

News versus Noise: Revision Analysis

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OECD Meeting on Short Term Statistics

Paris, France

10 September 2009



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- Because of the uneven flow of source data have vintages of estimates
- One way to evaluate the quality of the early vintage estimates is to study the information content embodied in succeeding revisions
- Mean, variance and assorted other commonly computed revision statistics provide information about the revision in a statistical sense, they do not provide inferences about how the information available is used



- 'News' vs. 'noise' analysis, can be applied to the results of a revisions analysis to give insights as to whether first published estimates are efficient
- A revision deemed noise does not contain any new information
 - the change in the estimate is due to random error that could arise from several factors such as inaccurate data
- A revision deemed news contains new information
 - Incorporating such information is important given the flow of source of data because the general goal of the sequence of estimates is to approach some "true" estimate



- If the revisions are statistically significantly correlated with the later estimates then the revisions contained new information
- It would mean that there is merit to the revision process because it enables the estimates to capture new information and thereby allows the estimates to approach the “true” value
- Correlations for US real GDP quarterly estimates for the period 1983-2006 are

Correlations Between GDP Growth Rates and Revisions, 1983-2005

Revisions by vintage	Estimate of GDP growth by vintage						
	Advance	Preliminary	Final	1st annual	2nd annual	3rd annual	Latest
Advance to preliminary	0.15 (1.39)	0.42 **(4.34)	0.40 **(4.16)	0.37 **(3.73)	0.37 **(3.73)	0.30 **(2.96)	0.27 **(2.69)
Preliminary to final	0.26 *(2.59)	0.25 *(2.44)	0.38 **(3.86)	0.30 **(2.98)	0.28 **(2.81)	0.27 **(2.58)	0.19 (1.85)
Final to 1st annual	-0.13 (1.29)	-0.13 (1.27)	-0.14 (1.38)	0.34 **(3.47)	0.33 **(3.34)	0.35 **(3.49)	0.24 *(2.38)
1st annual to 2nd annual	-0.22 *(2.11)	-0.21 *(2.02)	-0.21 *(2.04)	-0.23 *(2.24)	0.07 (.70)	0.05 (.50)	0.01 (.06)
2nd annual to 3rd annual	-0.02 (.17)	-0.07 (.66)	-0.07 (.68)	-0.03 (.29)	-0.05 (.47)	0.25 *(2.48)	0.22 *2.15)
3rd annual to latest	-0.27 (1.23)	-0.15 (1.40)	-0.17 (1.61)	-0.29 **(2.87)	0.33 **(3.32)	-0.35 **(3.56)	0.08 (.75)

* Significant at the 5-percent level

**Significant at the 1-percent level

Absolute values or t-test statistics shown in parentheses.



- Table similar to that in Mankiw and Shapiro (1986) that looked at the news vs. noise issue in the US GDP estimates.¹
- US vintages of GDP: the Advance estimate, about 30 days after the reference period; the Preliminary (now Second) estimate, 60 days after; the Final (now Third) estimate, 90 days after; First Annual, released in July of the following year and covers the past 3 years; Second annual; Third annual and the Latest estimate, the most up-to-date estimate.

¹ Mankiw, N.G. and Shapiro, M. (1986), "News versus Noise: an analysis of GDP revisions", Survey of Current Business, vol. 66, 20-25.

- Under each of the correlations presented in the table is the t-value, which shows the significance level at which one would conclude that the correlation is statistically significantly different from zero.
- The area to the left of the step-line denotes the correlations that test for noise; generally not statistically significant from zero.
- The area to the right of the step-line contains the correlations that test for news; generally statistically significant from zero.
- Conclusion: US revisions generally embody news.

- McKenzie, Toestto and Fixler “Assessing the efficiency of early release estimates of economic statistics” (OECD)
(<http://www.oecd.org/dataoecd/20/13/41009155.pdf>)
looks at a regression approach, that is essentially the same.
- Paper contains a news vs. noise assessment for several OECD countries for their first published GDP quarterly growth rates



Another use: weighting of GDP and GDI

- Based on Fixler and Nalewaik “News, Noise, and Estimates of the “True” Unobserved State of the Economy”,
<http://www.federalreserve.gov/pubs/feds/2007/200734/revision/200734pap.pdf>
- Say we have realizations of two time series: Each is an attempt at measuring the “truth” - the unobserved variable of interest.
- Have no other information about the time series, such as how they were constructed, the reliability of the data, etc.

- How do we produce the best possible estimate of the “truth”?
- Take some weighted average of the two time series.
- How do we chose weights optimally?
- Suppose estimating the “true” unobserved state of the economy
 - Taken to be the growth rate of NIPA definition of the economy
- Have multiple imperfect measures of the “truth” - GDP and GDI.
- Taking a weighted average of the two may produce the best estimate of the “truth”.

- Choice of weights → assumptions about reliability of GDP vs. GDI
- Weale (1992) and Howrey (2003)²: GDI is more reliable than GDP because it has more variance
 - Assume more variance indicates more noisiness and so higher variance → lower weight.
- Paper considers an alternative assumption: more variance indicates more information; higher variance → higher weight.

² Howrey, E. Philip. "The Accuracy of the Government's Estimates of GDP." University of Michigan, working paper, December 2003. Weale, Martin. "Estimation of Data Measured With Error and Subject to Linear Restrictions." *Journal of Applied Econometrics*, 1992 (7), pp. 167-174.

- Since “truth” is never observed, any set of weights can be rationalized
- Examine vintages of GDP, assuming later vintages are closer to “truth.”
- Revisions from one vintage to the next in both GDP and GDI are mostly news
- Speculate: Differences between “truth” and latest vintages of GDP and GDI are likely to be news as well → pure news model might be the closer approximation to reality.
- For “true” growth rate of economy (weighted average), empirical results are more favorable to news model than noise model

Figure 1:
1985 to 2004 Growth Rates of Nominal GDP and GDI,
Latest Available data as of August 2007

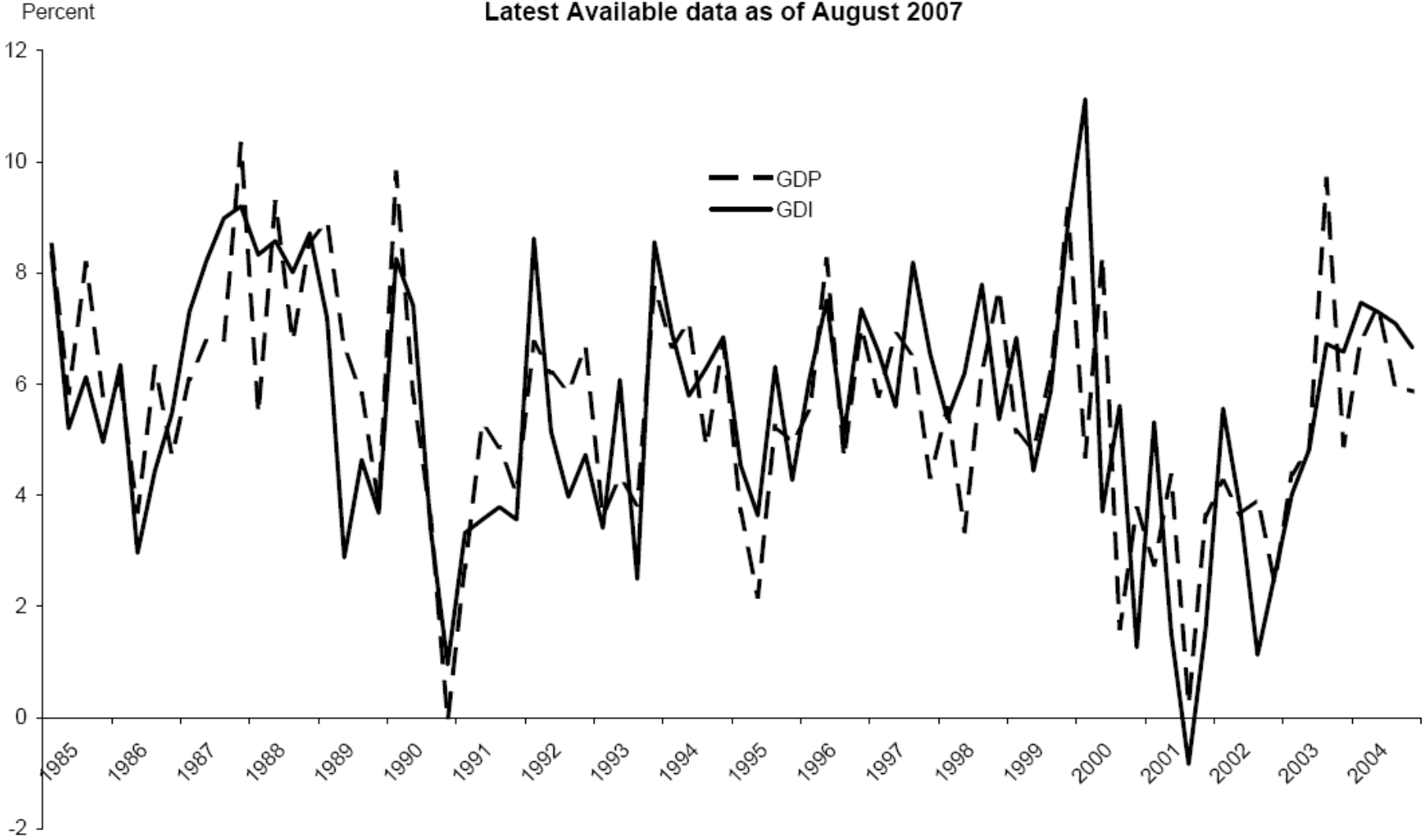


Figure 2:
1989Q1-1991Q4 Growth Rates of Real GDP, Real GDI, and
Estimated "True" Growth Rate,
Latest Available data as of August 2007

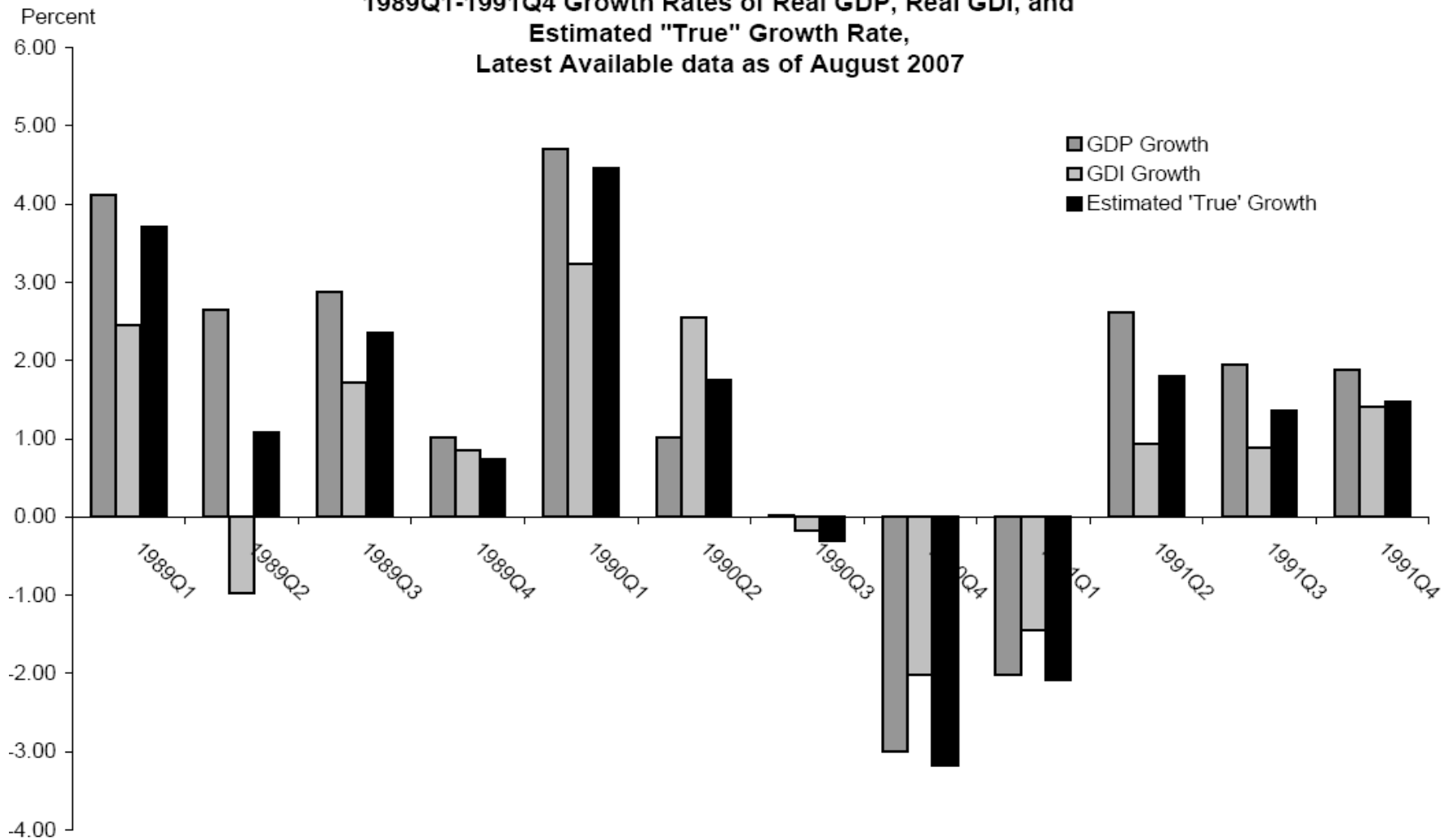


Figure 3:
1999Q4-2003Q2 Growth Rates of Real GDP, Real GDI, and
Estimated "True" Growth Rate,
Latest Available data as of August 2007

