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the back story on front page economics

"Dewey Defeats Truman": Be Aware of Data Revisions

April 2012

Classroom Edition

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Common Core Standards (see page 9)

ECONOMIC EDUCATION | FEDERAL RESERVE BANK OF ST. LOUIS

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"Dewey Defeats Truman": Be Aware of Data Revisions

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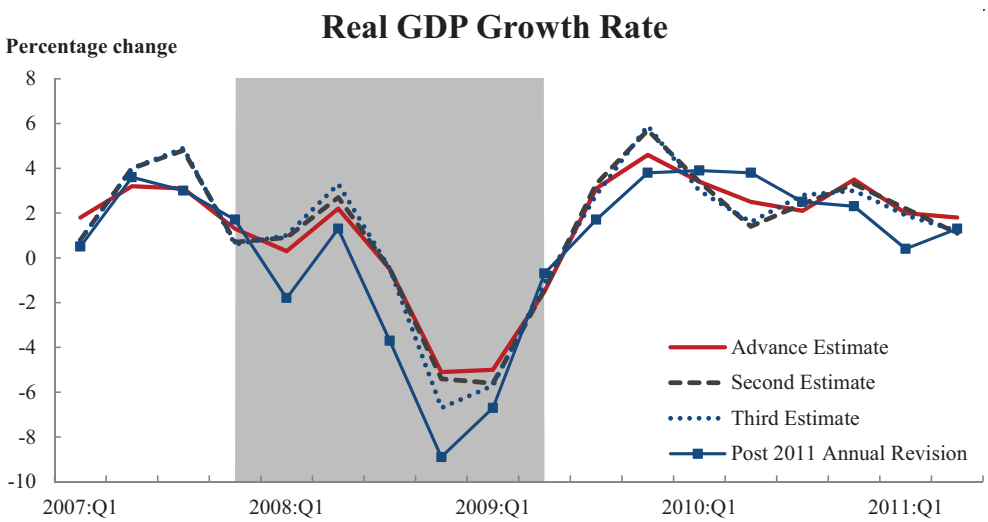
"One of the challenges we face as policymakers is the availability of data to assess the state of the economy in real time. Many economic data series...are subject to subsequent revisions that can be quite sizable and can alter our perceptions of the economic situation."
—James Bullard, President and CEO, Federal Reserve Bank of St. Louis, 2011

President Harry Truman's victory in the 1948 election was first announced by the *Chicago Tribune* as a loss to New York Governor Thomas Dewey. When even a simple counting of votes can produce such a large error, imagine the tremendous challenges and pressure for timeliness and accuracy facing government and private agencies in computing economic indicators for a $14 trillion economy.[1] Collecting the necessary economic information and processing it requires time and patience. Many people, including investors and policymakers, want information about current economic conditions as soon as possible so they can make decisions. However, there is often a trade-off between the timeliness and the accuracy of economic data.[2] For this reason, many data agencies report an initial release based on the available data and staff estimates for the information that is unavailable. The media frequently use the initial data releases for headline news.

Data revision is somewhat like revising a college writing assignment. Students usually turn in the initial draft of the assignment. After they conduct more research and receive feedback from their professor, they revise the draft a few times before submitting the final draft. Similarly, after agencies that provide data receive additional information and update their initial calculations, the first releases are revised one or more times. The number and frequency of revisions vary for different data series.[3] For example, data for gross domestic product (GDP) generally undergo two monthly revisions after the initial release. The Bureau of Economic Analysis (BEA) computes GDP by collecting data from thousands of government and private sources on factors such as business fixed investment, trade, individual consumption, and government spending. Four weeks after a quarter ends, the BEA announces its first release of GDP, known as the *advance* estimate. Because only 45 to 75 percent of the data are available at this time, the BEA makes its best estimate for the missing components in order to provide a timely release.[4] At the end of the following month, the BEA publishes the *second* GDP estimate, which includes revisions to the advance estimate. Finally, revisions based on more complete information are reflected in the *third* GDP estimate provided in the subsequent month.

Estimates made by the BEA in its initial GDP release are often very close to the numbers in the third estimate. The impact of the revisions in the second and third estimates is usually not large at dollar levels; generally there is more interest in the impact on growth rates. The chart shows how each later estimate differs from the advance estimate. On average, the second and third revisions in GDP growth rates have changed 0.50 percent and 0.54 percent, respectively, from the advance estimate over the past 11 years.



NOTE: The shaded area indicates the recent recession as determined by the National Bureau of Economic Research.
SOURCE: Federal Reserve Bank of St. Louis ALFRED.

Monthly data revisions are not the only type of revision to GDP data. Every July, the BEA performs a revision that involves more changes and generally has a greater impact on the data than monthly revisions. This revision comes in two forms: The *annual revision* is in response to new seasonal factors and incorporates new source data from the Census Bureau. The *benchmark* (comprehensive) revision, which occurs about every five years, includes changes in methodology and definitions.[5] For instance, in 1999 the BEA included computer software purchases as a part of business fixed investment in calculating GDP; these purchases were generally considered an intermediate input before the revision.[6] Annual and benchmark revisions can affect data going back many years. As the chart shows, the impact of the annual revision in July 2011 on real GDP growth rates is quite significant compared with the monthly revisions.

Similar monthly, annual, and benchmark revisions occur for many other economic series. Awareness of these revisions is very important for economists, policymakers, and investors.[7] Revisions can change people's original views on the economy. For example, the 2011 annual revision of GDP in the chart indicates that the 2007-08 recession was much deeper than originally perceived based on the initial data. Revised data can also change economic forecasts significantly, which can alter expectations about future economic conditions. Without an understanding of data revisions, policymakers and investors may be misled by the advance release of data when they make decisions. Therefore, they need to base their decisions on (i) the data that are currently available and (ii) the expectation for future data revisions. The St. Louis Fed's ArchivaL Federal Reserve Economic Data (ALFRED) database contains vintage versions of data for more than 30,000 series. Access to such data helps decisionmakers evaluate past policies and investments. ■

NOTES

[1] Examples of economic indicators include measures of national output such as GDP, price indexes such as personal consumption expenditure, and labor market measures such as nonfarm payroll employment and the unemployment rate.

[2] One of the exceptions is the reporting of financial data such as interest rates and stock prices, which are considered accurate at the time of reporting.

[3] Some data such as initial unemployment insurance claims are revised on a weekly basis; in rare cases, some series are never revised.

[4] For detailed information on how data for computing GDP are collected, see Grimm and Weadock (2008).

[5] For a detailed explanation of seasonal adjustment, see Gascon (2009).

[6] See Kliesen (1999). Intermediate inputs are not directly counted in GDP since they are not final products. Investment, however, is a component of GDP calculation.

[7] See Bullard (2011).

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Name_____ Period_____

Federal Reserve Bank of St. Louis *Page One Economic Newsletter*:
"'Dewey Defeats Truman': Be Aware of Data Revisions"

After reading the article, answer the following questions.

1. **Describe the trade-off between timeliness and accuracy of data. How does an emphasis on one pose a risk to the other?**

2. **How do many data agencies try to accommodate both timeliness and accuracy for many economic data series?**

3. **The Bureau of Economic Analysis (BEA) releases gross domestic product (GDP) data in three intervals. How much of the data are available when the BEA releases the advance estimate?**

4. **On average, how close has the first (advance estimate) release of GDP data been to the second and third releases?**

5. **In addition to the monthly data revisions, what other GPD revisions are incorporated?**

6. **Looking at the revisions to the 2007-08 GDP data, why is it important to have an understanding of data revisions?**

Teacher's Guide

Federal Reserve Bank of St. Louis *Page One Economic Newsletter*:
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After reading the article, answer the following questions.

1. **Describe the trade-off between timeliness and accuracy of data. How does an emphasis on one pose a risk to the other?**

   People want data as soon as they are available, even if they are incomplete. An emphasis on *timeliness* means that data are not complete and may be misleading. An emphasis on *accuracy* means that the data would take longer to prepare, sacrificing the decisionmaking advantages of timeliness.

2. **How do many data agencies try to accommodate both timeliness and accuracy for many economic data series?**

   Many data agencies release initial estimates of some data to accomplish the objective of timeliness. Then they provide one or more revisions of a series as more information becomes available, which is meant to accomplish the objective of accuracy.

3. **The Bureau of Economic Analysis (BEA) releases gross domestic product (GDP) data in three intervals. How much of the data are available when the BEA releases the advance estimate?**

   Only 45 to 75 percent of the data are available when the BEA releases the advance estimate. They make estimates for the missing data.

4. **On average, how close has the first (advance estimate) release of GDP data been to the second and third releases?**

   Over the past 11 years the second estimates have changed 0.50 percent from the advance estimates; the third estimates have changed 0.54 percent from the advance estimates.

   Teacher note: While a 0.54 percent revision to GDP might seem like an insignificant number, in a $15.32 trillion economy, the number represents a difference of $82.7 billion.

5. **In addition to the monthly data revisions, what other GPD revisions are incorporated?**

   Every July the BEA releases the annual revision that incorporates new seasonal factors and new source data from the Census Bureau. Also, every five years the BEA performs a benchmark revision that includes changes in methodology and definitions.

6. **Looking at the revisions to the 2007-08 GDP data, why is it important to have an understanding of data revisions?**

   The recession turned out to be deeper with each successive GDP data revision. So, it is important to understand that data are the best information possible at the time but are subject to change with every revision. This knowledge is especially important for decisionmakers such as policymakers and investors.

For Further Discussion

Display or distribute copies of Visual 1. Read the following to your students and use the links and questions that follow to lead a classroom discussion.

The trade-off between timeliness and accuracy can be important in news cycles. On the one hand, people need data to plan for future events, even if the information is not in its final form. In addition, news reporting agencies have an incentive to be the first ones to report on a story. On the other hand, data that are not in the final, or complete, form might give misleading information. Sometimes reporting on first releases of data gets a lot of attention, and the reports may not be corrected when the data are revised. For example, it was widely reported in August 2005 that the U.S. personal savings rate had become negative.

Show students some of the media reports listed below:

www.msnbc.msn.com/id/11098797/ns/business-stocks_and_economy/t/us-savings-rate-hits-lowest-level/

www.bankrate.com/brm/news/sav/20060308a1.asp

www.nytimes.com/2005/12/02/business/worldbusiness/02iht-wbmarket03.html

This savings rate news was important because it was the first time since the Great Depression that the personal savings rate had become negative. It was also important because personal savings is an important part of the supply of loanable funds in financial markets. Without this crucial source of funds, interest rates would be expected to increase more than they would otherwise.

The chart below was created using ALFRED, a data tool that allows users to retrieve vintage, or real-time, versions of economic data.

Teacher note: Personal savings rate data are revised monthly on an ongoing basis.

August 2005 Personal Savings Rate

Observation date/Revision	Personal savings rate (%)
Initial release, September 2005	–0.7
Revision, August 2006	–3.0
Revision, August 2007	–2.3
Revision, August 2008	–2.7
Revision, August 2009	1.4
Most recent data, March 2012	1.5

1. Using the data from the chart above, how did the personal savings rate change as more data were collected and revisions released?

The initial release of the personal savings rate was –0.7 percent, then became more negative (–3.4 percent in December 2005), but in its most recent form the data show that the savings rate was actually positive (1.5 percent) in August 2005.

2. What implications might this have?

During a period of negative personal savings rates, people might expect that credit might tighten or interest rates rise. This would influence business investment plans, personal savings plans, and public policy plans.

3. Ask your students: If you were the editor at a news service and were given these data about the savings rate, would you report them in the first version, or wait several years for the data to be revised into their final form?

Answers may vary. Many students would likely support reporting the first information because people want the information and there are benefits for the news service to be known as among the first to report a breaking story.

4. After the data were revised, what was the personal savings rate at the latest revision?

1.5%

5. Why do you think that news agencies that spent so much time reporting that the savings rate had become negative did little to correct the story later?

By the time the revision came out there may have been other stories in which people were interested. Also, news companies may be hesitant to report stories that accentuate their shortcomings.

Teacher note: As an example, the following story from 2010 still reports a negative saving rate in 2005. By the time this story was published, in September 2010, the 2005 personal savings rate had been revised to a positive rate. (The reference to a negative savings rate in 2005 is in the thirteenth paragraph.)

www.cbsnews.com/2100-500395_162-2422489.html

Visual 1

August 2005 Personal Savings Rate

Observation date/Revision	Personal savings rate (%)
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Revision, August 2009	1.4
Most recent data, March 2012	1.5

Common Core Standards

Grades 6-12 Literacy in History/Social Studies and Technical Subjects

- **Key Ideas and Details**

  RH.11-12.1. Cite specific textual evidence to support analysis of primary and secondary sources, connecting insights gained from specific details to an understanding of the text as a whole.

  RH.11-12.2. Determine the central ideas or information of a primary or secondary source; provide an accurate summary that makes clear the relationships among the key details and ideas.

- **Craft and Structure**

  RH.11-12.4. Determine the meaning of words and phrases as they are used in a text, including analyzing how an author uses and refines the meaning of a key term over the course of a text (e.g., how Madison defines *faction* in *Federalist* No. 10).