

Just Released: Introducing the New York Fed Staff Nowcast

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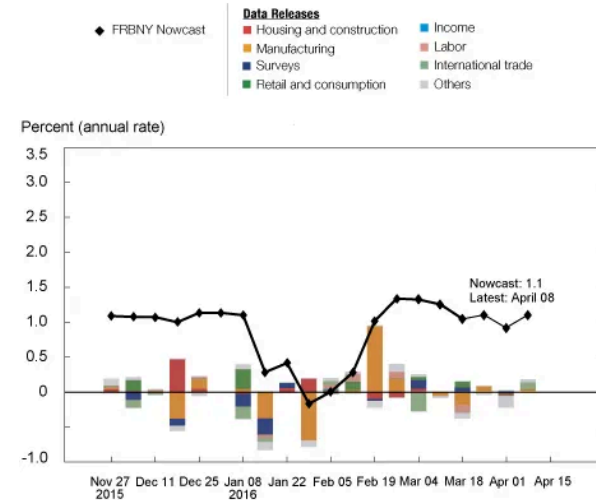


What is the weather today? You don't need to be a meteorologist to answer this question. Just take a look outside the window. Macroeconomists do not have this luxury. The first official estimate of GDP this quarter will not be published until the end of [July](#). In fact, we don't even know what GDP was last quarter yet! But while we wait for these crucial data, we float in a sea of information on all aspects of the economy: [employment](#), [production](#), [sales](#), [inventories](#), [you name it](#). . . Processing this information to figure out if it is rainy or sunny out there in the economy is the bread and butter of economists on trading desks, at central banks, and in the media. Thankfully, recent advances in computational and statistical methods have led to the development of automated real-time solutions to this challenging big data problem, with an approach commonly referred to as [nowcasting](#). This post describes how we apply these techniques here at the New York Fed to produce the FRBNY Nowcast, and what we can learn from it. It also serves as an introduction to our [Nowcasting Report](#), which we will update weekly on our website starting this Friday, April 15.

The chart below is the main visual tool that we created to track the evolution of the FRBNY Nowcast in real time, as macroeconomic news hits the tape. The black line with diamonds is our best estimate of GDP growth in the first quarter, based on information available at the dates represented on the x-axis. For instance, the last diamond says that the nowcast for GDP growth in the first quarter was 1.1 percent as of last Friday, based on information released until then. The first diamond in the series, instead, was our estimate of that same first-quarter GDP growth on November 27, 2015, when we started tracking the current quarter. The difference between two consecutive nowcasts, or the nowcast

revision, is the weighted average effect of the news received during the week. The impact of the news on the nowcast is represented by the colorful bars, with different colors associated with news from particular sectors. For instance, news from international trade data contributed positively to the nowcast last week, increasing it by about 0.1 percentage point, as shown by the light green bar in the picture.

FRBNY Nowcast
2016:Q1 GDP Growth



Source: Authors' calculations.

Note: Colored bars reflect the impact of each data release on the nowcast.

Though the chart above presents information at a weekly frequency, we update and monitor the FRBNY Nowcast on a daily basis, as soon as new data are released. The real-time updates for last week's releases are reported in the table below. A more detailed version of this table, including a longer history of recent releases, is available in the [Nowcasting Report](#). The table's columns decompose the steps involved to parse the impact of each data release on the nowcast. These steps are performed by a statistical model that distills the intricate relationships among different data series into a small number of so-called factors, which summarize the underlying "state" of the economy. The model computes a forecast for each release, denoted by a . The difference between the actual release (b) and this forecast is the news (that is, $b - a$) contained in the release, the new piece of information revealed by the data. Finally, the news is combined with a weight (c), which captures the timeliness and quality of each piece of new information, to give us the impact ($c \times (b - a)$) of the release on the nowcast. For example, the "All employees: Total nonfarm" payroll print for March of 215,000 jobs, which was released at 8:30 a.m. on April 1, represented positive news compared with the model's expectation of 184,600 new jobs, yielding a surprise gain of 30,400 jobs. Given the weight (of 0.098/1,000) attributed to employment news by the model, this surprise translated into a positive impact on the nowcast of 0.003 percentage point.

Nowcasting Detail (March 28-April 8, 2016)							
Update	Data Series	Units	Forecast	Actual	Weight	Impact	Nowcast GDP Growth
			[a]	[b]	[c]	$[c \times (b - a)]$	
Mar 25							1.11
Mar 28	Real personal income	MoM % chg.	0.163	0.280	0.026	0.003	
Mar 28	Core PCE price index	MoM % chg.	0.120	0.149	0.072	0.002	
Mar 28	PCE price index	MoM % chg.	0.119	-0.106	0.055	-0.012	
Mar 28	Real personal consumption	MoM % chg.	0.213	0.195	0.265	-0.005	
Mar 30	ADP nonfarm payrolls	Level chg. (thousands)	222	200	0.494*	-0.011	
Apr 1	Nonfarm payrolls	Level chg. (thousands)	184.6	215.0	0.098*	0.003	
Apr 1	Unemployment rate	Ptt. Chg.	0.028	0.100	-0.114	-0.008	
Apr 1	Construction put in place	MoM % chg.	0.844	-0.529	0.025	-0.034	
Apr 1	ISM mfg.: PMI	Index	51.4	51.8	0.022	0.010	
Apr 1	ISM mfg.: Prices	Index	40.8	51.5	0.003	0.032	
Apr 1	ISM mfg.: Employment	Index	50.3	48.1	0.007	-0.016	
	Data revisions					-0.045	
	Parameter revisions					-0.099	
Apr 1							0.92
Apr 5	Exports	MoM % chg.	0.229	1.01	0.054	0.042	
Apr 5	Imports	MoM % chg.	0.048	1.33	0.042	0.054	
Apr 5	JOLTS: Job openings	Level chg. (thousands)	-178.2	-159.0	0.153*	0.003	
Apr 5	ISM nonmfg.: NMI	Index	54.4	54.5	0.002	0.000	
Apr 8	Wholesale inventories	MoM % chg.	0.082	-0.480	-0.085	0.048	
	Data revisions					0.034	
Apr 8							1.11

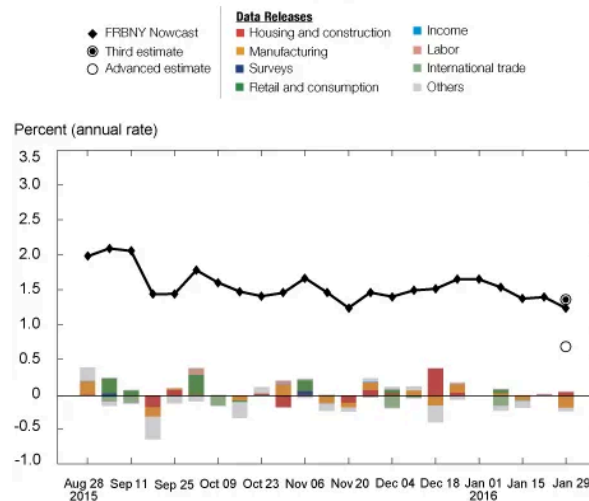
Source: Authors' calculations.

Note: We group the data series into related categories by color. MoM % chg. indicates month over month percentage change. The weights with the asterisk are multiplied by 1,000 for legibility.

But how reliable is the model that underlies the FRBNY Nowcast? For a complete answer to this important question, we refer you to the many [academic studies](#) that have been conducted on the subject. Overall, their findings suggest that nowcasting techniques produce results that are comparable to, and often more accurate than, those of the best human forecasters, with the added advantage of being automatic and free of judgment. This does not mean that nowcasting is always spot-on. The amount of noise in macroeconomic data is significant—even the official GDP release is revised twice before becoming “final.” As a result, the nowcast makes mistakes in any given quarter, like all economists’ forecasts do.

As an illustration, the chart below reports the evolution of the nowcast for 2015:Q4, a quarter for which we already have the third estimate of GDP. This estimate is represented as a full dot in the chart, along with the first, or preliminary, estimate (the empty dot).

Evolution of the Nowcast, 2015: Q4



Source: Authors' calculations.

Note: Colored bars reflect the impact of each data release on the nowcast.

By the time the first release became available, the nowcast predicted a growth rate for GDP of 1.2 percent, which is very close to the latest available number. Of course, this is only one example. However, the more comprehensive studies mentioned above demonstrate the usefulness of statistical nowcasts as a way of translating the real-time data flow into an estimate for current GDP. This reliability makes nowcasts a fundamental instrument in policymakers’ toolbox, especially in this era of data-dependent monetary policy.

Disclaimer

The views expressed in this post are those of the authors and do not necessarily reflect the position of the Federal Reserve Bank of New York or the Federal Reserve System. Any errors or omissions are the responsibility of the authors.



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