

# Update on BEA's Industry Economic Accounts

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Inforum Outlook Conference

College Park, Maryland

December 11, 2014



# Outline

- Fully Integrated Accounts
- Satellite Accounts
- Quarterly GDP by Industry
- Integrated GDP & Productivity Account at the Industry level
- Efforts to measure the economic impact of Global Value Chains

# Integration of the National and Industry Economic Accounts



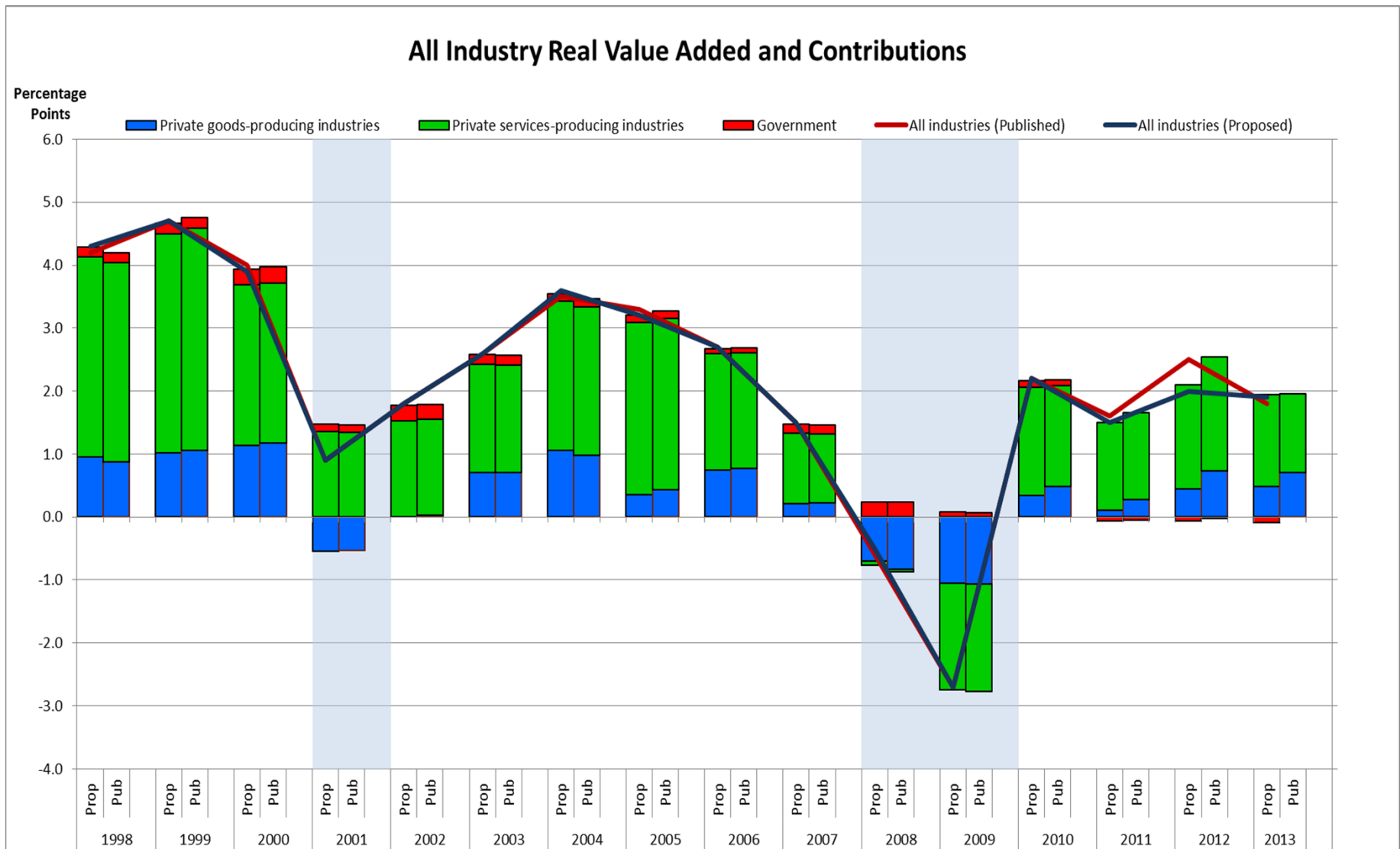
- 2014 comprehensive revision marks the first time that the Industry Economic Accounts (IEAs) and National Income and Product Accounts (NIPAs) are fully consistent with one another
- Benchmark I-O accounts establish both levels and commodity composition of GDP final use categories
  - Provide critical information for estimating GDP (by extrapolation) for periods after benchmark years
- Fully consistent benchmark I-O accounts

The top banner features the BEA logo (Bureau of Economic Analysis, U.S. Department of Commerce) in the upper right corner. The background of the banner includes a stylized map of the United States, a bar chart with various numerical values, and a globe. The text "2014 Flexible Annual Revision" is prominently displayed in white on a dark blue background.

# 2014 Flexible Annual Revision

- Revised statistics beginning with 1997, including 2007 BM I-O
- Fully consistent with NIPAs and ITAs
- Expanded industry detail
- Expanded final uses for fixed investment

# 2014 Flexible Annual Revision – Cont.





# Satellite Accounts

The background of the slide features a blue header with a white bar chart on the left. The chart has several bars of varying heights, with some labeled with numbers like 44,479, 36,279, 35,845, 19,271, 1,698, 724,210, and 1,750. To the left of the chart, a list of state names is partially visible: New Hampshire, Rhode Island, Vermont, Connecticut, Delaware, District of Columbia, Maryland, New Jersey, and New York. The main title 'The Arts and Cultural Production Satellite Account (ACPSA)' is written in large white font across the top right of the header. The BEA logo, 'BUREAU OF ECONOMIC ANALYSIS U.S. DEPARTMENT OF COMMERCE', is in the top right corner.

# The Arts and Cultural Production Satellite Account (ACPSA)

“The positive value of arts and culture on society has been understood on a human level for millennia. With this new effort, we are now able to quantify the impact of arts and culture on GDP for the very first time.”

Penny Pritzker

U.S. Secretary of Commerce


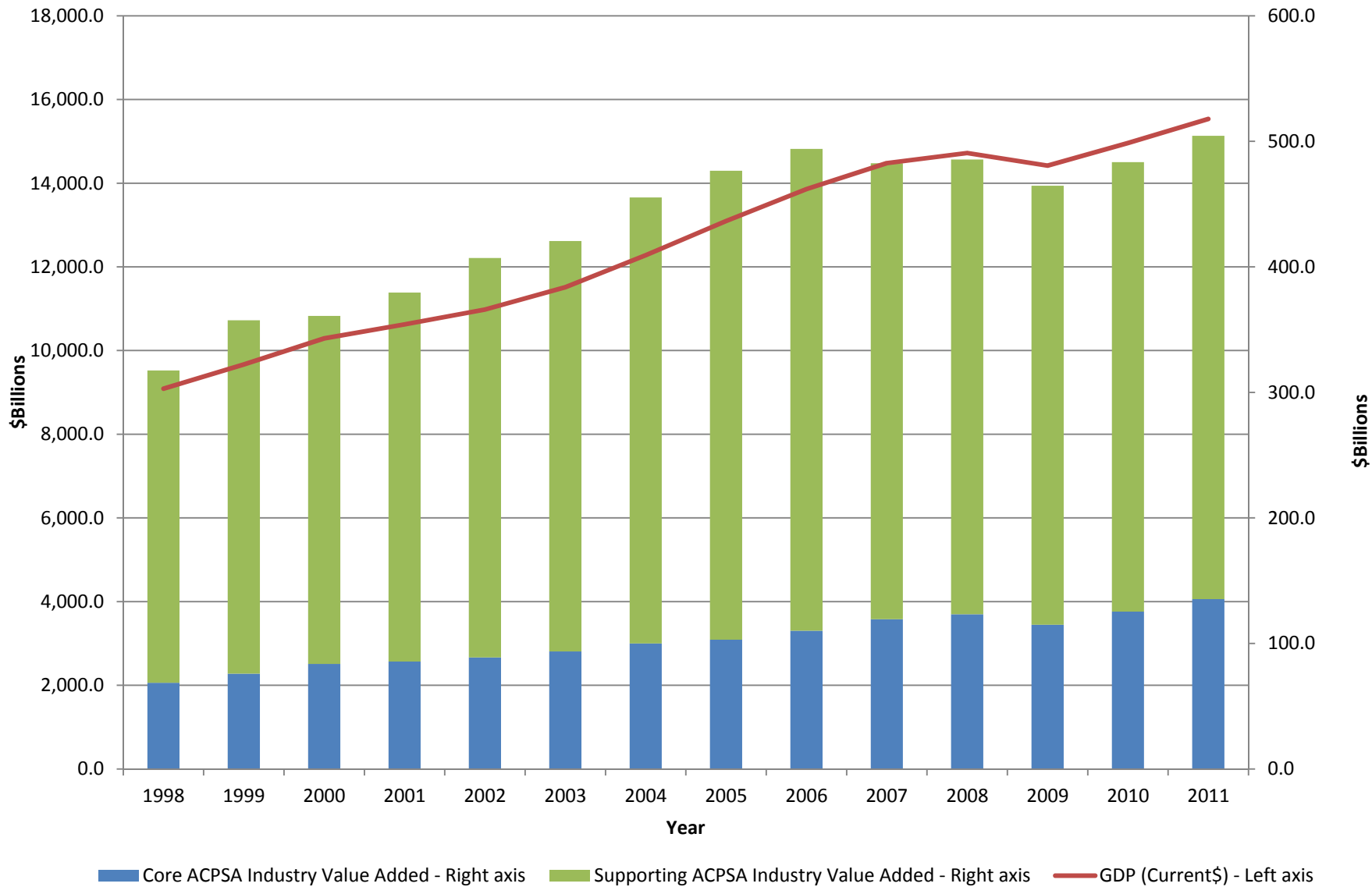
The title "ACPSA—Continued" is centered in a white serif font against a dark blue background. The background features a faint bar chart with various numerical values and state names like "New Hampshire", "Rhode Island", "Vermont", "Massachusetts", "Connecticut", "New York", "New Jersey", "Delaware", "District of Columbia", and "Maryland".

# ACPSA—Continued

- Uses BEA's I-O framework to provide:
  - Information on a select group of arts and cultural goods and services that are *currently* in the U.S. GDP accounts, but not clearly visible
  - A detailed accounting of the economic contribution of the arts and cultural sector
  - An estimate of arts and culture employment

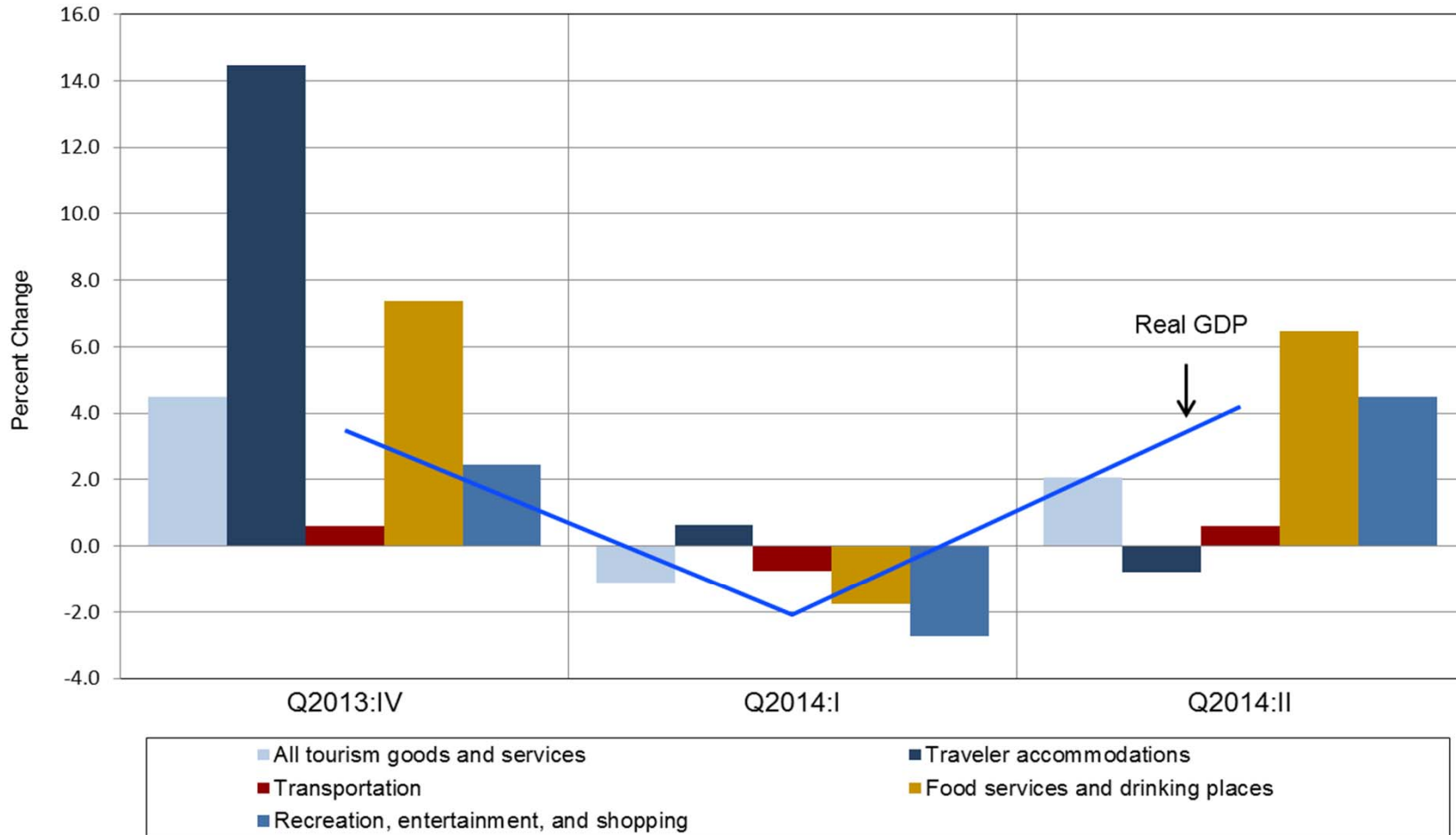


# GDP versus ACPSA Value Added

# Travel and Tourism Satellite Account

## Real Tourism Spending





# Quarterly GDP by Industry Statistics for the United States

The top banner features the BEA logo (Bureau of Economic Analysis, U.S. Department of Commerce) on the right. The background is a dark blue gradient with a faint bar chart and various numerical data points. The word 'Motivation' is written in large, white, sans-serif font across the center of the banner.

# Motivation

- Great Recession and subsequent recovery highlighted need for more “real-time” data
- Supplement existing quarterly/monthly indicators of industry performance—such as employment, sales & shipments, profits, prices
- Comprehensive and consistent picture of industries’ overall performance
  - Analyses of business cycle dynamics and the sources of U.S. economic growth



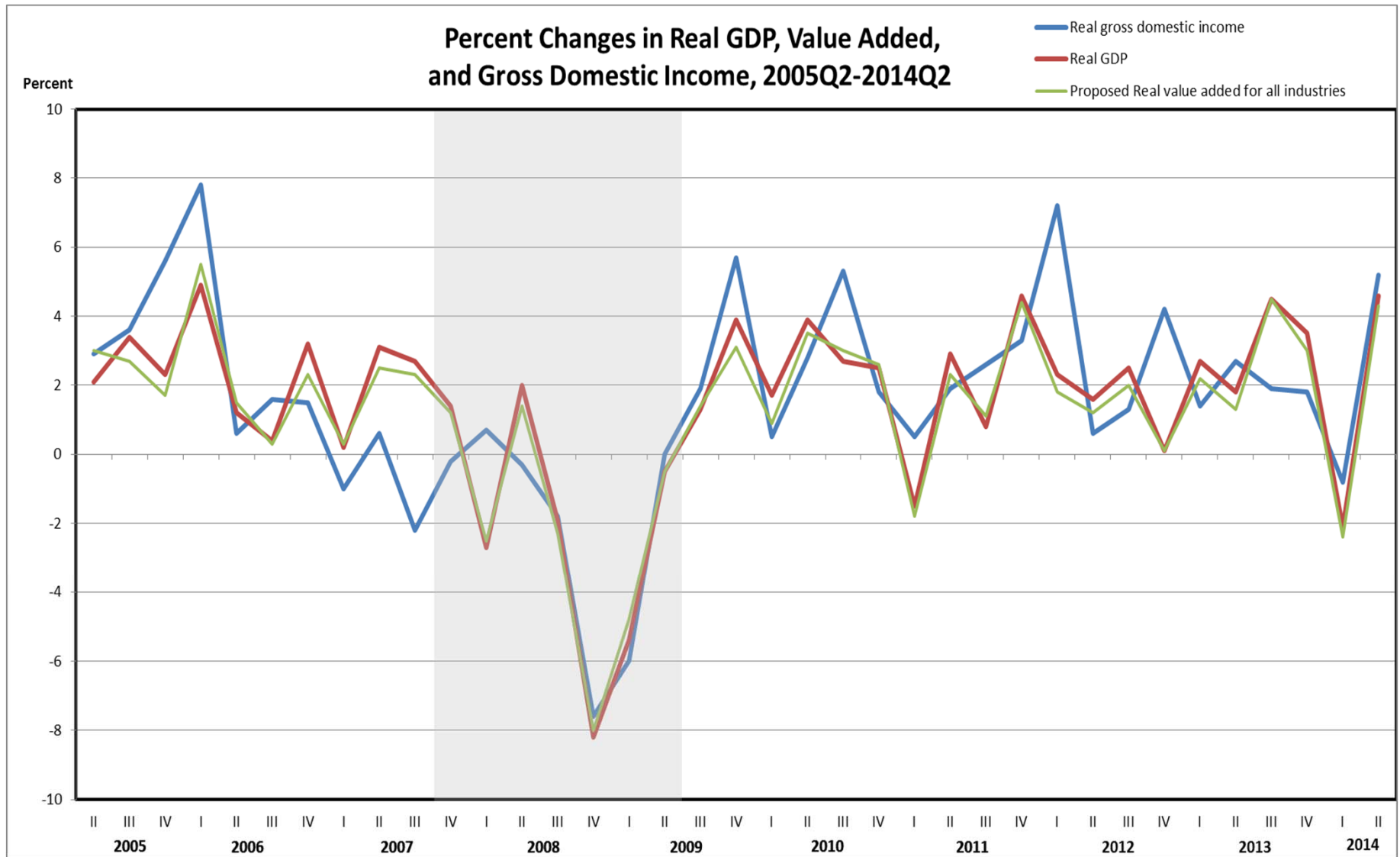
# Quarterly GDP by Industry

- Launched April 25<sup>th</sup>; 2005:I –2013:IV
- Available within 30 days after “3<sup>rd</sup>” release of GDP
  - Feature real value added by industry
  - Integrated statistics for gross output and intermediate inputs
  - 22 major industry sectors to begin ...
- Made possible with the expansion of source data, particularly for the services sector
  - Census Bureau Quarterly Services Survey
  - Bureau of Labor Statistics Producer Price Indexes

# Methodology: balanced input-output framework and double deflation

		INDUSTRIES						FINAL USES					Total Commodity Output and Value Added
		Mining and Construction	Manufacturing	Trade and Transportation	Utilities	Finance, Insurance, and Real Estate	Other	Personal Consumption Expenditure	Private Fixed Investment	Change in Private Inventories	Net Exports	Government Consumption and Investment	
COMMODITIES	Mining and Construction												<b>Make table</b>
	Manufacturing									<b>NIPA</b>			
	Trade and Transportation	<b>Adjusts during balancing</b>						<b>final expenditures</b>					
	Utilities												
	Finance, Insurance, and Real Estate												
	Other												
VALUE ADDED	Compensation	<b>A function of Gross Domestic Income</b>						/					
	Taxes on Production and Imports	<b>and Gross Output by Industry</b>											
	Gross Operating Surplus												
Total Industry Output and Final Uses				<b>Make table</b>									

# Comparisons with Real GDP

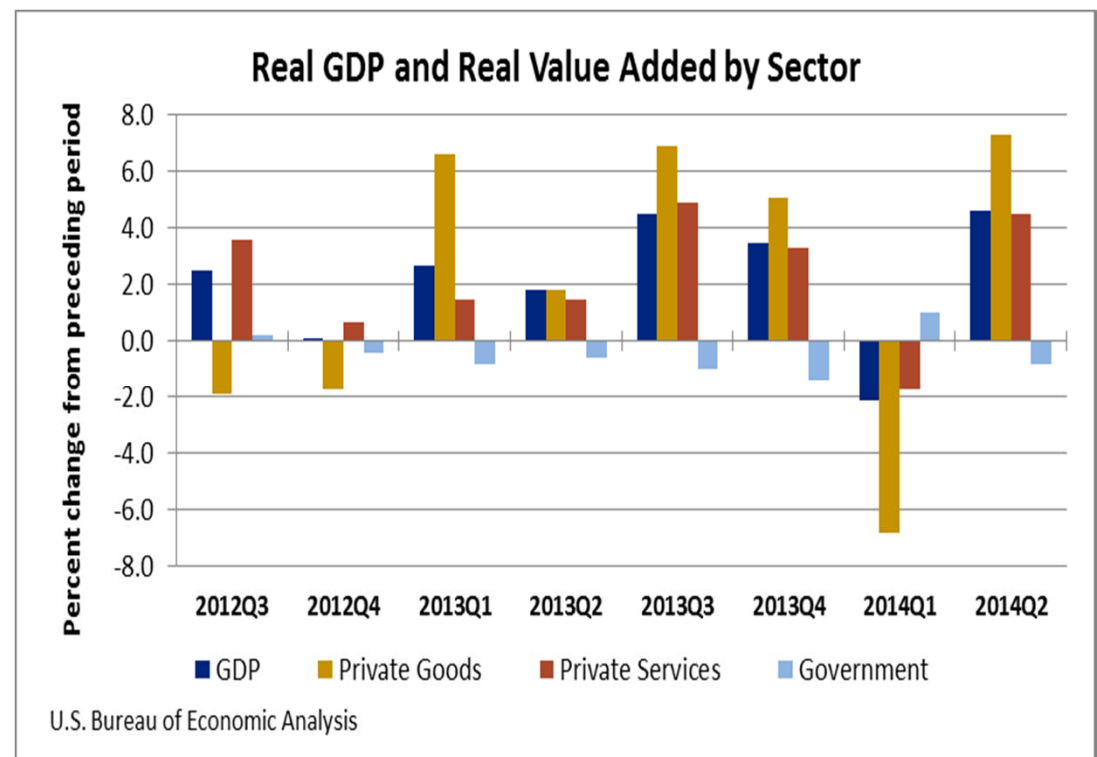




# An Inside Look at U.S. Producers

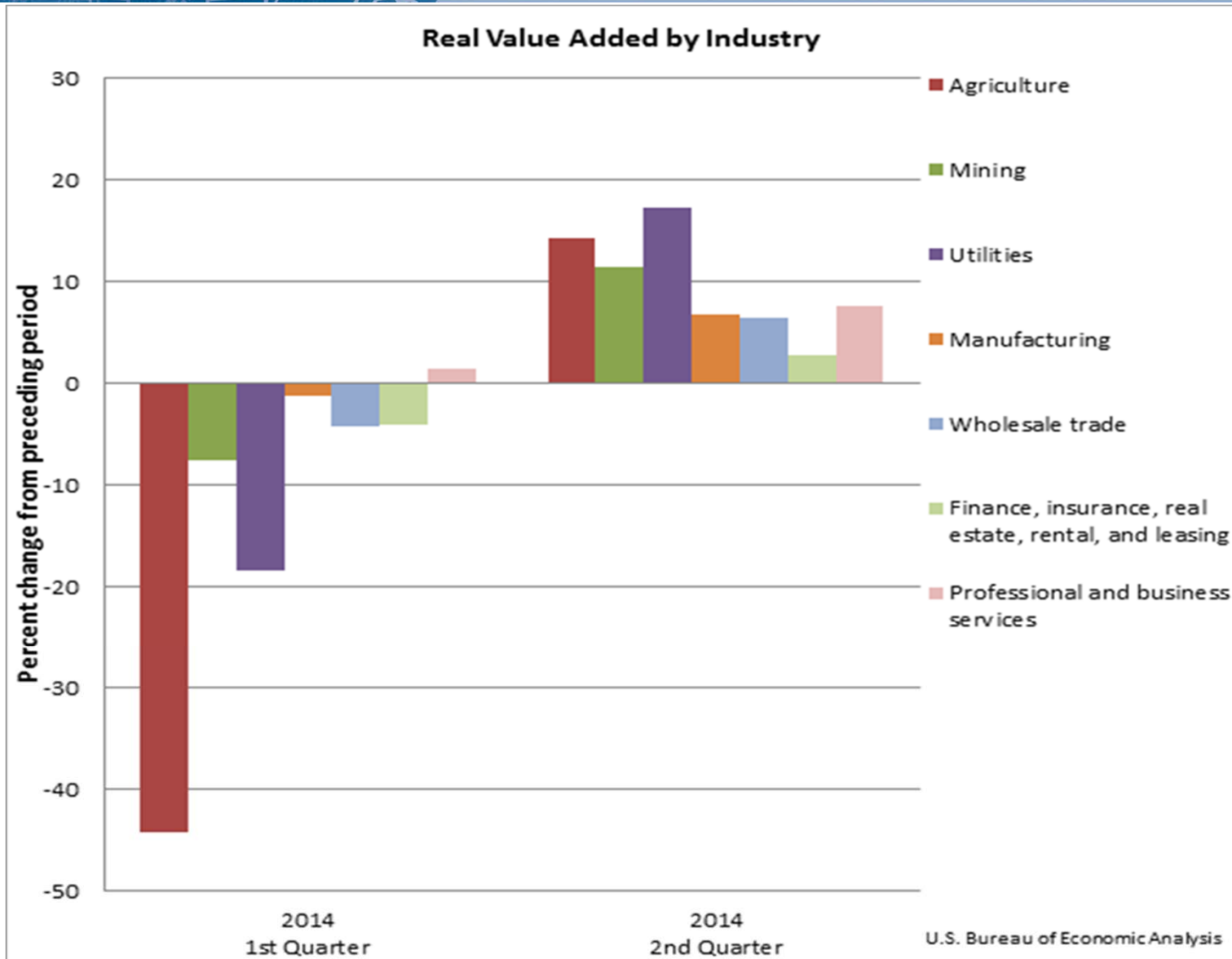
- GDP increased 4.6 percent in the second quarter of 2014, after decreasing 2.1 percent in the first quarter.

- Goods sector rebounds — led by durable-goods manufacturing
- Services sector turns up – reflecting an upturn in the finance and insurance sector





# An Inside Look -- Continued



# Future directions for quarterly statistics

- Expand industry detail from 22 to 71
- Accelerate release to coincide with 3<sup>rd</sup> estimate of U.S. GDP
- Longer run:
  - “Advance” release of GDP by industry?
  - A 3<sup>rd</sup>, “production” measure of GDP?



# Integrated GDP & Productivity Account at the Industry Level



# Motivation

- Long-standing call for statistics on the sources of growth
  - Solow (1957), Denison (1967), Griliches and Jorgenson (1967)
  - Postwar Recovery, Big Slump, IT Boom, the Great Recession
  - “... differences between the BEA and BLS estimates have led many researchers to construct their own measures ...”
    - Jorgenson and Landefeld (2006) in *A New Architecture for the U.S. National Accounts*
- The Advisory Committee on Measuring Innovation in the 21<sup>st</sup> Century: A Report to the Secretary of Commerce (January 2008)
  - “Develop annual, industry-level measures of total factor productivity ...”

# GDP integrated with productivity statistics



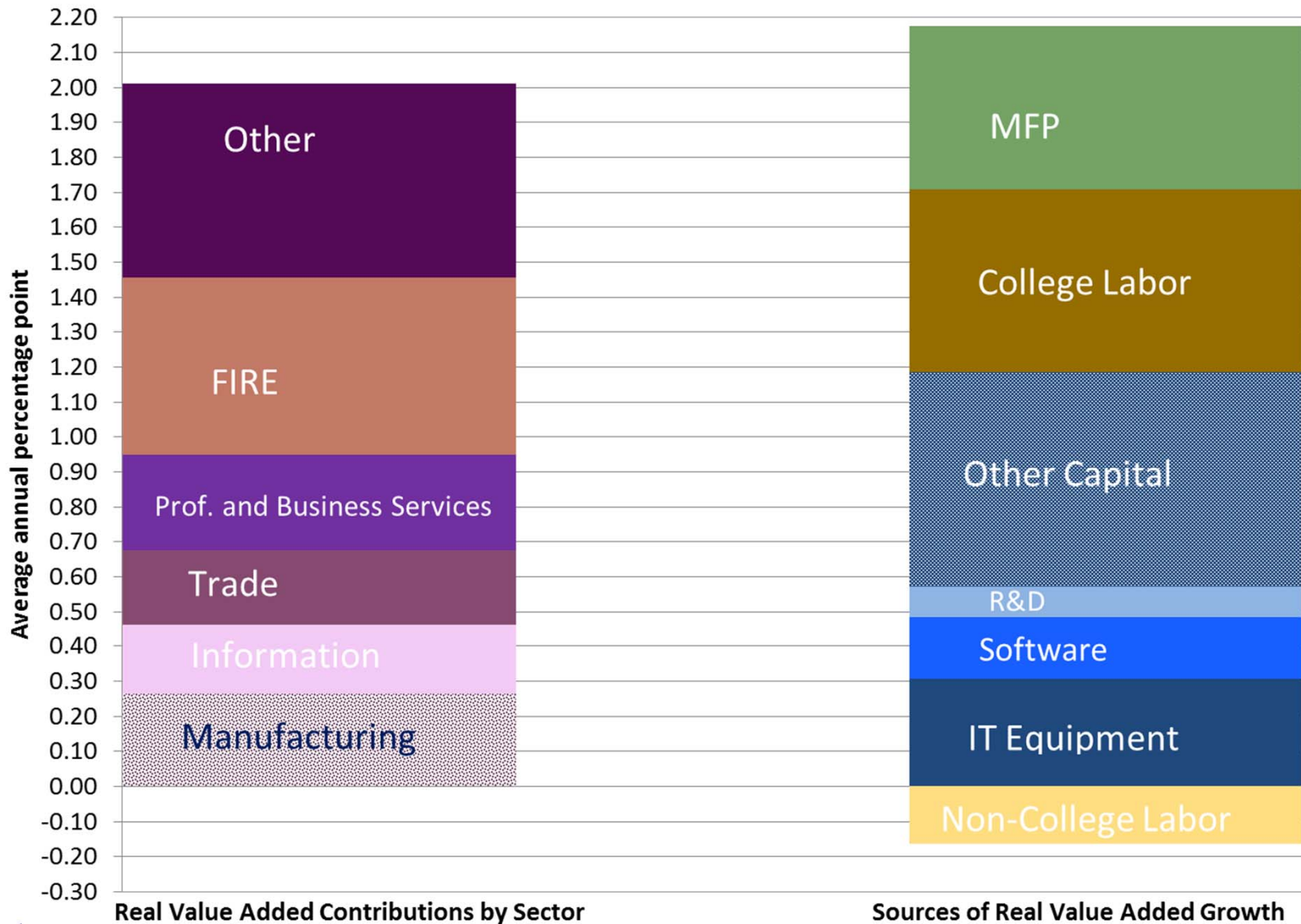
- Allows for integrated analysis on the sources of growth in the economy
  - Jorgenson and Landefeld (2006) provided blueprint for United States
  - Harper, Moulton, Rosenthal, and Wasshausen (2009) integrated account for nonfarm business
  - Fleck, Rosenthal, Russell, Strassner, and Usher (2013) integrated account for GDP at the industry level
  - Rosenthal, Russell, Samuels, Strassner and Usher (2014) incorporated 2013 comprehensive revision
    - [www.bea.gov/industry/index.htm#integrated](http://www.bea.gov/industry/index.htm#integrated)

# Big picture questions

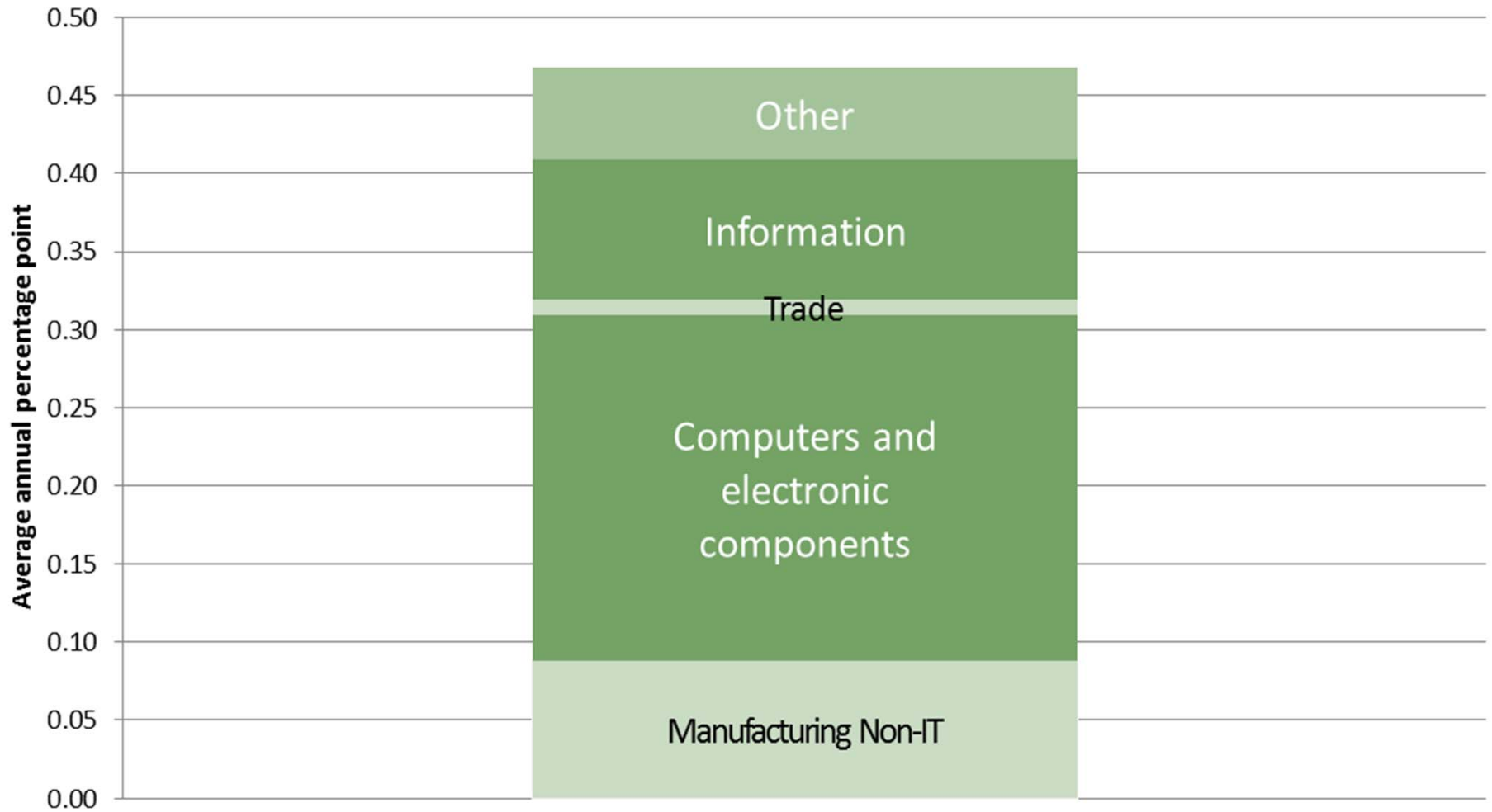
- What are the industry sources of GDP and multifactor productivity (MFP) growth?
  - For example, what is the role of manufacturing?
  
- What is the contribution of:
  - Information-communications-technology to growth and productivity?
  - Intellectual property products to growth and productivity?



# Sources of U.S. economic growth, 1998-2012



# Sources of multifactor productivity growth, 1998-2012



- Computers and electronic products accounts for about 50% of MFP growth!



# Industry sources of growth analysis

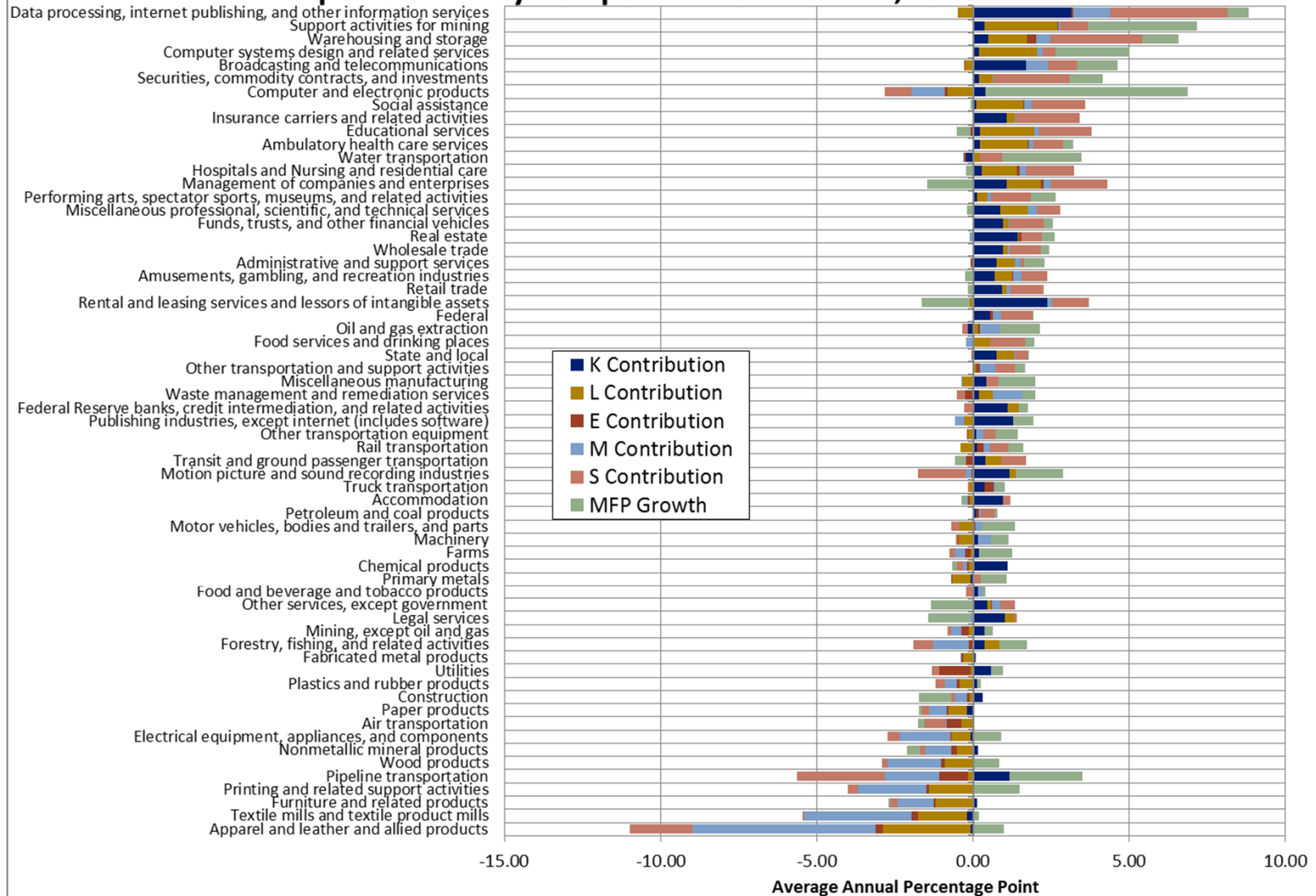
- Requires an industry-level production account
  - Industry-level outputs and inputs in current and constant prices

$$Y_Q Y_P = K_Q K_P + L_Q L_P + X_Q X_P = VA_Q VA_P + X_Q X_P$$

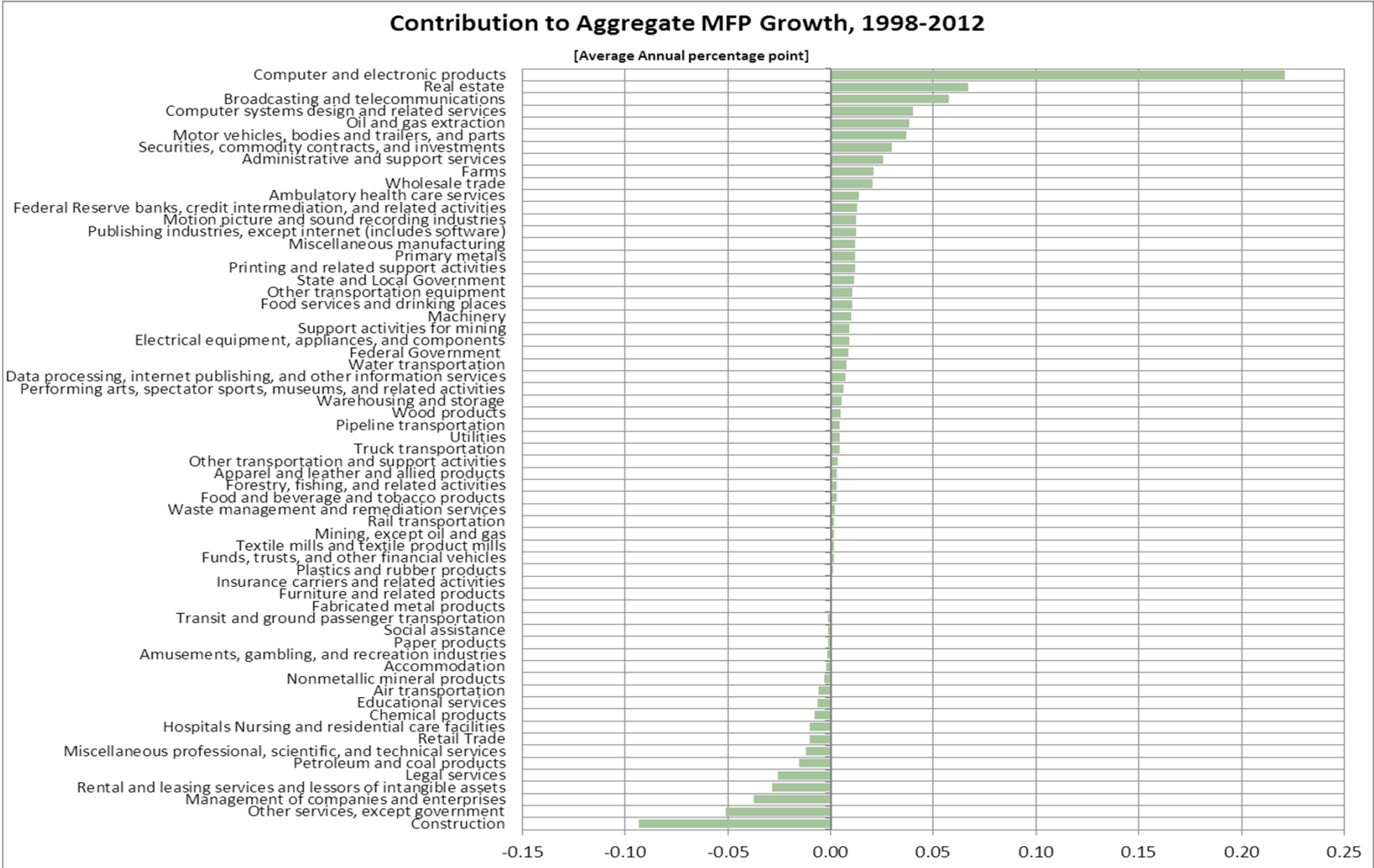
- Symmetric treatment of outputs, intermediate inputs, and value added inputs
- Consistent with aggregate GDP constructed within an Input-Output Framework
  - Gross output, intermediate input, value added: BEA
  - Capital input: BLS, based on BEA Fixed Assets
  - Labor input: Hours from BLS, Composition from BEA

# Gross output growth and sources

## Output Growth By Component Contribution, 1998-2012



# Contributions to aggregate MFP by industry

# Sources of U.S. economic growth

	1998-2012
<b>GDP</b>	<b>2.02</b>
IT-producing industries	0.31
IT-using industries	0.98
Non-IT industries	0.73
<b>Capital input</b>	<b>1.19</b>
IT-producing industries	0.04
IT-using industries	0.59
Non-IT industries	0.56
<b>Labor input</b>	<b>0.36</b>
IT-producing industries	0.00
IT-using industries	0.30
Non-IT industries	0.06
<b>Multifactor productivity</b>	<b>0.47</b>
IT-producing industries	0.27
IT-using industries	0.09
Non-IT industries	0.11

- Capital input accounted for about 60 percent of growth
  - 50 percent due to IT-using industries
- Labor input accounted for a bit more than 15 percent
- MFP accounted for about 25 percent
  - 60 percent due to IT-producing industries



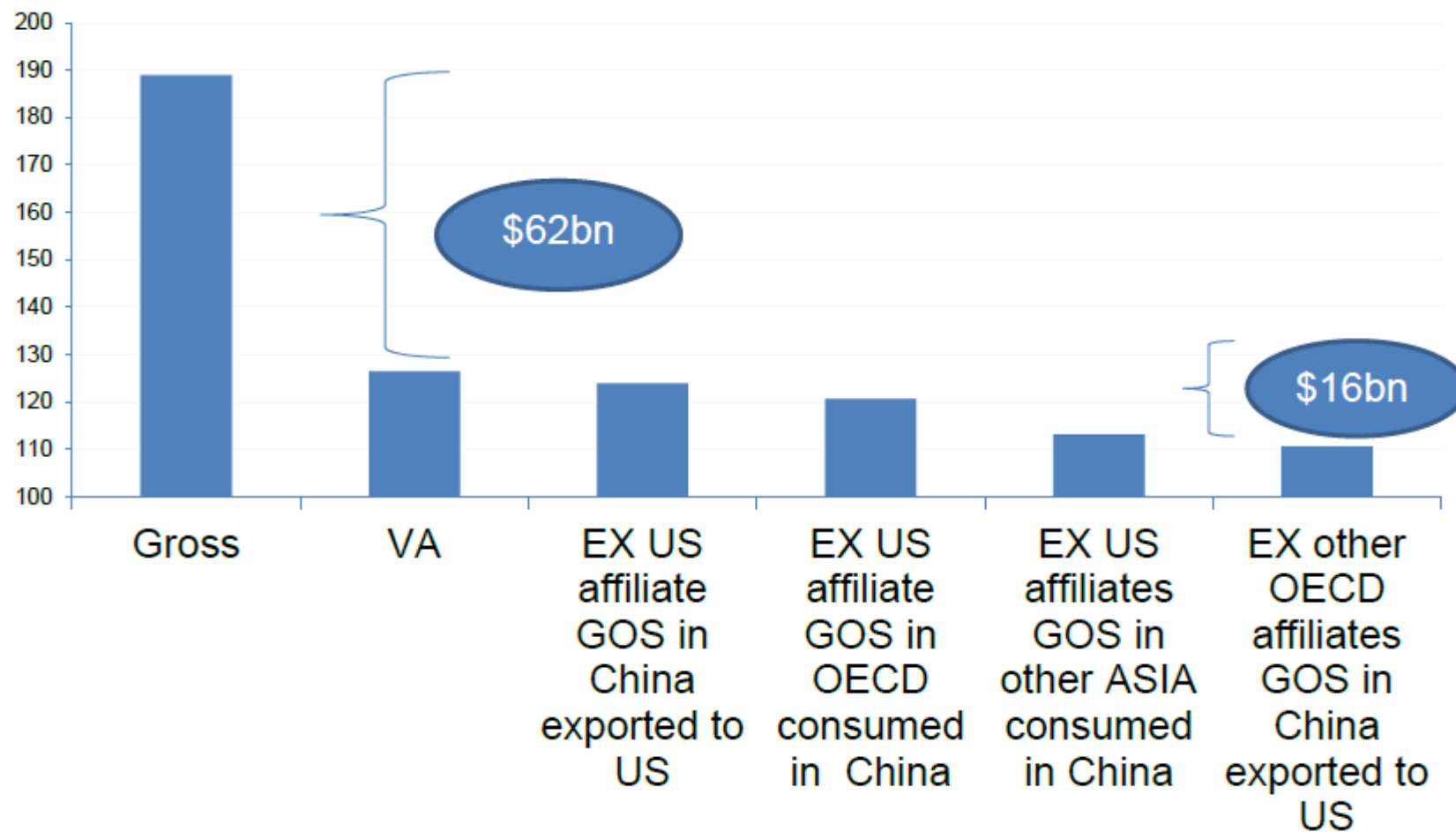
# Efforts to measure the economic impact of Global Value Chains

# How to measure impact of globalization?

- Increased need to assess impacts of globalization/global value chains (GVCs) on national economies
- One approach to measurement:
  - Trade in Value Added (TiVA)-led by OECD
- Requires global Supply-Use tables
  - National tables linked together through bilateral international trade flows
  - Extensions: New work looks to introduce firm-level heterogeneity into National Supply-Use tables
    - E.g., ownership characteristics, exporter/nonexporter
    - How much of value created is captured domestically or is repatriated?



# OECD TiVA Example: China's trade surplus with the US?



Source: OECD illustrative estimates

# BEA Engagement: International working groups

- United Nations Statistical Commission “Friends of the Chair” on trade and economic globalization
  - Handbook on Extended International Accounts
  - Establishment of Work Group akin to that for National Economic Accounts (ISWGNA)
- OECD Expert Group on “Extended” Supply-Use Tables
  - Introduce firm-level heterogeneity to fine-tune TiVA statistics; 2-year time horizon
- APEC TiVA Technical Group
  - Consistent goals to that of OECD but for APEC member countries (20); 4-year time horizon



# BEA Engagement: Projects to enhance relevance of BEA statistics for GVC analysis—cont.

- **Industry Accounts**
  - Supply-Use tables consistent with International guidelines
  - Research to assess Import Use table assumptions using data on U.S. multinational enterprises
  - Estimate import use tables that reflect data by major trade partner
- **Development of a North American Regional Supply Chain Model**
  - Proposed by the USITC in collaboration with BEA, Statistics Canada, and INEGI (Mexico Bureau of Statistics)
- **Extensions to introduce firm-level heterogeneity**
  - Short run: “Proof of Concept” project based on comparisons of published enterprise data by BEA and by IRS Statistics of Income
  - Longer-run: BEA-Census link projects on multinational enterprises, trade in goods and services, and establishment-level data