US Economic Weekly

Supermodels

Bank of America Merrill Lynch

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Economics
United States

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Macro viewpoint: Supermodels

The Atlanta Fed GDPNow, New York Fed Nowcast, and our in-house GDP tracking model take their own distinct approaches to "nowcast" current quarter growth. Our in-house model has been slightly more accurate on average than the two Fed models, though Bloomberg consensus tends to have the best forecast. While nowcasting models help, it is important to remember that there is plenty of scope for error with the first estimate of GDP as it is based on incomplete data.

Fed watch: Global spillovers and the Fed

While the Fed continues to monitor global risks, these are less concerning than earlier this year. Fed research finds a quantitatively small spillover from US policy into global GDP, which suggests such spillovers are unlikely to significantly constrain Fed policy.

Housing watch: Listening to stories

Surveys generally show that people still believe it is a good time to buy a home, largely due to low interest rates. At the same time, there is a growing perception that it is a good time to sell, likely reflecting the rise in home prices. That is a good combination.

Last week and the week ahead:

Fashionably late

Most of the important data this week are on Friday, after this report. Wholesale inventories on Tuesday bumped up 2Q GDP tracking by 0.2pp to 2.8% qoq saar.

All about housing

Homebuilder sentiment likely held at solid levels, while housing starts and existing home sales slipped.

Data deck for 18-22 July

Date	Time	Indicator	Period	BofAML Estimate	Consensus	Previous
7/18/16	10:00	NAHB Housing Market Index	Jul	60	60	60
7/18/16	16:00	Net Long-term TIC Flows	May	—	—	-$79.6bn
7/19/16	8:30	Housing Starts	Jun	1150k	1170k	1164k
7/19/16	8:30	Building Permits	Jun	1160k	1150k	1136k
7/21/16	8:30	Initial Jobless Claims	16 Jul	265k	—	254k
7/21/16	8:30	Philadelphia Fed	Jul	4.0	5.0	4.7
7/21/16	10:00	Existing Home Sales	Jun	5.35M	5.47M	5.53M
7/21/16	10:00	Leading Indicators	Jun	—	0.2%	-0.2%

Source: BofA Merrill Lynch Global Research, Bloomberg

US Economics

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Recent publications

- Bruised by Brexit
- Housing's bumpy ride
- Back to risk management
- The election and the economy
- The Long View: Getting to equilibrium
- CPI forecast: Shocking the gasoline curve
- Don't discount Fed due to election
- Pent-up rent
- Opportunistic reflation
- The city does sleep

Refer to important disclosures on page 15 to 16.

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Macro viewpoint

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- The Atlanta Fed GDPNow, New York Fed Nowcast, and our in-house GDP tracking model take their own distinct approaches to "nowcast" current quarter growth.
- Our in-house model has been slightly more accurate on average than the two Fed models, though Bloomberg consensus tends to have the best forecast.
- While nowcasting models help, it is important to remember that there is plenty of scope for error with the first estimate of GDP as it is based on incomplete data.

Supermodels

The US is blessed with timely and valuable economic data. Given this glut of information, economists are able to track estimates of current quarter GDP growth in real time using "nowcasting" models. These types of models generally pursue either a bottoms-up or top-down approach, and more complex models can combine elements of both. In this piece, we discuss the mechanics behind our GDP tracking model, the relatively new FRBNY Staff Nowcast from the New York Fed, and the popular GDPNow from the Atlanta Fed.

Comparing forecasts heading into the first release of GDP, we find that our in-house GDP tracking model has a slightly better record than GDPNow and the FRBNY Nowcast, though the latter has a very short history. That said, the Bloomberg consensus tends to be the most accurate forecast, albeit modestly. Differences aside, these models are tasked with a difficult job as GDP is computed with incomplete data and revised several times, including with annual source adjustments every July. In addition, the BEA revisits the GDP methodology every couple of years.

From bottom to top

In a standard bottoms-up approach, each major component of GDP is forecasted using "bridge equations" that link it to one or several monthly economic indicators. For example, real equipment investment is forecasted using monthly core capital goods shipments. These components are then added up to compute a tracking estimate for real GDP. This method of nowcasting is the basis for our own in-house GDP tracker. This type of model allows for a granular look at GDP and provides a precise sense of strong or weak areas of activity during a quarter. It is also easy to incorporate expert judgment into the forecast, overlaying quantitative analysis. There are some drawbacks, however, such as difficulty in tracking some GDP components in real-time and having to rely on judgment to adjust the models.

A top-down approach skips the component forecasting entirely and attempts to directly estimate GDP. A top-down model can be as straightforward as regressing GDP on a single variable like nonfarm payrolls, which is strongly correlated with the business cycle. They can also use more sophisticated econometric techniques that extract information from a wide range of data. However, the drawback of such approach is that relationships can change over time which the models may not capture appropriately.

From Atlanta to New York

The FRBNY Staff Nowcast[1] is a top-down model. This big data model simplifies a basket of major market-moving economic variables into a small number of common factors that reflect the underlying "state" of the economy—this is known as factor modeling.

[1] Aarons, Grant et al. "Just Released: Introducing the FRBNY Nowcast." FRB New York. 12 April, 2016.

These factors are influenced by both current and lagged values of the economic variables as well as lagged values of the factors themselves. The model then predicts what the next most likely "state" is, allowing for a current quarter forecast. A major feature of this model is its ability to interpret a large dataset all at once with little effort. The forecast is also completely data driven and thus is objective. However, it is a bit of a black box, as it is difficult to understand drivers of growth or sources of forecast error, and the model may be slow to recognize and adjust to new trends in the data, absent human judgment.

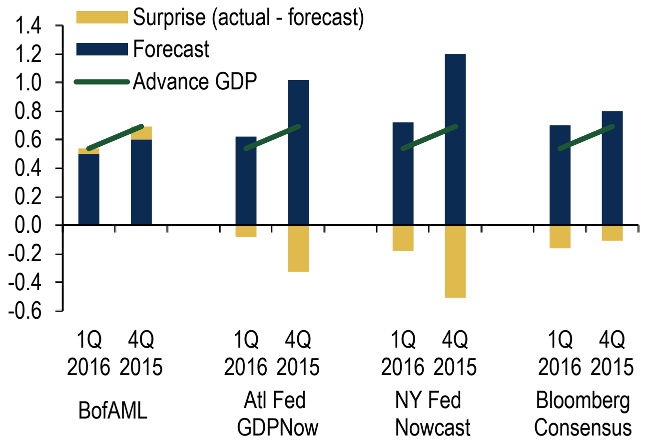
The Atlanta Fed GDPNow is predominantly a bottoms-up model as estimates are produced for each major component of GDP and added up.[2] That said, it combines this with top-down factor modeling (as explained later).. GDPNow produces two estimates for each GDP component and calculates a weighted average of the two before adding up to GDP. The first estimate is calculated using lags of the component itself and all of the other major GDP components. For example, residential investment is based on prior residential investment, consumer spending, trade, etc. The second is determined using bridge equations with monthly data, like the models discussed earlier.[3]

Here is where factor modeling comes in: when forecasting the monthly variables that feed into the bridge equations, the forecasts are based on lags of the monthly variables themselves and also lags of a single common factor, which is estimated separately using an extensive basket of economic indicators.[4] As the quarter progresses and the actual monthly data overwrite forecasts, this second estimate becomes more relevant and important. This results in the second estimate receiving an increasingly higher weight over time than the first estimate when calculating the weighted average for the GDP component. This methodology is transparent, objective, and able to tie in the underlying trend in the economy.

Take your best guess

Each of these models has their pros and cons, but the real test is which one has the best forecasting record? The New York Fed Nowcast is a relatively new measure with history only back to April 2016. We can therefore only compare how well it did in the advance releases of 4Q 2015 and 1Q 2016 GDP. Chart 1 shows that our in-house GDP tracking model gave the most accurate forecasts for advance GDP, while Bloomberg consensus was a close second. But it was a close call.

Chart 1: GDP forecast comparison (% qoq saar, advance release)



Source: BofA Merrill Lynch Global Research, Atlanta Fed, New York Fed, Bloomberg

Table 1: GDP forecast comparison part two (advance release)

	Atlanta Fed GDPNow	BofAML	Bloomberg Consensus
Full sample (3Q 2011 - 1Q 2016)			
Absolute error	0.610	0.529	0.451
Standard deviation	0.857	0.645	0.593
Root-mean squared error	0.835	0.645	0.585
Last 8 qtrs (2Q 2014 - 1Q 2016)			
Absolute error	0.510	0.525	0.407
Standard deviation	0.691	0.679	0.551
Root-mean squared error	0.665	0.647	0.516

Source: BofA Merrill Lynch Global Research, Atlanta Fed, Bloomberg

[2] Higgins, Patrick. "GDPNow: A Model for GDP 'Nowcasting'." FRB Atlanta Working Paper Series. July 2014.

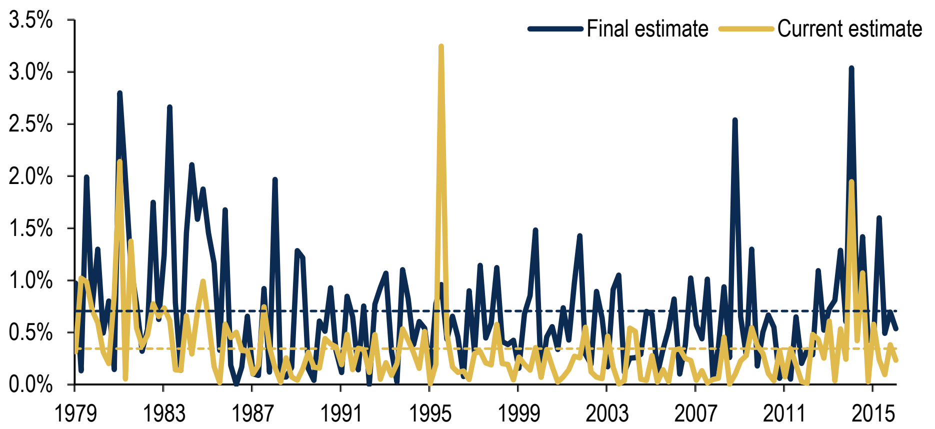
[3] Consumption is the only GDP component reported monthly. As a result, the weights of the first and second estimates are always 0 and 1, respectively.

[4] Monthly inventories are not forecasted using the common factor but instead use an alternative model with other econometric techniques.

The Atlanta Fed GDPNow has a much longer history back to the advance release of 3Q 2011 GDP. To assess the track record of the Atlanta Fed GDPNow, our GDP tracking model, and Bloomberg consensus over that time period, we calculate the absolute value of the forecast miss (absolute error), standard deviation of these errors, and root-mean squared error for each. We also narrow the sample to just the last eight quarters to see if the accuracy has changed. We find that the differences in model performance are small. Bloomberg consensus was the best performer during both periods, with modestly lower absolute and root-mean squared errors (Table 1). Meanwhile, our model was second over the full sample and just a touch worse than GDPNow over the most recent 8 quarters when looking at absolute error, though our root-mean squared error was slightly better.

Separately, one shortcoming of GDPNow and the FRBNY Nowcast is that they stop reporting nowcasts after the advance GDP release. But revisions from the first to final release can be significant, and should warrant continued monitoring—as we do in our tracking model (Chart 2).

Chart 2: Absolute size of revision from advance release (% qoq saar)



Note: Final estimate refers to the third and final GDP report in the regular release schedule. Current estimate refers to the latest GDP release, which accounts for previous annual GDP revisions. Dotted lines represent historical averages. Source: BofA Merrill Lynch Global Research, Bureau of Economic Analysis

A moving target

An important takeaway from the above analysis is that estimating GDP in real-time can be challenging—most forecasts seem to have gotten it wrong by around 0.5% on average in recent years (Table 1). One hurdle is that some GDP components are not even known at the time of publication. Heading into the advance report, these include inventories, services trade, and construction spending. As a result, the BEA pencils in their own key source assumptions for the missing data. These are typically based on previous estimates, using moving averages, regressions, growth factors, or analyst judgment. Services consumption data are also incomplete until the Quarterly Services Survey (QSS) between the second and final GDP releases.

The data and methodology of GDP are also subject to change. Many of the data sources for GDP are revised in the first half of the year which the BEA incorporates in the first release of 2Q GDP every July. Additionally, the BEA revisits the methodology for GDP every couple of years, implementing changes that can affect the full history of the data.

What's next

Given this backdrop of uncertainty, lets review the latest tracking forecasts. We are tracking 2.8% qoq saar growth for the second quarter, while the Atlanta Fed GDPNow is at 2.3% and FRBNY Nowcast is at 2.1%. Thus, all signs point to a rebound from the sluggish 1.1% start to the year. The first estimate of 2Q GDP growth will be released on July 29, along with the annual revision to the recent history. Stay tuned.

Fed watch

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Global spillovers and the Fed

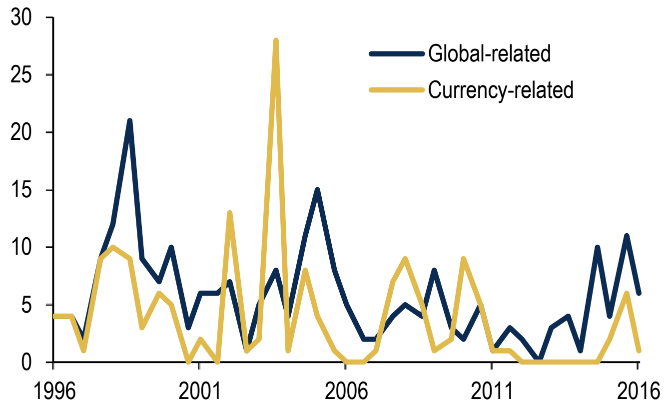
As the US data have continued to modestly improve — we are tracking 2.8% for 2Q real GDP growth, the latest jobs report was solid, and inflation is picking up — the global outlook remains uncertain. The Fed must note both the spillover from conditions abroad into the US, but also the feedback from Fed policy into global conditions. The former remains a reason the Fed is likely to proceed cautiously with normalization (we expect the next hike in December), but the latter is not as large as some market participants fear according to recent Fed research. That suggests it may be less of a constraint on policy decisions than is commonly assumed.

Talking the global factors up and down

Chart 3 shows the relative frequency that "global-related" and "currency-related" terms (see the chart note for details) have appeared in the Semi-annual Monetary Policy Testimony by the Federal Reserve chair since 1996. (Written testimony is not available earlier.) Over the last few years, there has been a modest rise in the frequency of both, but each remains well below prior peaks. Moreover, both measures declined a fair bit in Yellen's June testimony relative to February. Fed worries are not as acute as at the start of the year when global markets sold off sharply on concern about China and the collapse in oil prices.

Global considerations clearly still register at the Fed and are the main source of downside risk. Yet, they aren't the impediment to normalization that some commentators suggest. In recent speeches, some Fed officials have suggested that domestic conditions may be good enough to hike soon, provide global risks do not spillover into the US data. Obviously the main concern remains the after-effects of Brexit. Uncertainty is still high, and what limited post-Brexit UK data exist have not been good (consumer sentiment, housing prices). But the question remains just how large the spillover into the US will turn out to be. Atlanta Fed President Lockhart, typically a centrist on the FOMC, said this week that Brexit could cause persistent uncertainty but that there was no reason at this time to assume it had changed the US growth path.

Chart 3: Word count in Humphrey-Hawkins written testimony



Source: BofA Merrill Lynch Global Research, Federal Reserve Board
Note: "Global-related" counts terms: "global," "international," "abroad," "overseas," and "foreign."
"Currency-related" includes: "dollar," "currency," "currencies," "exchange rate," "foreign exchange."

Table 2: Channels of estimated global GDP impact from Fed easing that reduces 10y Treasury yields by 25bp

	Exchange rate	Domestic demand	Financial spillovers
US trade-wgt'd dollar	-1%		
US domestic demand		+0.5%	
Foreign bond yields			-10bp
Change in foreign GDP	-0.05%	+0.05%	+0.25%

Source: Ammer,et al (2016)

Also on the global risks watch list, according to Lockhart, is the Italian banking system and corporate debt in China.

Modeling the spillovers

Another common view among market participants is that the Fed is more cognizant of how its policies adversely impact other countries, and thus is more willing to effectively act as the "world's central banker" — or less able to avoid playing that role. A recent study by staff economists at the Board of Governors investigates the size and nature of Fed policy spillovers into the global economy.[5] They find quantitatively small impacts globally, in which the "bolster-thy-neighbor" effects tend to outweigh the "beggar-thy-neighbor" ones. In other words, the evidence points against global spillovers as a significant constraint on Fed policy actions.

Fed researchers looked at the consequences of a policy easing that resulted in a 25bp drop in 10-year Treasury yields. They focused on the impact on Treasury yields since multiple policy tools have been used in the post-crisis period, including asset purchases and forward guidance, and not just changes to the funds rate target. Monetary policy typically affects global activity through three channels: the exchange rate, domestic demand, and financial market spillovers. In the post-crisis era, much of the focus has been on the exchange rate channel, which is the canonical "beggar-thy-neighbor" channel, as easy policy depreciates the domestic currency and thus "steals" demand from trading partners by boosting net exports.

On average for an easing of this nature, the Fed researchers estimate that the broad trade-weighted USD depreciated by around 1%, boosting US net exports by 0.15pp of US GDP and reducing foreign GDP by 0.05% (Table 2). This is a relatively modest spillover. Moreover, it typically is more than offset by the other two channels. Easier policy boosts domestic demand which in turn increases imports and supports foreign growth; quantitatively this impact is of similar size — but opposite sign — to the exchange rate channel, so the net impact on global GDP cancels out. Finally, Fed easing tends to reduce bond yields globally: about 10bp lower global yields for a 25bp reduction in 10-year Treasury yields. This global easing of financial conditions adds about 0.25% to foreign GDP, on average.

These three channels together thus have a fairly small impact on global activity. Quantifying this impact is important, as tighter Fed policy should, on average, have the same modest effect in the opposite direction: slightly lower global GDP. Of course, in any particular case the consequences could be larger or smaller, as the relative strength of these three channels can vary. Moreover, this analysis is conducted under the assumption that other central banks do not react to the Fed's moves. Most central banks retain the ability to offset any adverse spillovers from Fed policy; the few that don't are typically emerging market central banks with some alternative objective than stabilizing domestic economic conditions, such as exchange rate management.

Assessing the spillover risks today

Numerous other central banks are already easing, an already well into unconventional policies and at (or below) zero rates. That likely adds a bit of caution to the Fed's considerations, as it limits how much other central banks can offset spillovers from Fed policy. That said, in the end the Fed has to set US monetary policy based on the US outlook: the Fed cannot tell Congress that US conditions are good enough to hike but it had to worry about some other country's economy. If spillovers are weak and the US outlook diverges from global risks, then so too should Fed policy diverge. If the spillover from the global economy is large enough to constrain the US recovery, it will similarly restrain the pace of Fed policy normalization as well.

[5] John Ammer, Michiel De Pooter, Christopher Erceg and Steven Kamin, "International spillovers of monetary policy," IFDP Notes, 8 February 2016

Housing watch

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Listening to stories

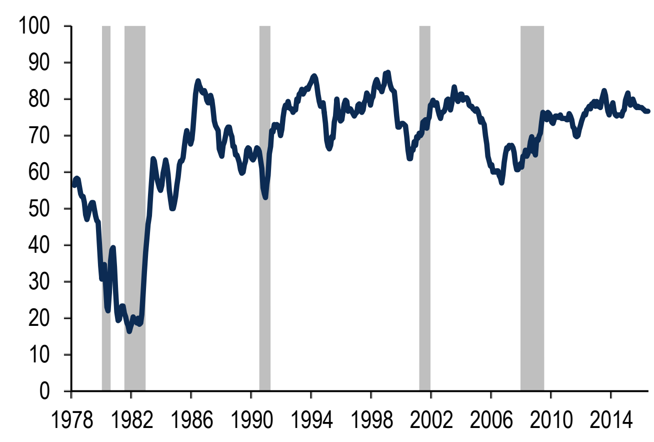
One thing is clear; everyone has a tale to tell. Whether you are a current or potential homeowner, most people have a view about the housing market. How many for-sale signs are up on their street? How much foot traffic is there during the spring selling season? Do you believe it to be a sellers' or a buyers' market? The stories vary by region and price point. While the one-off anecdotes are not necessarily actionable, we can glean information from surveys and other aggregated reports.

Two of the housing-related surveys we follow are from the University of Michigan and Fannie Mae. According to the University of Michigan, 76% of respondents say it is a good time to buy a home, largely owing to low interest rates (Chart 4). However, the Fannie Mae survey shows some slippage with a net 32% in June of respondents reporting it is a good time to buy. On the other end, a net 18% of respondents believe it is a good time to sell their home, which is the highest since the survey goes back mid-2010 (Chart 5). This seemingly reflects the increase in home prices which supports sellers and squeezes affordability for buyers.

It is also useful to anecdotes from the Federal Reserve Beige Book. The most recent assessment was generally positive with reports of single family sales heading higher. There was particular strength in Boston, Cleveland and St. Louis, with optimism in Atlanta, Dallas and Kansas City. On a more downbeat note, New York and Chicago reported that single family construction has softened. And, specifically in New York, there were reports of multifamily construction tapering off. This is largely consistent with the hard data which shows multifamily apartment starts in New York have been declining in recent months, which we flagged in "The city does sleep." As we have argued, there are certain markets where there has been an excess of construction, but we think supply is still lean, on balance, on a national level.

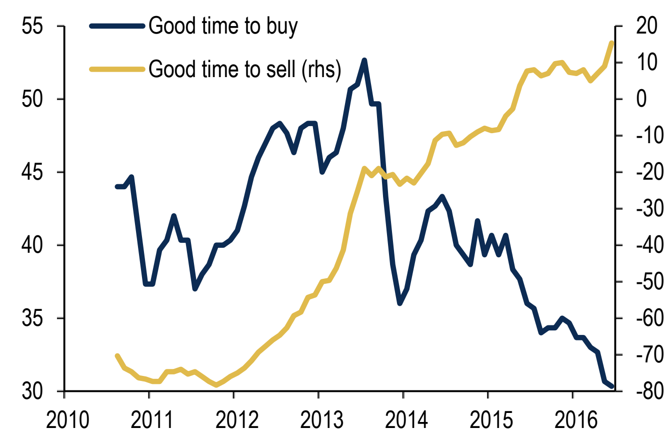
The surveys and reports from the Beige Book suggest that conditions are generally still favorable for continued growth in home sales and construction. The rising share of respondents who believe it is a good time to sell could help boost supply and lead to greater churn in the housing market

Chart 4: Good time to buy a house (% responses, 3-mo moving average)



Source: University of Michigan

Chart 5: Buy or sell (% net responses, 3-mo moving average)



Source: Fannie Mae

Last week and the week ahead

Last week: Fashionably late

Most of the important data this week are on Friday, after this report. Wholesale inventories on Tuesday bumped up 2Q GDP tracking by 0.2pp to 2.8% qoq saar.

The week ahead: All about housing

Homebuilder sentiment likely held at solid levels, while housing starts and existing home sales slipped.

Monday, 18 July

NAHB Housing Market Index, July — 10:00am

	Exp	Cons	Range	History
NAHB HMI	60	60	59 to 62	Jun = 60 vs. May = 58

Source: BofA Merrill Lynch Global Research, Bloomberg

We expect the NAHB housing index to hold at 60 in July, showing that homebuilders remain confident about prospects for the industry. We think lower interest rates are likely boosting confidence, particularly about the medium term outlook.

Tuesday, 19 July

Housing Starts and Permits, June — 8:30am

	Exp	Cons	Range	History
Housing Starts	1150k	1,170k	1095k to 1200k	May = 1164k vs. Apr = 1167k
Building Permits	1160k	1,150k	1105k to 1200k	May = 1136k vs. Apr = 1130k

Source: BofA Merrill Lynch Global Research, Bloomberg

Housing starts are likely to slip to 1.150 million in June, driven lower by a decline in single family building. Permits for single family homes have been running below starts, suggesting some lingering weakness for building. However, looking over the medium term, we expect single family starts to be on a bumpy upward trajectory. We also suspect that there are seasonal issues still at play where the warm winter weather likely pulled forward construction from the spring and summer.

Thursday, 21 July

Initial Jobless Claims, week ending 7/16/2016 — 8:30am

	Exp	Cons	Range	History
Initial Jobless Claims	265k	—	—	Jul 09 = 254k vs. Jul 02 = 254k

Source: BofA Merrill Lynch Global Research, Bloomberg

We look for jobless claims to rise to 265,000 for the week ending July 16, following two consecutive readings of 254,000. This would result in the 4-week moving inching up to 260,750 from 259,000. Firings remain at very low levels, pointing to a healthy labor market.

Philadelphia Fed Survey, July — 8:30am

	Exp	Cons	Range	History
Philly Fed	4.0	5.0	-1.0 to 8.0	Jun = 4.7 vs. May = -1.8

Source: BofA Merrill Lynch Global Research, Bloomberg

The Philly Fed index likely inched down to 4.0 in July from 4.7, suggesting continued modest expansion in regional manufacturing. The strengthening in the dollar this month should be a headwind for the sector, but the domestic economy has gained momentum since the weak start to the year, which should be supportive.

Existing Home Sales, June — 10:00am

	Exp	Cons	Range	History
Existing Home Sales	5.35M	5.47M	5.36M to 5.56M	May = 5.53M vs. Apr = 5.43M

Source: BofA Merrill Lynch Global Research, Bloomberg

We forecast existing home sales to fall to 5.35 million in June, after the past few months of solid gains. Pending home sales tumbled, suggesting a weakening in signed contracts which should translate to a decline in closed contracts as well.

Debt issuance

Treasury financing (billions of $)

Coupon auctions:

Announcement	Auction	Settlement	Issue	Size
14-Jul	21-Jul	29-Jul	10-yr TIPS	13
21-Jul	27-Jul	1-Aug	2-yr FRN	15
21-Jul	25-Jul	1-Aug	2-yr note	26
21-Jul	26-Jul	1-Aug	5-yr note	34
21-Jul	28-Jul	1-Aug	7-yr note	28

*Announced (actual) values. ( ) = Paydown. (R) = Reopening

Source: BofA Merrill Lynch Global Research, Bloomberg, U.S. Treasury

Policy speakers

Key speaking engagements and news events*

Monday, 18 July	*No events scheduled at this time*
Tuesday, 19 July	*No events scheduled at this time*
Wednesday, 20 July	*No events scheduled at this time*
Thursday, 21 July	*No events scheduled at this time*
Friday, 22 July	*No events scheduled at this time*

*All listed times are Eastern times. Dates and times are subject to change.

Source: BofA Merrill Lynch Global Research, Bloomberg, Market News

Economic forecast summary

Real Economic Activity, % SAAR	2Q 15	3Q 15	4Q 15	1Q 16	2Q 16	3Q 16	4Q 16	1Q 17	2Q 17	3Q 17	4Q 17	2014	2015	2016	2017
Real GDP	3.9	2.0	1.4	1.1	2.8	1.9	1.7	1.3	2.0	1.9	1.9	2.4	2.4	1.9	1.8
% Change, Year Ago	2.7	2.1	2.0	2.1	1.8	1.8	1.9	1.9	1.8	1.8	1.8				
Final Sales	3.9	2.7	1.6	1.3	3.1	2.0	1.8	1.4	2.0	1.9	1.9	2.4	2.3	2.2	1.9
Domestic Demand	3.7	3.0	1.8	1.2	3.3	2.1	2.1	2.1	2.2	2.2	2.1	2.5	2.8	2.2	2.2
Consumer Spending	3.6	3.0	2.4	1.5	4.2	2.5	2.2	2.2	2.2	2.2	2.1	2.7	3.1	2.7	2.4
Residential Investment	9.4	8.2	10.1	15.6	10.0	5.0	5.0	5.0	5.0	5.0	5.0	1.8	8.9	10.1	5.3
Nonresidential Investment	4.1	2.6	-2.1	-4.5	0.5	0.4	1.5	1.5	2.5	2.5	2.5	6.2	2.8	-0.7	1.7
Structures	6.3	-7.2	-5.1	-7.9	-3.0	0.0	1.0	1.0	1.0	1.0	1.0	8.1	-1.5	-4.0	0.6
Equipment	0.3	9.9	-2.1	-8.7	0.0	-2.0	0.0	0.0	2.0	2.0	2.0	5.8	3.1	-1.7	0.5
Intellectual Property	8.3	-0.8	-0.1	4.4	3.5	4.0	4.0	4.0	4.0	4.0	4.0	5.2	5.7	2.9	4.0
Government	2.6	1.8	0.1	1.3	0.3	1.1	1.1	0.5	0.5	0.5	0.5	-0.6	0.7	1.0	0.7
Exports	5.1	0.7	-2.0	0.3	1.0	2.5	1.0	-2.0	2.0	2.5	2.5	3.4	1.1	0.7	0.9
Imports	3.0	2.3	-0.7	-0.5	2.0	3.0	3.0	3.0	3.0	4.0	4.0	3.8	4.9	1.1	3.1
Net Exports (Bil 09$)	-535	-546	-552	-547	-555	-561	-576	-607	-617	-630	-645	-443	-543	-560	-625
Contribution to growth (ppts)	0.2	-0.3	-0.1	0.1	-0.2	-0.1	-0.3	-0.6	-0.2	-0.3	-0.3	-0.2	-0.6	-0.1	-0.3
Inventory Accumulation (Bil 09$)	113.5	85.5	78.3	68.3	53.3	49.3	47.3	43.3	45.3	45.3	45.3	68.0	97.5	54.6	44.8
Contribution to growth (ppts)	0.0	-0.7	-0.2	-0.2	-0.4	-0.1	0.0	-0.1	0.0	0.0	0.0	0.0	0.2	-0.3	-0.1
Nominal GDP (Bil $, SAAR)	17914	18060	18165	18230	18445	18619	18794	18940	19121	19302	19494	17348	17947	18522	19214
% SAAR	6.1	3.3	2.3	1.4	4.8	3.8	3.8	3.1	3.9	3.8	4.0	4.1	3.5	3.2	3.7
Key Indicators															
Industrial Production (% SAAR)	-2.7	1.5	-3.4	-1.6	-1.3	1.1	1.7	1.8	1.9	2.1	2.1	2.9	0.3	-1.0	1.6
Capacity Utilization (%)	76.7	76.6	75.8	75.4	75.1	75.2	75.4	75.6	75.9	76.1	76.4	78.2	76.7	75.3	76.0
Nonfarm Payrolls (Avg mom change, 000s)	251	192	282	196	163	160	160	160	153	150	150	251	229	170	153
Civilian Unemployment Rate (%)	5.4	5.1	5.0	4.9	4.8	4.7	4.7	4.6	4.6	4.5	4.4	6.2	5.3	4.8	4.5
Civilian Participation Rate (%)	62.7	62.5	62.5	62.9	62.7	62.7	62.7	62.7	62.7	62.7	62.7	62.9	62.7	62.7	62.7
Productivity (% SAAR)	3.1	2.0	-1.7	-0.6	0.9	0.0	-0.3	-0.6	0.2	0.0	-0.1	0.8	0.7	0.1	-0.1
Personal Savings Rate (%)	5.0	5.0	5.3	5.8	5.4	5.4	5.2	5.1	5.1	5.0	4.7	4.8	5.1	5.4	5.0
Light Vehicle Sales (Millions SAAR)	17.1	17.8	17.8	17.1	17.1	17.2	17.3	17.6	17.7	17.8	17.9	16.4	17.3	17.2	17.7
Housing Starts (Thous. SAAR)	1156	1156	1135	1151	1160	1172	1230	1271	1312	1352	1393	1001	1108	1178	1332
Current Account (% of GDP)												-2.3	-2.6	-2.9	-3.0
US Budget Balance ($bn, Fiscal Year)												-483	-439	-520	-530
Inflation															
GDP Price Index (% SAAR)	2.1	1.3	0.9	0.4	1.9	1.9	2.0	1.8	1.8	1.9	2.1	0.1	1.0	1.3	1.9
% Change, Year Ago	1.0	0.9	1.1	1.2	1.1	1.3	1.6	1.9	1.9	1.9	1.9				
PCE Chain Prices (% SAAR)	2.2	1.3	0.3	0.2	2.0	2.0	2.5	1.6	1.7	1.9	2.7	1.4	0.3	1.2	2.0
% Change, Year Ago	0.3	0.3	0.5	1.0	1.0	1.1	1.7	2.0	1.9	1.9	2.0				
Core PCE Chain Prices (% SAAR)	1.9	1.4	1.3	2.0	1.7	1.7	1.5	1.8	1.9	2.0	2.0	1.5	1.3	1.7	1.8
% Change, Year Ago	1.3	1.3	1.4	1.6	1.6	1.7	1.7	1.7	1.7	1.8	1.9				
CPI, Consumer Prices (% SAAR)	2.4	1.4	0.8	-0.3	2.6	2.6	3.8	1.8	2.0	2.2	3.5	1.6	0.1	1.4	2.5
% Change, Year Ago	0.0	0.1	0.4	1.1	1.1	1.4	2.2	2.7	2.5	2.5	2.4				
CPI ex Food & Energy (% SAAR)	2.3	1.8	2.2	2.7	2.1	2.1	2.2	2.3	2.4	2.3	2.3	1.7	1.8	2.2	2.3
% Change, Year Ago	1.8	1.8	2.0	2.3	2.2	2.3	2.3	2.2	2.2	2.3	2.3				

Shaded regions represent BofA Merrill Lynch US Economics Research forecast
Source: BofA Merrill Lynch US Economics Research

To view our long-run forecasts, see US Economic Watch: The Long View: Getting to equilibrium 26 May 2016.

Global economic forecast summary

	GDP growth, %				CPI inflation, %				Short-term interest rates, %			
	2012	2013	2014F	2015F	2012	2013	2014F	2015F	Current	2013	2014F	2015F
Global	**3.1**	**2.9**	**3.1**	**3.7**	**3.3**	**3.1**	**3.4**	**3.4**	**2.62**	**2.50**	**3.35**	**3.65**
Global ex US	**3.2**	**3.2**	**3.5**	**3.9**	**3.6**	**3.5**	**3.8**	**3.7**	**3.35**	**3.14**	**4.21**	**4.48**
Euro Area	-0.7	-0.5	1.0	1.5	2.5	1.4	0.6	1.1	0.15	0.25	0.15	0.15
UK	0.3	1.8	2.7	2.7	2.8	2.6	1.7	2.0	0.50	0.50	0.50	1.25
Japan	1.4	1.5	1.8	1.5	0.0	0.4	2.6	2.0	0.10	0.10	0.10	0.10
Canada	1.7	2.0	2.1	2.3	1.5	0.9	2.1	1.7	1.00	1.00	1.00	1.00
Emerging EMEA	2.9	2.4	2.2	2.3	4.8	4.8	5.6	4.0	6.90	4.68	5.67	5.90
Latin America	3.0	2.5	1.9	2.7	6.2	7.4	10.4	9.8	8.84	8.01	11.13	11.82
Brazil	1.0	2.3	1.6	2.0	5.4	6.2	6.5	6.6	11.00	10.00	11.00	12.00
Emerging Asia	6.1	6.0	6.1	6.3	4.2	4.1	3.4	3.9	4.09	4.01	5.53	5.77
China	7.7	7.7	7.4	7.2	2.7	2.6	2.3	3.3	3.00	3.00	3.00	3.00

Shaded regions represent BofA Merrill Lynch Global Economics Research forecast.
Source: BofA Merrill Lynch Global Economics Research

Interest rate forecast summary

(% EOP)	3Q14	4Q14	1Q15	2Q15	3Q15	4Q15	1Q16	2Q16	3Q16	4Q16	1Q17	2Q17	2013	2014	2015	2016
Fed Funds	0-0.25	0-0.25	0-0.25	0-0.25	0-0.25	0.25-0.50	0.25-0.50	0.25-0.50	0.25-0.50	0.50-0.75	0.50-0.75	0.75-1.00	0-0.25	0-0.25	0.25-0.50	0.50-0.75
Fed effective	0.07	0.06	0.06	0.08	0.07	0.20	0.25	0.30	0.25	0.62	0.62	0.87	0.07	0.06	0.20	0.62
3-Month T-Bill	0.02	0.04	0.02	0.01	-0.02	0.16	0.20	0.26	0.25	0.30	0.35	0.40	0.07	0.04	0.16	0.30
3-Month LIBOR	0.24	0.26	0.27	0.28	0.33	0.61	0.63	0.65	0.65	0.73	0.78	0.83	0.25	0.26	0.61	0.73
2-Year T-Note	0.57	0.66	0.56	0.64	0.63	1.05	0.72	0.58	0.65	0.75	0.85	0.90	0.38	0.66	1.05	0.75
5-Year T-Note	1.76	1.65	1.37	1.65	1.36	1.76	1.20	1.00	0.85	1.00	1.25	1.40	1.74	1.65	1.76	1.00
10-Year T-Note	2.49	2.17	1.92	2.35	2.04	2.27	1.77	1.47	1.25	1.50	1.75	2.00	3.03	2.17	2.27	1.50
30-Year T-Bond	3.20	2.75	2.54	3.12	2.85	3.02	2.61	2.28	2.00	2.25	2.45	2.60	3.97	2.75	3.02	2.25
2-Year swap	0.82	0.90	0.81	0.90	0.75	1.18	0.84	0.73	0.77	0.89	0.99	1.06	0.49	0.90	1.18	0.89
5-year swap	1.93	1.77	1.53	1.79	1.38	1.74	1.17	0.98	0.85	1.02	1.29	1.44	1.79	1.77	1.74	1.02
10-year swap	2.64	2.28	2.02	2.46	2.00	2.19	1.64	1.36	1.13	1.40	1.65	1.92	3.09	2.28	2.19	1.40
30-year swap	3.19	2.70	2.39	2.94	2.52	2.62	2.14	1.83	1.50	1.80	2.00	2.15	3.93	2.70	2.62	1.80

Shaded regions represent BofA Merrill Lynch US Rates Research forecast.
Source: BofA Merrill Lynch US Rates Research

FX rate forecast summary

	Spot	16-Sep	16-Dec	17-Mar	17-Jun	17-Sep	17-Dec
G3							
EUR-USD	1.11	1.08	1.05	1.05	1.08	1.10	1.10
USD-JPY	105	103	105	108	112	114	115
EUR-JPY	117	111	110	113	121	125	127
Dollar Bloc							
USD-CAD	1.29	1.37	1.36	1.36	1.35	1.35	1.35
AUD-USD	0.76	0.71	0.69	0.68	0.68	0.68	0.68
NZD-USD	0.72	0.65	0.63	0.61	0.61	0.61	0.61
Europe							
EUR-GBP	0.84	0.80	0.81	0.84	0.84	0.84	0.84
GBP-USD	1.33	1.35	1.30	1.25	1.29	1.31	1.31
EUR-CHF	1.09	1.05	1.06	1.06	1.07	1.08	1.10
USD-CHF	0.98	0.97	1.01	1.01	0.99	0.98	1.00
EUR-SEK	9.43	9.40	9.30	9.30	9.20	9.20	9.20
USD-SEK	8.48	8.70	8.86	8.86	8.52	8.36	8.36
EUR-NOK	9.29	9.50	9.40	9.40	9.30	9.30	9.30
USD-NOK	8.35	8.80	8.95	8.95	8.61	8.45	8.45

Note: Spot exchange rate as of day before publishing. The left of the currency pair is the denominator of the exchange rate. Forecasts for end of period.
Source: BofA Merrill Lynch Global FX Rates & Commodities Research

Monthly CPI forecast update

	Non-seasonally Adjusted						Seasonally Adjusted			
	Total CPI			Energy			Total CPI		Core CPI	
	Level	mom	yoy	Level	mom	yoy	mom	yoy	mom	yoy
2015: Jul	238.65	0.01	0.2	219.85	-0.46	-14.8	0.13	0.2	0.15	1.8
2015: Aug	238.32	-0.14	0.2	213.25	-3.00	-15.0	-0.01	0.2	0.12	1.8
2015: Sep	237.95	-0.16	0.0	201.64	-5.44	-18.4	-0.09	0.0	0.19	1.9
2015: Oct	237.84	-0.04	0.2	194.50	-3.54	-17.1	0.19	0.1	0.20	1.9
2015: Nov	237.34	-0.21	0.5	189.27	-2.69	-14.7	0.15	0.4	0.18	2.0
2015: Dec	236.53	-0.34	0.7	183.38	-3.11	-12.6	-0.11	0.7	0.15	2.1
2016: Jan	236.92	0.17	1.4	180.17	-1.75	-6.5	0.03	1.3	0.29	2.2
2016: Feb	237.11	0.08	1.0	172.06	-4.50	-12.5	-0.17	1.0	0.28	2.3
2016: Mar	238.13	0.43	0.9	179.02	4.04	-12.6	0.09	0.9	0.07	2.2
2016: Apr	239.26	0.47	1.1	185.65	3.71	-8.9	0.41	1.1	0.19	2.1
2016: May	240.24	0.41	1.0	192.67	3.78	-10.1	0.22	1.1	0.20	2.2
2016: Jun	240.97	0.31	1.0	198.10	2.82	-10.3	0.23	1.1	0.14	2.2
2016: Jul	241.18	0.09	1.1	196.40	-0.86	-10.7	0.21	1.1	0.18	2.2
2016: Aug	241.41	0.09	1.3	193.98	-1.23	-9.0	0.18	1.3	0.18	2.3
2016: Sep	241.95	0.22	1.7	192.72	-0.65	-4.4	0.26	1.7	0.18	2.3
2016: Oct	242.30	0.14	1.9	190.37	-1.22	-2.1	0.37	1.9	0.18	2.3
2016: Nov	242.48	0.07	2.2	190.24	-0.07	0.5	0.42	2.2	0.18	2.3
2016: Dec	242.26	-0.09	2.4	190.97	0.38	4.1	0.16	2.4	0.18	2.3
2017: Jan	242.79	0.22	2.5	192.06	0.57	6.6	0.10	2.5	0.19	2.2
2017: Feb	243.54	0.31	2.7	193.12	0.56	12.2	0.06	2.7	0.19	2.1
2017: Mar	244.90	0.56	2.8	198.88	2.98	11.1	0.16	2.8	0.19	2.2
2017: Apr	245.91	0.41	2.8	204.96	3.06	10.4	0.35	2.8	0.20	2.2
2017: May	246.36	0.18	2.5	205.54	0.28	6.7	0.00	2.5	0.20	2.2
2017: Jun	246.65	0.12	2.4	205.41	-0.06	3.7	0.05	2.3	0.19	2.3
2017: Jul	246.94	0.12	2.4	205.05	-0.17	4.4	0.24	2.4	0.19	2.3
2017: Aug	247.49	0.22	2.5	204.39	-0.33	5.4	0.32	2.5	0.19	2.3
2017: Sep	247.92	0.18	2.5	201.09	-1.61	4.3	0.21	2.5	0.20	2.3
2017: Oct	248.17	0.10	2.4	197.33	-1.87	3.7	0.33	2.4	0.19	2.3
2017: Nov	248.13	-0.01	2.3	196.19	-0.58	3.1	0.34	2.3	0.19	2.3
2017: Dec	248.00	-0.05	2.4	196.28	0.05	2.8	0.19	2.4	0.19	2.3

NSA: Not seasonally adjusted, SA: seasonally adjusted. MoM is monthly percent change; YoY is year-over-year percent change.
Source: BofA Merrill Lynch Global Research

Rolling calendar of business indicators

Monday	Tuesday	Wednesday	Thursday	Friday
18 July 10:00 am: NAHB Housing Market Index – Jul Jul 60* Jun 60 May 58 4:00 pm: Net Long-Term TIC Flows – May Apr -79.6% Mar 78.1%	19 July 8:30 am: Housing Starts – Jun Jun 1,150k* May 1,164k Apr 1,167k 8:30 am: Building Permits – Jun Jun 1,160k* May 1,136k Apr 1,130k	20 July MBA Mortgage Applications -(week ending 07/15/16)	21 July 8:30 am: Initial Jobless Claims -(week ending 07/16/16) 8:30 am: Philly Fed – Jul Jul 4.0* Jun 4.7 May -1.8 10:00 am: Existing Home Sales – Jun Jun 5.35M* May 5.53M Apr 5.43M 10:00 am: Leading Indicators – Jun May -0.2% Apr 0.6%	22 July
25 July 10:30 am: Dallas Fed – Jul Jun -18.3 May -20.8	26 July 9:00 am: Case-Shiller HPI yoy – May Apr 5.0% Mar 5.1% 10:00 am: Consumer confidence – Jul Jun 98.0 May 92.4 10:00 am: Richmond Fed – Jul Jun -7 May -1 10:00 am: New Home Sales – Jun May 551k Apr 586k	27 July MBA Mortgage Applications -(week ending 07/22/16) 8:30 am: Durable Goods Orders – Jun May -2.3% Apr 3.2% 8:30 am: Durables ex. Trans. – Jun May -0.3% Apr 0.3% 8:30 am: Core Capital Goods Orders – Jun May -0.4% Apr -0.9% 8:30 am: Core Capital Goods Shipments – Jun May -0.5% Apr 0.6% 10:00 am: Pending Home Sales – Jun May -3.7% Apr 3.9% 2:00 pm: *FOMC Rates Decision*	28 July 8:30 am: Initial Jobless Claims -(week ending 07/23/16) 8:30 am: Advance Goods Trade Balance – Jun May -$61.1B Apr -$57.4B	29 July 8:30 am: Employment Cost Index – 2Q 1Q 0.6% 4Q 0.5% 8:30 am: GDP qoq ann. – 2Q (A) 1Q 1.1% 4Q 1.4% 8:30 am: Personal Consumption – 2Q (A) 1Q 1.5% 4Q 2.4% 8:30 am: GDP Price Index – 2Q (A) 1Q 0.4% 4Q 0.9% 8:30 am: Core PCE qoq – 2Q (A) 1Q 2.0% 4Q 1.3% 9:45 am: Chicago PMI – Jul Jun 56.8 May 49.3 10:00 am: U. of Michigan Consumer Sentiment – Jul (F) Jun 93.5 May 94.7
01 August 10:00 am: ISM manufacturing – Jul Jun 53.2 May 51.3 10:00 am: Construction Spending – Jun May -0.8% Apr -2.0%	02 August 8:30 am: Personal Income – Jun May 0.2% Apr 0.5% 8:30 am: Personal Spending – Jun May 0.4% Apr 1.1% 8:30 am: PCE Core – Jun May 0.2% Apr 0.2% All day: Vehicle Sales – Jul Jun 16.6M May 17.4M	03 August MBA Mortgage Applications -(week ending 07/29/16) 8:15 am: ADP Employment – Jul Jun 172k May 168k 10:00 am: ISM non-manufacturing – Jul Jun 56.5 May 52.9	04 August 8:30 am: Initial Jobless Claims -(week ending 07/30/16) 10:00 am: Factory Orders – Jun May -1.0% Apr 1.8%	05 August 8:30 am: Trade Balance – Jun May -$41.1B Apr -$37.4B 8:30 am: Nonfarm Payrolls – Jul Jun 287k May 11k 8:30 am: Private Payrolls – Jul Jun 265k May -6k 8:30 am: Unemployment Rate – Jul Jun 4.9% May 4.7% 8:30 am: Avg. Hourly Earnings – Jul Jun 0.1% May 0.2% 8:30 am: Avg. Weekly Hours – Jul Jun 34.4 May 34.4 3:00 pm: Consumer credit – Jun May $18.6B Apr $13.4B

*Projections— subject to revision as additional data become available during the month. P – preliminary reading , S – second reading, T – third reading, F – final reading

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