

Hey, Economist! How Do You Forecast the Present?

A Conversation with Domenico Giannone, Argia Sbordone, and Andrea Tambalotti



New York Fed macroeconomists have been sharing their “nowcast” of GDP growth on the Bank’s public website since April 2016. Now, they’ve launched an interactive version of the [Nowcasting Report](#), which updates the point forecast each week, but also helps users better visualize the impact of the flow of incoming data on the estimate produced by the model. Tables offer more detail on the data series informing the estimate. The interactive version also reports the staff nowcast back to January 2016, a longer nowcast history than has previously been available. Cross-media editor Anna Snider spoke to Domenico Giannone, Argia Sbordone, and Andrea Tambalotti—economists who developed the model underlying the report and produce estimates weekly with the help of research analysts Brandyn Bok and Daniele Caratelli—about nowcasting and its role in the policymaking process.

Q. What is nowcasting? How does it compare with the standard methods of forecasting macroeconomic variables?

Giannone: A nowcast is a very short-term forecast. We’ve built a model that uses a variety of high-frequency incoming information, including production, trade, and labor market data, to construct “real-time” estimates of current- and next-quarter GDP growth. In doing so, we can inform our view of whether the economy is slowing down or accelerating without waiting for the official GDP estimates from the Commerce Department, which aren’t available until about four weeks after the reference quarter closes. We presented the model in a [blog post](#) last year, and further details can be found in the [methodology](#) section of the *Nowcasting Report*.

The nowcasting model produces a forecast of each economic series that we track: when the actual release for that series differs from the model’s forecast, this “news” impacts the GDP nowcast. Our approach formalizes key features of how market participants and policymakers have traditionally produced forecasts, a process that involves monitoring many data releases, forming expectations about them, and then revising the assessment of the state of the economy whenever facts differ from those expectations.

Q. You’ve described nowcasting as an important tool for policymakers. How are they using it?

Sbordone: Policymakers closely monitor nowcasts. Their decisions on how to conduct monetary policy crucially depend on their assessment of where the economy is headed, so it is extremely useful to have timely evidence on where the economy stands and whether it may be changing course.

At the New York Fed, we brief Bank President Bill Dudley on the nowcast and a range of other forecasts—including a judgmental forecast—as he prepares for policy meetings. The New York Fed staff’s judgmental forecast, [shared periodically](#) on *Liberty Street Economics*, relies on individual expertise to fine-tune forecasts generated by a set of econometric models and other inputs. We also use dynamic stochastic general equilibrium (DSGE) models, which merge theory about structural economic relationships with statistical methods, and a Bayesian vector autoregression model to generate alternative forecasts. We report the [forecast](#) generated by our DSGE model on the blog roughly four times a year.

Nowcasting models are now used to assess economic conditions in many different countries, ranging from large economies such as the United States, Japan, and the euro area to small economies such as New Zealand and Norway and even some emerging economies.

Q. How did you choose the input variables? What did you determine was essential and what could be ignored?

Giannone: We set up our model to mimic what markets do. The [tables](#) in the *Nowcasting Report* list the input variables, which include data related to industrial production, labor and housing markets, business outlook surveys, prices, trade, and consumption. We aimed at selecting the headline data releases—those releases that “move” markets and make front-page news. These include not only “hard” data, such as industrial production, but also more timely “soft” data, such as the ISM manufacturing survey, which give early signals based on people’s sentiments and perceptions.

You’ll see that we left out financial variables. They tend to be quite volatile and, therefore, in our experience, have a limited role in GDP growth nowcasting once a rich set of macroeconomic variables have been included. Financial variables, however, provide important signals for downside risk, as shown in this [paper](#) that I wrote with my colleagues Tobias Adrian and Nina Boyarchenko. Note also that we employ total indexes for industrial production and capacity utilization, disregarding sectoral disaggregation. This practice again follows the approach of market

participants, who focus more on the headlines of each report. Our nowcasting model can handle a much larger set of time series than we currently use, including disaggregated data, which might be useful to better interpret the aggregate numbers, but we found their impact on the nowcast's accuracy is only marginal.

Q. How does your model perform in comparison with other approaches, including survey forecasts?

Giannone: Numerous academic studies in different environments and our own [real-time back-testing](#)—which involves evaluating model forecasts obtained with data available *at the time* of the forecast—suggest that the nowcasting techniques overall produce results at least as good as those obtained from institutional and private sector forecasts. The advantage of nowcasting is that it's based on an algorithm, so it is free of the herding and other biases sometimes seen in judgmental forecasting.

Q. How close are the staff nowcasts to official estimates? For the first quarter of 2017, the readings were widely different.

Tambalotti: The goal of the New York Fed Staff Nowcast is to measure economic activity in real time, rather than to provide an accurate estimate of any one GDP print. This focus on the underlying level of activity comes from the recognition that measuring precisely the output of an economic system as complex as that of the United States is inherently challenging, even for the Bureau of Economic Analysis (BEA)! In fact, the average absolute revision between the “advance” and “latest” GDP releases is 1.1 percentage points, [as the BEA itself points out](#).

As a result, our staff nowcast is sometimes very close to the BEA's estimates, but other times less so. For example, the BEA's first estimate of GDP growth for 2016:Q4 [was 1.9 percent](#), and its most recent revision was [2.1 percent](#). Meanwhile, our final nowcast for the period was [2.1 percent](#). Clearly, we hit it right on the nose then. By contrast, the first GDP release for 2017:Q1 came in at 0.7 percent (later revised to 1.2 percent), while the staff nowcast predicted 2.7 percent growth.

To cut through statistical noise, we identify the systematic component of business cycle fluctuations, which is common across many sectors, and abstract from the idiosyncrasies of individual variables. In this way, we believe that the staff nowcast is a reliable signal of the underlying state of the macroeconomy, although the approach is still subject to statistical error.

Q. What other variables are suited to nowcasting?

Sbordone: Nowcasting is particularly relevant for slow-moving macroeconomic variables whose estimates are released with a substantial lag. We concentrate on GDP growth, but the general framework can be extended to track the progression of the real-time predictions of other variables. Good candidates are gross domestic income, a quarterly variable that is released two months after the end of its reference period, and that, like GDP, summarizes macroeconomic conditions well, and personal consumption expenditures, the largest component of GDP.

Q. What's coming next for you? What extensions can you see for this work?

Giannone: Nowcasting is a relatively new field and it is likely to see development on many fronts. For example, we might report predictions for the entire distribution of GDP growth, not just its central tendency. Researchers, just like market participants, will also continue to investigate the potential value of new or different sources of information that might help tell a story about GDP growth.

My colleagues and I have also been working on extensions of the model. A recent *Journal of Monetary Economics* [paper](#), for instance, describes efforts to link a nowcasting framework to a quarterly structural model. A benefit of this analysis is that policymakers can obtain real-time estimates of model-based variables that are not directly observable, such as the output gap (which captures the difference between actual GDP and its potential value) and the natural rate of interest, r^* . Reading the data flow through the lens of the structural model also lets us identify meaningful shocks to the economy in real time.

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