



Revisions to BEA's Estimates of GDP and GDI

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Assessing accuracy

- BEA judges the accuracy of its early estimates by whether they present the same picture of the economy as its latest estimates in terms of:
 1. Long-term growth rates.
 2. Trends in saving, investment, government spending , corporate profits, and other key components of GDP and GDI.
 3. Broad features of business cycles, including the timing and depth of recessions, the strength of recoveries, and the major components contributing to growth and contractions.
 4. Patterns of quarterly growth, including whether it is high or low relative to trend, acceleration or deceleration, and whether it is positive or negative.

Long-run patterns

- Revisions to GDP growth average less than 0.1 percentage points over the comprehensive revisions in the period 1985-2009.
- Revisions to the contributions of key components of GDP growth are relatively small and do not substantially change the ordinal rankings of the contributions.
- The overall pattern of change in GDP over business cycles is little changed by revisions.

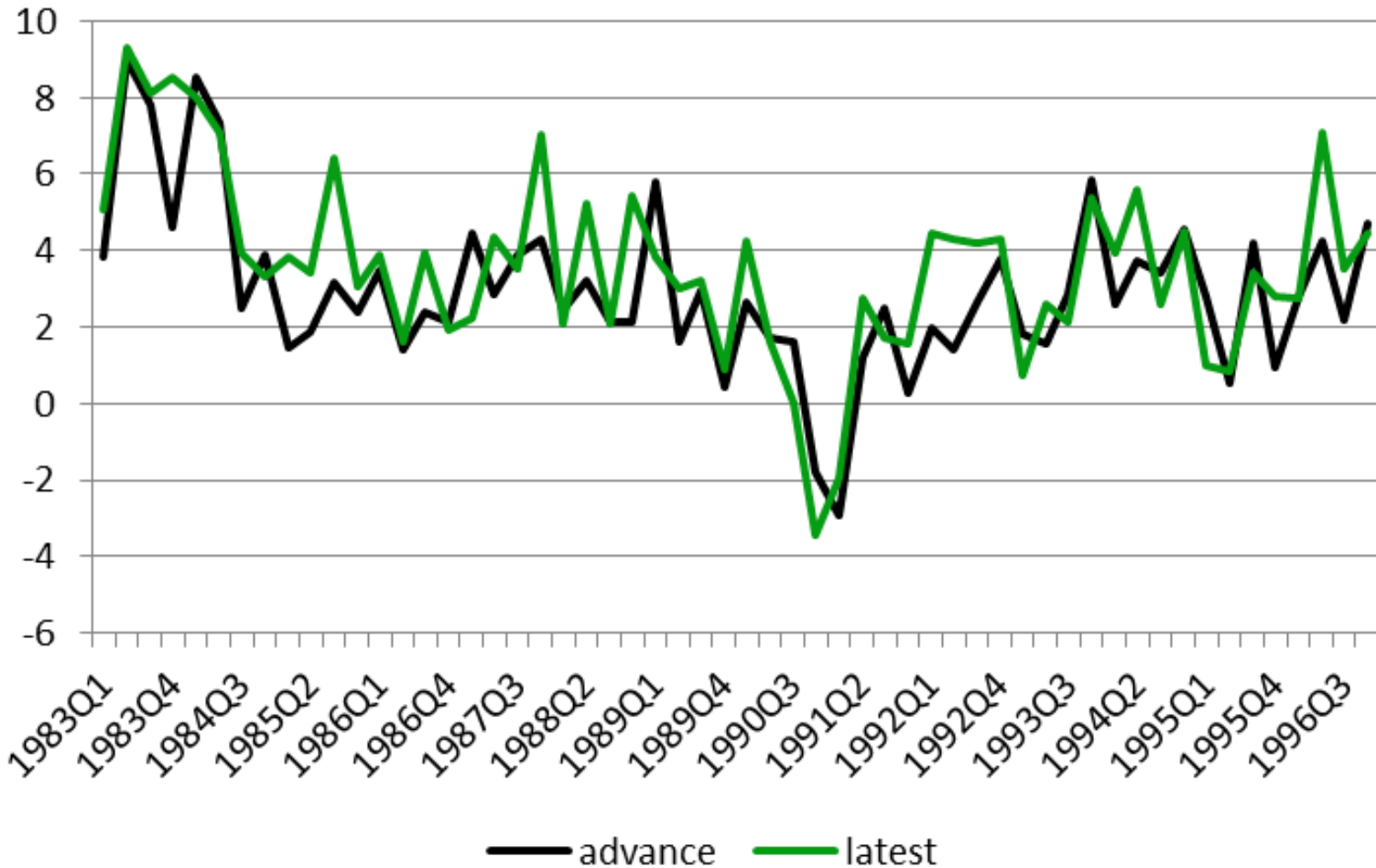
Long-run patterns (continued)

- For the period 1983-2009, real GDP successfully indicated:
 1. The direction of change in real GDP 97 percent of the time.
 2. The acceleration of growth about 72 percent of the time.
 3. Whether growth was above, near, or below trend four-fifths of the time.
 4. The cyclical peaks before 5 of the 6 recessions in 1969-2006.
 5. The cyclical troughs of 4 of the recessions.

- Source: Fixler, Greenaway-McGrevy and Grimm, “Revisions to GDP, GDI, and Their Major Components, July 2011 [Survey of Current Business](#)

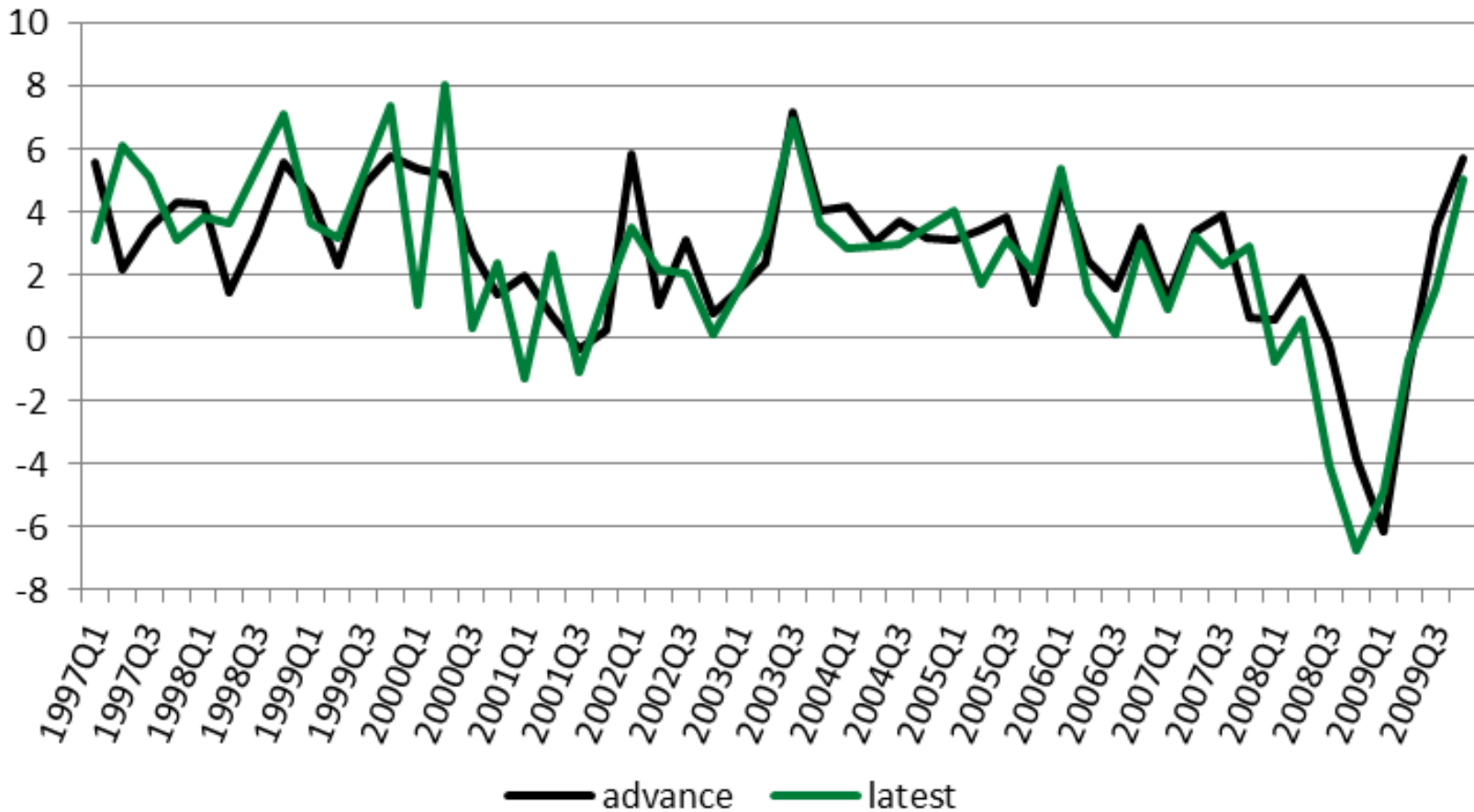
Long-run patterns (continued)

Percent Change in Real GDP



Long-run patterns (continued)

Percent Change in Real GDP



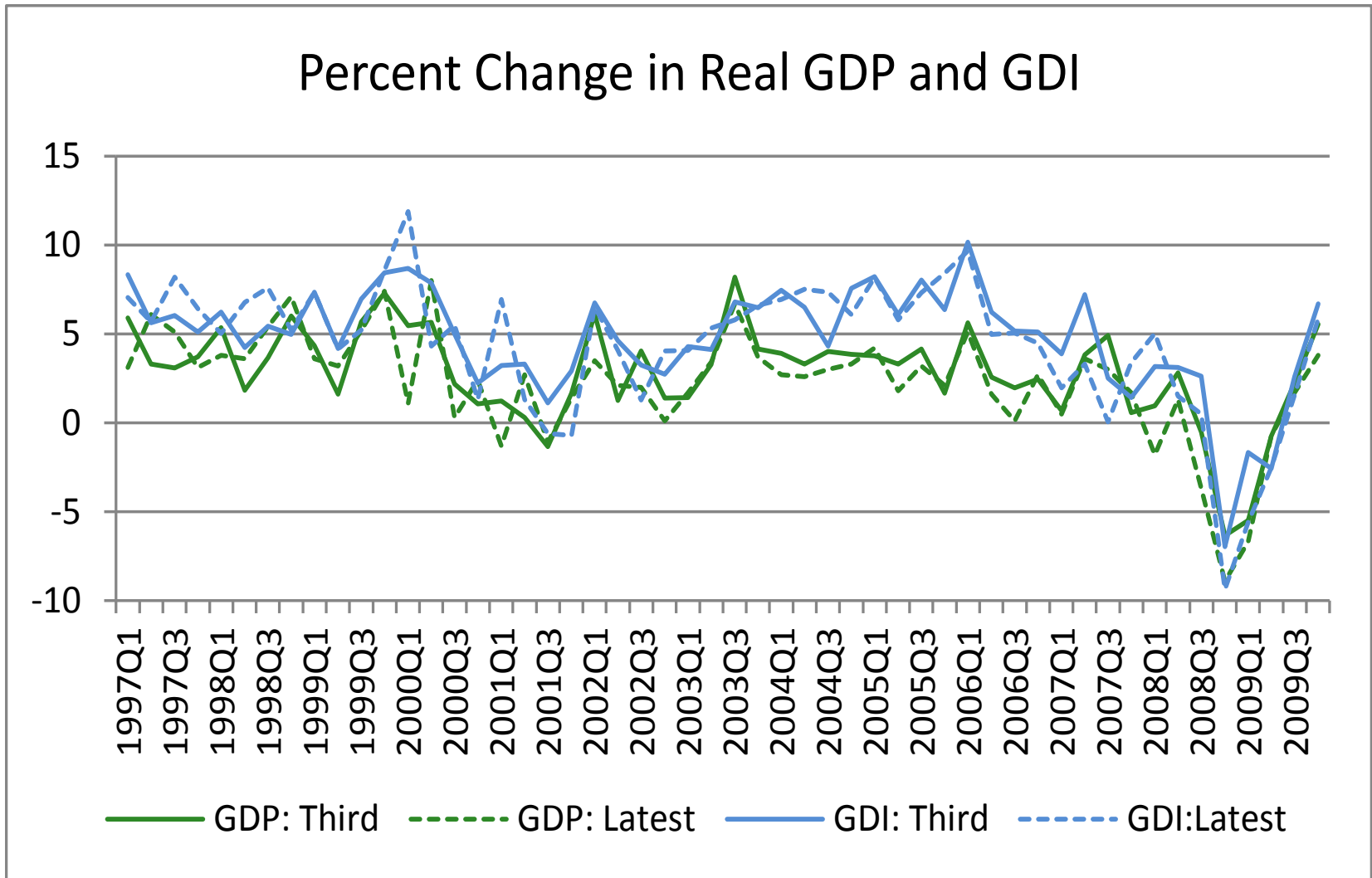
Long-run patterns (continued)

- Average revisions of GDP and GDI are modest, and of similar sizes
- For sub period 2002-09, for first annual, MR to GDP was -0.27 percentage points and MAR was 0.33 percentage points

Average Revisions to Annual Estimates of GDP and GDI; 1983-2009 [Percentage points]				
Vintage	Mean Revision		Mean Absolute Revision	
	GDP	GDI	GDP	GDI
First annual	0.17	0.13	0.39	0.48
Second annual	0.20	0.13	0.36	0.29
Third annual	0.17	0.18	0.28	0.30

- Nominal values; same price index would be used for real

Long-run patterns (continued)



Long-run patterns (continued)

Revisions to Annual Estimates of GDP and Its Major Components in 1983 to 2009
[Percentage points]

	Mean Revision		Mean Absolute Revision	
	Current-dollar GDP	Real GDP	Current-dollar GDP	Real GDP
Gross domestic product				
First annual	0.17	0.27	0.39	0.53
Second annual	0.20	0.34	0.30	0.48
Third annual	0.17	0.35	0.28	0.39
Personal consumption expenditures				
First annual	0.23	0.35	0.42	0.54
Second annual	0.21	0.36	0.40	0.36
Third annual	0.21	0.39	0.31	0.39
Gross private domestic investment				
First annual	-0.17	-0.38	1.84	1.74
Second annual	0.23	0.25	1.39	1.35
Third annual	0.15	0.24	1.09	1.13
Exports				
First annual	0.47	0.35	0.68	1.04
Second annual	0.19	0.00	0.56	0.82
Third annual	-0.10	-0.22	0.59	0.79
Imports				
First annual	0.24	-0.10	0.41	0.73
Second annual	0.13	0.16	0.35	0.86
Third annual	0.03	-0.34	0.35	0.82
Government consumption expenditures and gross investment				
First annual	0.07	0.24	0.57	0.65
Second annual	0.11	0.22	0.59	0.66
Third annual	0.04	0.14	0.46	0.49

Long-run patterns (continued)

For GDI

Revisions to Annual Estimates of GDI and Selected Components in 1983 to 2009

[Percentage points]

	Mean Revision			Mean Absolute Revision		
	First annual	Second annual	Third annual	First annual	Second annual	Third annual
Gross domestic income	0.13	0.13	0.18	0.48	0.29	0.30
Compensation of employees	0.11	0.11	0.13	0.37	0.22	0.24
Proprietors' income with IVA and CCA _{adj}	0.67	0.38	0.74	2.98	2.32	2.51
Corporate profits with IVA and CCA _{adj}	-0.32	-0.45	-0.74	6.52	4.19	3.19

Short-term patterns

- Revisions to the three current quarterly vintages tend to be larger due to revisions to seasonal adjustments, the use of incomplete source data, and because rates are shown at annual rather than quarterly rates.
- Mean revisions are about 0.1 to 0.3 percentage points for all three vintages.
- Mean absolute revisions of current-dollar GDP are 1.1 to 1.2 percentage points, with a very slight reduction in the second and third estimates relative to the advance estimates.
- Mean absolute revisions of real GDP are about 1.3 percentage points, with no tendency to decline in the later vintages.

Short-term patterns (continued)

- The general lack of declines in later vintages has been the result of all of BEA's previous revisions studies.
- In comparison, the MARs for the average forecasts of the Philadelphia Federal Reserve Bank's Survey of Professional Forecasters , which are made early in the quarter, are 1.9 percentage points for current-dollar GDP, and 1.6 percentage points for real GDP.

Short-term patterns (continued)

Revisions of Current Quarterly Estimates to Latest Estimates of GDP in 1983-2009

[Percentage points]

	Mean Revision		Mean Absolute Revision	
	Current-dollar GDP	Real GDP	Current-dollar GDP	Real GDP
Advance	0.31	0.21	1.22	1.31
Second	0.13	0.10	1.13	1.29
Third	0.14	0.12	1.12	1.32

Mean Absolute Revisions to Successive Vintages of Changes in Real GDP; 1983-1009

[Percentage points]

Vintage	Vintage of revision used as standard					
	Second	Third	First annual	Second annual	Third annual	Latest
Advance	0.53	0.59	1.02	1.13	1.20	1.31
Second		0.25	0.87	1.08	1.21	1.29
Third			0.87	1.08	1.21	1.32
First annual				0.63	0.85	1.16
Second annual					0.58	1.08
Third annual						0.90

Short-term patterns (continued)

- Revisions to seasonal adjustment factors can play a large role.
- Fixler and Grimm (December 2003 Survey of Current Business) examined the effects of revisions to seasonal adjustment factors on revisions to current-dollar GDP.
 1. Revisions to seasonal factors accounted for 1.0 percentage point, slightly larger than the MAR for GDP of 0.7 percentage points.
 2. Revisions to seasonal factors occur with the passage of time; even if there are no revisions to the underlying unadjusted data.
 3. This suggests that the MAR for GDP cannot be zero.

Short-term patterns (continued)

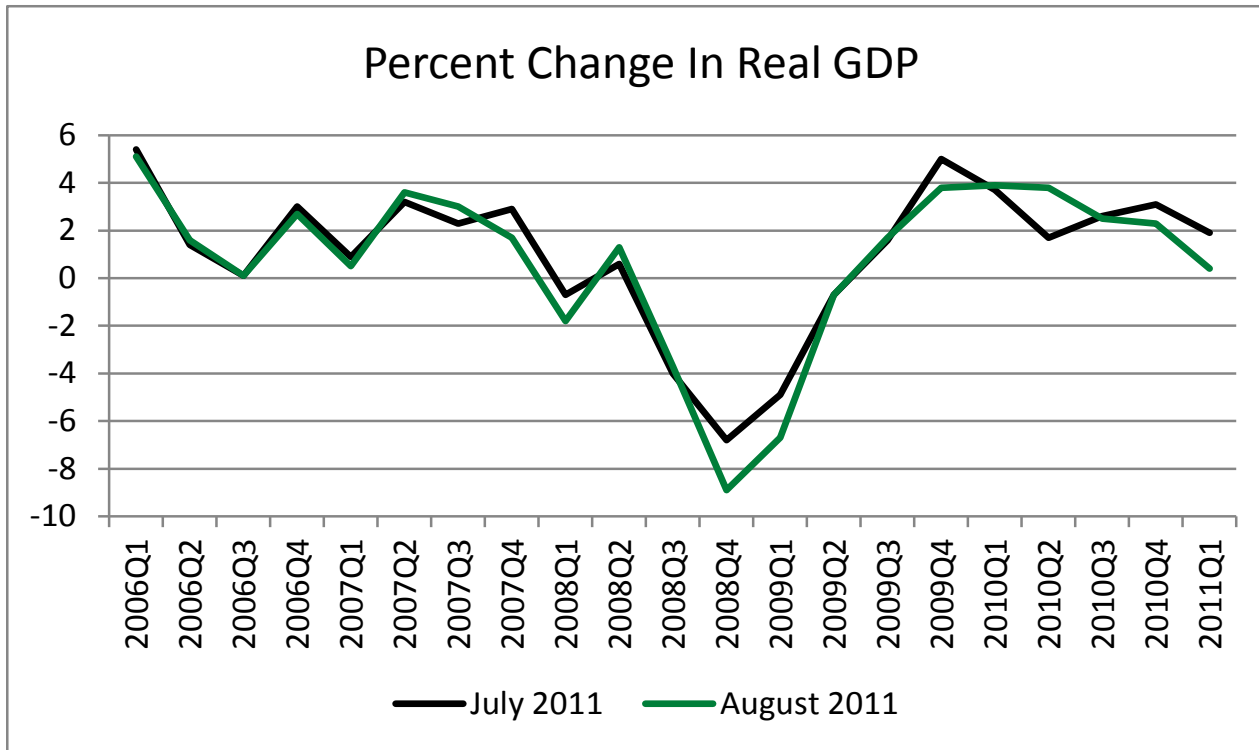
- For the averages for revisions to GDI:
 1. There are no advance estimates for GDI because some components are not yet estimated.
 2. There is a fourth current quarterly estimate, appearing 2 months after the third and incorporating information from the Quarterly Census of Employment and Wages.
 3. The mean revisions are quite small, and two have small negative values.
 4. The MARs range from 1.2 to 1.4 percentage points, again with no tendency to get smaller with later vintages.

Short-term patterns (continued)

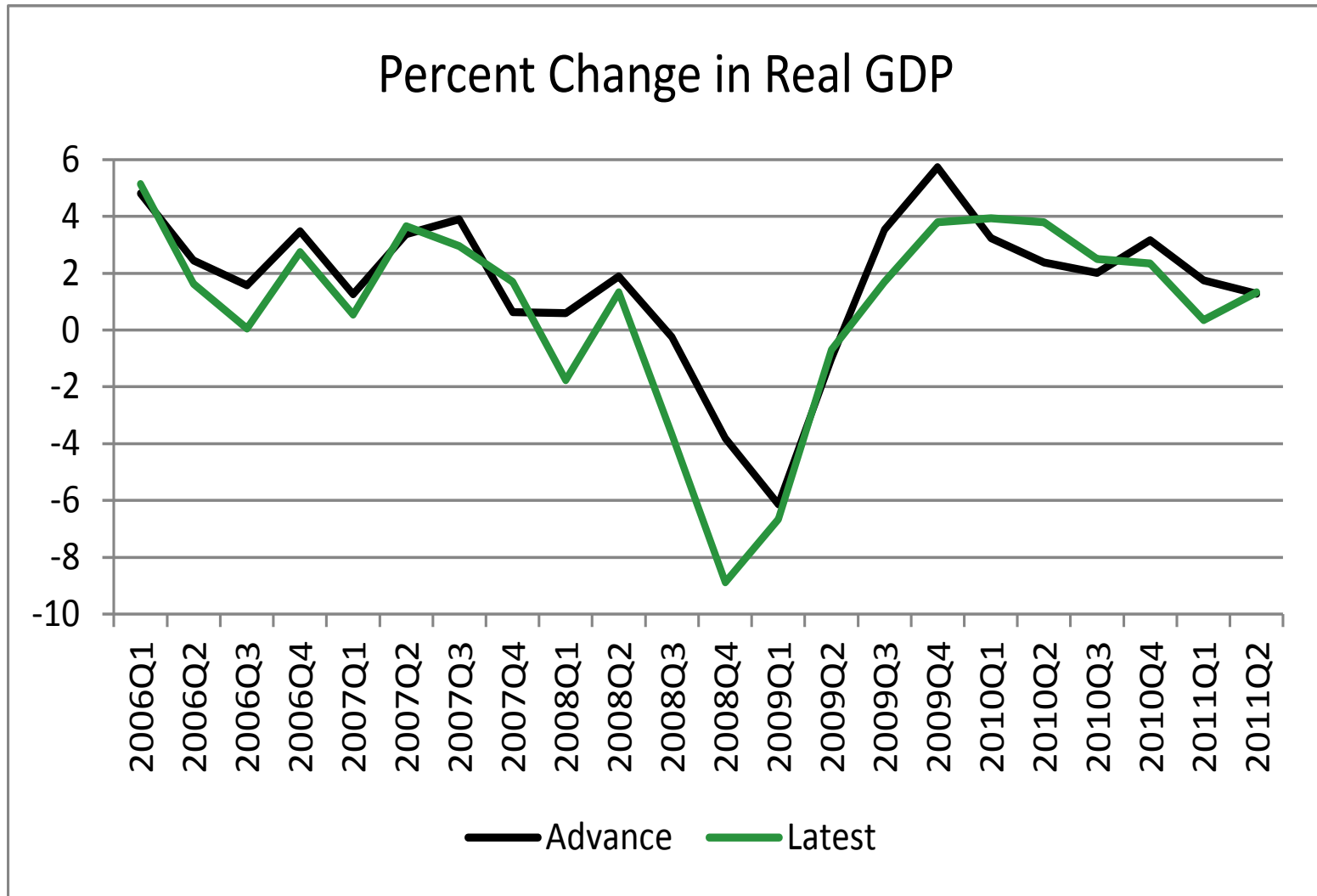
Revisions to Quarterly Estimates of GDI; 1983-2009 [Percentage points]		
	Mean revision	Mean Absolute Revision
Advance	- - - -	- - - -
Second/1/	-0.01	1.28
Third	0.02	1.24
Fourth/2/	-0.16	1.43
1. No fourth quarter estimates beginning in 1995		
2. Estimates begin in 2002:I		

The 2011 annual revision

- The annual revision that was published in July had large downward revisions in the growth rates of real GDP in 2008, and especially in the fourth quarter.



The 2011 annual revision



The 2011 annual revision (continued)

- The downward revision over the recent cycle was significant, lowering the cumulative decline over the six quarters of the recession from -4.1 percent to -5.1 percent and lowering growth during the expansion from a cumulative increase of 17.8 percent to 17.6 percent.
 - While the revision was large, the general picture was unchanged. Before and after revision this recession was the deepest since the great depression and the recovery was the weakest of the post WWII era.

The 2011 annual revision (continued)

- The large cumulative revision in 2008:IV, from -3.8 percent in the advance estimate to -8.9 percent in the latest estimates has also received a lot of attention as has the downward revision of growth in 2011:I.
 - Most of the revision for 2008:IV was made in the second estimate, which reduced the estimate by 2.45 percentage points and the third estimate, which reduced the estimate by a further .09 percentage points.
 - These two revisions incorporated a large drop in newly available retail sales and other source data that had not been fully anticipated by BEA or by forecasters.

The 2011 annual revision (continued)

- Most of the rest of the downward revision of 2008:IV was from the second to third annual revision estimates; a reduction of 2.12 percentage points.
- This downward revision occurred as downward revisions to the contributions of personal consumption expenditures and imports more than offset an upward revision of inventories.
- The PCE revisions were due to the use of data benchmarked to the Economic Census and the availability of more detail.
- Also due to the seasonal adjustment of petroleum imports.

The 2011 annual revision (continued)

- This annual revision is different than others because it allowed a wider set of source data improvements than in the past—implementation of flexible annual revisions.
 1. Real GDI had an even larger downward revision in the third annual estimates.
 2. This was due to downward revisions in PCE and imports that reflected new source data, including the 2007 economic census, as well as a new seasonal adjustment process for petroleum imports. An upward revision in inventories partially offset these.

Possible improvements to revision process

- Source data
 1. GDP: finish services expansion; acceleration of receipt of data; work with Census on reconciling differences between monthly and annual estimates.
 2. GDI: afternoon session discussions.

Possible improvements to revision process

- Methods

1. Working with agencies on improving seasonal adjustment.
2. Use of forecasting models for missing months and trends?
3. Waiting for more data—drop Advance estimate?

Analysis suggests that this would provide only a small gain in accuracy.

Possible improvements to revision process

- Presentation
 1. Drop annual rates of change; show quarterly change and same quarter from previous year.
 2. Expand the discussion about revisions in the press releases.
 3. Canvass media outlets/uses about what they would like to see.