New Data Sources and Methods for GDP and other Economic Statistics

J. Steven Landefeld, Director

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GDP: Mosaic of Public and Private Data

- Since its inception, BEA has used a mix of public and private data to provide a comprehensive picture of overall economic activity that is timely and accurate.

  - BEA makes extensive use of partial data – public and private – as extrapolators for its early estimates.

  - Accuracy of extrapolators are improved through weighting, filling in gaps in coverage, bias adjustments, averaging with other extrapolators, and benchmarking and balancing.

- For most periods, extrapolators work well

  - Early estimates provide an accurate general picture of economic activity.

Percent Change in GDP
Advance and Latest Estimates
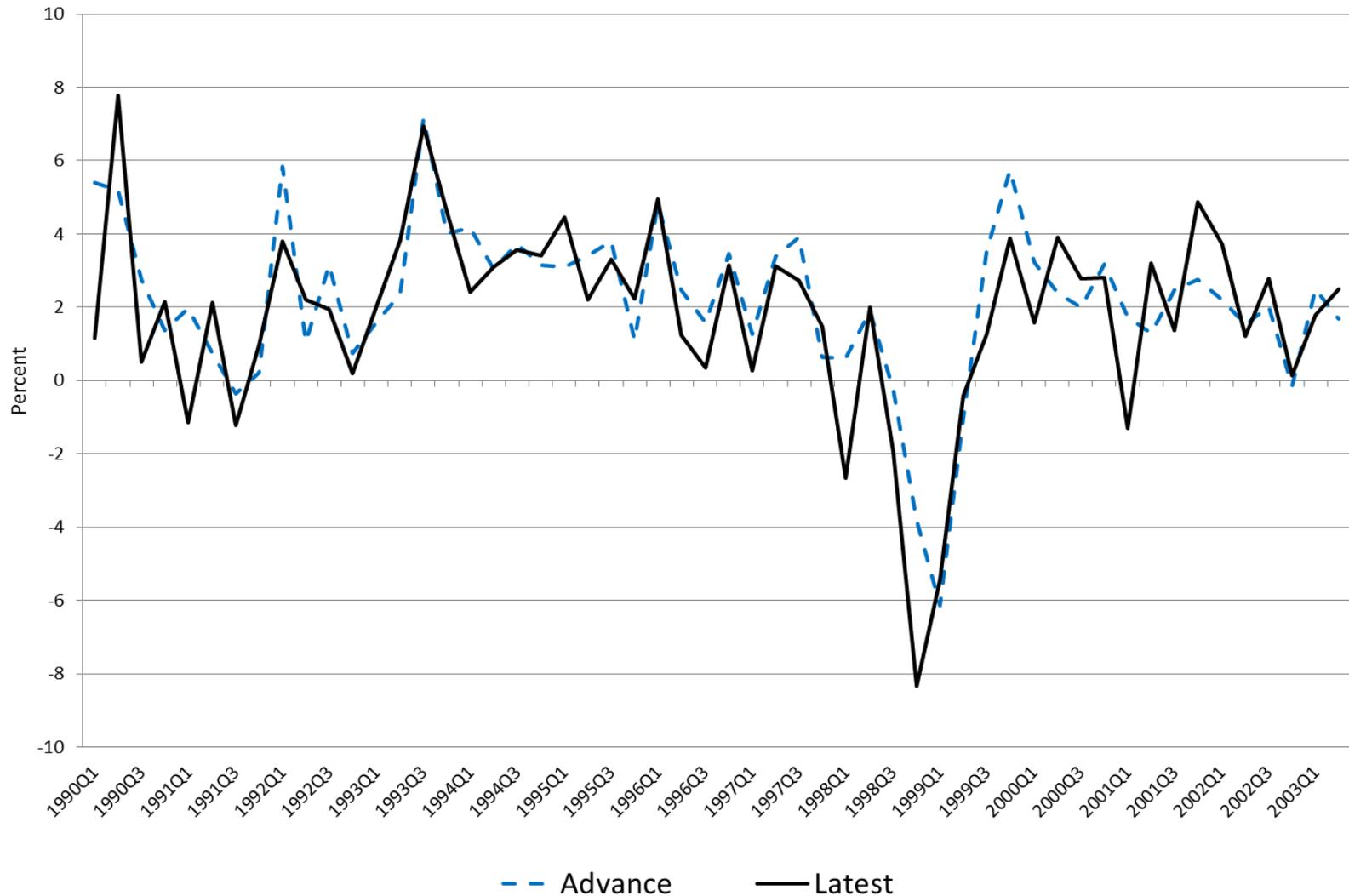
Source data for early estimates

- Estimates are largely based on "advance" Census Bureau, BLS, and other indicators

- Where monthly/quarterly indicators are not available, other government and private sources are used. Examples of private sources:
    - Ward's/JD Powers/Polk (auto sales/price/registrations)
    - American Petroleum Institute (oil drilling)
    - Airlines for America (airlines)
    - *Variety* magazine (motion picture admissions)
    - STR (hotels and motels)
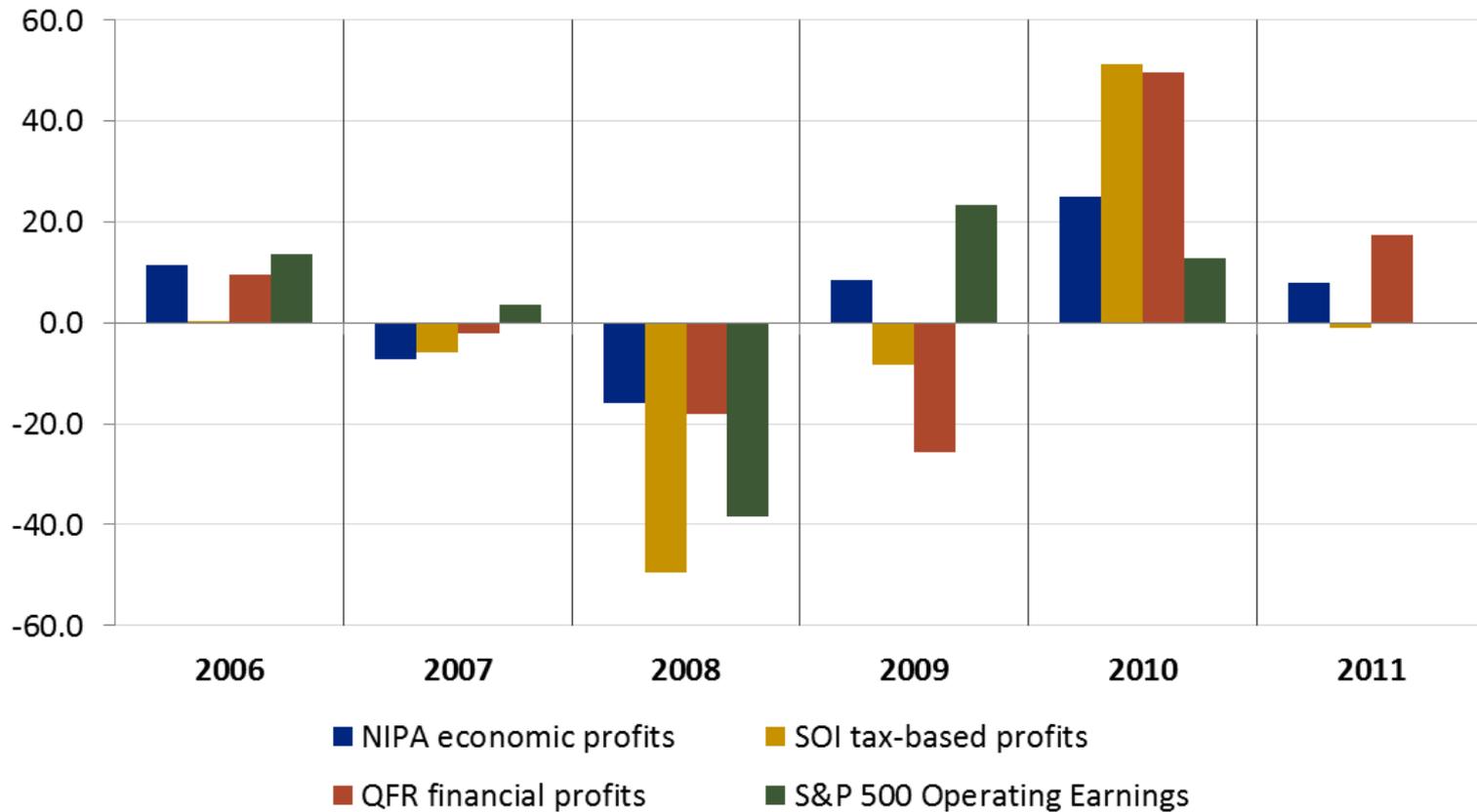   - Investment Company Institute (mutual fund sales)

Evaluating private-source data

- How closely do the data fit with national accounts concepts?
  - Economic profits vs. financial and tax-based profits
  - Final expenditures vs. total sales
- Time frame? – e.g., monthly vs. weekly
- How representative are the data?
  - Selection biases
- Data gaps often difficult to fill from Web
  - GDP: services, state & local governments
  - GDI: Irregular pay, small business income

Different Measures of Profits

Mean absolute difference between measures, [2006-2011] 27.2%

Annual % Change

Legend:
- NIPA economic profits
- SOI tax-based profits
- QFR financial profits
- S&P 500 Operating Earnings

New Data Sources and Methods: Extrapolators ?

- Incorporating new Extrapolators:
  - Evaluating the concepts, definitions, coverage, and performance of extrapolators relative to more comprehensive and consistent and annual and benchmark data.
  - Developing new methods to use new extrapolators.
  - Evaluating their performance relative to existing extrapolators.
  - Developing seasonal adjustment factors.
- Examples from some preliminary collaborative research and analysis

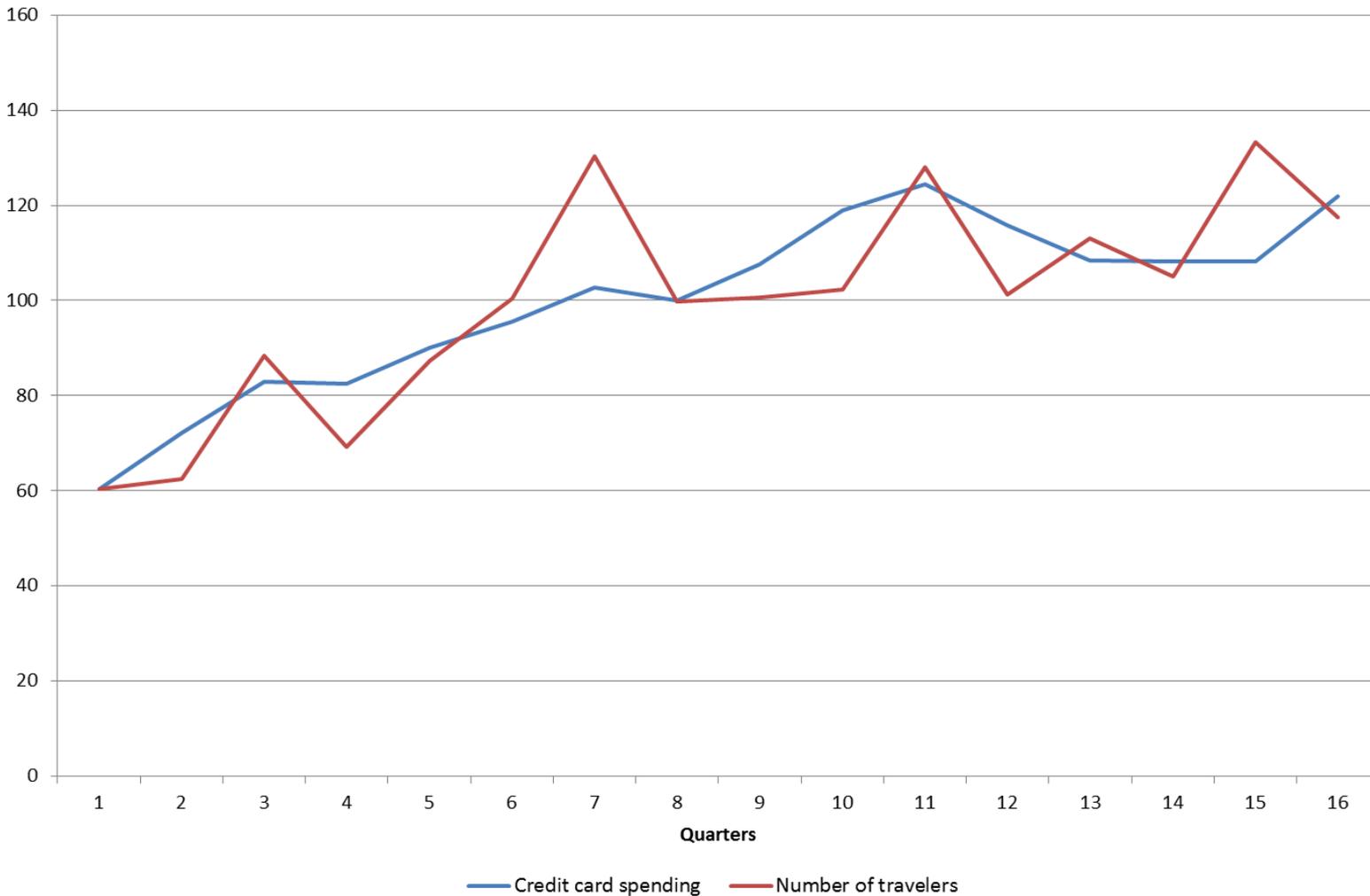# Credit card use and travel to the U.S.

Travel from France
[2009-2012]

Index, Mean = 100

Legend: Credit card spending — Number of travelers

X-axis: Quarters (1–16)
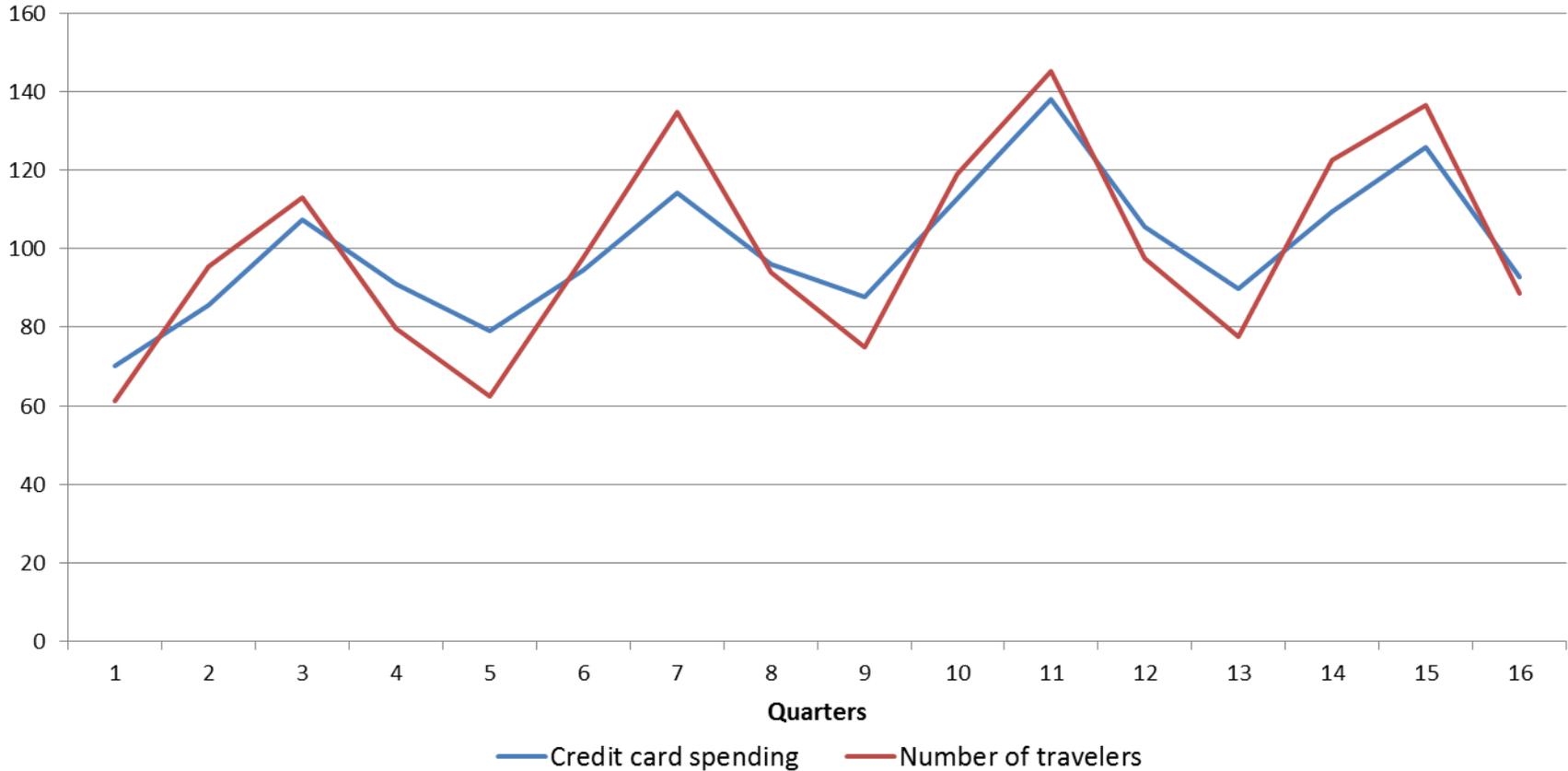
Credit card use and travel to the U.S.

Travel from Korea
[2009-2012]

Index, Mean = 100

Legend: Credit card spending — Number of travelers

X-axis: Quarters (1–16)
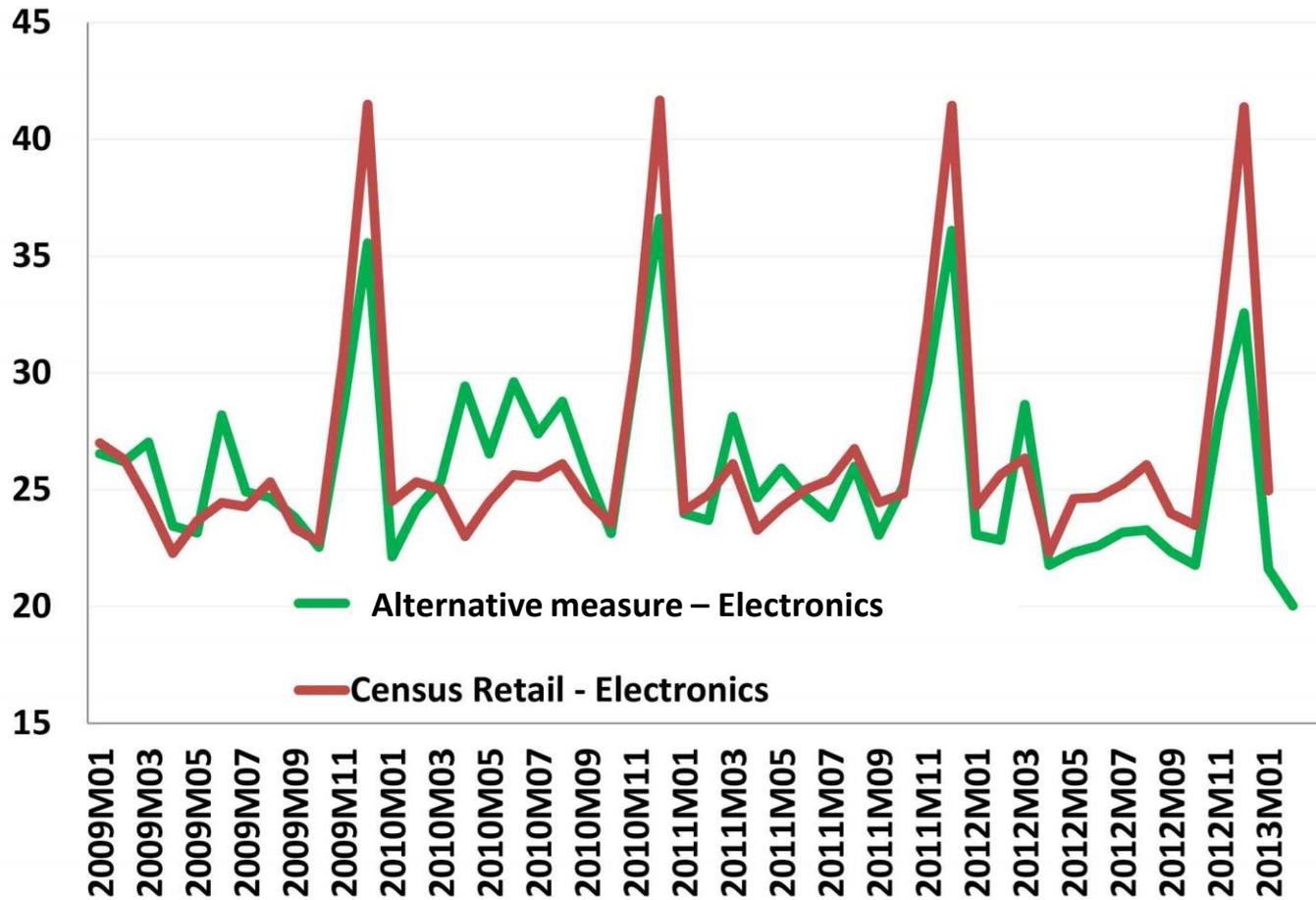
Alternative measures of consumer spending

clothing
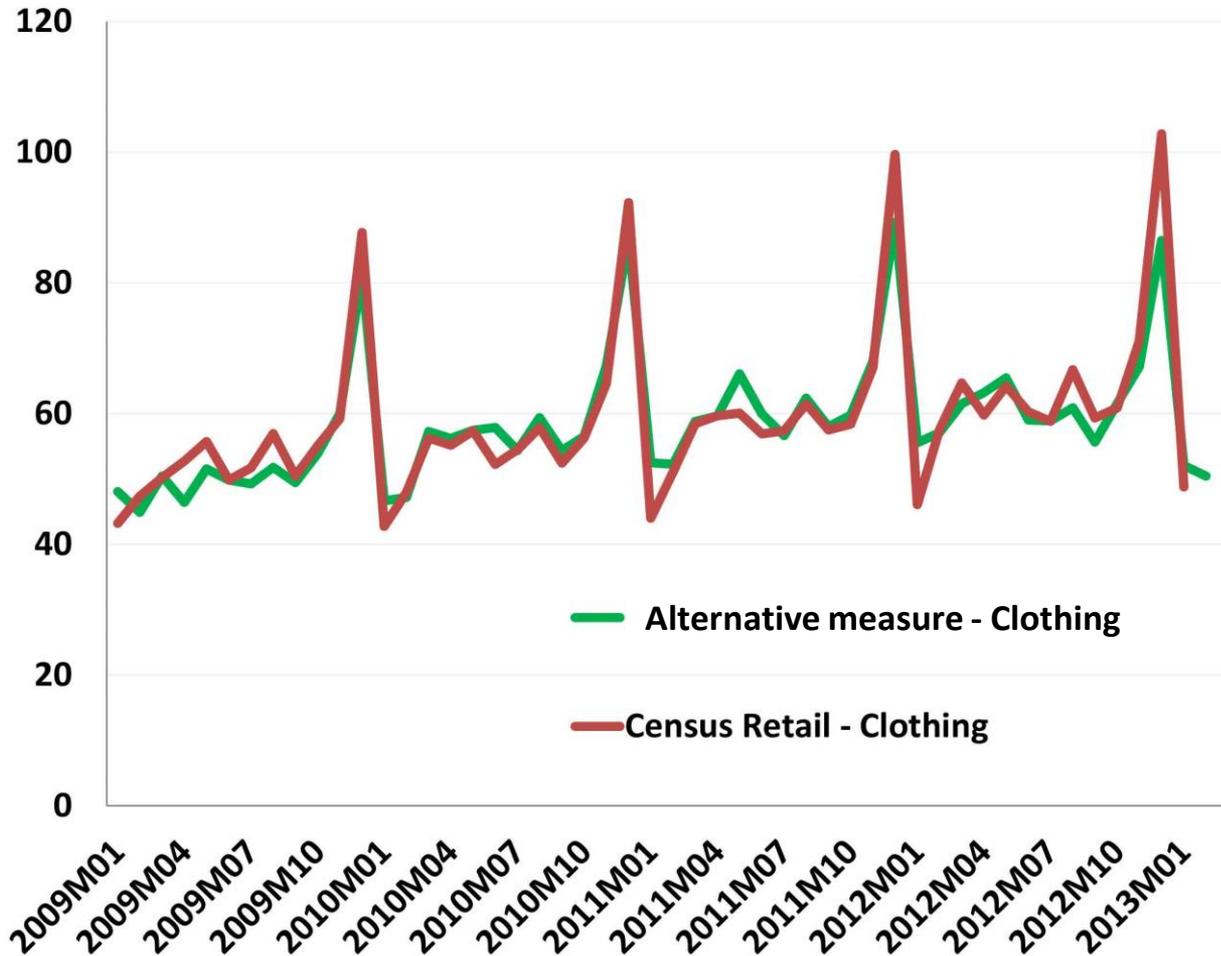
Alternative measures of consumer spending

electronics

Legend:
- Alternative measure – Electronics
- Census Retail - Electronics

Alternative measures of small business

Chart legend:
- NFPI Total (with IVA & CCADJ) — black line
- NFPI indicator — blue line
- Alternative Net Profit index — red line

Y-axis (left): Billions of dollars — 700 to 1,200
Y-axis (right): Index — 60 to 150
X-axis: 04m1 04m7 05m1 05m7 06m1 06m7 07m1 07m7 08m1 08m7 09m1 09m7 10m1 10m7 11m1 11m7 12m1 12m7

- Benefits of New Extrapolators:
  - Potential benefits to BEA data and private source data
    - BEA – potential for replacing the 14% of early GDP and 63% of early GDI estimates based on judgemental and trend-based extrapolators with new data.
    - Private source data – improved ability to provide accurate early estimates to investors of GDP, inflation, and other key economic data.
      - Transparency critical to effective collaboration in benchmarking
      - Providing transparency on source data and methods may be difficult for proprietary data suppliers

New Data Sources and Methods: Research, Data Collection, and Accuracy

- Data scraping can be quite helpful with research, data collection, and accuracy:
    - Improved measures of depreciation – Use of VIN-level data from decodethis.com combined with auction data from NADA and data from other auto websites to better measure obsolescence.
    - More timely state government tax receipts – pulled from websites of 27 states that provide monthly or quarterly information.
    - Improved "fact-checking" of local area data – LATS gathers data on largest employers, principal industries, recent layoffs, local real estate and financial trends, agricultural information, and weather events.

New Data Sources and Methods: Research, Data Collection, and Accuracy

- ## Work with industry to develop new measures
  - IBM and computer price indexes and output
  - Chrysler and other motor vehicle manufactures and motor vehicle prices and output
- ## Medical care & insurance records
  - Improved measures of prices, output and productivity
  - Better understanding of sources of growth in medical spending

New Data Sources and Methods: Data Dissemination?

- Benefits of collaboration between statistical agencies and search engines:
  - Provision of the most timely and authoritative data
  - More relevant searches
  - Branding
  - Improved Statistical literacy – for matches and "mash-ups"
  - Expanded access to, and understanding of, official statistics

New Data Sources and Methods: New Methods

- BEA continually updates estimating techniques.
    - Mainly weighting, balancing, averaging, bias adjustment, smoothing, etc.
    - Limited use of econometric techniques:
        - Limited benefits
        - Loss of transparency
        - Loss of drill down capacity and links to key indicators

New Data Sources and Methods: Old Data

- One of the most important sources of new data may be existing data:
    - Data sharing between BEA, BLS, Census could significantly improve accuracy and consistency of data (GDP/GDI, productivity, prices, industries, regions, etc.)
    - Expanded access to tax and administrative data for statistical purposes could produce large benefits in accuracy, level of detail, and efficiency.

Conclusions

- BEA will continue to focus on producing timely, accurate economic accounts
  - Priority will be on improving data quality, filling gaps, and keeping up with changing economy
- Higher frequency data? Priority is existing monthly, quarterly, and annual data and new quarterly GDP by industry and by state.
- Looking forward new data and methods work will focus on:
  - Extrapolators provided that data quality is validated
  - Data scrapping for research, data collection, and data validation
  - New estimating techniques
  - Expanded access and uses of existing statistical, tax, and administrative data