

## STATISTICAL (IM)PERFECTION



Heath Jordan, CFA  
Portfolio Manager

Trustmark Investment Advisors, Inc.

We are surrounded by numbers. A lengthy list of government bureaus, trade groups, and organizations release reams of data covering every imaginable facet of the economy, life, and business. With all of this data at our fingertips, the question is, “Can we trust the numbers?”

To begin answering that question, we must recognize that measuring the various parts of the economy is enormously complex — not as simple as counting the pennies in your change jar. All of the parts are constantly in motion: people changing jobs, foreign and domestic investments, shipments of goods, currency flows, natural disasters, etc. Therefore, economists and statisticians must use sampling and surveys to estimate what is happening in the real economy. The key word here is “estimate,” which means that the reported number may be incorrect and subject to significant revision as more accurate information becomes available.

To illustrate, consider the monthly employment numbers reported by the Bureau of Labor Statistics (BLS), which is closely watched and widely reported in the financial media. Unfortunately, only the headline number is discussed without all of the disclosures provided by the BLS, which gives details about the estimate. Carl Bialik of *The Wall Street Journal* neatly summed up the problem on April 17, 2010:

The ranks of unemployed individuals grew by 134,000 last month from February, to 15 million, the Department of Labor's Bureau of Labor Statistics says. But it also is plausible, the agency says, that the number of unemployed rose by 500,000. Or, it could have fallen by 200,000.

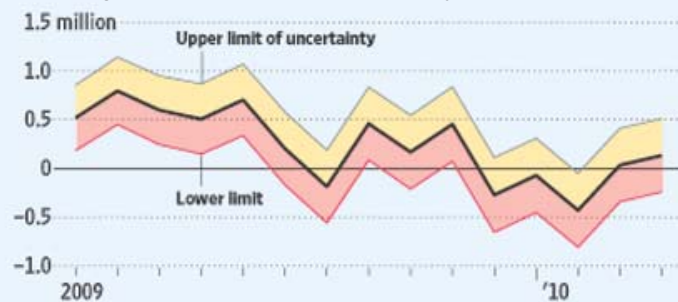
In fact, at a time when high unemployment tops many

people's worries about the economic recovery, the BLS can say only that it is 90% confident that the true change in the number of unemployed in March was somewhere between a drop of 243,000 and an increase of 511,000. In other words, it isn't even clear whether the number of unemployed rose or fell last month.

### Grey Areas

**Economic statistics such as unemployment figures are reported with substantial margins of error.**

Reported change in number of people unemployed each month:



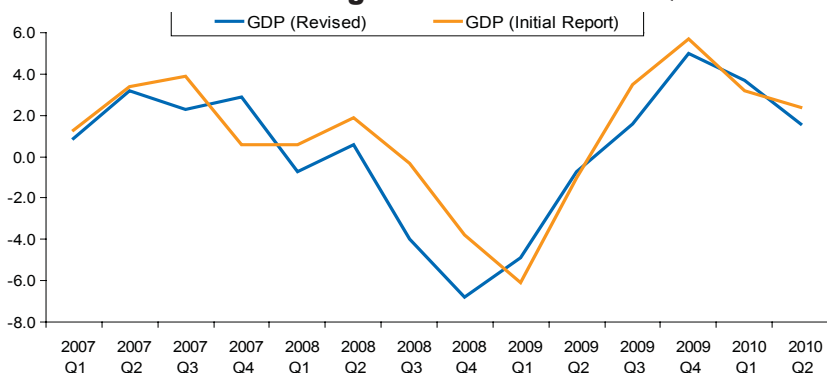
Note: The Labor Department is 90% certain the number fall within this range.  
Sources: Bureau of Labor Statistics, wsj.com

Take some time to consider the graph that goes along with that quote. Each month, the BLS is 90% sure that the actual change in unemployment fell within shaded areas — they cannot say with confidence if unemployment increased or decreased for most of the last year! Initial reports should not be

taken at face value. This, of course, brings up the second point: Initial reports are revised over time as more information becomes available to paint a more accurate picture of the past. In more direct terms, the initial report may be grossly misleading.

— continued

### Annualized Change in GDP from Prior Quarter



Source: Bureau of Economic Analysis, Bloomberg

Let's analyze the revisions to quarterly Gross Domestic Product (GDP) made over the last three years. The GDP report is initially released one month after the end of each calendar quarter, with revisions being made on a periodic basis. The orange line in the second chart depicts the quarterly GDP as first released by the Bureau of Economic Analysis (BEA), and the blue line shows the quarterly GDP after all of the subsequent revisions. While the

overall ebb and flow of the reports are very similar, the data at any particular point can paint a significantly different picture about the state of the economy. For example, the initial estimate for the third quarter 2008 GDP was  $-3\%$ , technically an economic contraction, but certainly not all that bad. After two years of revisions, the BEA now reports that the economy was actually contracting at a rate of  $-4\%$ , a far more distressed economic portrait.

What are we to conclude from all of this? First, the observations made above apply to nearly all economic numbers to some degree or another. Second, never take the reported numbers at face value; read the details of the economic release. Third, the trend of the revisions is often more informative than the initial data. Last, and most important, do not dig too deeply into how the Consumer Price Index (inflation) is calculated and how it has changed over the years.

*Source of information is Morningstar, Inc.*



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