

Key takeaways

- Our big-data indicator shows slippage in the data-flow over the last year. 2019 looks more like 2016 than 2018.
- Downturns are hard to predict. We quantify this, showing that recessions are more different from one another than expansions.
- Even compared to recent cycles this one has been very flat, with a brief peak in 2017-18. This is positive for carry trades.

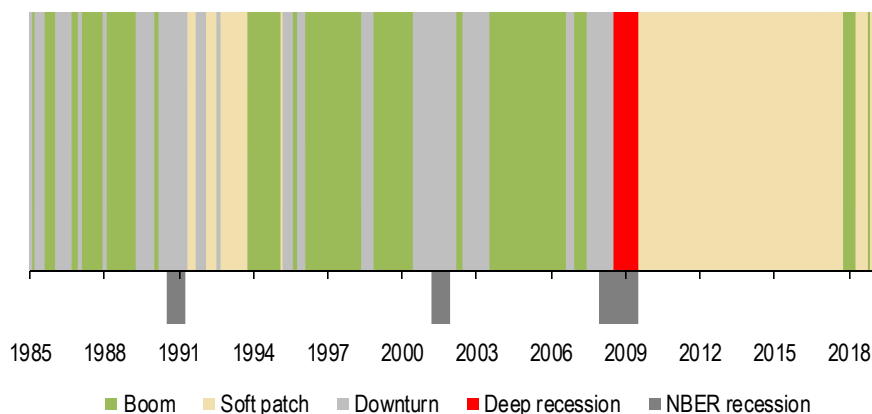
Boring isn't always bad

Our big-data business-cycle indicator classifies the US business cycle into three phases — booms, soft patches and recessions — by running a machine-learning algorithm on 56 years of monthly data covering 124 variables. Here we update our work. We find that the economy is still stuck in the soft patch that started after the financial crisis. But the data have deteriorated over the last year, moving the economy further away from the boom phase. In terms of where we are in the cycle, Feb. 2019 looks a lot like Feb. 2016.

What if we divide the cycle into four phases rather than three? In this case the algorithm identifies late-cycle periods in older expansions as a separate phase, which disappears after the early 1980s. The absence of late-cycle conditions is yet another reason it is so difficult to forecast recessions. The broader issue is that every recession is different. We quantify this by showing that the dispersion of data is largest in recessions.

Next we run our algorithm on a shorter sample that excludes older boom-bust cycles. This helps pick up smaller variations in recent cycles. Specifically, with a shorter sample we find that the current expansion saw a brief boom period in 2017-18. Besides that it has been extraordinarily flat: fluctuations in the data-flow have been very muted even relative to recent history (Chart 1). With fiscal stimulus fading, we expect the economy to fall back into a “no boom, no bust” state, which is supportive for carry trades.

Chart 1: Running our algorithm from 1985 onwards helps identify a boom period in 2017-18



Source: BofA Merrill Lynch Global Research, FRB St. Louis

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A quick review

Our big-data analysis of the US business cycle involves running the “k-means clustering” machine-learning algorithm on the St. Louis Fed’s FRED-MD database. The algorithm divides the data into categories or “clusters” that are meant to capture the phases of the business cycle. The classification closely matches the NBER’s official recession dating even though it does not use the latter as an input. It even distinguishes between economic booms and soft patches when asked to divide the data into three rather than two categories. Details of our methodology are available in the original piece (see [here](#)). Note that our colleagues in Equity Strategy maintain a “US Regime indicator,” which also models the phases of the business cycle (see [here](#)).

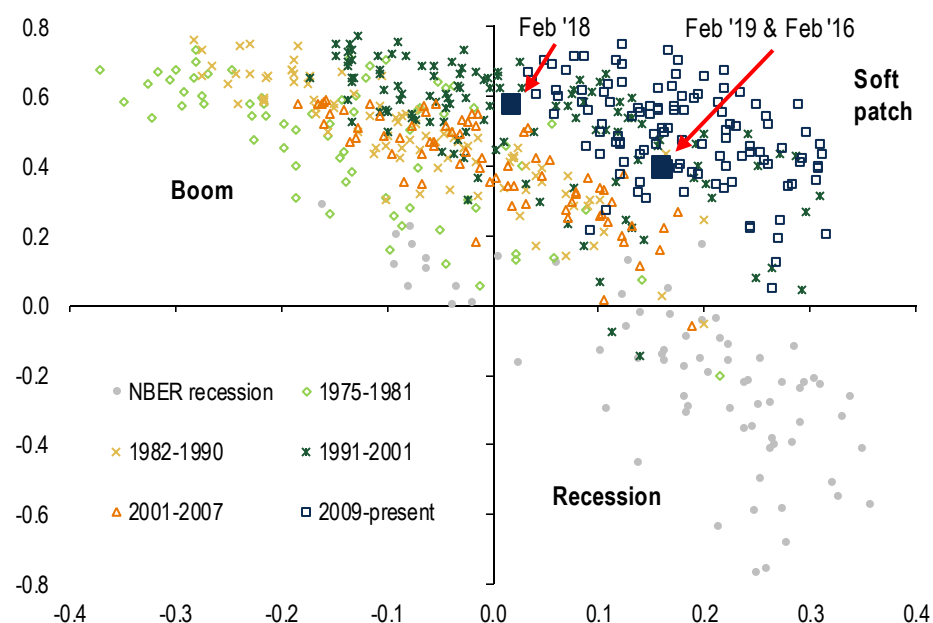
Is 2019 the new 2016?

We update our work with data through February 2019.¹ Unsurprisingly we find that the economy is still stuck in the soft patch that started at the beginning of the current expansion. However, we note that the data have deteriorated in recent months, moving further away from the “boom” phase of the cycle and closer to the “recession” phase. Chart 2 highlights three months: (i) February 2019, the most recent month in our sample, (ii) February 2018, when the economy was closer to the “boom” cluster than at any other time in the current expansion, and (iii) February 2016, which is almost indistinguishable from February 2019 in the chart.

The implication is that the current slowdown is similar in magnitude to the slowdown in early 2016. But this does not mean that the current data-flow is very similar to that three years ago. In fact it is not. For example, equity-market variables are presently much stronger and indicators related to money and credit are much weaker. According to our classification though, in terms of the overall state of the economy these differences almost perfectly net out.

The 2016 slowdown did not lead to recession, and we do not expect the current one to either. The current spell of weakness appears to be largely related to idiosyncratic factors, including the government shutdown, the resulting delays in tax refunds, bizarre volatility in the retail sales data and weather-related disruptions. Of course the economy is also slowing as the fiscal tailwinds from tax cuts and the budget deal fade. Our base

Chart 2: The data flow has deteriorated substantially in the last year



Source: BofA Merrill Lynch Global Research, FRB St. Louis, NBER

¹ A few variables are only available through January. For these we use either our forecasts or projections based on historical data.

case is that the economy will slow down to around trend growth (just under 2%) by the end of this year, and then remain thereabouts in 2020. In other words, we expect to remain in a soft patch, with decent growth but no obvious signs of overheating.

There are a lot of interesting extensions and modifications to our baseline model that can add nuance to the simple finding that the economy has been stuck in second gear for nearly a decade. Below we explore a couple.

Every recession is unhappy in its own way

Our baseline model identifies three phases of the business cycle: booms, soft-patch expansions and recessions. An obvious extension is to look for a fourth phase. Chart 3 illustrates that the fourth phase of the cycle identified by our model is a late-cycle phase that spills over into the early part of recessions. Interestingly though this phase completely disappears after the early 1980s.

We think the disappearance of late-cycle conditions is the result of the great moderation, i.e., the transition from boom-bust cycles to more tepid and usually-longer expansions. But the absence of a late-cycle signal in the macro data does make it even harder to forecast recessions, something that we economists are notoriously bad at.

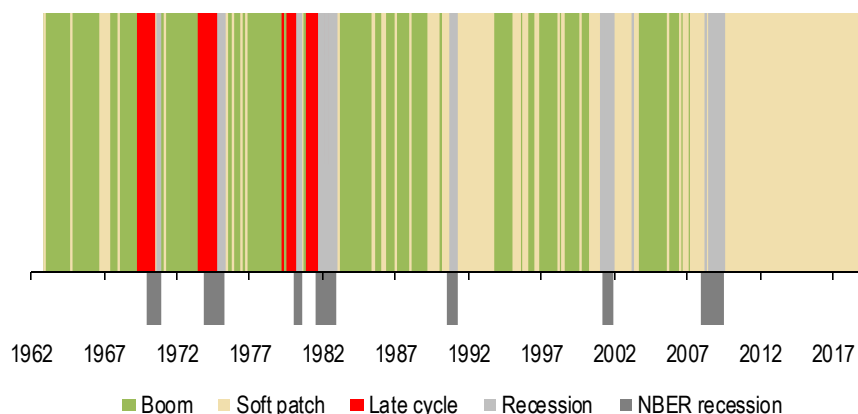
The often-cited reason for why it is so difficult to forecast recessions is that every downturn is different. After all if recessions were similar and easy to forecast, policymakers would be better at taking steps to avoid or mitigate them. Over the last several decades recessions have been caused by: oil-price spikes (e.g., 1973-75), an inflation-fighting Fed (e.g., 1981-82) and financial bubbles that correspond to ones in the real economy (e.g., 2001 and 2008-09).

Here we quantify this qualitative assessment. In our full dataset all variables are normalized to have a mean of zero and a standard deviation of one. By looking at the average standard deviation of the variables *within* the phases of the cycle we can measure how dispersed the data are during the different phases (Table 1). We consider various specifications, including the NBER's recession classification and our algorithm's classification of the data into two, three and four phases. In all cases we find that the dispersion of the data is largest in recessions. This basically means that recessions are more "different" from one another than expansions are.

There's Waldo

If the nature of the business cycle has changed because of the great moderation, another natural extension is to run our machine-learning algorithm on a shorter sample. Here we use a sample that starts in 1985, after the end of the "great inflation" (our full sample starts in 1962). This could help identify periods that are economic booms by

Chart 3: Dividing the cycle into four phases helps isolate late-cycle conditions in older expansions



Source: BofA Merrill Lynch Global Research, FRB St. Louis, NBER

Table 1: The average standard deviation across the variables in our dataset is largest in recessions

	Recession	Expansion		
NBER classification	1.33	0.87		
Big data: two clusters	1.28	0.87		
		Boom	Soft patch	Late cycle
Big data: three clusters	1.29	0.83	0.85	
Big data: four clusters	1.33	0.77	0.83	0.97

Source: BofA Merrill Lynch Global Research, FRB St. Louis, NBER

Table 2: Average monthly growth rates of headline indicators in the four data clusters (short sample, starting in 1985)

	Deep recession	Downturn	Soft patch	Boom
Nonfarm payrolls	-0.4%	0.0%	0.1%	0.2%
Industrial production	-1.4%	-0.1%	0.2%	0.4%
Real personal income less transfer payments	-0.4%	0.1%	0.2%	0.3%
Real manufacturing & trade sales	-1.1%	0.0%	0.3%	0.4%

Source: BofA Merrill Lynch Global Research, FRB St. Louis

recent standards, even if they get classified as “soft patches” in the full sample because they do not resemble peak conditions in older cycles.

It turns out that we can find a short boom period in the current cycle—10 months in total—if we divide the data into four clusters.² Table 2 shows the average performance of headline coincident indicators in each cluster. There is a clear rank ordering among the clusters. Instead of identifying late-cycle periods as the fourth cluster, as it did in the full sample, the algorithm now isolates the worst months of the financial crisis into a category that we refer to as “deep recession.” Based on the performance of the headline indicators we name the other categories “downturn”, “soft patch” and “boom” (Chart 1). We use the term “downturn” instead of “recession” because although this cluster captures the NBER’s recession dates, it also includes months that the NBER classifies as expansionary.

Our results suggest that the current business cycle peaked in late 2017 and early 2018, when the US economy benefited first from the synchronized pickup in global growth and then from tax cuts. Peak conditions returned late last year, but the economy fell back into a soft patch in the last three months of our sample (Dec 2018-Feb 2019). We would not rule out a brief return to the boom cluster this spring, if we get the expected payback for the above-mentioned data distortions. But it seems clear that the cycle is past its peak.

Risk carries the day

We conclude on a positive note. While much has been written about the weakness of the ongoing recovery, our work suggests it has actually been very durable. We can see from Chart 1 that when we run our algorithm on the short sample, the data in past cycles mostly flip-flop between the boom and downturn clusters. Yet not even one of the 116 months in this expansion falls into our algorithm’s downturn cluster. In this sense it might be more appropriate to refer to this cycle as “flat” rather than “weak.”

Therefore, although the cycle has probably peaked, we expect a soft landing back to trend-like growth rather than a recession in the medium term. In other words, we are likely back in a “no boom, no bust” paradigm. We view this environment as supportive for carry trades.

² We also tried dividing the data into three clusters. In this case downturns got classified into one cluster but the two expansion clusters did not clearly break out into expansions and soft patches.

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