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U.S. DEPARTMENT OF COMMERCE

Integrated Statistics and Accounts

Examples at BEA

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International Workshop on Economic Census, Business Registers and Integrated Economic Statistics

INEGI-UNSD

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Decentralized economic statistics

- The U.S. is a decentralized statistical system
  - Bureau of Economic Analysis –

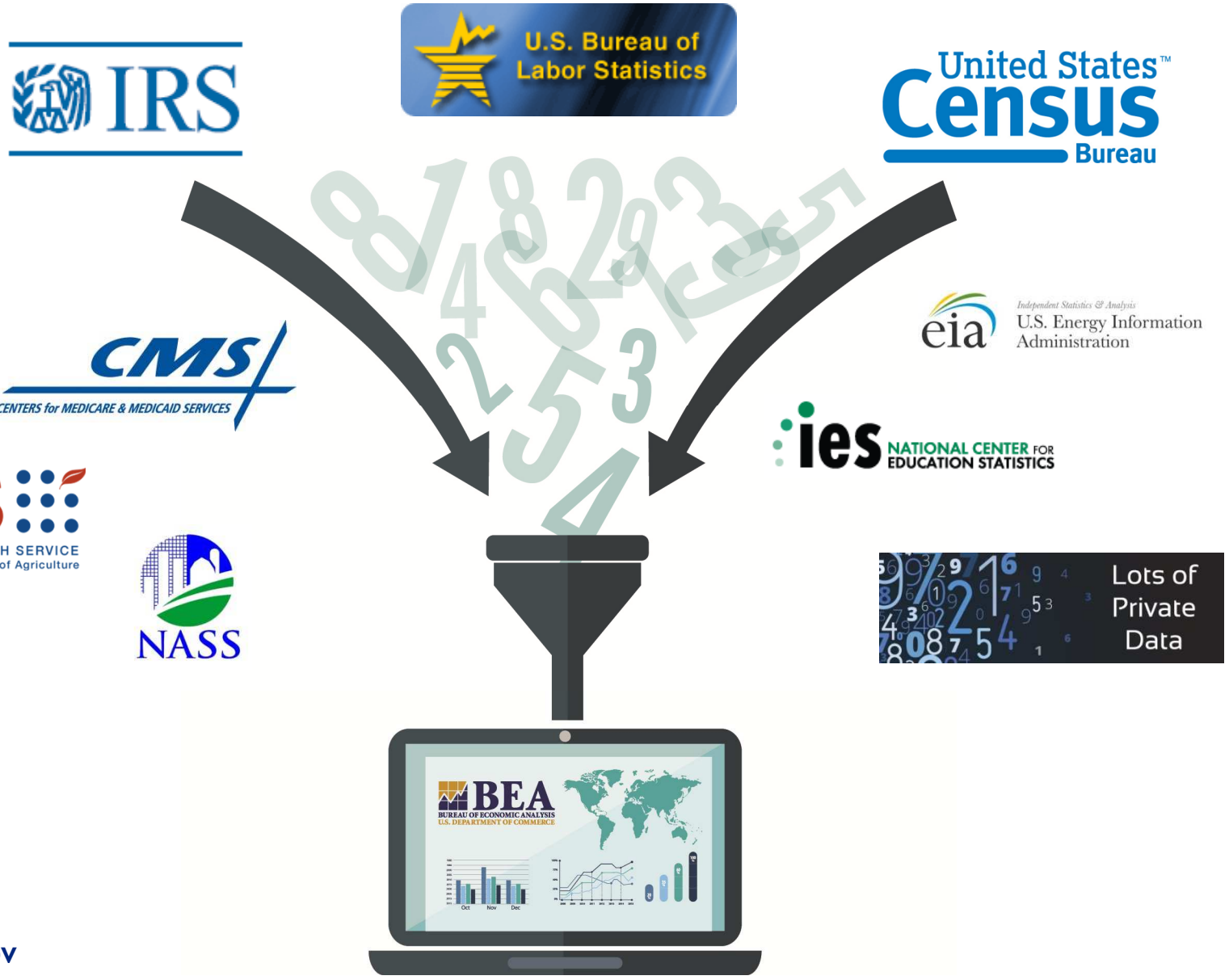
    National economic accounts, international economic accounts, regional accounts, trade in services, multinational enterprises (MNE) and foreign direct investment censuses and surveys
  - U.S. Census Bureau –

    Business register, economic census and business surveys
  - IRS – Tax data (Statistics of Income)
  - Federal Reserve Board – Central bank

    Financial accounts, regulatory data
  - Bureau of Labor Statistics –

    Productivity, prices, and labor data

BEA uses all of it!



Why integrate?

- Integration
  - Multiple data sets
  - Across statistical agencies
  - May or may not integrate at micro level
  - Across economic disciplines
  - One framework to support broader understanding of the macro economy
- BEA's role
  - Link projects
  - Integrated Macroeconomic Accounts (IMAs)
  - Integrated Production Accounts

BEA data link projects

- BEA-Census link projects
  - Link MNE and economic census micro data
  - Link MNE and R&D expenditure micro data
  - Better understand the role multi nationals play in the U.S. economy
- Extended supply-use tables
  - Link MNE data to U.S. input-output accounts
  - Heterogeneity between foreign vs domestic industry output, inputs, value added
- Income distribution
  - Linking micro household data to macro data to analyze household spending and income by income distribution *(won't discuss here)*

BEA supported integrated accounts

- IMAs
  - Combine financial accounts of the United States (FAUS) and national income and product accounts (NIPAs)
  - Link production and income to changes in net worth through balance sheets
  - Trace sources and uses of funds for capital formation and net lending
- Productivity Accounts
  - Integrate U.S. multifactor productivity (MFP) statistics and national economic accounts
  - Identify sources of economic growth and productivity by industry

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Link Projects

Foreign direct investment data

- BEA conducts surveys of foreign direct investment in the U.S. (FDIUS) and U.S. direct investment abroad (USFDIA)
- Rich source of data on multi-national enterprises
- When linked with other data, we can
  - Investigate global value chains
  - Study impacts of FDI on local employment
  - Track potential differences in productivity of NME vs non NME firms

FDI – economic census link project

- Link US affiliates of foreign companies to economic Census establishments
- Linked on EIN (employer identification number)
- Scope differences – econ census excluded some NAICS industries (agriculture, some air and railroad transportation and some financial industries)
- Timing differences – fiscal vs calendar years
- Classification differences – parent industry vs affiliate
- Last time this was done: 2002

Some findings (from 2002)

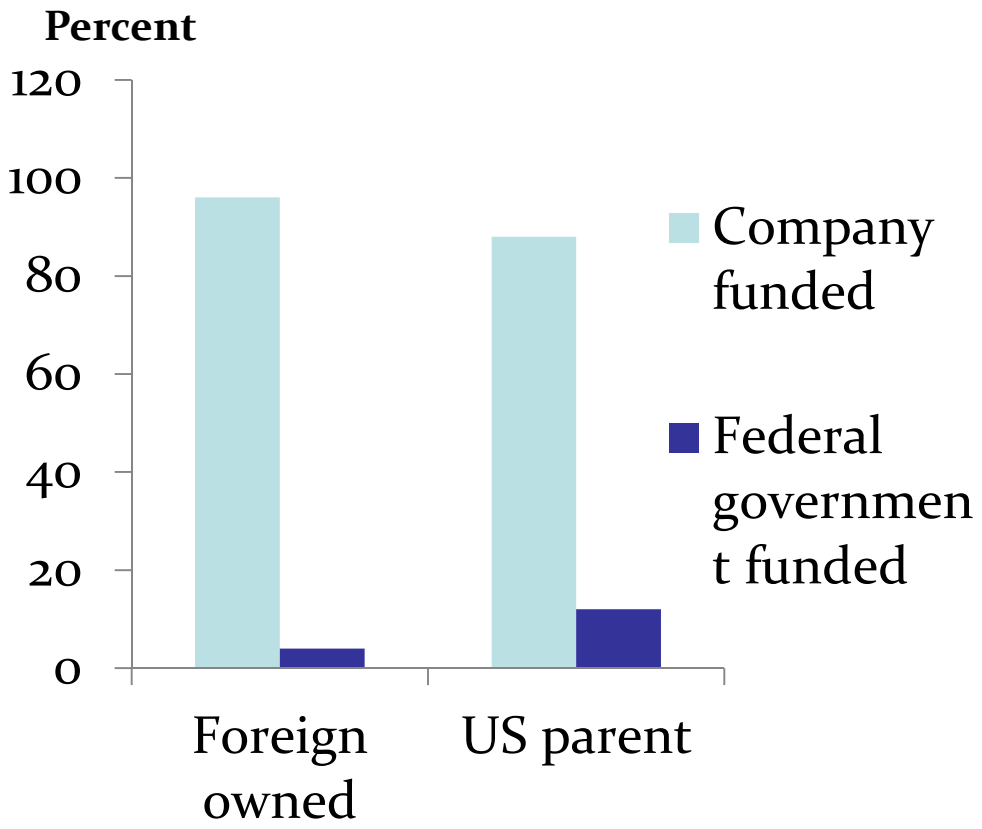
- Foreign owned establishments represented:
  - 1.7% of total establishments
  - 5.4% of employment in U.S
  - 7.3% of payroll
  - 10.9% of sales
- Data available by country and by state
- It is time to update these data

FDI – R&D link project

- R&D data - Survey of Industrial Research and Development (SIRD) – National Science Foundations and Census Bureau
- Linked on EIN for 2004 – 2007
- Linked ownership to type of R&D activity and location
- Industry classifications differed
  - SIRD based on employment
  - FDI based on revenue
  - Project used SIRD classifications

Some findings (2007)

- U.S. parents funded 88% of their U.S. R&D from own funds
- U.S. affiliates of foreign companies funded 96% of their R&D from nonfederal funds
- ¾ of R&D spending went to development activity for all groups
- NMEs made up 75% of employment of R&D performing companies
- The work provided a better picture of how MNEs contribute to R&D in the U.S.



FDI - extended supply-use link project

- Increased need to assess impacts of globalization/global value chains on national economies
- One approach to measurement:
  - Trade in Value Added (TiVA)-led by OECD-WTO
- Requires global Supply-Use tables (SUTs)
  - National tables linked together through bilateral international trade flows
  - New work to develop "Extended" SUTs that account for firm-level heterogeneity
    - E.g., ownership characteristics; MNE/Non; exporter/nonexporter

Proof-of-concept analysis on heterogeneity

- Erich Strassner and Jim Fetzer at BEA
- To motivate and validate longer-run BEA-Census link project on extended SUT
- Use data available to BEA: tabulations from tax returns for all U.S. firms and from BEA's MNE and SUT
- Decomposition of gross output for
  - Multi-national enterprises
  - Entirely domestic firms

Methodology for decomposing output

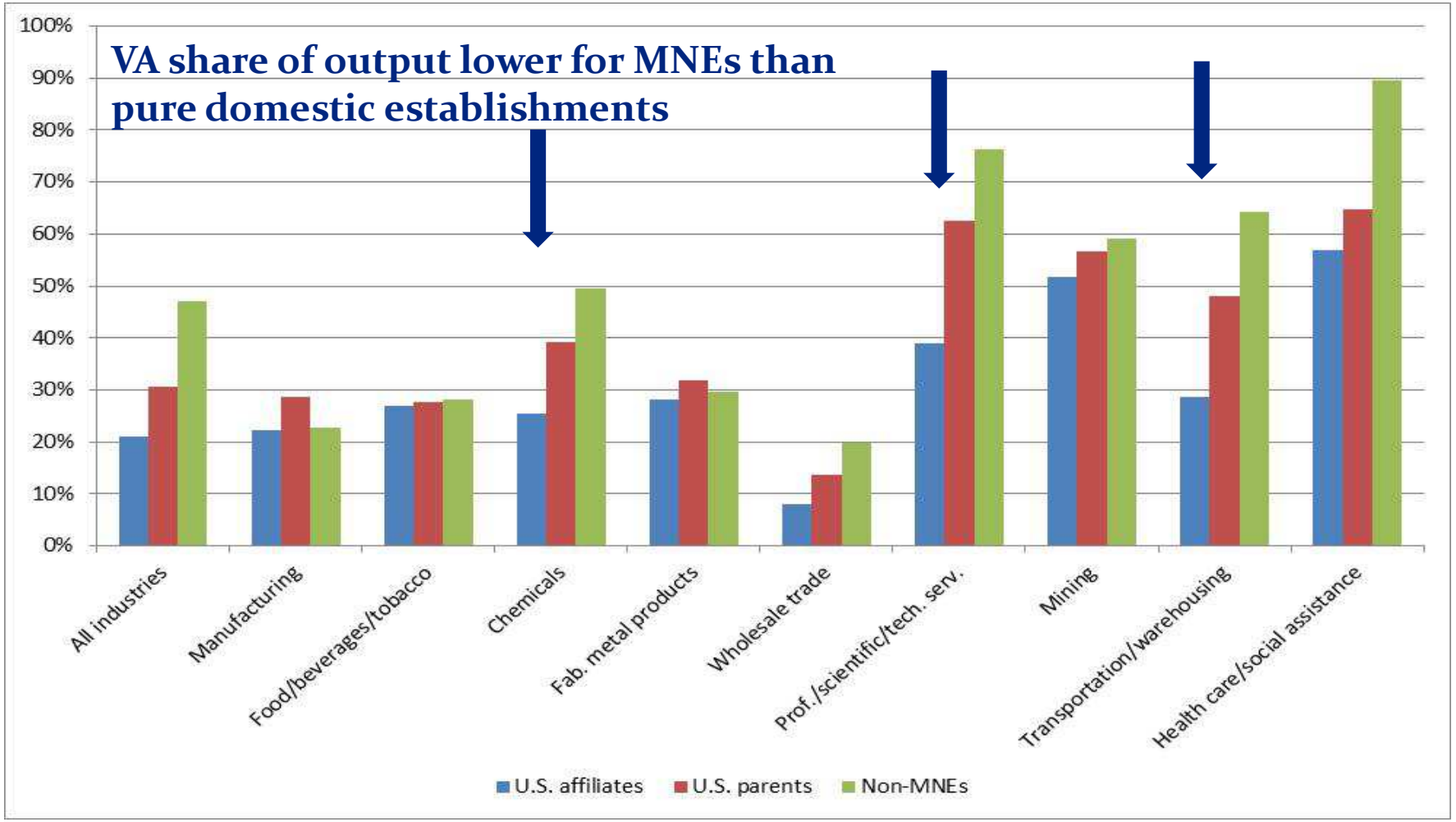
- U.S. parent and affiliate data
  - U.S. parents minus majority foreign owned
  - BEA surveys of U.S. MNEs
  - Value added directly measured as sum of components
- Non-MNEs=All U.S. firms less MNEs
  - IRS Statistics of Income tax return data
  - BEA IO-Employee comp and trade flows
  - Value added indirectly measured as Output-Intermediate inputs

Early results for all private industries

	A	B	C	D	E	F	G
1	Extended Supply/Use Tables for All Private Industries, 2011						
2	(percentage of total output)						
3							
4			Multinational		Non-multinational	Exports of goods	Other final uses
5			U.S. parent	U.S. affiliate			
6	Multinational	U.S. parent				6	94
7		U.S. affiliate				9	91
8	Non-multinational					3	97
9	Total domestic intermediate consumption and imports of services		63	61	48		
10	Total imports of goods		7	18	5		
11	Total intermediate consumption		69	79	53		
12	Value added		31	21	47		
13	*of which:*						
14	Compensation of employees		17	12	22		
15	Gross operating surplus		12	7	22		
16	*of which:*						
17	Consumption of fixed capital		4	3	5		
18	Taxes on production and imports		2	2	4		
19	Total output		100	100	100		
20							

Note: The experimental estimates presented in this table are provisional and are intended only for discussion and to illustrate the types of analysis that can be performed with this framework.

Value added share of output



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Exporters vs. non-exporters

- About one-half of U.S. parents and affiliates export
- Value added share of output for exporters vs. non-exporters
  - All industries
    - Smaller for both U.S. parents and affiliates that export
  - Manufacturing
    - Smaller for U.S. parents that export
    - Larger for U.S. affiliates that export

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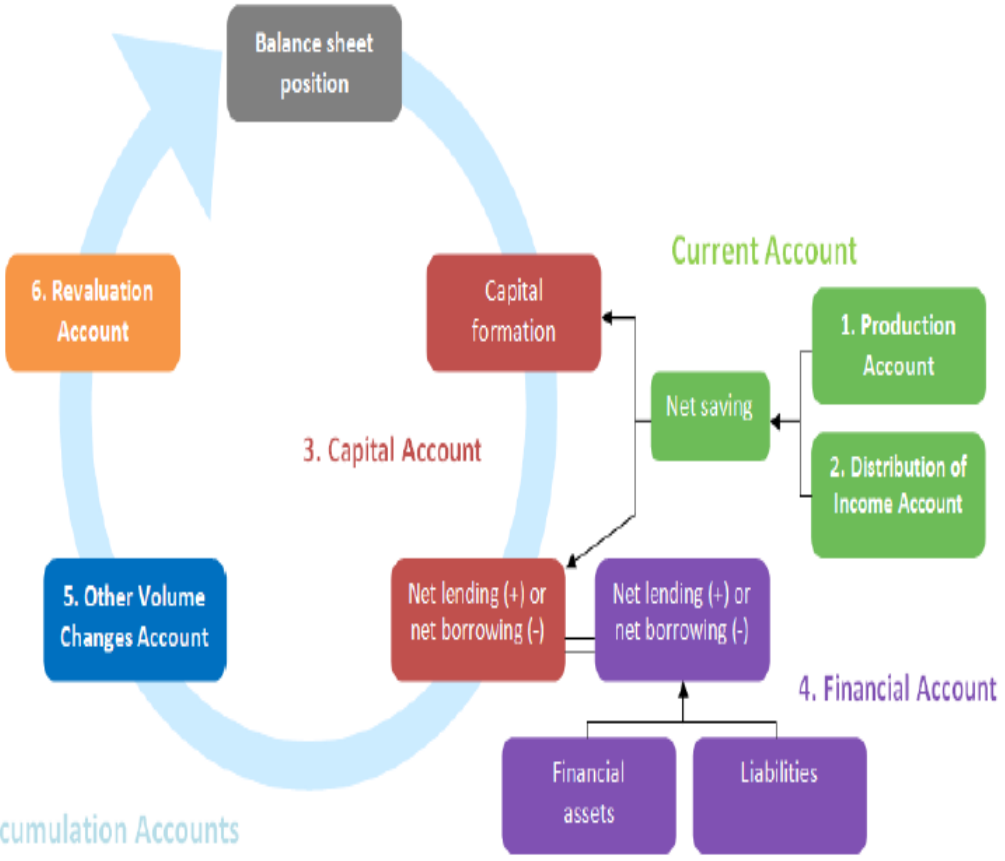
U.S. Integrated Macroeconomic Accounts
IMAs

Integrated Macro Accounts (IMAs)

- BEA and the Federal Reserve
- Harmonize financial accounts with capital and current accounts
- In general, follow the *System of National Accounts 2008*
- Released quarterly with the FAUS
- 7 sectors
  - Households and NPISHs
  - Nonfinancial noncorporate business
  - Nonfinancial corporate business
  - Financial business
  - Federal government
  - State and local governments
  - Rest of the world

  - *Government sectors include government enterprises*
  - *In the SNA noncorporate business is either in the quasi-corporate or household sector*



Overview of the IMAs

Current account

- Gross (net) value added
- Net national income
- Disposable income
- Net saving

Balance sheet

- Total assets
- Total liabilities
- Net worth

Capital account

- Net saving
- Capital transfers
- Capital formation
- Net lending/borrowing [C]

Financial account

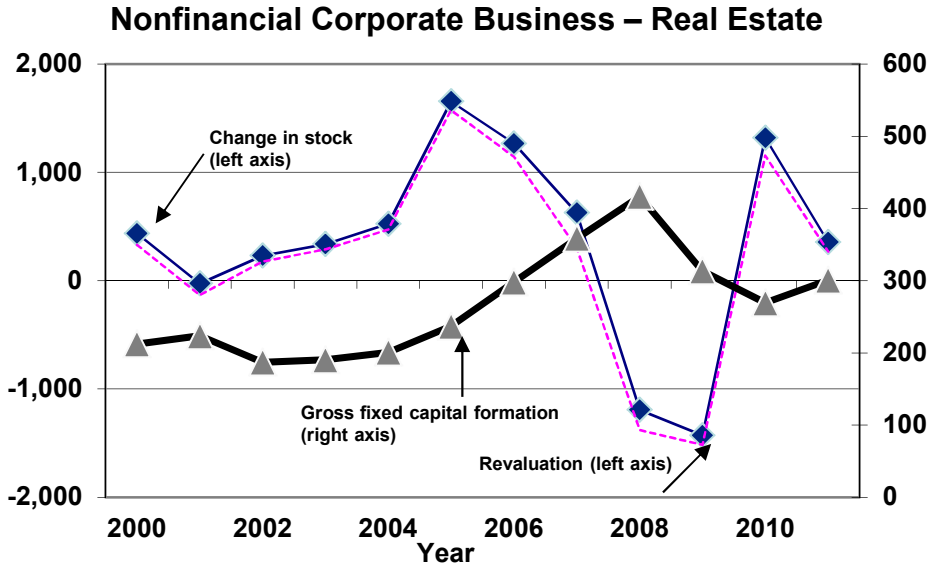
- Net acquisition of financial assets
- Net incurrence of liabilities
- Net lending/borrowing [F]

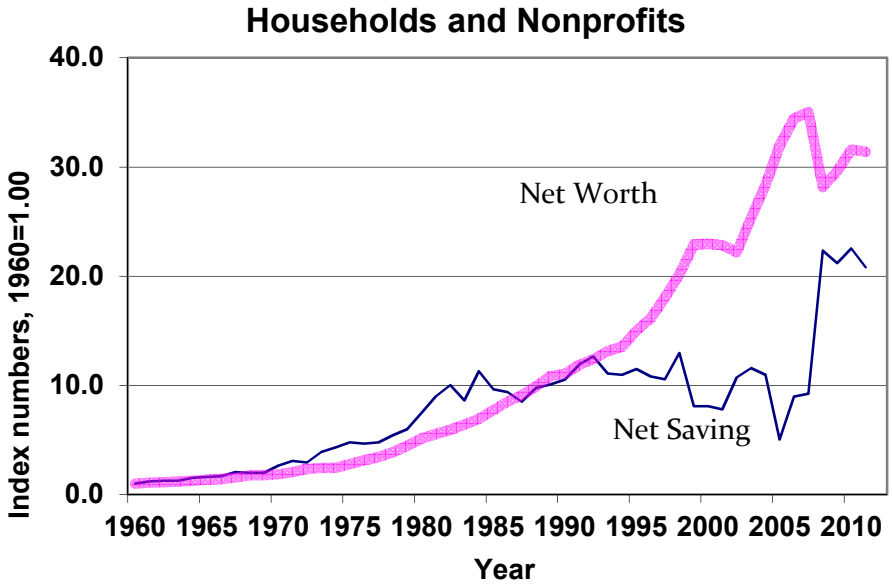
Other changes in volume and revaluation accounts

- Statistical discrepancy
- Change in net worth

Analysis using the IMAs

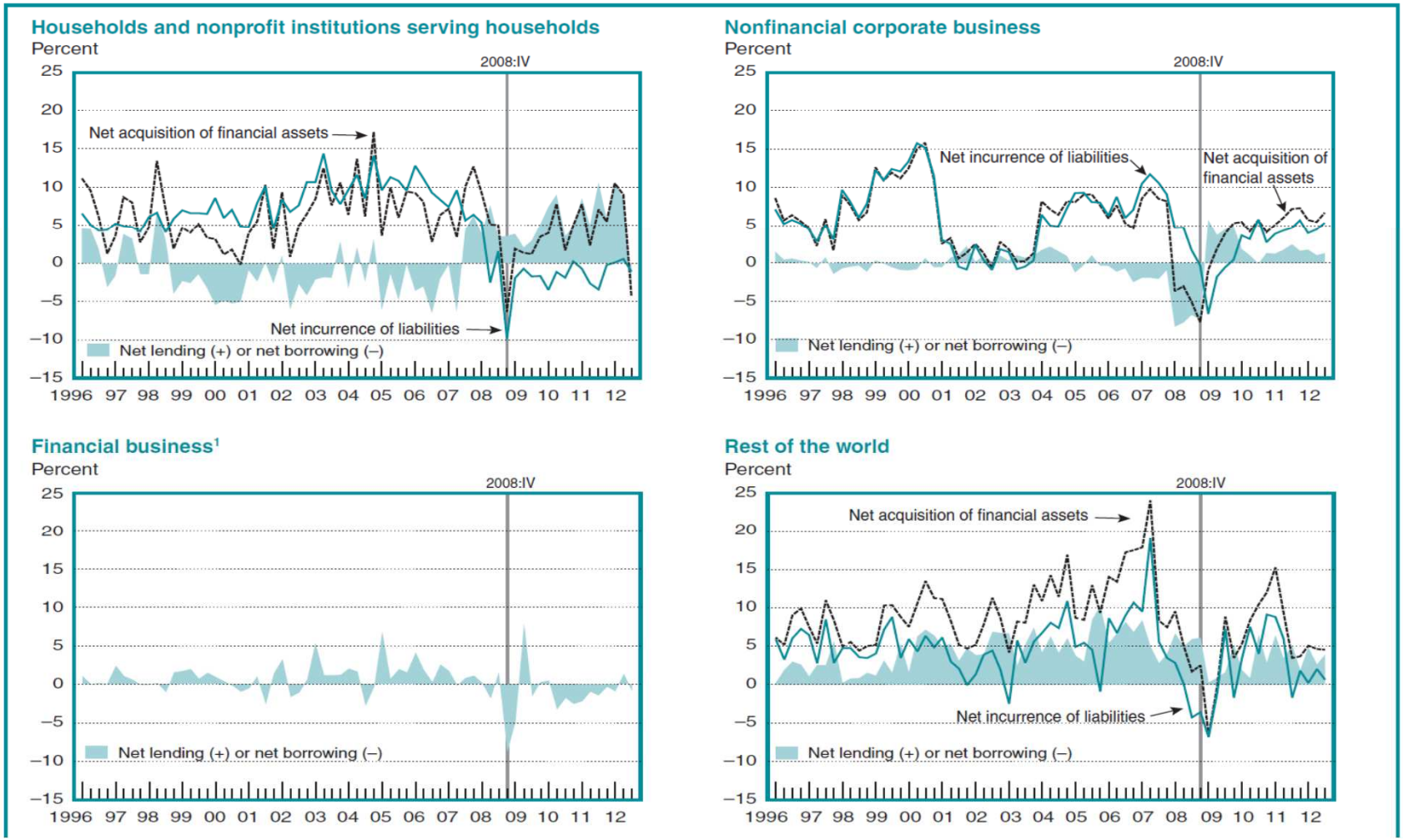
- More complete picture of economic activity
- Income and balance sheet data presented together – easy calculation of analytical ratios
- Delineate 4 sources of changes to net worth:
  - Saving, capital transfers, non price related changes, variation in market prices (holding gains)
- Shows which sectors are net provider of funds and which are net users of funds





Net lending and borrowing by sector

Chart 2. Net Lending or Net Borrowing From Financial Accounts as a Percentage of National Disposable Income for Selected Sectors, 1996–2012

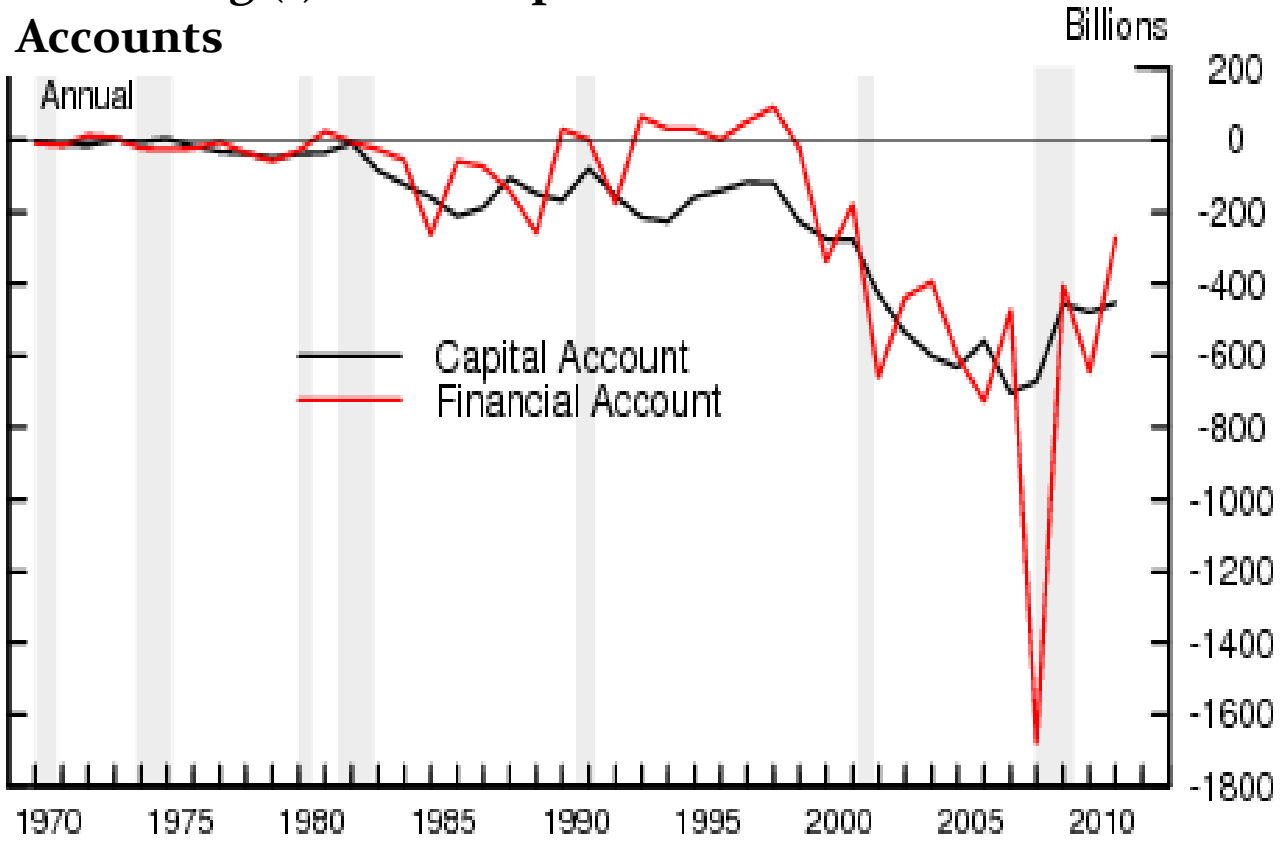


Source: Yamashita, Takashi, "A Guide to the Integrated Macroeconomic Accounts", *Survey of Current Business,* April 2013

Highlights differences in datasets

- Helps identify potential data and measurement gaps

Total Economy Net Lending (+) or Net Borrowing (-) in the Capital and Financial Accounts



Source: Flow of Funds Accounts of the United States, June 7, 2012

Challenges

- Alignment of data
  - NIPAs – NAICS industry based
    - But a mix of establishment and enterprise data
  - Financial accounts - institution based
- Lack of detailed data
  - Aggregations of financial sectors masks underlying differences
  - Financial products grouped together masks different risk characteristics

Future of the IMAs

- Break out financial sectors
  - Depository institutions
  - Central Banks
  - Pensions and insurance
  - Other financial business
- Breakout nonprofits from households
- Separate structured products from traditional debt instruments
- Develop whom-to-whom matrices for debt instruments
- Split real estate values into structures and land

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U.S. Integrated Production Accounts

Integrated production accounts

- Motivation
  - Long-standing call for statistics on the sources of economic growth
  - Researchers constructing their own measures

  Jorgenson and Landefeld (2006) in *A New Architecture for the U.S. National Accounts*
  - Call to action – industry-level total factor productivity

  The Advisory Committee on Measuring Innovation in the 21st Century: A Report to the Secretary of Commerce (January 2008)

BEA national and industry level accounts

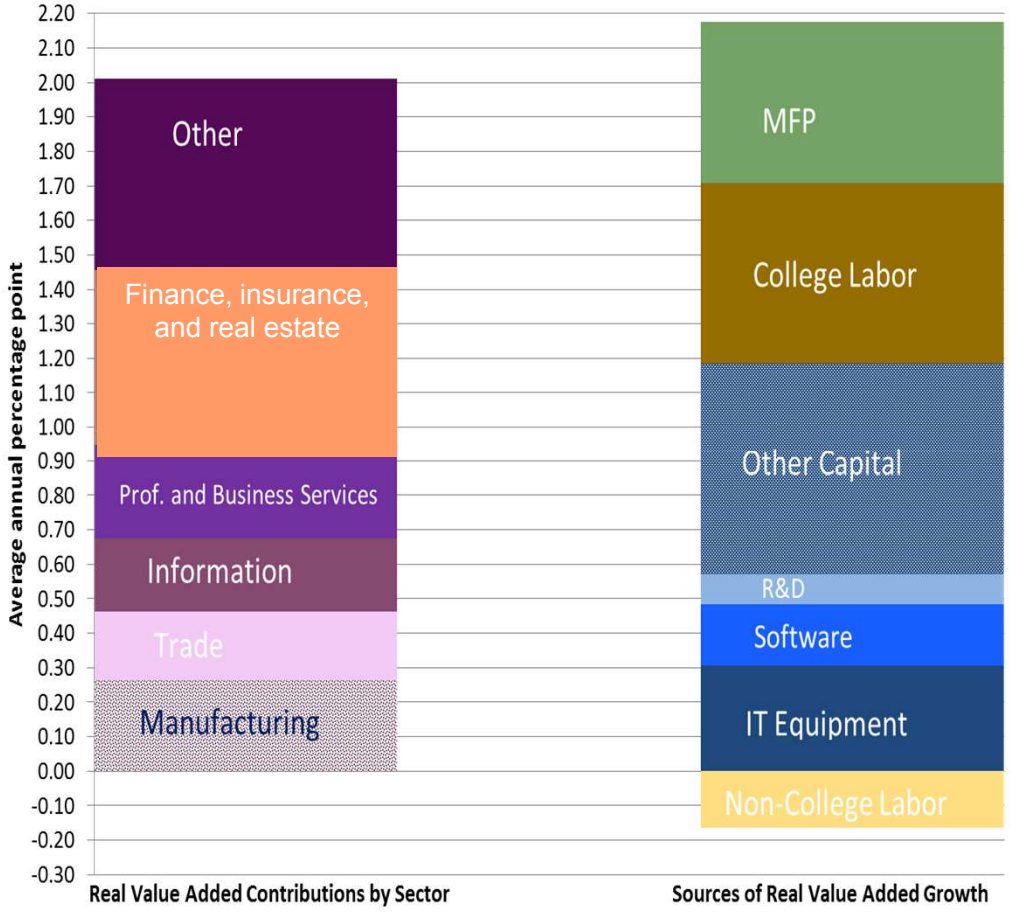
- National level account
  - Private total business and nonfarm business
  - Provides reconciliation between GDP and BLS-based output
  - Links BLS capital and labor inputs to GDP
- Industry level account
  - 63 industries
  - Links BLS capital and labor inputs to industry value added
  - Allows for heterogeneity of industry-specific inputs

Integrate GDP with productivity

- Growth accounting framework
- Consistent with the definitions and concepts of the U.S. national economic accounts
- Symmetric treatment of industry-level outputs, intermediate inputs, and value added inputs
- Consistent with aggregate GDP and the Input-Output Framework
  - Gross output: BEA intermediate input & value added
  - Capital input: BLS, based on BEA Fixed Assets
  - Labor input: BLS hours, BEA Compensation
- Available annually

Sources of growth

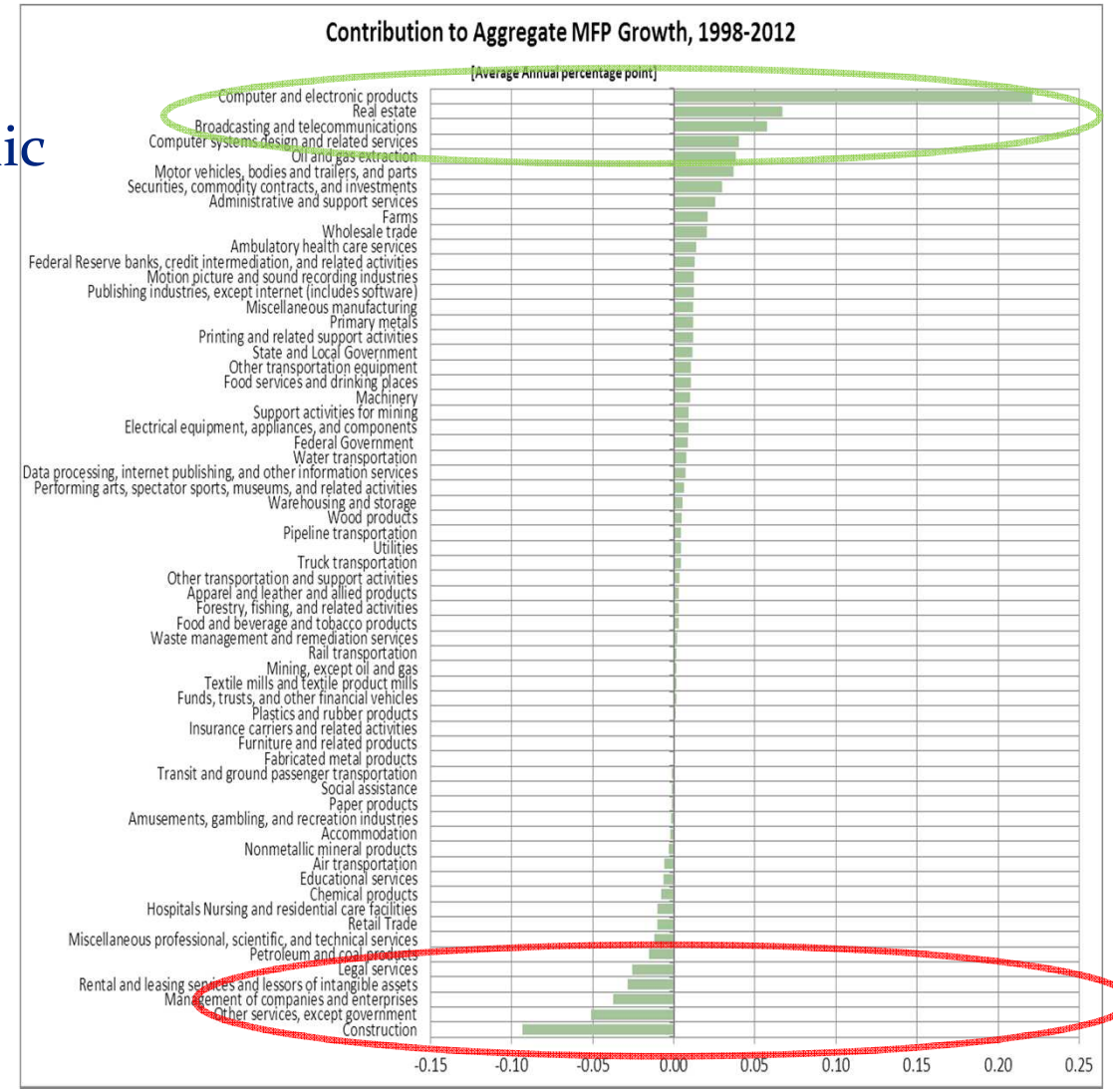
- GDP growth decomposed into industries and factors of production (KLEMS)
- Real value added growth decomposed into primary (capital and labor) inputs and multifactor productivity (MFP)



Contributors to MFP growth

(1998-2012)

- Positive contributors
  - Computer and electronic product manufacturers
  - Real estate
  - Broadcasting and telecommunications
- Offsets
  - Construction
  - Management of companies
  - Legal services



Analysis of economic growth

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

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

Integrated economic accounts

- Most relevant when datasets align in scope, classification, and definition
- Best chance for this is when data is derived from a single source (like a statistical business register)
- Otherwise, time lost to reconciling data sets, filling data gaps, or worse, leaving gaps

- *National accountants will always find a way to make estimates, but the more consistent their input datasets, the more accurate and relevant the data products will be for policy makers*

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Thank you.