(U.S.)
MACROECONOMIC DATA
IN REAL TIME

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Wianno Club in Cape Cod
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How Good are U.S. Macro Data?

- Two key issues:
  1. “Accuracy-timeliness” tradeoff.
     - Data released by statistical agencies are typically *estimates*
     - Most macro data are regularly revised.
  2. Different measures can give different pictures.
     - Economists look at a lot of data.
- One related question:
  - How good are forecasts?
The Big 3: GDP, Inflation, Employment

- Real GDP: how much total output are we producing?

- The inflation rate: how fast are prices rising?

- Employment: how many people are working?
Gross Domestic Product

• Real Gross Domestic Product (GDP)
  • “The output of goods and services produced by labor and property located in the United States”
  • Adjusted for inflation
  • The best measure of how well the economy is performing?
  • Total income = total expenditure
  • Measured quarterly
  • Typically reported as percentage change from preceding quarter at an annual rate (compounded annual rate of change).
  • Estimates are produced for the U.S. by the Bureau of Economic Analysis (BEA), U.S. Department of Commerce.
    • Released monthly.
    • Annual revisions each July.
    • Occasional “comprehensive” revisions – one coming in July, 2013.
U.S. Real GDP

Real Gross Domestic Product, 1 Decimal (GDPC1)
Source: U.S. Department of Commerce: Bureau of Economic Analysis

Shaded areas indicate US recessions.
2013 research.stlouisfed.org
Watch out for Nominal!

Real Gross Domestic Product, 1 Decimal (GDPC1)
Gross Domestic Product, 1 Decimal (GDP)

Shaded areas indicate US recessions.
2013 research.stlouisfed.org
# U.S. Real GDP Estimates

<table>
<thead>
<tr>
<th></th>
<th>Advance Estimate</th>
<th>Second Estimate</th>
<th>Third Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>4th Quarter 2012</td>
<td>-0.1% 1/30/13</td>
<td>0.1% 2/28/13</td>
<td>0.4% 3/28/13</td>
</tr>
<tr>
<td>(Oct – Dec)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st Quarter 2013</td>
<td>2.5% 4/26/13</td>
<td>2.4% 5/30/13</td>
<td>TBA 6/26/13</td>
</tr>
<tr>
<td>(Jan – Mar)</td>
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</tbody>
</table>
# Revisions Between Quarterly Annualized Percent Changes of Real GDP

<table>
<thead>
<tr>
<th>Revision</th>
<th>Average</th>
<th>Absolute Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advance to Second</td>
<td>0.1</td>
<td>0.5</td>
</tr>
<tr>
<td>Advance to Third</td>
<td>0.1</td>
<td>0.6</td>
</tr>
<tr>
<td>Second to Third</td>
<td>0.0</td>
<td>0.2</td>
</tr>
<tr>
<td>Advance to Latest</td>
<td>0.2</td>
<td>1.3</td>
</tr>
</tbody>
</table>

Source: [http://www.bea.gov/newsreleases/national/gdp/2013/gdp4q12_adv.htm](http://www.bea.gov/newsreleases/national/gdp/2013/gdp4q12_adv.htm)

Based on the period from 1983 through 2009. The average real GDP growth rate in this period was 3.0%.
Why So Many Revisions?

• Timeliness versus accuracy trade-off.
  • “The Bureau emphasized that the … advance estimate … is based on source data that are incomplete or subject to further revision by the source agency”

• Seasonal adjustment.
  • Seasonal events affecting the economy follow a more or less regular pattern each year.
  • Statistics are regularly adjusted to make it easier to observe the longer term movements in the series.

• Conceptual/Definitional Changes.
  • July 2013 will see major changes with R&D and IP.
Prices and Inflation

- Overall/Headline: General rise in the price level.
- Consumer Price Index (CPI)
  - Produced by the Bureau of Labor Statistics (BLS)
  - Used to make cost-of-living adjustments to Social Security benefits.
- Personal Consumption Expenditures (PCE) price index
  - Produced by the Bureau of Economic Analysis (BEA)
  - As of January, 2012, the Fed has a target of 2% inflation as measured by the PCE price index.
- CPI is generally about 0.5% points higher than PCE
  - Average from 1983-present: CPI is 2.9%, PCE is 2.6%.
- Core measures exclude food and energy
  - Reduces volatility.
  - May be a better forecast of future inflation than overall/headline inflation.
CPI and PCE

Consumer Price Index for All Urban Consumers: All Items (CPIAUCSL)
Personal Consumption Expenditures: Chain-type Price Index (PCEPI)

Shaded areas indicate US recessions.
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CPI and “Core” CPI

Consumer Price Index for All Urban Consumers: All Items (CPIAUCSL)
Consumer Price Index for All Urban Consumers: All Items Less Food & Energy (CPIFESL)

Shaded areas indicate US recessions. 2013 research.stlouisfed.org
Employment and Unemployment

- Most labor market data are collected by the Bureau of Labor Statistics (BLS)
- Monthly Survey Data
  - Current Population Survey (CPS)
    - A Joint Effort Between the BLS and the Census Bureau
    - Household survey
    - Key data: Unemployment Rate
  - Current Employment Statistics (CES)
    - Establishment survey
    - Eventually “benchmarked” to the “universe” of employed persons
    - Key data: Payroll employment
- Population = employed + unemployed
  + not in the labor force
Statistical Significance

• Estimates of monthly changes in employment or unemployment are often not “statistically different” from zero.

• BLS language:
  • “changed little”
  • “basically unchanged”

• The estimates may look big.
  • But, if we can’t say they’re different from zero then we need to look for more information.

• We may not even be sure of the direction of the change!
## Two Monthly Measures of Employment

<table>
<thead>
<tr>
<th></th>
<th>Establishment Survey</th>
<th>Household Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Approx. Sample Size</strong></td>
<td>486,000 establishments</td>
<td>60,000 households</td>
</tr>
<tr>
<td><strong>“Statistically Significant” Change</strong></td>
<td>100,000</td>
<td>400,000</td>
</tr>
<tr>
<td><strong>Demographic Groups?</strong></td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Includes self employed, agriculture, etc?</strong></td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Most Recent Value (May 2013)</strong></td>
<td>135,637,000 Persons</td>
<td>143,898,000 Persons</td>
</tr>
</tbody>
</table>

Note: The household series presented here has been smoothed for population control adjustments. The “adjusted” household series has been adjusted to an employment concept more similar to the payroll survey’s and smoothed for population control adjustments. Shaded areas represent recessions as determined by the National Bureau of Economic Research (NBER).

Unemployment Rates

• U3: Civilian Unemployment Rate
  • Conventional unemployment rate
  • “Total unemployed persons, as a percent of the civilian labor force.”
  • May, 2013: 7.6%
  • Average 1983 – present: 6.3% (6.0% since 1994)

• U6: Total unemployed, plus …
  • The broadest Bureau of Labor Statistics (BLS) measure of unemployment
  • “Total unemployed persons, plus all ‘marginally attached’ workers, plus all persons employed part time for economic reasons, as a percent of the civilian labor force plus all ‘marginally attached’ workers.”
  • May, 2013: 13.8%
  • Average 1994 – present: 10.5% (not reported before 1994)
U3 and U6 Unemployment Rates

Civilian Unemployment Rate (UNRATE)
Total unemployed, plus all marginally attached workers plus total employed part time for economic reasons (U6RATE)

Shaded areas indicate US recessions.
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Labor Force Participation Rate

Civilian Labor Force Participation Rate (CIVPART)

Shaded areas indicate US recessions.
2013 research.stlouisfed.org
Forecasts?

• “An economist is an expert who will know tomorrow why the things he predicted yesterday didn't happen today.”
  • Laurence J. Peter

• The Federal Reserve Board’s staff is generally the best forecaster for the U.S. economy
  • The best does not mean good, particularly for recessions
  • Forecasts only released with a 5 year lag
  • Forecasts released from the FOMC (the committee at the Fed responsible for making monetary policy decisions) are not as good.

• Recently surveys of professional forecasts have mostly caught up to the Fed
  • Survey of Professional Forecasters (SPF)
A Note about Recessions

• When is the U.S. in a recession?
  • No rule of thumb
  • Determined by (NBER) Business Cycle Dating Committee
  • Only know in hindsight
    • December 2007 was announced as the start of the most recent recession in December of 2008.
    • June 2009 was announced as the end in September 2010.
• Fed may know when we’re in one and when we’re out of one, but not what is going to happen next…
• End of a recession doesn’t mean good times are here again!
• Data revisions larger
• Forecasts worse
Final Takeaways

• Macroeconomic data can send mixed signals as it arrives in real time.
• Macroeconomic forecasts are even less reliable than the incoming current data.
• It is unfortunately even harder to produce correct estimates and forecasts in downturns.
• But, U.S. statistical agencies are hard at work to produce the best and most useful data possible.
• So…
  • don’t be surprised when the data and the forecasts change.
  • don’t rely on a single number.
  • Be careful to watch for statistical significance.
Contact Information

- Full slides from the presentation are available on my website:
- Feel free to contact me for interviews, background research, or just curiosity questions about:
  - Macroeconomic data and forecasts for the U.S. and around the world; U.S., Euro-Area, China, Canada, Australia, or global macro events; Federal Reserve actions; government macro policy or impacts; etc.
- How to reach me:
  Tara Sinclair
  Associate Professor of Economics and International Affairs
  The George Washington University
  Email: tsinc@gwu.edu (generally the best way to reach me)
  Cell: 202-306-3351 (feel free to call)
  Office: 202-994-7988 (please call my cell or email me if you get voicemail)
- Also feel free to check my website and blog for new research:
  - Web: http://home.gwu.edu/~tsinc/
Data Sources

• BEA Website: http://www.bea.gov/index.htm
  • Data and methodology for:
    • GDP
    • PCE

• BLS Website:  http://www.bls.gov/
  • Data and methodology for:
    • CPI
    • PPI
    • Employment and unemployment measures

• Business Cycle Dates: http://www.nber.org/cycles/

• St. Louis Federal Reserve
  • Most recently revised data: Federal Reserve Economic Data (FRED):
    • http://research.stlouisfed.org/fred2/
  • “Vintage” data: ArchivaL Federal Reserve Economic Data (ALFRED)
    • http://alfred.stlouisfed.org/

• Philadelphia Federal Reserve
  • Real Time Data:
    • http://www.philadelphiadfed.org/research-and-data/real-time-center/real-time-data/
  • Forecasts:
    • Greenbook data:
      • http://www.philadelphiadfed.org/research-and-data/real-time-center/greenbook-data/
    • FOMC forecasts
      • http://www.philadelphiadfed.org/research-and-data/real-time-center/monetary-policy-projections/
  • Survey of Professional Forecasters:
    • http://www.philadelphiadfed.org/research-and-data/real-time-center/survey-of-professional-forecasters/
Background Research

- More on GDP Estimates:
  - BEA’s National Income and Product Accounts (NIPA) Primer
- Federal Reserve Speeches:
  - [http://federalreserve.gov/newsevents/speech/2012speech.htm](http://federalreserve.gov/newsevents/speech/2012speech.htm)
- Real time data analysis:
  - Croushore (2011, *Journal of Economic Literature*)
- Fed’s forecasting ability generally:
- Data Revisions in Recessions:
    - [http://amstat.tandfonline.com/doi/abs/10.1198/073500105000000036](http://amstat.tandfonline.com/doi/abs/10.1198/073500105000000036)
- Fed’s forecasting ability in recessions:
- Comparing the Fed Staff and the FOMC for forecasting:
    - [http://elsa.berkeley.edu/~dromer/papers/aer_98_2.pdf](http://elsa.berkeley.edu/~dromer/papers/aer_98_2.pdf)
Other Great Places to Check for Economic Stories

• NBER Working Paper Series:
  • http://federalreserve.gov/newsevents/speech/2012speech.htm

• IGM Experts Panel:
  • http://www.igmchicago.org/igm-economic-experts-panel

• Shameless Plugs:
  • My Website:
    • http://home.gwu.edu/~tsinc/
  • GW Research Program on Forecasting:
    • http://research.columbian.gwu.edu/cer/research/forecasting
  • GW Institute for International Economic Policy:
    • http://www.gwu.edu/~iiep/

• A few of my favorite blogs:
  • http://internationaleconpolicy.wordpress.com/
  • http://econbrowser.com/
  • http://macroblog.typepad.com/
  • http://economistsview.typepad.com/
  • http://marginalrevolution.com/
  • http://blog.bea.gov/
Selected Media Coverage of My Work by Past Media Retreat Participants


• “Has government regulation slowed the recovery?” by Louis Jacobson, March 12th, 2013.

• “Why August’s jobs number is likely wrong” by Zachary A. Goldfarb, September 07, 2012.