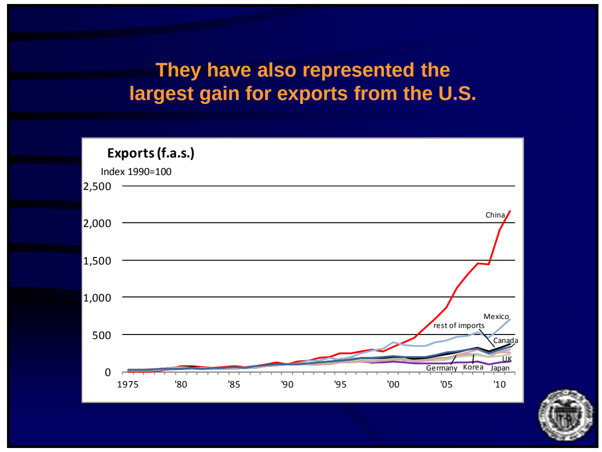

Trade with China

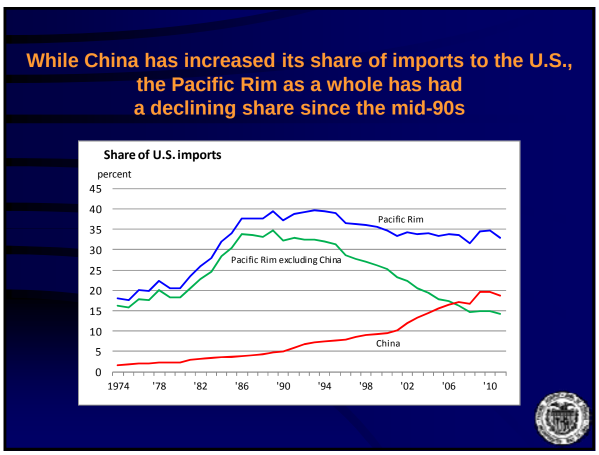

China has risen to number one in terms of U.S. imports,
representing 18.1% of all imports in 2011
Imports (customs value)
billions of dollars
2,500
2,000
1,500
1,000
500
0
rest of imports
UK
Korea
Germany
Mexico
Japan
Canada
China
1975
'80
'85
'90
'95
'00
'05
'10


While China has risen to be our third largest export country,
it represents only 7.0% of U.S. exports
Exports (f.a.s.)
billions of dollars
1,600
1,400
1,200
1,000
800
600
400
200
0
rest of exports
Korea
Germany
UK
Japan
China
Mexico
Canada
1975
'80
'85
'90
'95
'00
'05
'10

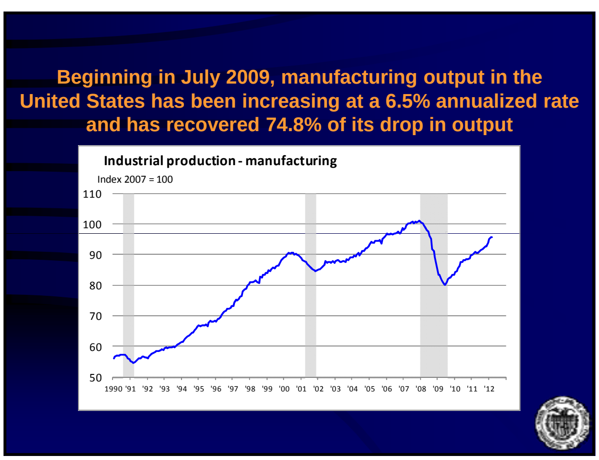

This difference has led to China having
the largest trade deficit with the U.S.
Trade balance (customs value)
billions of dollars
100
0
-100
-200
-300
-400
-500
-600
-700
-800
-900
China
Mexico
Japan
Germany
Canada
UK
Korea
rest of trade deficit
1975
'80
'85
'90
'95
'00
'05
'10

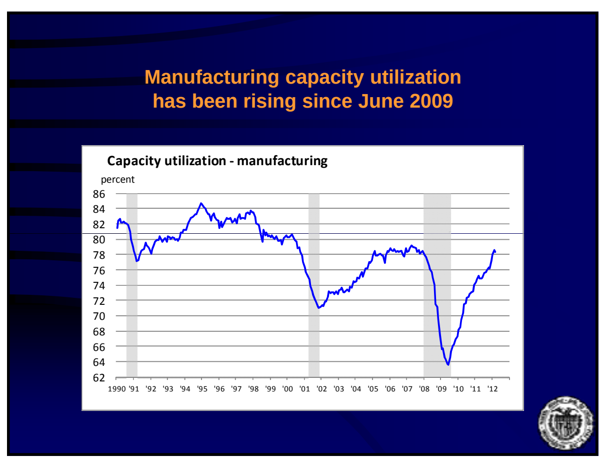

China has certainly increased
the amount of goods flowing into the U.S.
Imports (customs value)
Index 1990=100
China
Mexico
rest of imports
Canada
Germany
Korea
UK
Japan
1975 '80 '85 '90 '95 '00 '05 '10


They have also represented the
largest gain for exports from the U.S.
Exports (f.a.s.)
Index 1990=100
China
Mexico
rest of imports
Canada
UK
Germany
Korea
Japan
1975 '80 '85 '90 '95 '00 '05 '10

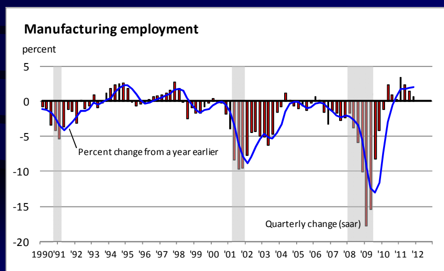

While China has increased its share of imports to the U.S.,
the Pacific Rim as a whole has had
a declining share since the mid-90s
Share of U.S. imports
percent
Pacific Rim
Pacific Rim excluding China
China
1974 '78 '82 '86 '90 '94 '98 '02 '06 '10


The Current Expansion

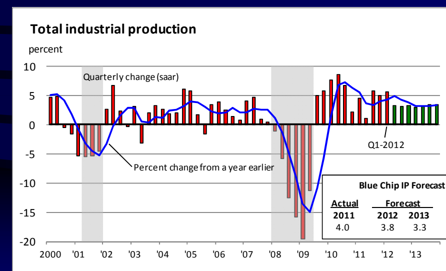

Beginning in July 2009, manufacturing output in the
United States has been increasing at a 6.5% annualized rate
and has recovered 74.8% of its drop in output
Industrial production - manufacturing
Index 2007 = 100


Manufacturing capacity utilization
has been rising since June 2009
Capacity utilization - manufacturing
percent

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

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