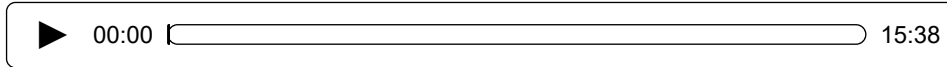


Going Inside GDPNow



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Tom Heintjes: Hello, and welcome back to another episode of the Economy Matters podcast. I'm Tom Heintjes, managing editor of the Atlanta Fed's Economy Matters magazine. Today we're speaking with Pat Higgins, an economist at the Atlanta Fed. We're going to discuss gross domestic product, one of the most widely used barometers of economic performance, and specifically we're going to discuss [GDPNow](#), which is a tool that Pat developed while here at the Atlanta Fed. Since its introduction in July 2014, GDPNow has proved to take a very accurate snapshot of GDP.

Pat, GDPNow uses a "nowcasting" model to forecast GDP growth, and our listeners can't see me using air quotes around "nowcasting." What's the distinction between nowcasting and forecasting, and how did nowcasting gain such a foothold in the discussion of GDP? Is it because in our digital age we expect to know everything immediately?

Pat Higgins: Nowcasting is actually a type of forecasting. It originally comes from weather forecasting—in weather forecasting, a nowcast is a forecast of the weather that's between three and six hours or less. The analogue for economic forecasting is forecasting the next data point. For example, the next GDP release will be the fourth quarter GDP that will be released at the end of January, so the nowcast for GDPNow that's being made is for fourth quarter growth. I would say nowcasting for GDP has been going on for a while—there are just more nowcasting models like GDPNow out there because of improvements in technology. Lots of people can do it now.



Pat Higgins

Heintjes: What led you to develop GDPNow, Pat? Did you see an approach to measuring GDP that no one else was using, or was there information that you wanted to get that you weren't able to obtain from existing measures?

Higgins: The glib answer is that my boss asked me to—the director of research, Dave Altig.

Heintjes: That's a good reason!

Higgins: His original idea was to use an existing model and take that off the shelf. I tried that approach, but the forecast from it didn't work that well, so I went back to the drawing board and used some more old-fashioned models, which forecasted the components of GDP like consumption investment, government spending, etc., directly, and combined that old-fashioned approach with the newer, more sophisticated econometric approach. That seemed to do the trick.

Heintjes: Pat, I wanted to talk a bit about the nature of GDP as an economic yardstick. We all know that GDP measures the size of an economy, tallying

the value of all goods and services. It sounds like a simple definition, but in practice, measuring changes in a \$17 trillion economy—down to a tenth of a percent, at that—is anything but simple, isn't it?

Higgins: Yeah, I definitely agree with that sentiment, Tom. I guess the first issue is the data collected. The beginning is not as comprehensive as what we get several months later, so estimates are often revised. For example, this morning, November 24 [2015], the first estimate of GDP growth for the third quarter was revised from 1.5 percent to 2.1 percent, and that number is going to be revised several more times. So at any point in time, getting to one-tenth of a percentage point—like you mentioned—is an impossibility. There are other issues, too. Even though GDP is nominal, what we're really interested in is real GDP and adjusting for price changes, adjusting for quality improvements and computers and health care—things like that is really where I think the most difficult issues are.

Heintjes: *GDP has been a fixture in the national economic discussion for years, but the widespread use of GDP as a barometer of economic performance is actually a fairly recent development, isn't it?*

Higgins: Yeah. I would say the first cousin to GDP was introduced in the 1930s, a measurement of national income as a response to the Great Depression. It was introduced, I think, in 1934. And then an even closer cousin, gross national product, was introduced in 1942, I believe, to sort of balance the needs of the war economy and the civilian economy. Then there were more improvements made in the 1950s, like getting quarterly measures of GDP, real GDP. Gross national product, which is fairly closely related to GDP, was actually the standard yardstick until about 1991, when the Bureau of Economic Analysis, who measures or estimates GDP, switched to gross domestic product, and since then that's been the standard measure.

Heintjes: *Pat, as a measure of the overall economy, GDP receives a great deal of attention, grabbing headlines and often leading off news reports. Do you think the way GDP is reported contributes much to people's understanding of economic growth? Do the quarterly fluctuations require more nuance and context to really interpret them in a meaningful way?*

Higgins: Yes, Tom—I definitely agree with that. GDP growth, especially at the quarterly frequency, is fairly volatile. For example, in the second quarter, real GDP growth was 3.9 percent. In the third quarter, that stepped down to 2.1 percent. One might think that that's a big step down, but within the fairly typical range of fluctuations of the data, fluctuations of that magnitude are pretty typical. It's pretty common to smooth through some of that noise by looking at four-quarter percent changes, or even longer-term growth rates. I think news reports tend to just look at the headline number, which is just the one quarter growth rate for the most recent quarter. Just looking at that number doesn't always give you a good sense of the momentum in the macroeconomy.

Heintjes: *When it comes to measuring the economy, are there aspects that prove especially challenging even for tools like GDPNow? For example, when innovations like, say, the sharing economy come onto the scene, how do the data collection and calculation processes change?*

Higgins: The first part of your question, the most challenging part of forecasting GDP for GDPNow and for other forecasters is probably inventory investment. Two reasons for that is because the data release is released with a fairly long lag, and also there's two parts of that data, and the book value of inventories. We only get that part, but there's another important part that we don't get until the official report. The forecasters have to forecast, and we don't necessarily do a great job of forecasting. That's called the inventory valuation adjustment.

The second part of your question, about the sharing economy—that's still a pretty small part of the economy, I think maybe in the tens of billions of dollars. That data would be captured in a survey called the Quarterly Services Survey, I believe. That survey is actually compiled fairly late. We haven't actually gotten the data for that quarter. We won't get that until mid-December. Those things don't get captured till later in the game. That does mean the GDP revisions can get bigger. We've seen a phenomenon in more recent years where revisions from the second release to the third release have gotten bigger. That is probably due to things like the sharing economy and other things like research and development, things like that, getting folded into GDP.

Heintjes: *Let's briefly pop the hood on GDPNow. It aggregates a number of components that the U.S. Bureau of Economic Analysis uses to calculate GDP. What goes into the model to allow it to work as it does with such a level of accuracy?*

Higgins: The model uses data from the major statistical releases from the U.S. Census Bureau, the Bureau of Labor Statistics, and some other government agencies. There's about 15 of those; the biggest ones are the international trade report, construction spending, manufacturing shipments, various inventory reports, and on and on. There's also price information that you need to deflate. The data from those reports are generally nominal expenditures. The price data come from reports like the consumer price index, the producer price index, etc. Those are used to deflate the nominal measures.

So all of those get combined in a way to sort of mimic what the BEA does in actually making their estimate of GDP in a very coarse way. Not all of the nuts and bolts that the BEA does is done by GDPNow, but the essentials are done by GDPNow, in some sense. The model forecasts 13 components of GDP, and those are built up into what is the aggregate GDP forecast.

Heintjes: *Pat, I know the Atlanta Fed gets approached from time to time for the code that makes GDPNow work, and we don't make it available. Why is that? Does it fall into a "trade secret" category like Coke's formula?*

Higgins: No, I would say it doesn't fall into that. We have a spreadsheet that we post online with all of the calculations of the model. So if a user has any questions about why the model is forecasting a subcomponent of GDP in a certain way or how the monthly data links into that forecast—if they're willing to spend some time to figure it out, they can go into the spreadsheet and it will exactly trace out how that is being done. I'd say the biggest reason why we don't provide the code is we don't want others to sort of provide an early release of GDPNow. We tend to post about two or three hours after the data releases, so one can imagine someone posting something quicker than that. Another reason is some of the data itself comes from a proprietary provider that not all users would have access to.

Heintjes: *The "now" part of a nowcast must require frequent updating. How much care and feeding go into maintaining GDPNow?*

Higgins: I would say not a whole lot of care and feeding. There are some changes that need to be made when you transition from a quarter. When we went from forecasting third quarter growth to fourth quarter growth, that took maybe 30 minutes to an hour to make some small changes to the code. But very few changes will need to be made until about another two months later, when we go from forecasting the fourth quarter to the first quarter. I'd say most of the work is making the charts and writing the summary of what happened and posting that on the web.

Heintjes: *Since the Atlanta Fed unveiled GDPNow in July 2014, have you tweaked its architecture? How would you rate its performance and accuracy*

now, versus when it debuted?

Higgins: I'd say there've been very few tweaks. The one major tweak is actually incorporating a new data release that wasn't available until July of 2015, I believe. That's called the Advanced Report on International Trade in Goods. Prior to the second quarter of 2015, the third month of International Trade in Goods wasn't available for the advanced estimate of GDP, and the BEA essentially had to make a guess of what international trade in goods was. But with the introduction of that report, those numbers are available. So the model has been tweaked to incorporate those numbers, and the incorporation of those numbers actually improved the forecast for third quarter growth by almost 50 percent. The miss in the forecast was cut almost in half.

Heintjes: *Pat, GDPNow has garnered some nice press because of its accuracy. I recall last year when the GDPNow estimate outperformed those of some Wall Street economists, a Marketwatch writer said, "It's never fun to be beaten by a machine." And not to put too fine a point on it, but I can vouch for the fact that you are in fact a human. But I imagine that you don't really see yourself in competition with other nowcasters, do you?*

Higgins: No, although I'm always happy when I do well. My hope is that GDPNow doesn't lag too far behind other forecasters. If it performs considerably worse than others, then it's hard to take too seriously as a model. But one should keep in mind that others are probably using a fair degree of judgment. There was a forecast survey by the European Central Bank in 2008 that asked forecasters how much judgment they used for their short-term GDP forecast. They answered that about 40 percent of their forecast is judgment and 60 percent comes from models. Obviously, GDPNow is 100 percent a model forecast, so one should expect some difference in both the performance and sort of the properties of the forecast. So no, I don't expect they should be directly comparable in some sense.

Heintjes: *Well, we're just entering a new year. I wonder if you have any insights on where GDP will go in the near term.*

Higgins: As of now, both GDPNow and professional forecasters—I'll use an example: the panelists from the CNBC Rapid Update survey—are forecasting 2.3 percent growth for the fourth quarter. That means I don't have to pick between those two. I can say I'd have a hard time beating either of those two, so that's probably a pretty good guess. But the numbers can obviously change from now until the first estimate of fourth quarter growth is released in late January. So it's probably a good idea to check early next year to see what the numbers are tracking then.

Heintjes: *Keeping an eye on GDP is in fact one of my New Year's resolutions. Pat, this has been a fascinating conversation. I want to thank you for taking the time to talk with us today. Again, I'm Tom Heintjes, managing editor of the Atlanta Fed's Economy Matters magazine, and thanks for spending some time with us today. I encourage you to visit Economy Matters at frbatlanta.org/economymatters and read the many interesting features we have for you there, including the [GDPNow](#) tool. When we get together for another Economy Matters podcast next month, we'll talk about trends in Southeast housing and how the housing market has been performing regionally. Thanks again for listening, and let's meet again next month.*

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