

Enhancing Public Understanding of Revisions to Preliminary Estimates

The U.S. Post-Recession Perspective on Revisions

Brent Moulton and Dennis Fixler

IARIW 32nd General Conference

Boston

August 8, 2012

Why does BEA revise its estimates?

- Improve accuracy of the estimates by incorporating the most complete and reliable source data
 - Benchmarking indicators to annual surveys
 - Replacing trends or indirect indicators with comprehensive source data
- Provide a more detailed picture of the economy
- Make improvements to methods used for preparing the estimates

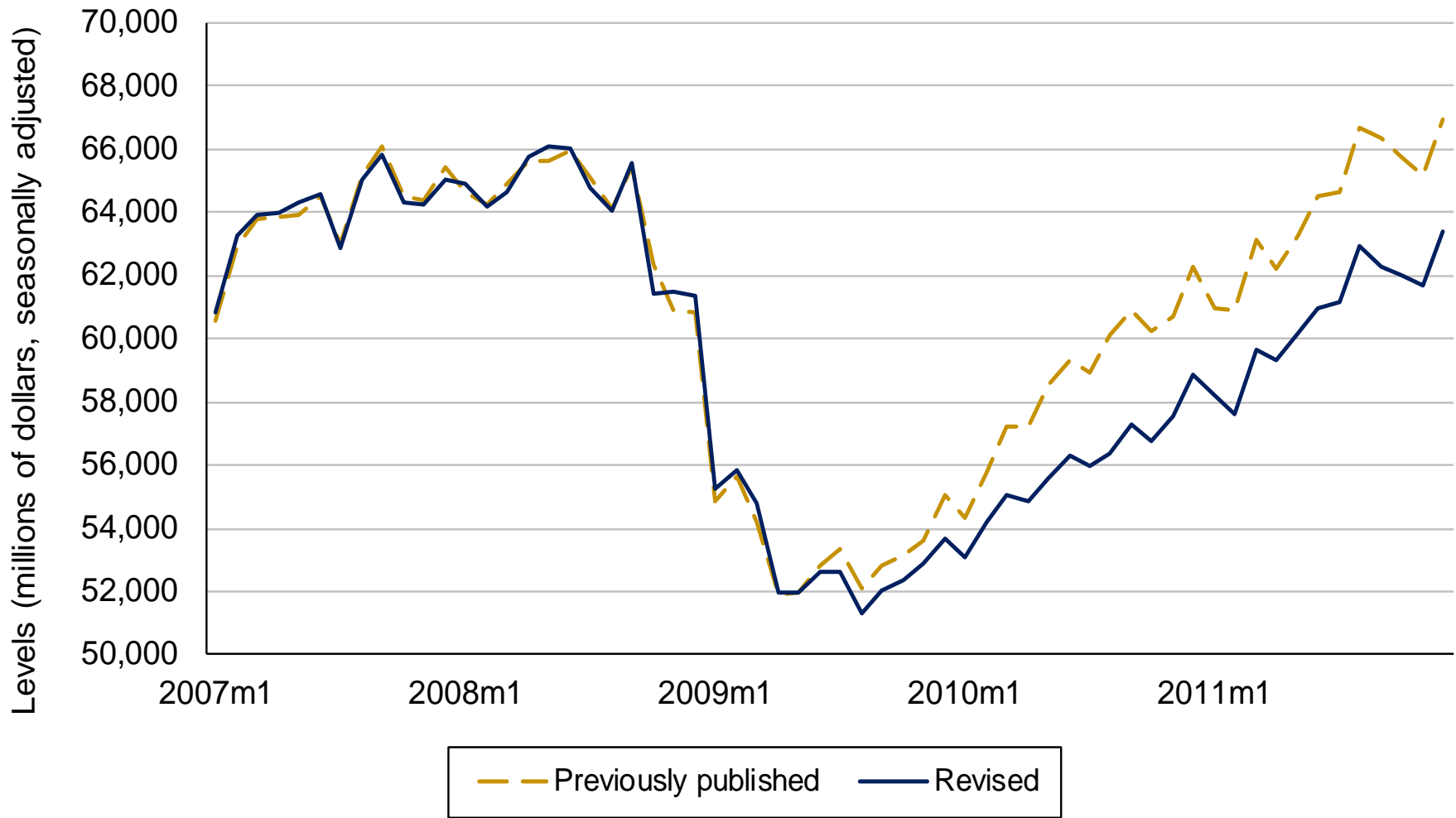
Revisions are not errors

- Schedule is determined and is a commitment
- “Error correction” is a term that is reserved for true errors
- Main cause: availability of more complete and revised data

Example: Benchmarking manufacturing

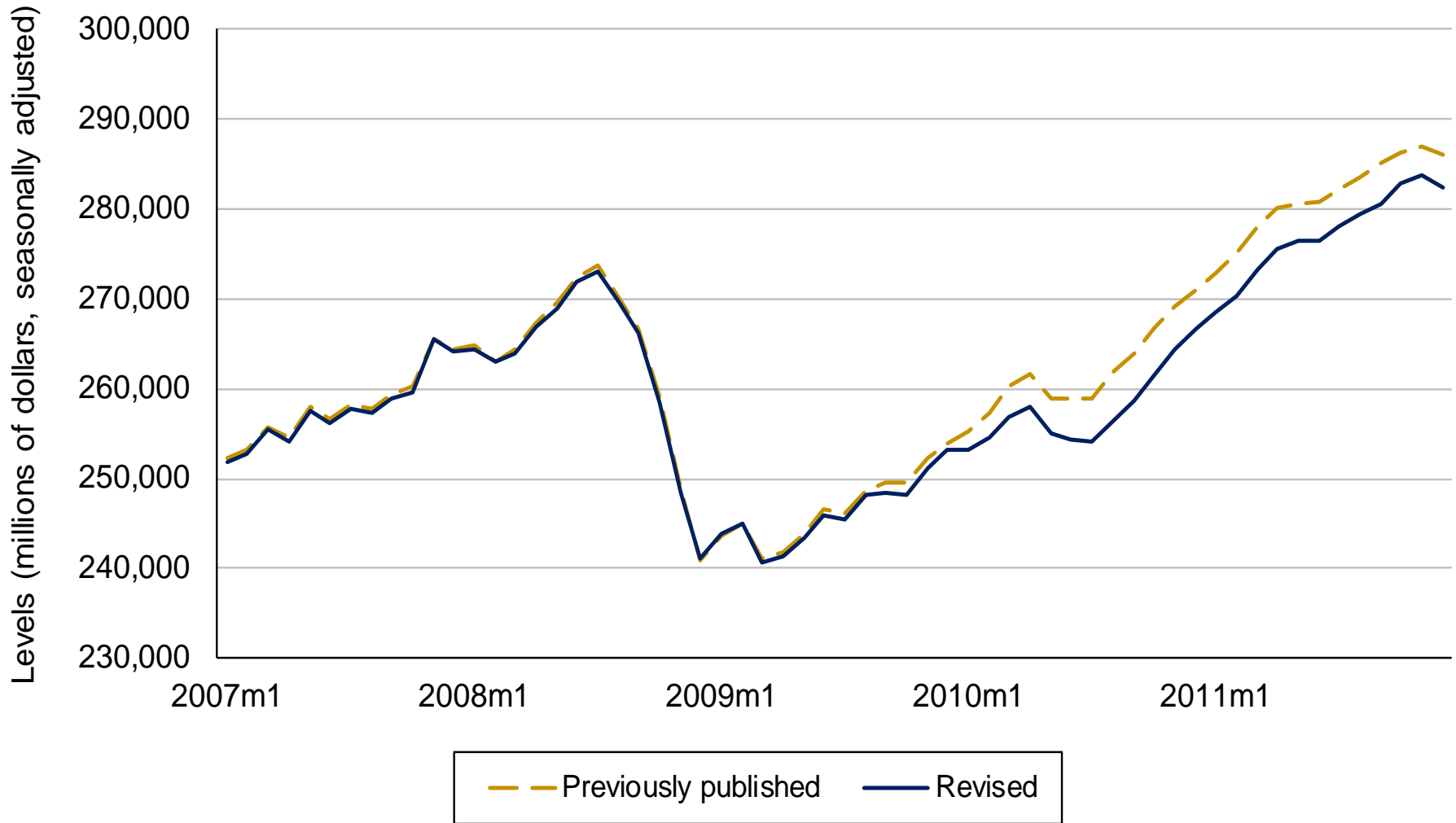
- Indicator: Monthly M₃ (“manufacturers’ shipments, inventories, and orders”)
 - Voluntary reporting
 - 4,300 reporting units with more than \$500 million in shipments (represents 60% of manufacturing)
 - 89 industry categories
 - No product detail
- Benchmark: Annual survey of manufactures
 - Mandatory reporting
 - 50,000 establishments (representing all 328,500 manufacturing establishments)
 - 471 industries
 - 1,384 product classes

Shipments - Nondefense capital goods excluding aircraft



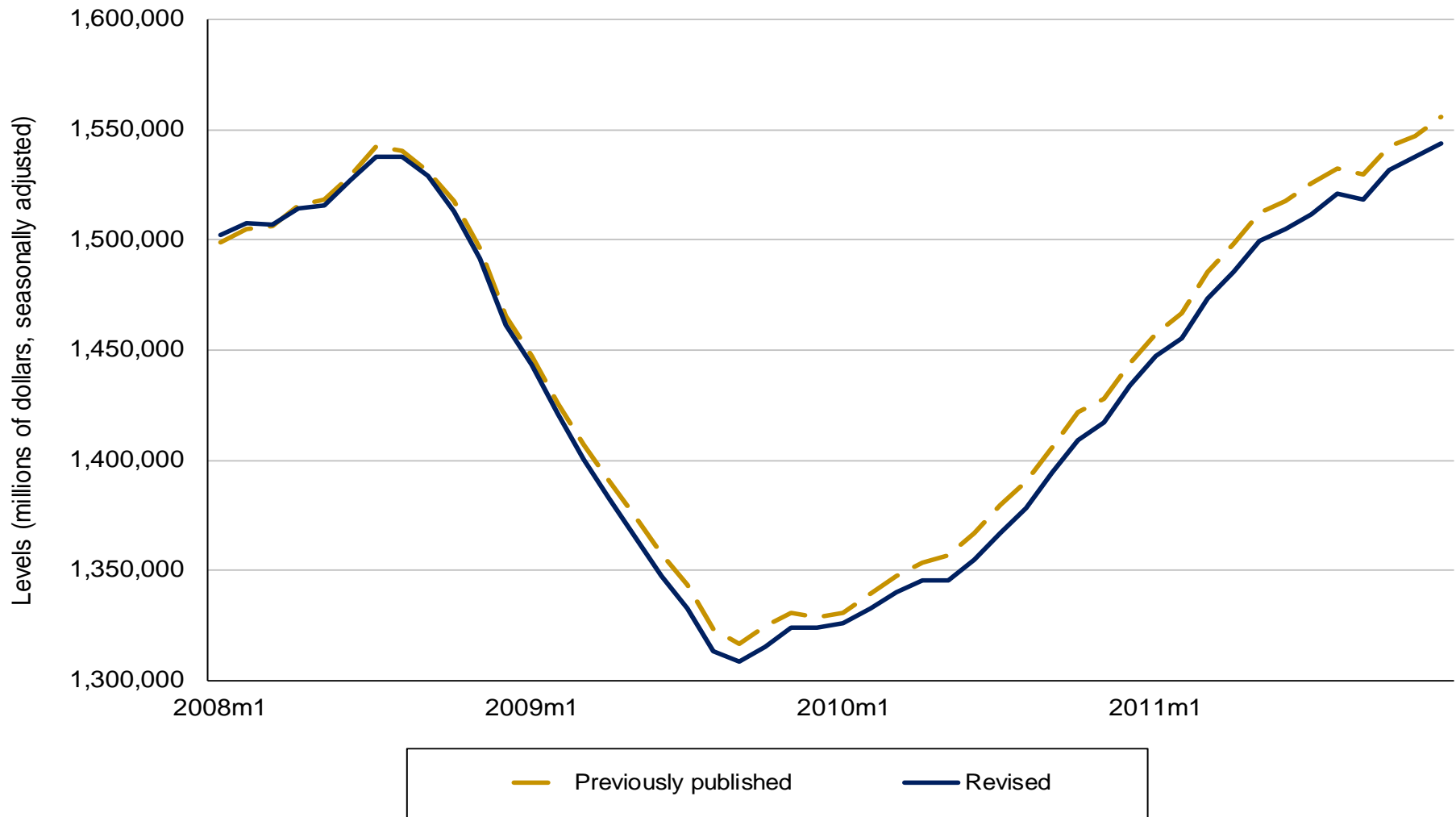
Source: Census Bureau, July 3, 2012

Retail sales excluding motor vehicles



Source: Census Bureau, March 30, 2012

Business inventories



Source: Census Bureau, July 20, 2012

New source data vs. indirect indicators

- For some components of GDP and GDI, direct indicators aren't available
 - State & local government spending
 - Current data on employment and construction
 - Data on other types of spending available from Census Bureau with a 2-year lag
 - Corporate profits
 - Current data on public corporations
 - Comprehensive IRS data available (including private and S corporations) with a 2-year lag
 - IRS data on proprietors' and partnership income with a 2-year lag

Revisions to the 2007–2009 recession

- Revisions were unusually large
 - Early estimates significantly understated the extent of the decline
 - Revisions exposed gaps in data used for early estimates
- Some revisions came quickly as actual data replaced assumptions and indicators were revised
 - 2008Q4 – revised from -3.8% (Jan 30, 2009) to -6.2% (Feb 27, 2009)
- Other revisions came later with annual revisions
 - In July 2011, 2008Q4 was revised to -8.9%
 - Total revision from advance to latest (5.1 percentage points) is the largest downward GDP revision on record

Sources of revisions to 2008Q4 GDP [percentage points]

	Advance	Third Annual (Latest)	Revision
Gross domestic product	-3.8	-8.9	-5.1
Personal consumption	-2.47	-3.53	-1.06
Fixed investment	-3.12	-4.05	-0.93
Change in private inventories	1.32	-1.54	-2.86
Exports	-2.84	-2.97	-0.13
Imports	2.93	2.84	-0.09
Government expenditures	0.38	0.35	-0.03

- Revisions to inventory investment came in 2nd estimate (Feb 2009) and in 1st & 2nd annual revisions (July 2009, 2010)
- Revisions to personal consumption came in 2nd estimate (Feb 2009) and in 3rd annual revision (July 2011)
- Revisions to fixed investment in 2nd annual revision

Revisions to GDP contraction, 2007Q4–2009Q2

Release date	Cumulative percent change [<i>not</i> at annual rate]	Cumulative revision
July 2009	-3.7	...
July 2010	-4.1	-0.4
July 2011	-5.1	-1.4
July 2012	-4.7	-1.0

- From first estimate for full contraction period to latest estimate, cumulative contraction in real GDP revised from -3.7 percent to -4.7 percent
- Revisions in July 2011 mostly reflected newly available annual surveys for 2009

Misperceptions about revisions

- BEA's practice of annualizing percent changes exaggerates perceived revisions

GDP revisions

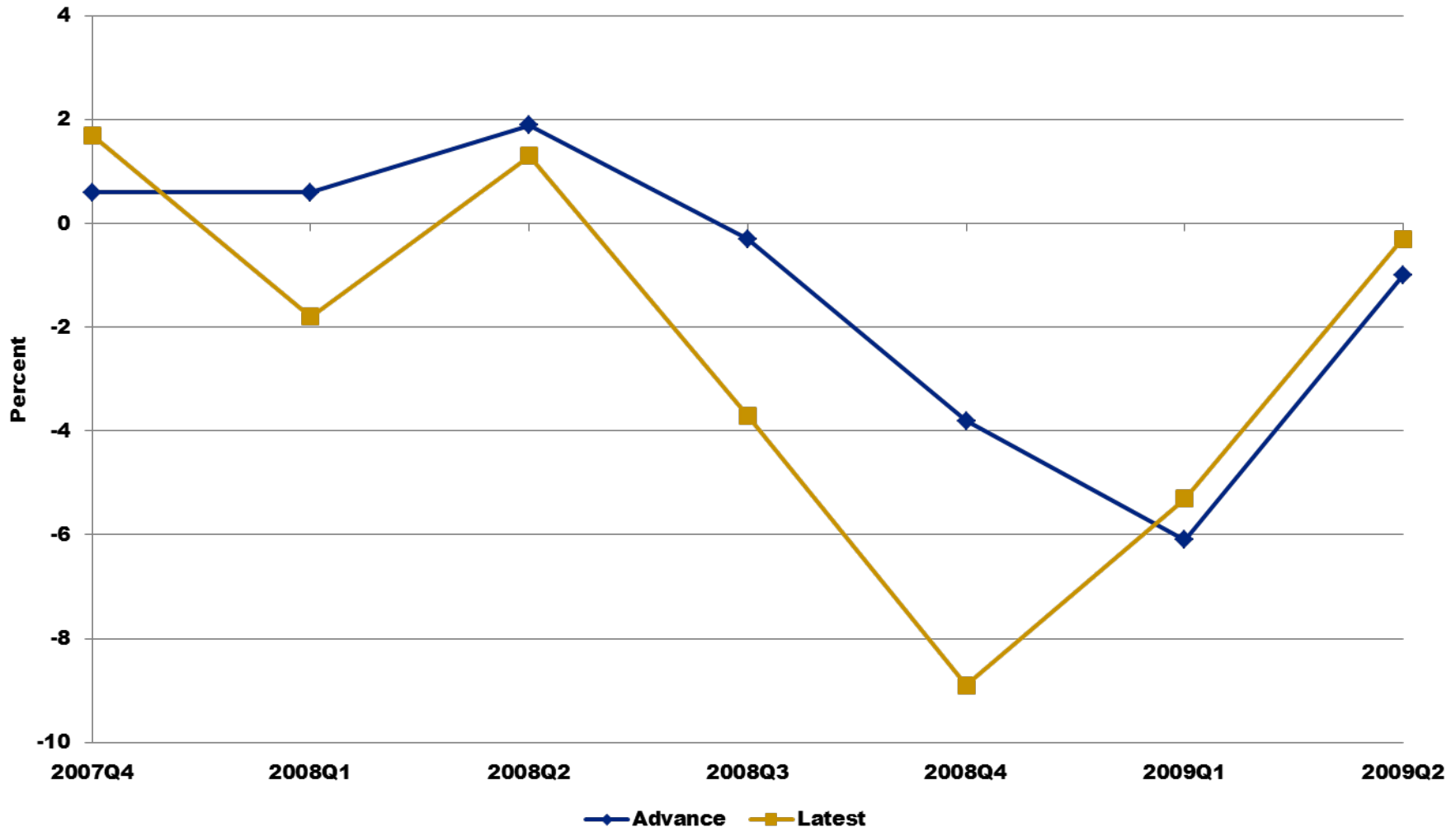
Quarter	Percent change Annual rate			Percent change Quarterly rate		
	Advance	Latest	Revision	Advance	Latest	Revision
2008Q1	0.6	-1.8	-2.4	0.1	-0.4	0.5
2008Q2	1.9	1.3	-0.6	0.5	0.3	-0.2
2008Q3	-0.3	-3.7	-3.4	-0.1	-0.9	-0.8
2008Q4	-3.8	-8.9	-5.1	-1.0	-2.3	-1.3
2009Q1	-6.1	-5.3	+0.8	-1.6	-1.3	+0.3
2009Q2	-1.0	-0.3	+0.7	-0.3	-0.1	+0.2

Misperceptions about revisions

- Although the sequence of “advance” GDP estimates looks like a time series, it does not represent a series that BEA ever actually published
 - For example, by the time BEA published the advance GDP for 2009Q1, the estimate for 2008Q4 had already been revised from -3.8 percent to -6.3 percent
- Example from *New York Times* blog

Advance versus latest estimates

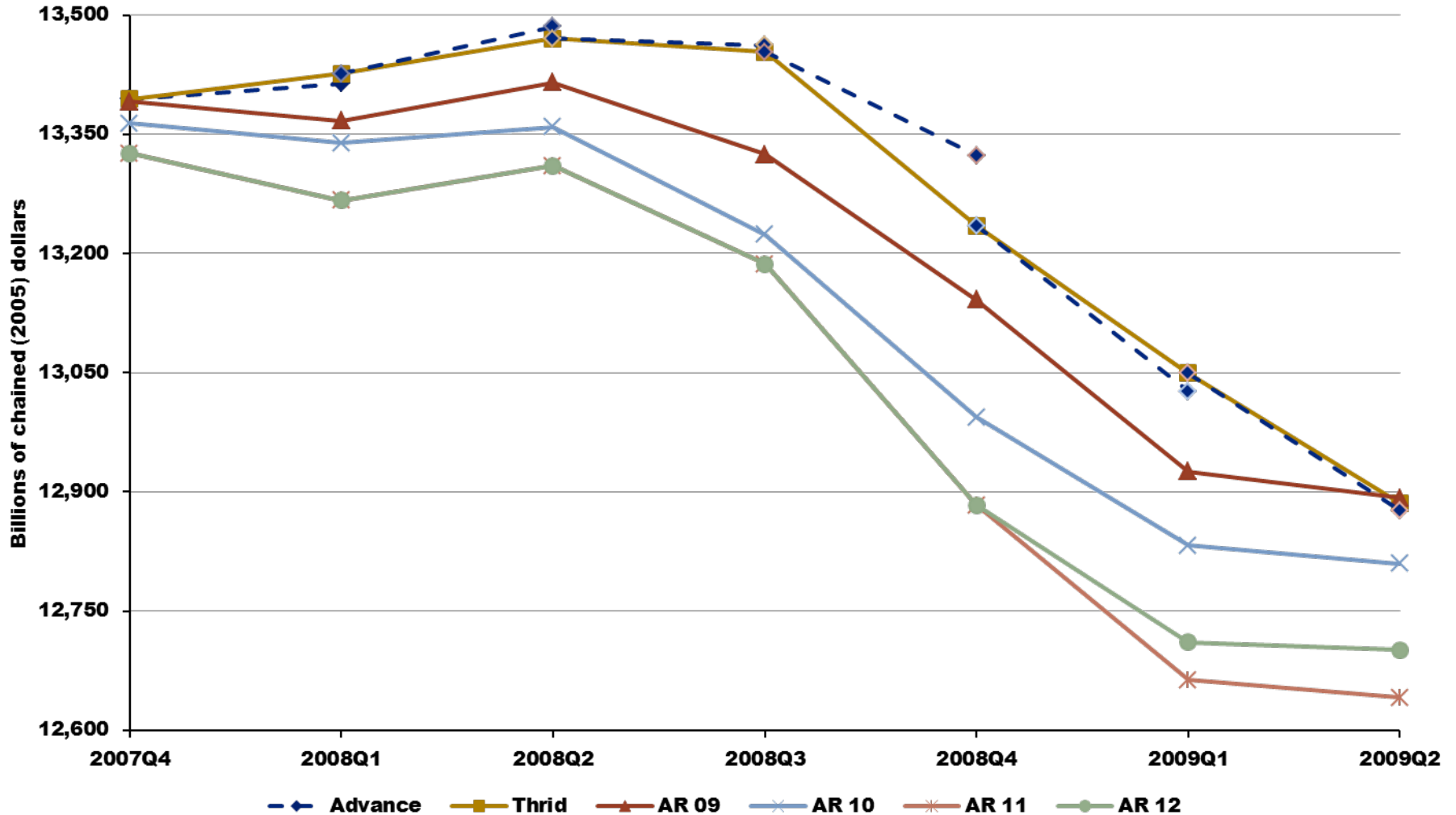
Percent Change From Preceding Period in Real GDP



Revisions to published time series

Real GDP, 2007Q4-2009Q2

Real GDP, 2007Q4-2009Q2



Interaction between revisions and policy

- Analysis to answer the question: If we knew then what we know now, how would policy have been different?
- The importance of timing; revision release dates and formulation of policy
- Timing of advance 2008Q4 GDP estimate doesn't coincide with ARRA legislation
 - ARRA formulated in December 2008
 - Passed House on January 28 (2 days before GDP)
- Estimates for 2008Q3 may have had an effect

Basic revision patterns: Frequency patterns for revisions

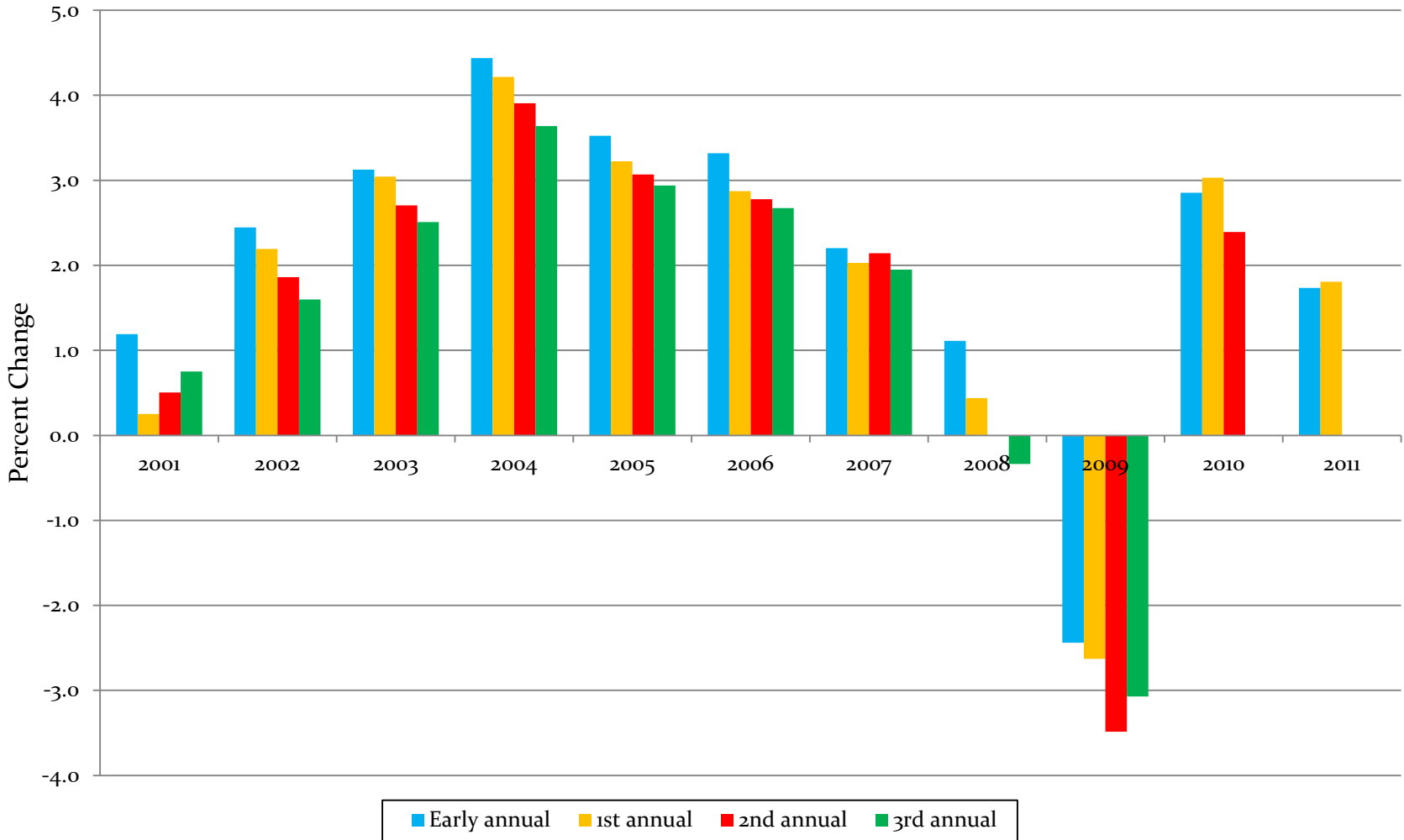
- The three current quarterly vintages of estimates of GDP successfully indicated the following:
 - The direction of change in GDP 97 percent of the time
 - The acceleration or deceleration of growth 72 percent of the time
 - The relative magnitude of growth—whether it was above, near, or below trend more than 80 percent of the time (near is within one standard deviation of the mean growth)
 - The cyclical peaks before 5 of the 6 recessions between 1969 and 2006
 - The cyclical troughs of 4 of the 6 recessions
 - Revisions in both current-dollar and real GDP and their major components are roughly similar to each other over the 1983-2009 time period

Average revisions to current quarterly estimates of GDP, 1983-2008 [percentage points]

	Mean Revision		Mean Absolute Revision	
	Current-dollar	Real	Current-dollar	Real
Advance	0.31	0.21	1.16	1.31
Second	0.13	0.10	1.06	1.29
Third	0.14	0.12	1.06	1.32

Systematic Trends?

Vintage Estimates of Real GDP



Looking at the income side

- Conceptually equivalent measure of aggregate economic activity
- Differences arise from different data sources
- Source data flow not equivalent
 - There is no advance estimate of GDI
 - Second estimates exist for 3 out of 4 quarters for this vintage

Average Revisions to Current Quarterly Estimates of GDI, 1983-2009 [percentage points]

	Mean Revision	Mean Absolute Revision
Second/1/	-0.01	1.28
Third	0.02	1.24
Fourth/2/	-0.16	1.43

/1/ Beginning with 1995, there are no second estimates for the fourth quarters of years.

/2/ These estimates have been published only from 2002:Q1.

Revisions to Real GDP and Real GDI in 2008:IV

[percentage points]

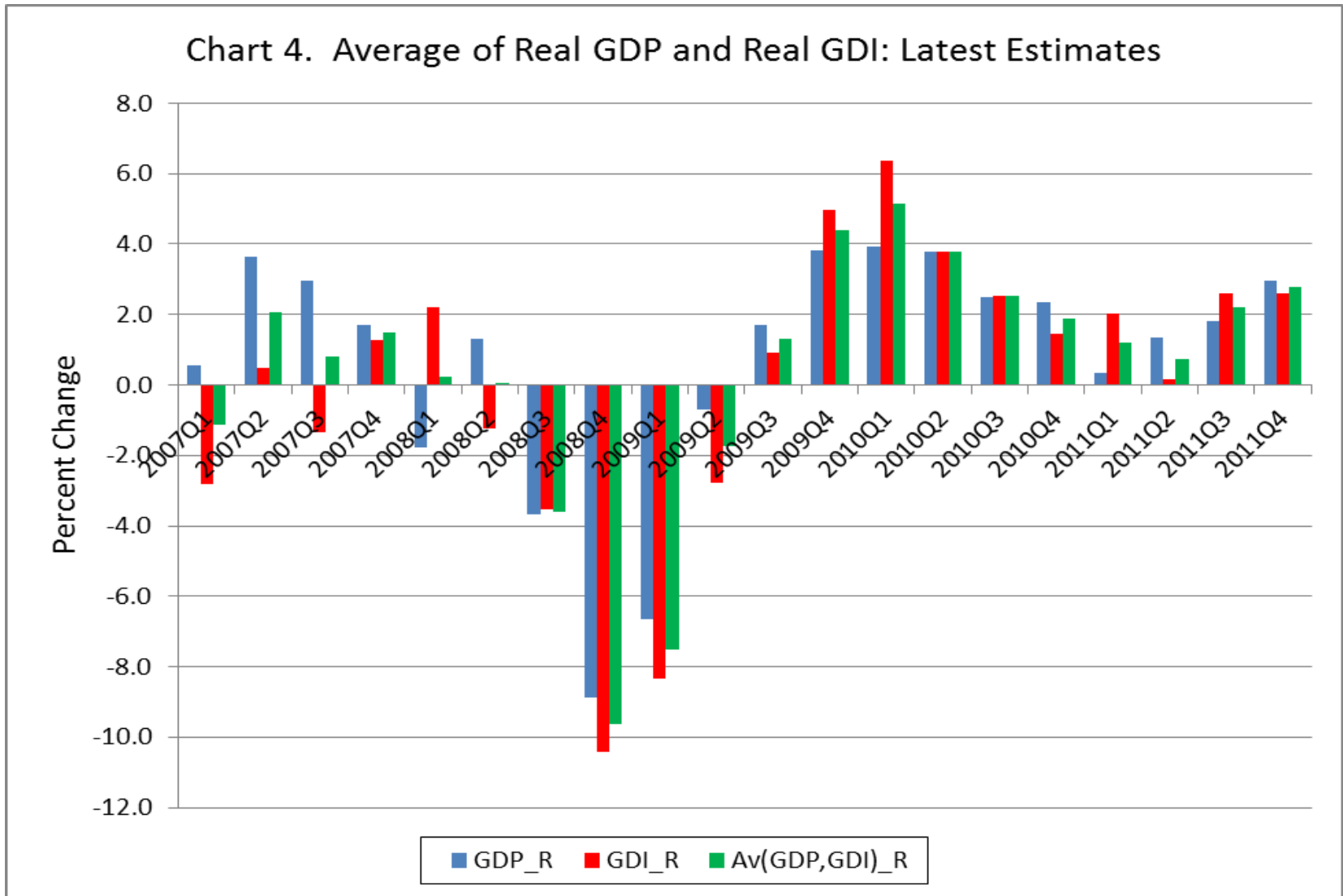
Vintage	Change from Previous Quarter		Revision From Advance Estimate	
	Real GDP	Real GDI	Real GDP	Real GDI
Advance/1/	-3.8	(-4.3)	- - - - -	- - - - -
Second/1/	-6.2	(-6.5)	-2.4	-2.2
Third	-6.3	-7.5	-2.5	-3.2
First annual	-5.4	-7.3	-1.6	-3.0
Second annual	-6.8	-6.9	-3.0	-2.6
Third annual (latest)	-8.9	-9.8	-5.1	-5.5

/1/ Advance and second GDI estimated from GDP by holding the 2008:III statistical discrepancy constant into 2008:IV.

Recent discussion about which is “better”

- Both GDP and GDI provide information about economic activity
- A simple average of the two was used in BEA articles in the SCB

Average of real GDP and real GDI



Average of real GDP and real GDI

