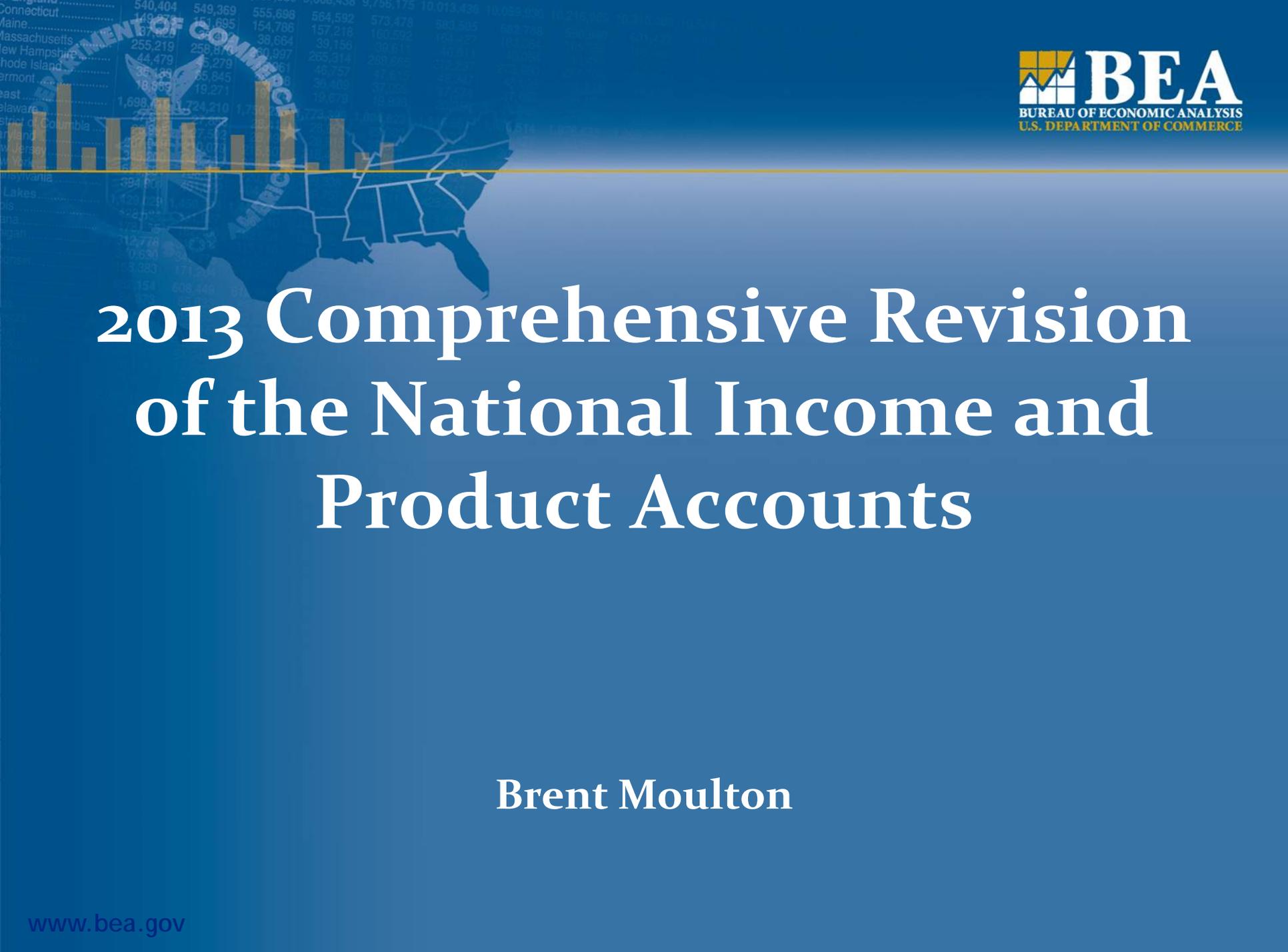


National Accounts Data Users' Conference:

Briefing on the 2013 Comprehensive NIPA Revision

Washington D.C.

May 15, 2013



2013 Comprehensive Revision of the National Income and Product Accounts

Brent Moulton

Agenda

- Opening Remarks - *Steve Landefeld*
- Overview of the Comprehensive Revision - *Brent Moulton*
- Capitalization of Intangible Assets - *Robert Kornfeld*
 - Research & Development
 - Entertainment, Literary, & Artistic Originals

Coffee break

- Accrual Measures of Defined Benefit Pensions - *Dylan Rassier*
- Statistical Improvements - *Nicole Mayerhauser*

Overview

My remarks will address several questions:

- What is a comprehensive revision?
- What major changes are coming?
- Why is BEA making these changes?
- When will the revised data be available?
- Where can I learn more?

Comprehensive Revisions

- Occur about every five years (this is the 14th)
- Incorporate the results of the 5-year economic census and the benchmark input-output accounts
- Update the reference year for prices, quantities
- Opportunity to introduce major changes in concepts, methods, and tables
- The entire time span is potentially open for revisions

Major Changes

- Benchmark input-output accounts for 2007
- Reference year updated to 2009
- Major conceptual changes:
 - Capitalize research & development
 - Capitalize entertainment, literary, and artistic originals
 - Accrual treatment of defined benefit pension plans
- Major statistical changes:
 - Improved measures of banking services
- Major table changes:
 - Intellectual property products
 - New pension tables

Reasons for Change

- Changes in the economic environment
 - Growing importance of intellectual property products in business, productivity
- Financial crisis and recession
 - Exposed vulnerabilities in pension promises
 - Data gaps in financial services
- Updated international guidelines
 - Maintain comparability of GDP across countries, while allowing accounts to remain up-to-date

System of National Accounts 2008

- International guidelines for national economic accounts
 - Used by national statistical offices, international organizations
 - Major update from *SNA 1993*
- BEA was a major participant in the task forces and advisory expert groups charged with updating these guidelines
 - U.S. was one of the countries that made the case for updating the *SNA*
- *SNA 2008* changes such as capitalizing R&D will soon be made by all major countries

Communicating with Users

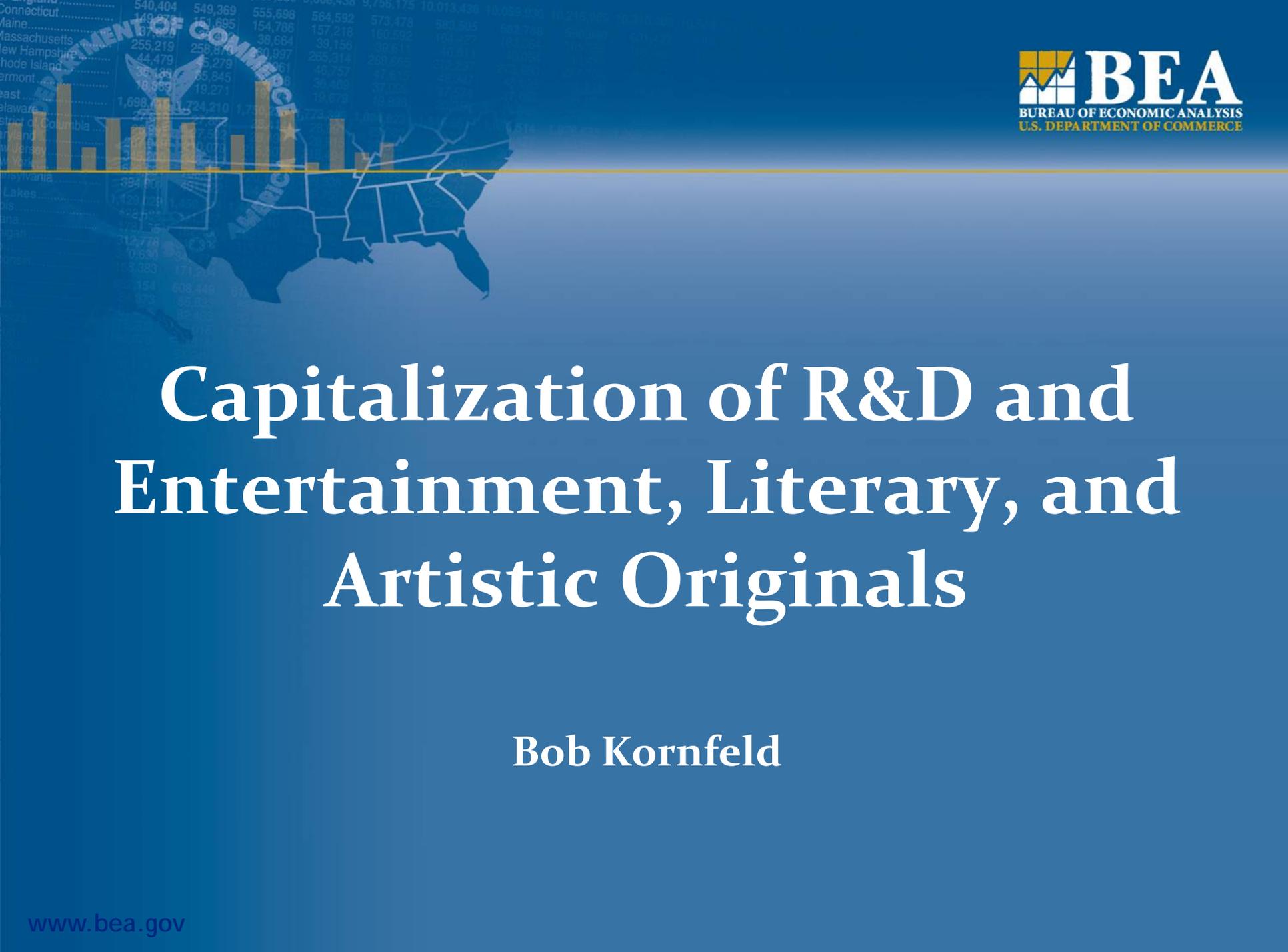
- BEA's 5-year strategic plan
- Plans for 2013 comprehensive revision announced
 - August 2012 *Survey of Current Business*
- BEA solicits feedback from many sources:
 - BEA Advisory Committee
 - Conference for Research on Income and Wealth (e.g., 2002 conference, *Measuring Capital in the New Economy*)
 - Users' conferences and meetings
 - Feedback on articles and presentations

Availability of Revised Data

- GDP news release (July 31, 2013)
 - Concurrent with advance GDP for 2013Q2
 - Information on revisions
 - Revised estimates for some major aggregates
- Personal Income & Outlays (August 2)
- Other tables posted as soon as they can be reviewed and verified
- Article in September issue of *Survey of Current Business*

Additional Information

- *Survey of Current Business* articles:
 - Banking services (February 2013)
 - Changes in definitions and presentations (March)
 - Statistical changes (May)
- FAQs, BEA Blog
- Working papers
- In June, BEA plans to post information:
 - Table stubs
 - Data release schedule
- For more information, see BEA's website:
<http://www.bea.gov/gdp-revisions/>



Capitalization of R&D and Entertainment, Literary, and Artistic Originals

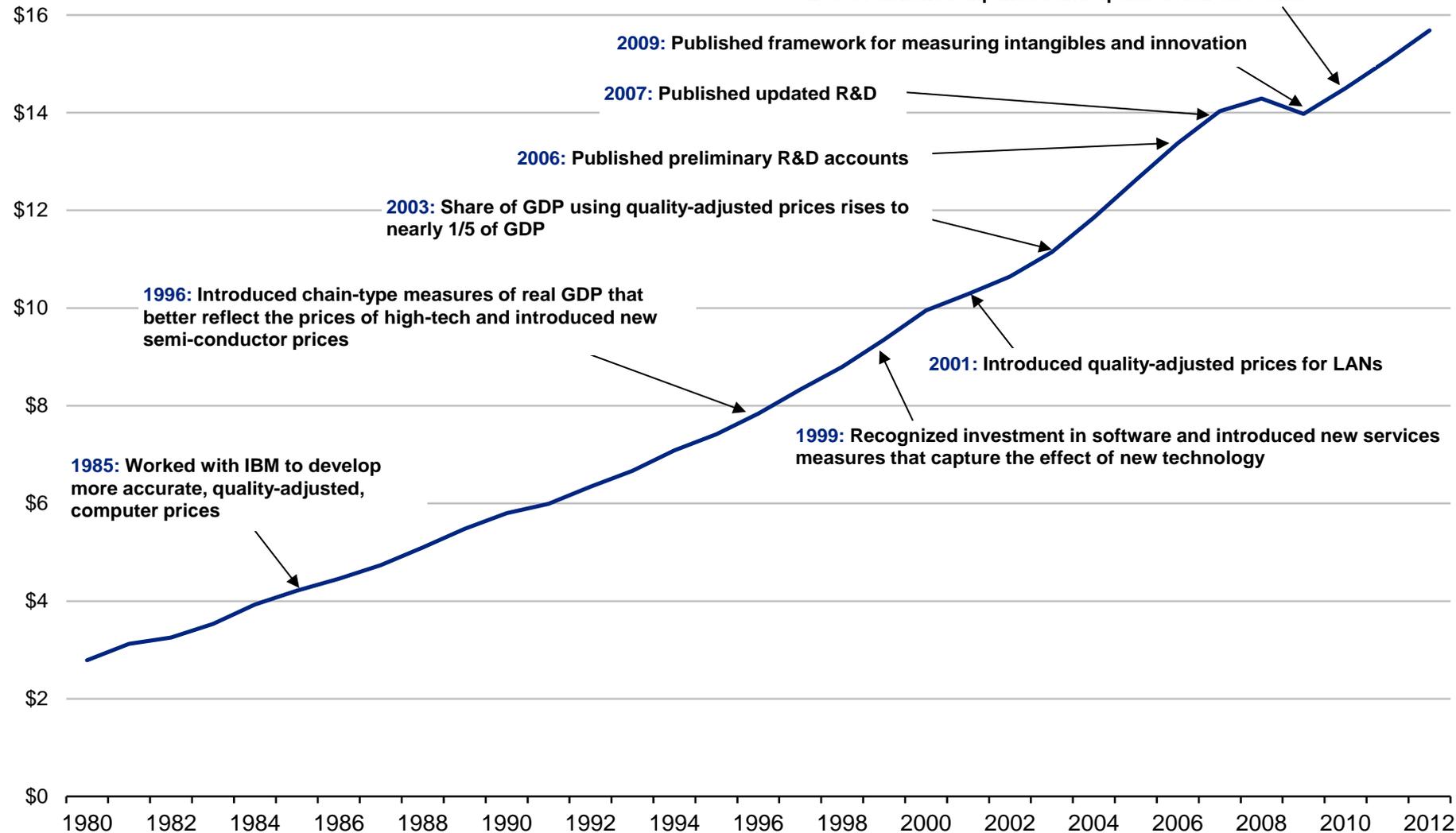
Bob Kornfeld

Capitalizing Intangibles: Motivation

- Expenditures on R&D and entertainment, literary, and artistic originals have the characteristics of fixed assets and should be treated as investment:
 - Ownership rights, long-lasting, used in production process
- Capitalizing R&D and entertainment originals is important for:
 - Improving accuracy and relevance of GDP estimates
 - Developing quantitative measures of innovation
 - Identifying sources of economic growth
- Intangible produced assets in the *SNA 2008*:
 - Computer software; mineral exploration; entertainment, literary, and artistic originals; R&D expenditures

The Knowledge Economy: The Importance of Updating Economic Measurements

[GDP, Trillions of dollars]



R&D: Current vs. New Treatment

- Current treatment
 - Business R&D expenditures are classified as intermediate inputs
 - R&D expenditures of nonprofit institutions serving households (NPISH) and governments are included in consumption expenditures

- New treatment
 - R&D expenditures by businesses, NPISH, and governments are counted as fixed investment
 - Depreciation of R&D added to consumption of fixed capital (CFC)

- GDP and GDI impacts
 - Private business sector GDP increases by new R&D investment
 - Government and NPISH GDP increases by CFC on the stock of R&D capital
 - GDI increases by similar amount

Summary of GDP Impacts: 2007

(billions of dollars)

Total GDP (published NIPAs)	14,028.7
<i>Plus:</i> Business own-account and purchased R&D investment	234.3
<i>Less:</i> Overlap with own-account software	23.6
<i>Plus:</i> CFC on government and nonprofit R&D assets	103.4
Total GDP, with R&D as investment	14,342.8
GDP impact of capitalizing R&D	314.1

Summary of GDI Impacts: 2007

(billions of dollars)

Total GDI (published NIPAs)	14,040.7
<i>Plus:</i> Corporate profits from current production	27.8
R&D Investment (no longer an expense)	194.5
<i>Less:</i> CFC on R&D assets	166.8
<i>Plus:</i> Proprietors' income from current production	3.7
R&D Investment (no longer an expense)	16.1
<i>Less:</i> CFC on R&D assets	12.5
<i>Plus:</i> CFC on R&D assets	282.6
Corporate	166.8
Proprietors'	12.5
Nonprofits and government	103.4
Total GDI, with R&D as investment	14,354.8
 GDI impact of capitalizing R&D	 314.1

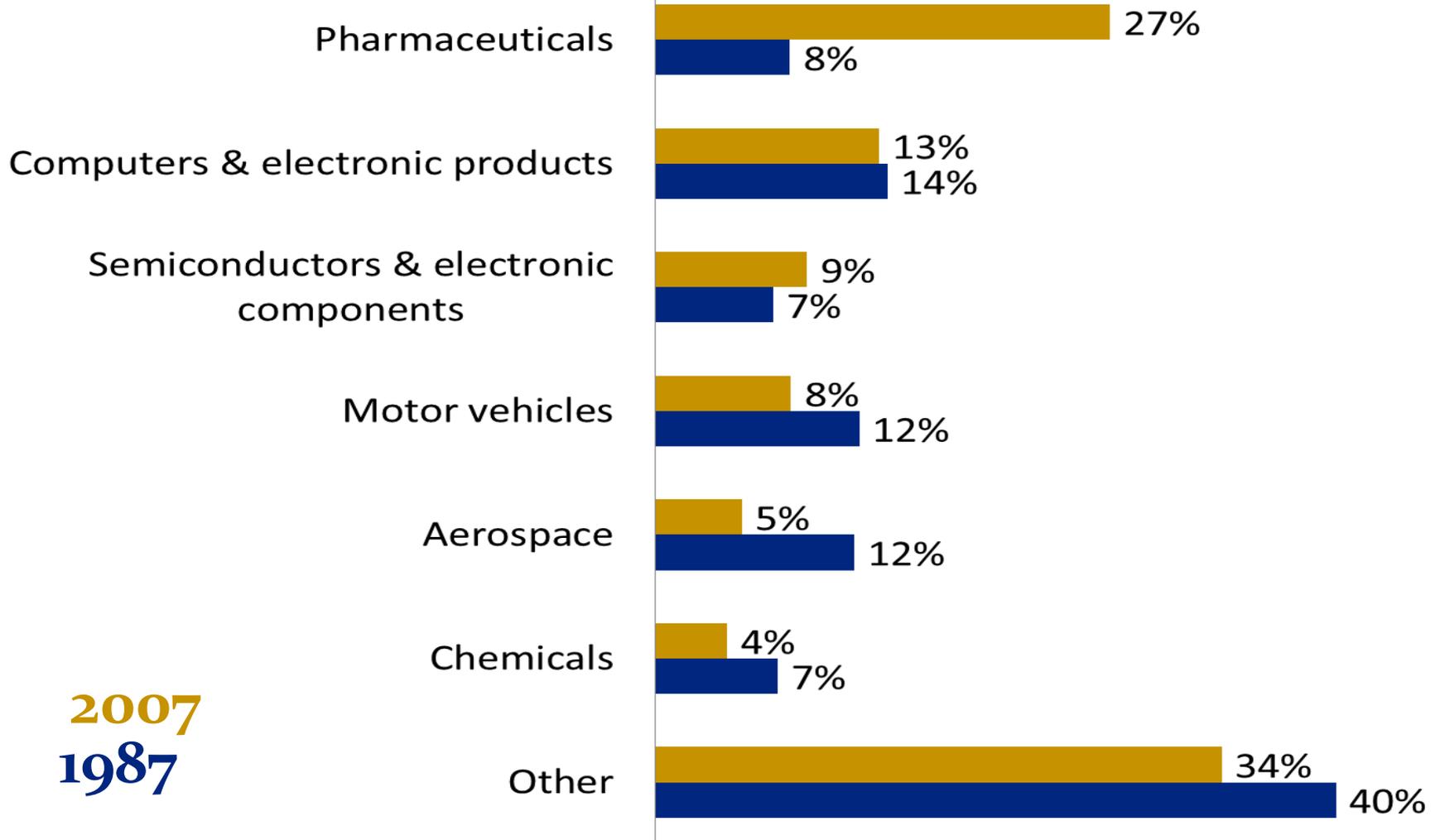
From R&D Expenditures to GDP Impacts

- Identify R&D investment
 - Sum R&D input costs based on performer data
 - Remove double-counting of software
 - Include depreciation of other fixed assets used to produce R&D
 - Assign investment to owning sector [funder of R&D]
 - Business
 - Household & institution (nonprofit institutions serving households)
 - Government (federal and state and local)
 - Deflate nominal investment

- Estimate R&D capital stocks by owner
 - Create capital stocks with perpetual inventory method

Top Private Business R&D-investing Industries

Percent of Private Business Investment in R&D



2007
1987

R&D: Implementation Plans

- Prices of R&D output are unobserved; output is heterogeneous; most is produced on own-account
 - Input-cost price indexes
 - Adjustments for productivity

- Economic depreciation measures the decline in value of capital as it ages
 - Industry-specific depreciation rates for business R&D
 - Government and nonprofit depreciation rates based on the business R&D model or on research about the production cycle for certain federal defense and nondefense assets

R&D: Quarterly Estimates

- Private business R&D investment
 - After 2007 - quarterly financial statements (Compustat)
 - Before 2007 - wages and employment

- Federal R&D investment
 - Interpolated based on trends in intermediate R&D services

- NPISH and state and local government R&D investment
 - Interpolated as a smooth trend

Entertainment, Literary, and Artistic Originals

- Original films, sound recordings, manuscripts, etc., that can be used for the production and sale of copies
- *SNA* recommends that they be capitalized
- Estimates for several types, including:
 - Motion pictures
 - Television programs
 - Books
 - Music compositions and recordings
- June 2011 *Survey* article

Entertainment Originals: Current vs. New Treatment

- Current treatment
 - Private expenditures are classified as intermediate inputs

- New treatment
 - Private expenditures by businesses are counted as fixed investment
 - Depreciation of the stock of entertainment capital added to CFC

- GDP and GDI impacts
 - Private business sector GDP increases by new investment
 - GDI also increases

Entertainment Originals: Summary of Impacts, 2007

- Preliminary estimates - about \$70 billion, or about 0.5 percent of GDP
 - \$20 billion in theatrical movies
 - \$30 billion in long-lived television
 - \$9 billion in original books
 - \$8 billion in original music
 - \$3 billion in miscellaneous entertainment
- Short-lived entertainment like newspapers, radio, etc. are not capitalized

Entertainment Originals: Implementation Plans

- Little data on production costs
 - Except theatrical movies, pre-2007

- Value of Investment = Net Present Value of Revenue (NPV) Minus Non-Artwork Cost
 - Revenue data adjusted to include only revenue from new works
 - Net revenue is estimated by removing non-artwork costs
 - Net revenue is adjusted to include only revenue from new works
 - Adjusted net revenue is multiplied by an “NPV factor” to derive investment value of future revenue stream
 - The discount rate is 7% real

Entertainment Originals: Implementation Plans (cont'd)

- Prices of entertainment assets
 - PPIs, CPIs
- Annual depreciation will follow a geometric pattern, based on trends in NPV over time.
 - Theatrical movies: 9.3 %
 - Long-lived television: 16.8 %
 - Books: 12.1 %
 - Music: 26.7 %
 - Miscellaneous: 10.9 %

Entertainment Originals: Quarterly Estimates

- For 2007-forward
 - Based on data from the Census Bureau's quarterly services survey

- Prior to 2007
 - Motion picture investment - data from trade sources
 - Other forms of entertainment originals - trend extrapolation

Intellectual Property Products

- New presentation of NIPA private fixed investment tables:
- Nonresidential fixed investment
 - Structures
 - Equipment (no longer including software)
 - Intellectual property products
 - Software (currently included with equipment)
 - Research and development
 - Entertainment, literary, and artistic originals

New NIPA Tables

Private Fixed Investment in Intellectual Property Products

NIPA series	Start date
Private fixed investment in intellectual property products	1929
Software	1959
Prepackaged	1985
Custom	1985
Own account	1985
Research and development	1929
Business	1959
Manufacturing	1959
Pharmaceutical and medicine manufacturing	1959
Chemical manufacturing, excluding pharmaceutical and medicine	1959
Semiconductor and other electronic component manufacturing	1959
Other computer and electronic product manufacturing	1959
Motor vehicles, bodies and trailers, and parts manufacturing	1959
Aerospace products and parts manufacturing	1959
Other manufacturing	1959
Nonmanufacturing	1959
Scientific research and development services	1987
All other nonmanufacturing	1987
Nonprofit institutions serving households	1959
Universities and colleges	1959
Other nonprofit institutions	1959
Entertainment, literary, and artistic originals	1929
Theatrical movies	1929
Long-lived television programs	1949
Books	1929
Music	1929
Other	1929

Accrual-Based Measurement of Defined Benefit Pension Plans for the NIPAs

Dylan G. Rassier

Overview of Forthcoming Changes

- **Accrual-Based Accounting**
 - Consistent with the *System of National Accounts 2008 (SNA)*
 - Matches income earned with related production
 - Replaces current cash-based accounting

- **New Pension Subsector**
 - Consistent with the *SNA*
 - Consistent with the Federal Reserve's Flow of Funds Accounts
 - “Pass-through” in financial corporate sector

- **New Pension Tables**
 - All defined benefit plans
 - Private plans
 - Federal plans
 - State and local plans

Defined Benefit Pension Concepts

- **Deferred Compensation**
 - Participants forgo compensation today for future benefit payments
 - Benefit payments depend on years of service, final average pay, etc.

- **Components of Pension Costs**
 - **Normal Cost**
 - Benefits accrued currently on services rendered in the current period
 - Borne by employers and possibly employees
 - **Interest Cost**
 - Benefits accrued currently on services rendered in past periods
 - Borne by employers

Defined Benefit Pension Concepts

- Actuarial Liability
 - Actuarial value of accumulated benefit entitlements
 - $\Delta = \text{normal cost} + \text{interest cost} - \text{benefits paid}$
 $+/- (\text{actuarial assumption changes, plan amendments})$

- Categories of Actuarial Methods
 - Projected benefit obligation (PBO)
 - Assume future compensation increases
 - Accumulated benefit obligation (ABO)
 - Assume benefit accumulations end on the valuation date

Defined Benefit Pension Concepts

- Plan Assets
 - Market value of all resources available to satisfy the actuarial liability
 - $\Delta = \text{contributions} + \text{property income} - \text{benefits paid} - \text{admin. exp.} \pm (\text{holding gains/losses, capital transfers})$

- Unfunded Actuarial Liability (UAL)
 - Actuarial liability – plan assets

SNA Recommendations

- Pension Sector
- Compensation
 - Actual employer contributions
 - Imputed employer contributions
 - Excludes actual employee contributions
 - May include administrative expenses as in-kind income
 - May be negative
- Investment Income
 - Actual property income
 - Imputed property income

Employer
Normal
Cost

Interest = Contribution
Cost = Supplements

SNA Recommendations

- Related Household Wealth and Income
 - Wealth = actuarial liability
 - Income = employer normal cost + interest cost

Current Treatment

- No Pension Subsector
- Compensation
 - Actual employer contributions
 - No imputed employer contributions
- Investment Income
 - Actual property income
 - No imputed property income
- Related Household Wealth and Income
 - Wealth = plan assets (i.e., actuarial liability – UAL)
 - Income = actual employer contributions + actual property income

Current Treatment

- Implications for the NIPAs
 - Actual employer contributions often do not reflect benefits accrued
 - Compensation
 - Corporate profits
 - Government consumption expenditures → GDP
 - No income flows for the implicit loan (i.e., the UAL)
 - Personal interest receipts
 - Corporate interest payments → corporate profits
 - Government interest paid → government saving
 - Personal saving and employer saving
 - Depends on imputed employer contributions and imputed interest on the UAL
 - Offsetting inaccuracies (i.e., no affect on national saving)

New Treatment

- Pension Subsector
 - “Pass-through” in the financial corporate sector

- Compensation
 - Actual employer contributions
 - Imputed employer contributions
 - Normal cost + administrative expenses – actual employee contributions – actual employer contributions

- Investment Income
 - Actual property income
 - Imputed interest on the UAL



New Treatment

- Related Household Wealth and Income
 - Wealth = actuarial liability
 - Income = employer normal cost + actual property income + imputed interest on the UAL

Source Data and Methods

- **Private Plans**
 - Tax data for normal cost and actuarial liability back to 2000
 - Extrapolate normal cost and actuarial liability back to 1968
 - ABO with discount rate based on AAA corporate bonds

- **Federal Plans**
 - Actuarial reports for normal cost and actuarial liability back to 1979 (civilian) and 1985 (military)
 - Extrapolate normal cost and actuarial liability back to 1929
 - PBO with discount rate used by federal actuaries

- **State and Local Plans**
 - Actuarial reports for normal cost and actuarial liability back to 2000
 - Extrapolate normal cost and actuarial liability back to 1929
 - ABO with discount rate based on AAA corporate bonds

Draft Pension Table

Annual Estimate

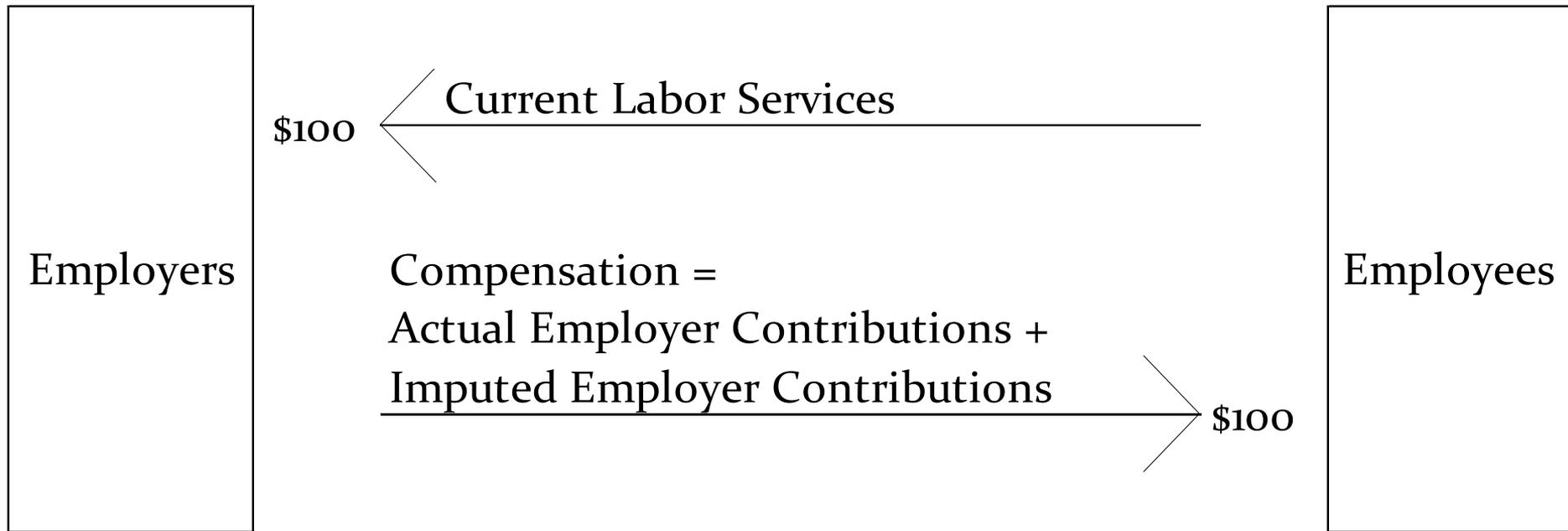
1	Current receipts, accrual basis	225
2	Output	10
3	Contributions	155
4	Claims to benefits accrued through service to employers	95
5	Actual employer contributions	70
6	Imputed employer contributions	30
7	Household actual contributions	5
8	Less: Pension service charges	10
9	Household pension contribution supplements	60
10	Income receipts on assets	60
11	Interest	40
12	Monetary interest	25
13	Imputed interest from employers for the UAL	15
14	Dividends	20

Draft Pension Table

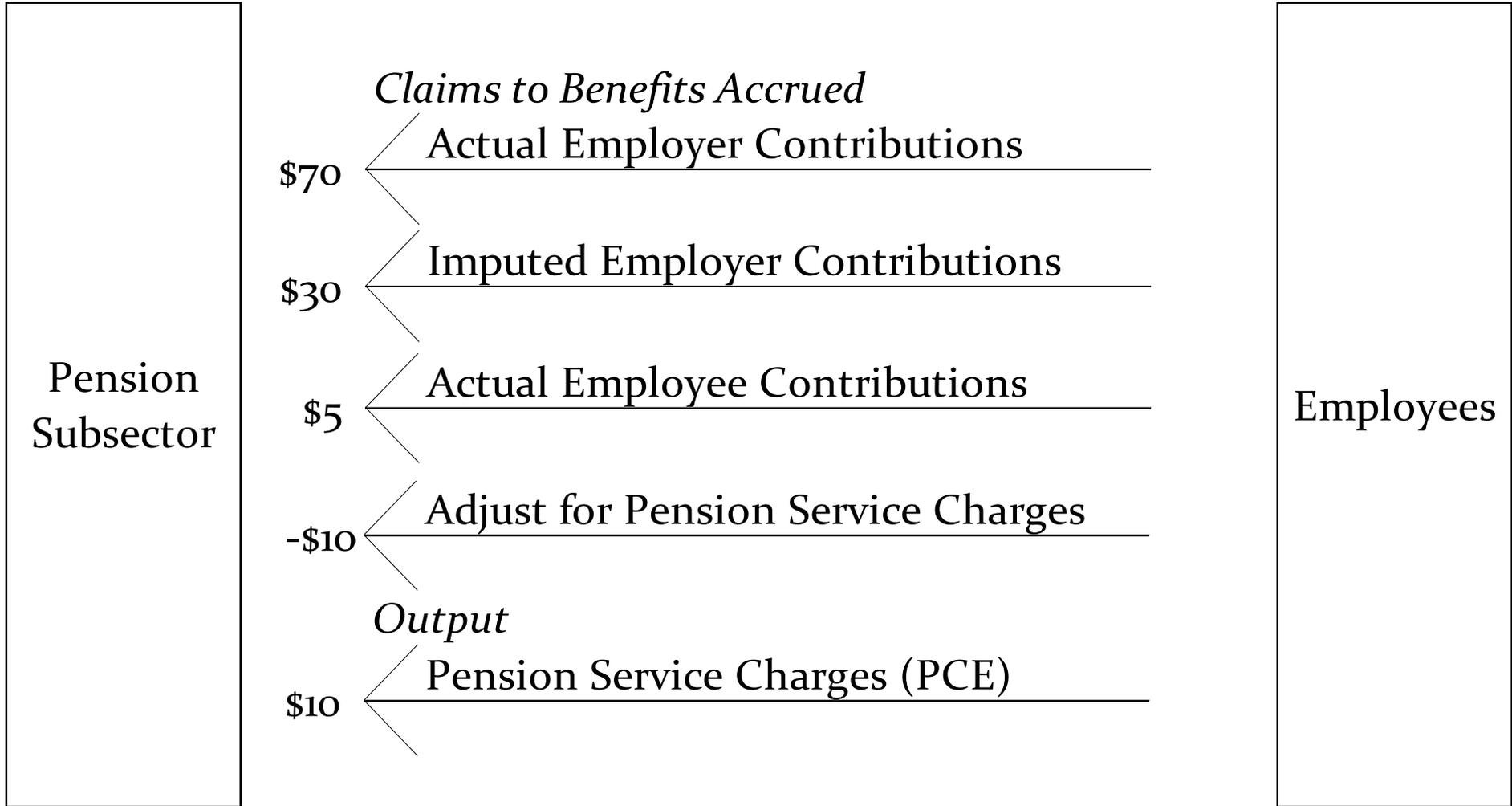
Annual Estimate

15	Current expenditures, accrual basis	225
16	Administrative expenses	10
17	Imputed income payments on assets to persons	60
18	Interest	40
19	Dividends	20
20	Benefit payments and withdrawals	75
21	Net change in benefit entitlements	80

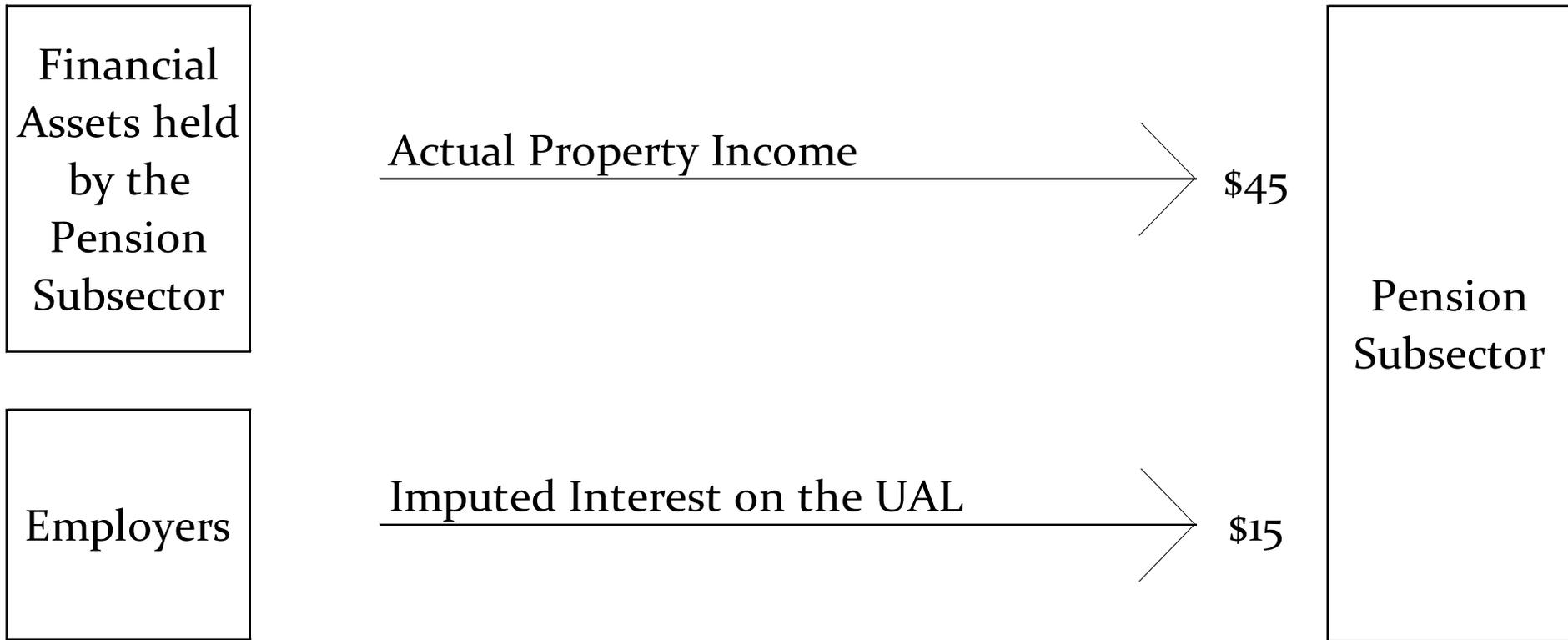
NIPA Flows: Labor Services



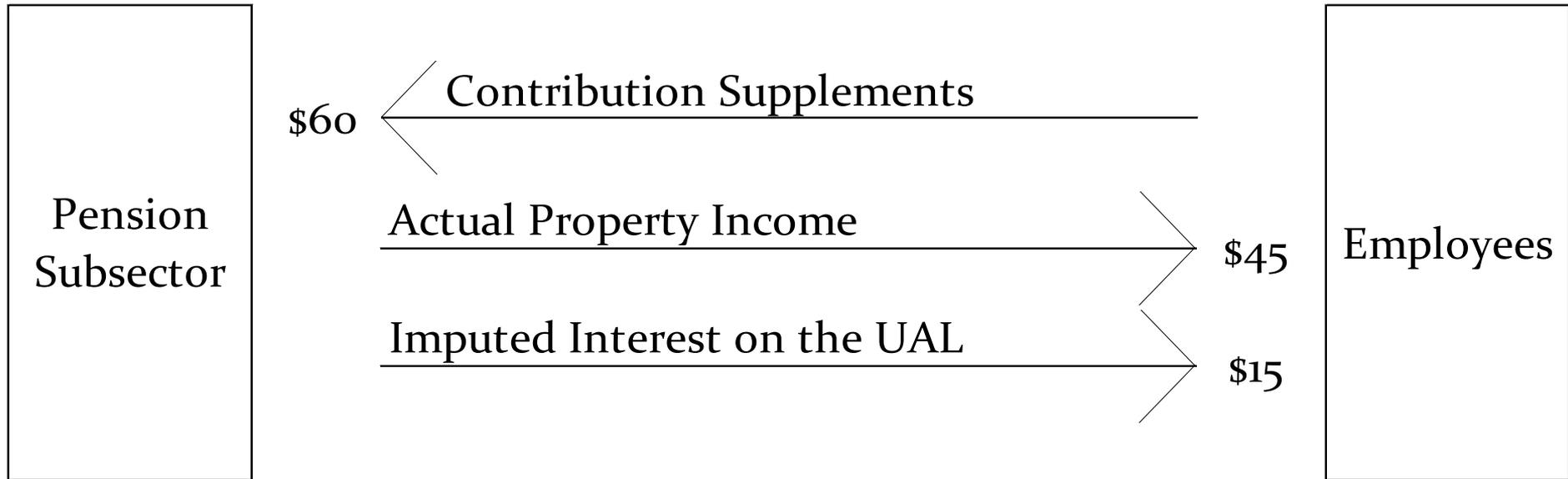
NIPA Flows: Claims to Benefits Accrued



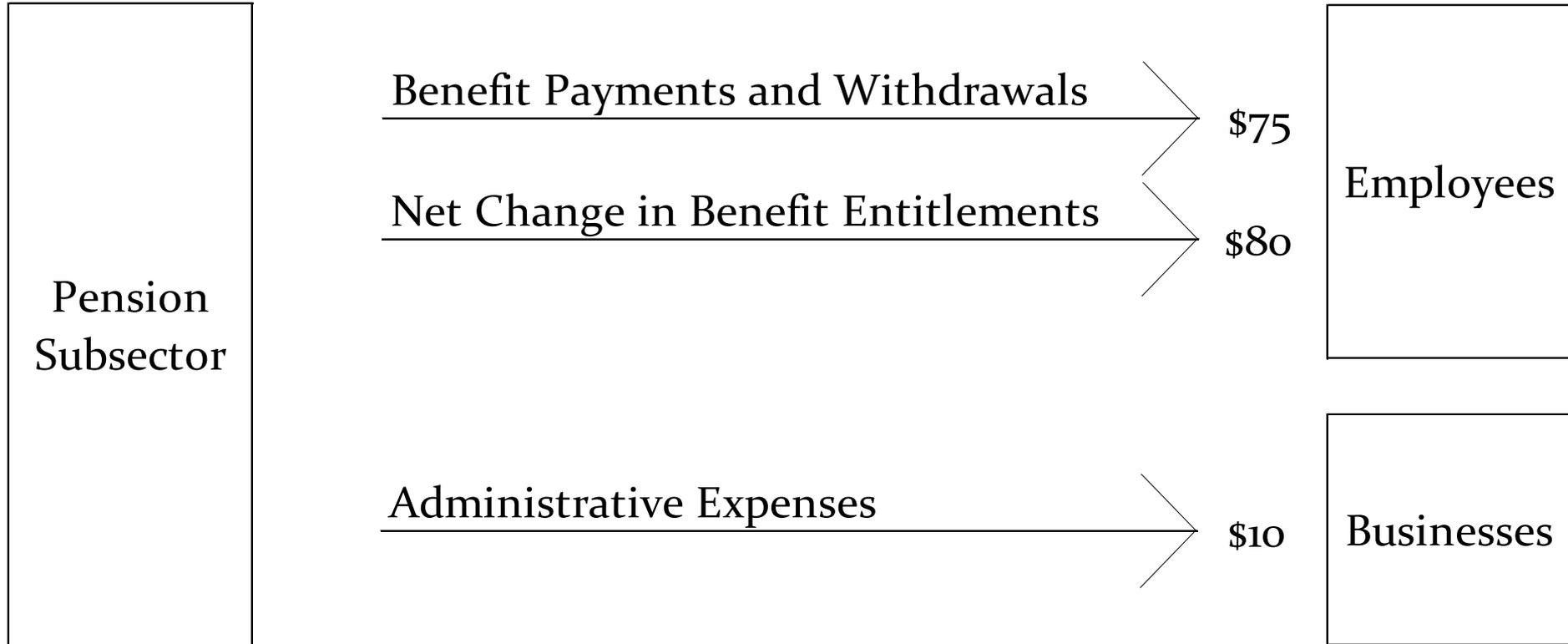
NIPA Flows: Investment Income



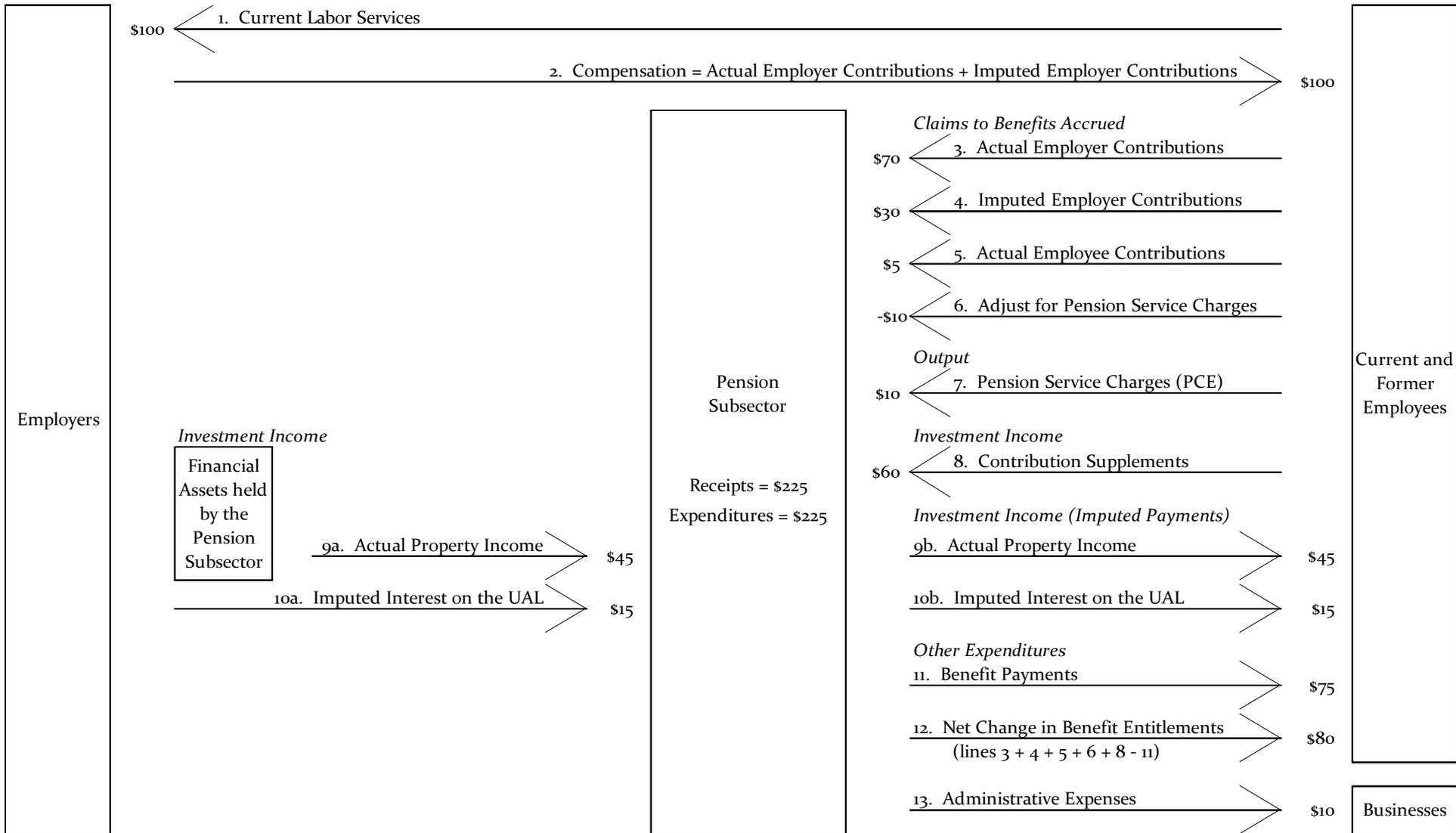
NIPA Flows: Investment Income



NIPA Flows: Other Expenditures



Summary of NIPA Flows



Summary Effects

	Private	Federal	S&L	All
Compensation Revisions / Published Compensation	- 1.3% to 0.8%	- 0.9% to 3.0%	- 0.1% to 1.4%	- 1.4% to 3.3%
Consumption Expenditure Revisions / Published GDP	N/A	- 0.4% to 1.5%	- 0.1% to 0.7%	- 0.4% to 1.6%

Note: The table shows ranges of relative revisions for 1968-2009 for private plans and 1929-2009 for federal and state and local plans. Percentages reflect revisions in nominal levels attributable to the new accrual-based accounting treatment for defined benefit pension plans relative to the nominal underlying aggregate. Revisions in levels attributable to other benchmark proposals are not reflected in the table.

Summary Effects

	Private	Federal	S&L	All
Imputed Interest on the UAL / Published Net Operating Surplus	- 0.8% to 1.2%	N/A	N/A	- 0.8% to 1.2%
Imputed Interest on the UAL / Published Current Gov't Expenditures	N/A	1.0% to 5.3%	- 1.1% to 1.4%	1.3% to 6.3%

Note: The table shows ranges of relative revisions for 1968-2009 for private plans and 1929-2009 for federal and state and local plans. Percentages reflect revisions in nominal levels attributable to the new accrual-based accounting treatment for defined benefit pension plans relative to the nominal underlying aggregate. Revisions in levels attributable to other benchmark proposals are not reflected in the table.

Summary Effects

	Private	Federal	S&L	All
Employer Saving Revisions / Published Disposable Personal Income	- 0.9% to 0.9%	- 3.2% to - 0.3%	- 1.5% to - 0.1%	- 3.7% to - 0.6%
Personal Saving Revisions / Published Disposable Personal Income	N/A	N/A	N/A	0.6% to 3.7%

Note: The table shows ranges of relative revisions for 1968-2009 for private plans and 1929-2009 for federal and state and local plans. Percentages reflect revisions in nominal levels attributable to the new accrual-based accounting treatment for defined benefit pension plans relative to the nominal underlying aggregate. Revisions in levels attributable to other benchmark proposals are not reflected in the table.



Statistical Improvements

Nicole Mayerhauser

Overview

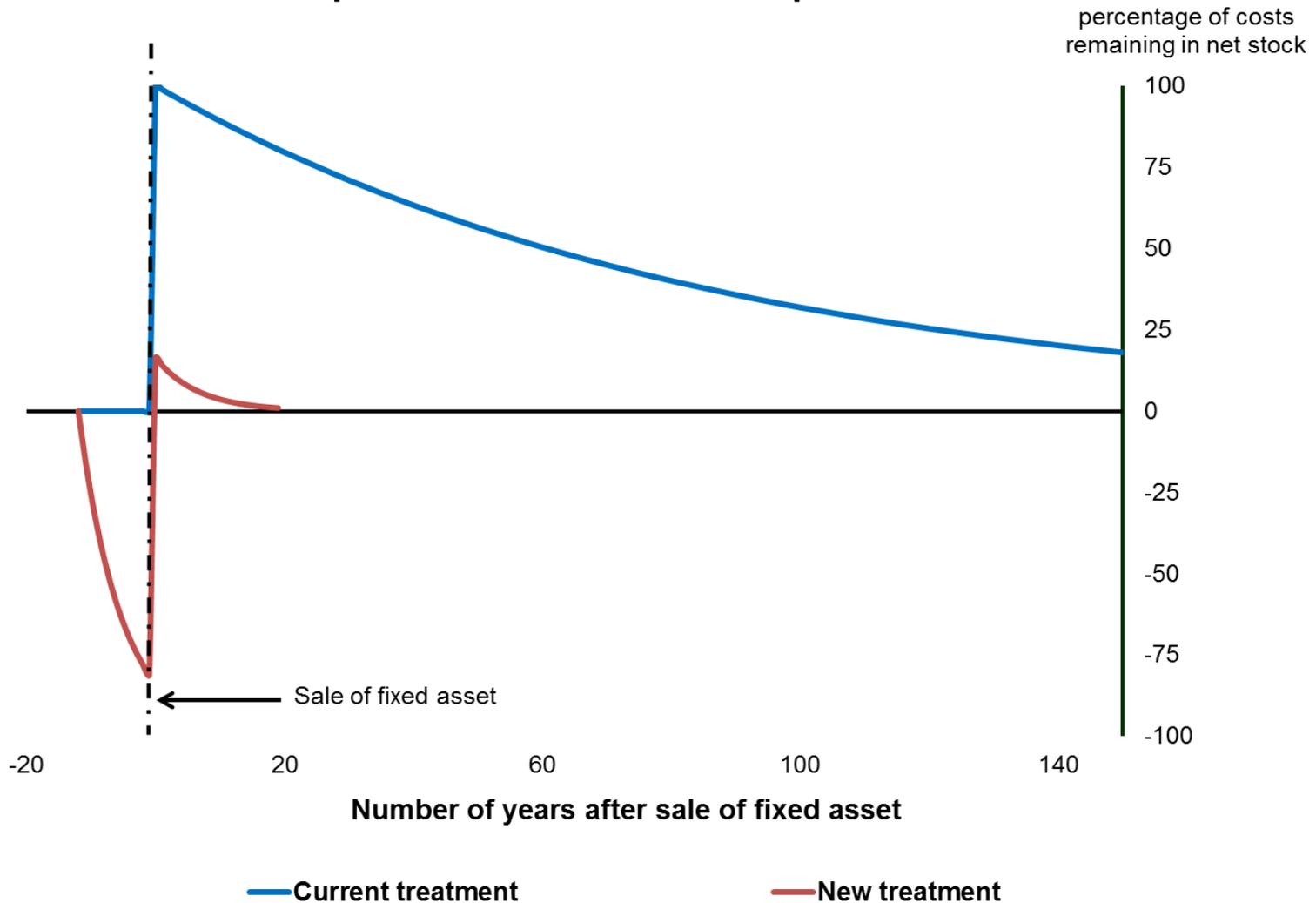
- Other conceptual changes
 - Reclassify ownership transfer costs of residential property as capital investment
 - Accrual accounting of compensation in NIPA personal income
- Statistical changes
 - Source data
 - Estimation methods

Costs of Ownership Transfer

- **Current treatment**
 - Real estate brokers' commissions on structures are classified as fixed investment
 - Depreciated over the life of the structure (80 years)
- **New treatment**
 - Commissions on structures and land, title fees, attorney fees, other non mortgage related costs
 - Depreciated over the typical holding period (12 years)
- **Effects**
 - Increase GDP by the newly recognized investment (2007: \$60 billion)
 - Increase CFC more than investment (2007: \$130 billion)
 - Decrease net operating surplus (2007: \$70 billion)

Costs of Ownership Transfer

Disposal Costs: Pattern of Depreciation



Harmonize Treatment of Wages and Salaries

- Current treatment
 - Accrual basis for GDI, national income
 - Disbursement basis for personal income
 - WALD (wage accruals less disbursements)
- *SNA* recommends accrual throughout
- Primary source data (QCEW)
 - Disbursement basis
- New treatment
 - All wages & salaries on accrual basis
 - Timing adjustments will be shown in an annual reconciliation table
 - In practice, timing adjustments will be infrequent

Statistical Changes

- What are statistical changes?
 - Changes in source data
 - Changes in estimation methods

- Why do we make them?
 - Incorporate newly available data
 - Incorporate data from new sources
 - Address data gaps and other shortcomings
 - Incorporate new methods and techniques

- When do we make them?
 - Annual revisions
 - Comprehensive revisions

Regular Source Data Updates

BEA data

- 2007 benchmark input-output accounts
- International transactions accounts

Census data

- 2007 economic census
- Construction spending
- Annual manufactures and services surveys
- Government finance statistics

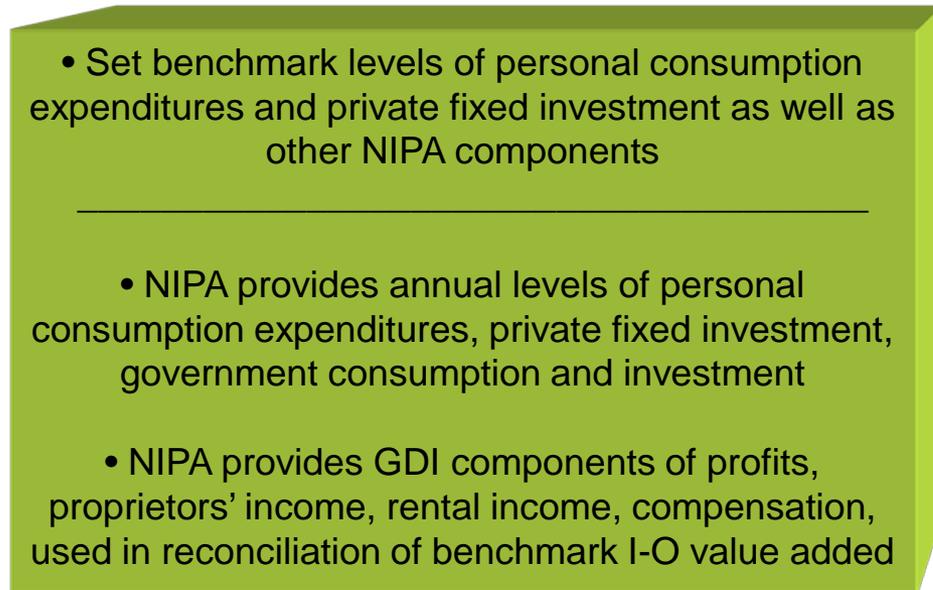
Other

- BLS quarterly census of employment and wages
- IRS tabulations of business tax returns
- USDA farm statistics

2007 Benchmark Input-Output Accounts

- Internally consistent framework tracking flows of inputs and outputs in the economy
- Provides shares of output and imports to final uses
- Ensures GDP avoids double-counting
- Used to “benchmark” dollar levels for PCE, PFI, and certain income components
- Provides commodity weights for CPI and S&L government spending
- Based on detailed 2007 economic census data

Integration with Input-Output Accounts



Integration with Input-Output Accounts

- New approach
 - I-O account will be published after the NIPAs release
 - NIPAs and I-O will be fully consistent at release of I-O
 - Annual time series I-O accounts and BM I-O account are consistent with each other and with NIPAs
- New Process
 - Closer collaboration on conceptual improvements (like R&D and Entertainment Originals)
 - Shared production schedules
 - Improved data transfers

Changes to Estimation Methods

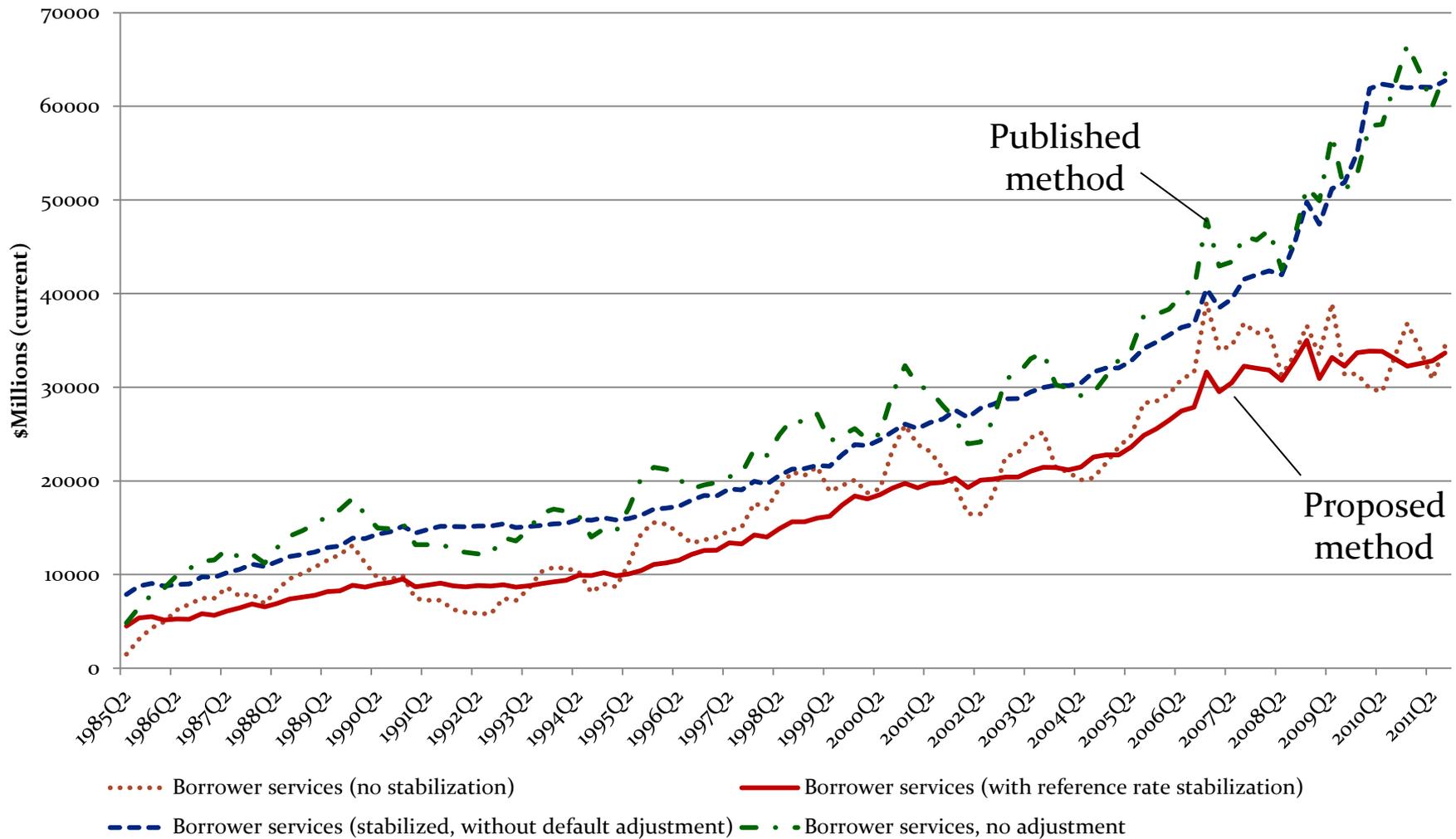
- Improve commercial bank services
- Expand coverage of state and local government-sponsored defined contributions pension plans
- Nonfarm proprietors' income adjustments
- New data to measure mortgage interest rates
- Expand scope of rents and royalties
- Improve measures of PCE insurance services
- Improve seasonal adjustment of investment in structures

Banking Services

- Include only assets and liabilities with direct customer contact
- Exclude expected credit losses from borrower services
- Improve user cost estimate of depositor and borrower services

- Future work: Extend the reference rate approach beyond commercial banks to thrifts

Effect of smoothing and default adjustment on borrower services



State and Local Government Defined Contribution Plans

- Current treatment
 - Only accounts for contributions to TIAA / CREF plans
 - About 30% of all S&L defined contributions plans
- New treatment
 - Employer Costs for Employee Compensation (ECEC) survey
 - Provides shares of compensation by type
 - ECEC available 1995 forward, trend extrapolation back
- Result
 - Increase in state and local govt. compensation

Proprietors' Income Adjustments

- Misreporting adjustment
 - Incorporate 2006 tax gap study from the IRS NRP
 - Previous study for 2001

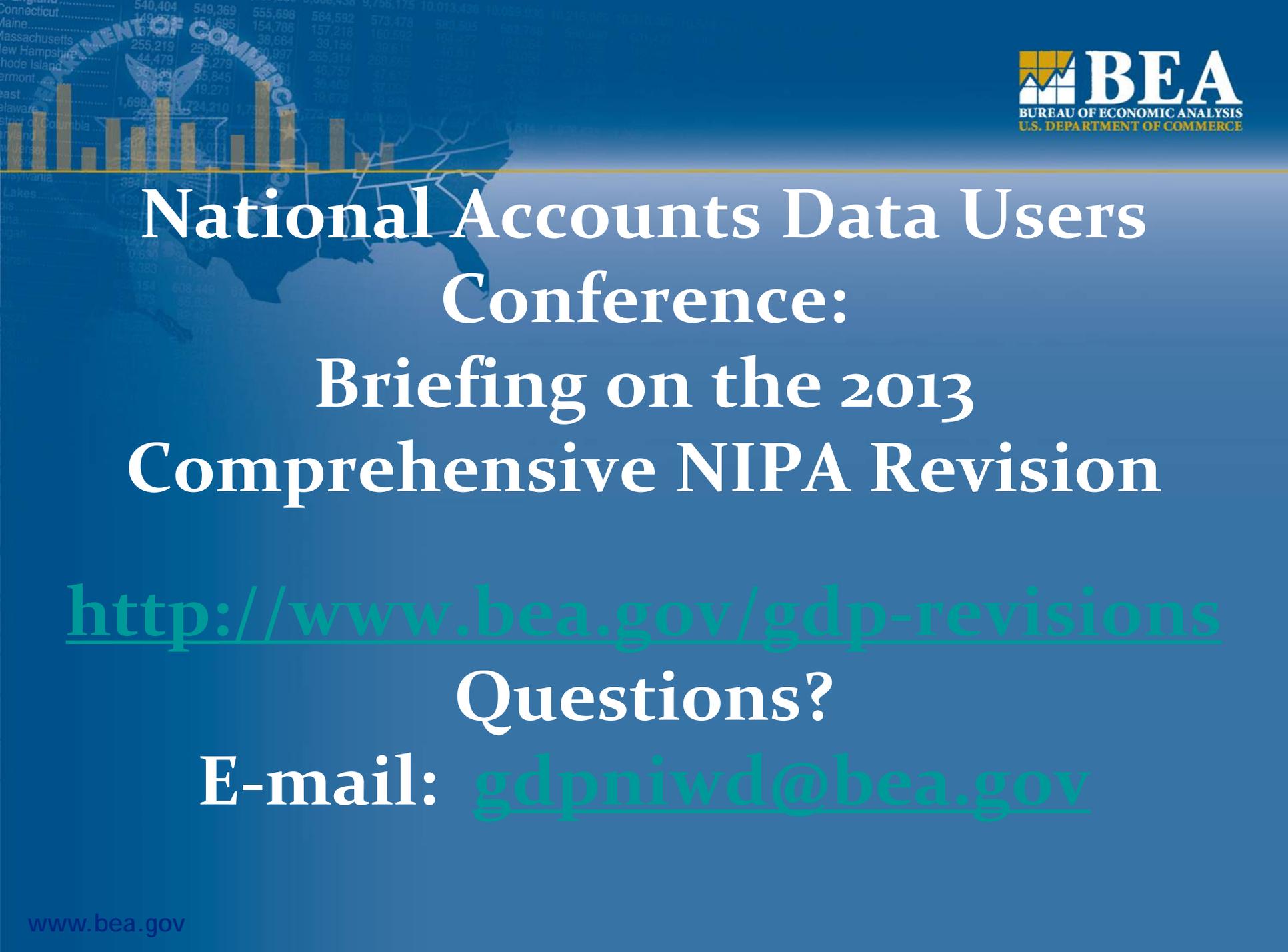
- Corporate partners (CPs) adjustment
 - Corporate partner income included in IRS partnership and corporate income data
 - Remove CP income from partnership income (NIPA table 7.14, line 2)
 - Research using IRS 1065 K-1 form
 - Conclusion is more CP income than previously assumed is included in IRS data
 - Result is a lower level of nonfarm proprietors' income

Mortgage Interest

- Mortgage interest
 - Operating expense in rental income of persons
 - Offset by net interest paid by business in overall GDI
- Improved data source to measure mortgage rate
 - Loans types, prepayments, outstanding balances, etc.
 - First introduced in 2011 NIPA annual revision
- Result is lower mortgage interest (lower rate)
 - No effect on overall GDI
 - Higher rental income of persons offset by
 - Lower net interest paid by business

What to Expect Going Forward

- May 2013 *SCB* article on statistical changes
- July 31, 2013 GDP (Including 2013 Q2 Advance)
- August 2, 2013 PI&O (Including June 2013)
- 300+ NIPA tables
- 4.5 million data points
- “Results” *SCB* article in September 2013
- Updated *Concepts and Methods* chapters



National Accounts Data Users Conference: Briefing on the 2013 Comprehensive NIPA Revision

<http://www.bea.gov/gdp-revisions>

Questions?

E-mail: gdpniwd@bea.gov