

Economics Group

MONTHLY OUTLOOK

U.S. Overview

Where Have All the Good Times Gone?

A few short months ago, the U.S. economy was cruising along with strong growth momentum. But the environment clearly has changed. Financial markets have encountered turbulence and economic growth has slowed. What happened?

Some of the deceleration in economic activity is policy induced. Higher rates, brought about by Fed tightening last year, appear to have weighed on the housing market. Chinese tariffs on American goods, which were levied in retaliation for American tariffs on Chinese products, have caused U.S. exports to China to weaken significantly. In addition, slower global growth, in conjunction with booming petroleum supply in the United States, led to a sharp decline in oil prices in the fourth quarter.

Lower oil prices should help to support real disposable income growth, which should underpin continued solid growth in real personal consumption expenditures. The drop in oil prices will also weigh on investment in the energy sector, similar to how it did in 2015-2016. The impact should be less dramatic, however, reflecting the more modest rebound we have seen in exploration and production. Accordingly, we have pared back our forecast for business fixed investment as well as real GDP growth.

We have also made some changes to our forecast for Federal Reserve policy. **We continue to look for the FOMC to hike rates by 50 bps in 2019, but we have pushed back the timing for its first 25 bps rate hike to June** (from March). We look for one more 25 bps hike in December, before the Fed reverses course in late 2020 as real GDP growth slows further.

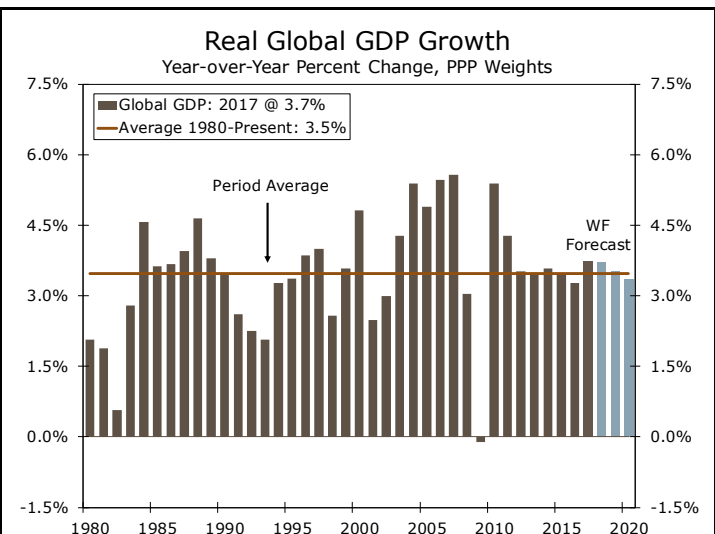
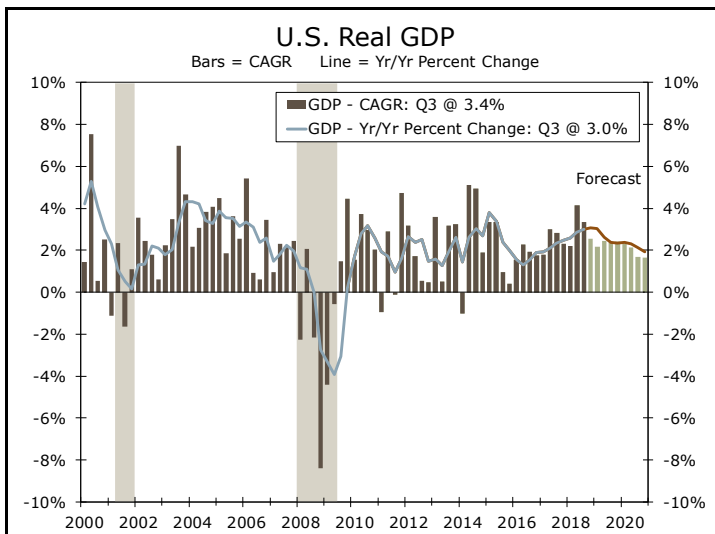
International Overview

New Year, Same Fears of a Global Slowdown

As the New Year kicks off, many of the same concerns around global economic growth have carried over from 2018. Specifically, there seems to be a particular focus on the Chinese economy, where the hard data and sentiment figures have both weakened, while there have also been some signs that the Eurozone economic expansion is softening further. In light of these more concerning growth and activity figures, **we have lowered our 2019 global GDP forecast slightly, partly driven by slower growth in the Eurozone.**

Amid these concerns around the pace of global growth, foreign central banks have generally followed the Federal Reserve in adopting a more cautious or dovish stance. While the European Central Bank (ECB) ended its bond buying program in December, it also noted that risks around the growth outlook were moving to the downside, and the Bank of Canada (BoC) signaled a slower pace of rate hikes going forward. Accordingly, **we have dialed back the pace of ECB rate hikes and now see the BoC hiking rates just twice this year rather than three times.**

Global political developments remain in focus as well. In late December, Italy reached a deal with its European partners to target a narrower budget deficit in 2019, diffusing a months-long period of uncertainty. That said, Brexit uncertainty remains, with U.K. Parliament expected to reject the current withdrawal deal in a vote scheduled for January 15. Meanwhile, the U.S. and China continue to hold discussions in an effort to reach a deal and diffuse the ongoing trade war.



Source: U.S. Department of Commerce, International Monetary Fund and Wells Fargo Securities



Where Have All the Good Times Gone?

A few months ago, the U.S. economy was cruising along with strong momentum (see graph on front page). Real GDP in Q2-2018 grew 4.2% at an annualized rate, the strongest sequential growth rate in four years, and most stock market indices had risen to all-time highs. But the environment clearly has changed in recent months. Financial markets have encountered volatility and economic growth has slowed. In that regard, we estimate U.S. real GDP grew at an annualized rate of 2.5% in the fourth quarter of 2018, a solid rate to be sure but a meaningful slowing nevertheless from the heady rates earlier in the year. What happened?

Some of the deceleration in economic activity is policy induced. For starters, the Fed hiked rates by 100 bps in 2018. Higher mortgage rates have weighed on the housing market, which has essentially stalled, and auto sales were flat in 2018 due, at least in part, to higher interest rates. Trade policy appears to be exerting headwinds on growth as well. U.S. exports to China have weakened sharply in recent months due to the tariffs the Chinese government slapped on American goods in retaliation for U.S. tariffs on Chinese products. Uncertainty about trade policy may be weighing on business fixed investment spending, which also has downshifted in recent months.

Economic growth in many foreign economies also appears to have slowed. Eurozone real GDP, which rose 2.8% in Q3-2017, the strongest year-over-year rate in six years, grew just 1.6% in the third quarter of last year. American tariffs on Chinese goods have also led to weaker growth in China, the world’s second largest individual economy. Slower global growth, in conjunction with booming petroleum supply in the United States, led to a sharp decline in oil prices in the fourth quarter.

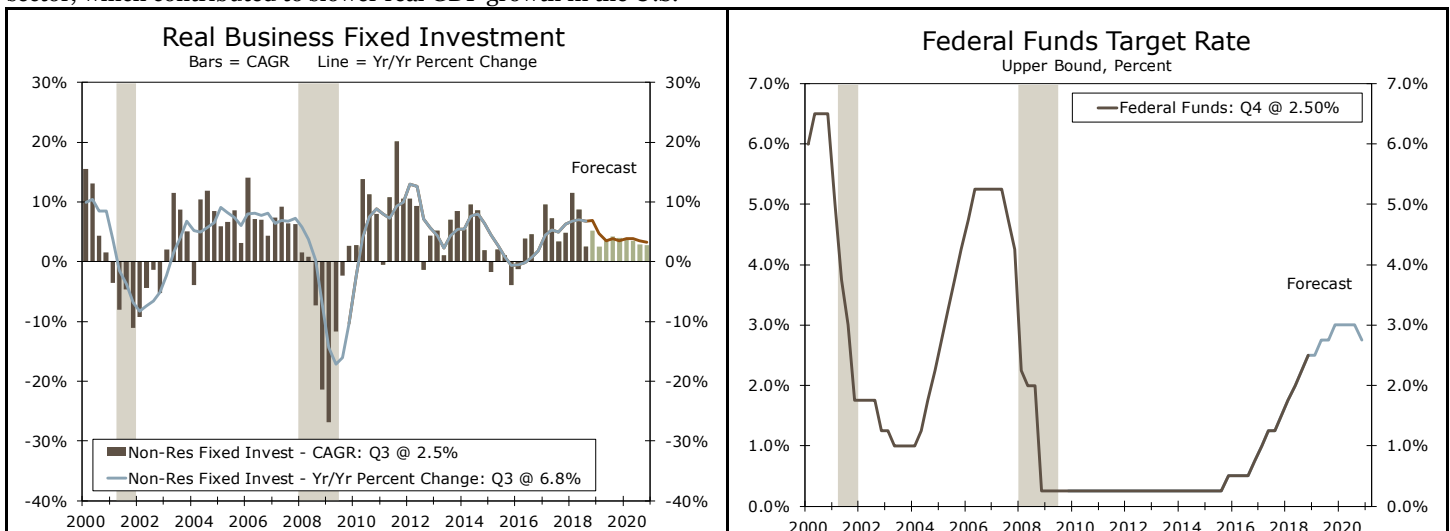
In many respects, the events of the past few months remind us of late 2015/early 2016. Oil prices had collapsed, there were concerns about economic deceleration in China and financial markets encountered turbulence. The nosedive in oil prices led to significant cutbacks in investment spending in the energy sector, which contributed to slower real GDP growth in the U.S.

economy. Indeed, real GDP edged up only 0.4% (annualized rate) in Q4-2015 and 1.5% in the first quarter of 2016. The slowdown in real GDP growth and sharp deceleration in consumer price inflation—the overall rate of PCE inflation fell below 1% throughout 2015 and the first half of 2016—caused the Fed to refrain from raising rates from late December 2015 until December 2016.

We have been forecasting for some time that U.S. GDP growth would slow in 2019. We anticipated the dampening effects higher interest rates would have on GDP growth. Furthermore, the fiscal stimulus the economy received in 2018 via tax cuts and spending increases will fade as 2019 progresses. That said, the events of the past month have led us to dial back our GDP forecast for 2019 a bit. A month ago, we projected U.S. real GDP would grow 2.5% between Q4-2018 and Q4-2019. We have shaved that forecast down to 2.4%.

The decline in oil prices should help support real disposable income growth, which should underpin continued solid growth in real personal consumption expenditures. Lower overall inflation should also keep interest rates lower than they would otherwise be, which will lend some much needed support to the housing sector. The drop in oil prices will likely weigh on investment in the energy sector as it did in 2015-2016. The impact will be somewhat less, however, as the rebound from the mid-decade slide in oil output has been fairly modest. Accordingly, we have pared back our forecast for business fixed investment spending (left chart).

We have also made some changes to our forecast for Federal Reserve policy. A month ago, we thought that the Federal Open Market Committee (FOMC) would hike rates twice in 2019—once in March and once in September. We still look for 50 bps of rate hikes in 2019, but we think that the FOMC will wait until the June meeting to lift its target range for the fed funds rate by 25 bps (right chart). We expect the FOMC will hike again in December before ultimately reversing course in late 2020 as real GDP growth decelerates further.



Source: U.S. Department of Commerce, Federal Reserve Board and Wells Fargo Securities

Wells Fargo U.S. Economic Forecast																				
	Actual								Forecast								Actual		Forecast	
	2017				2018				2019				2020				2017	2018	2019	2020
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q				
Real Gross Domestic Product (a)	1.8	3.0	2.8	2.3	2.2	4.2	3.4	2.5	2.2	2.4	2.4	2.4	2.3	2.1	1.7	1.7	2.2	2.9	2.6	2.2
Personal Consumption	1.8	2.9	2.2	3.9	0.5	3.8	3.5	3.6	2.4	2.6	2.5	2.4	2.2	2.1	1.8	1.7	2.5	2.7	2.9	2.2
Business Fixed Investment	9.6	7.3	3.4	4.8	11.5	8.7	2.5	5.2	2.6	3.5	4.2	4.0	3.7	3.6	2.9	2.8	5.3	6.9	3.9	3.6
Equipment	9.1	9.7	9.8	9.9	8.5	4.6	3.4	5.3	0.3	2.3	3.7	3.1	2.7	2.6	2.1	2.0	6.1	7.4	2.9	2.7
Intellectual Property Products	8.0	6.6	1.7	0.7	14.1	10.5	5.6	6.5	5.8	5.3	4.7	4.6	4.7	4.6	3.7	3.6	4.6	7.3	5.9	4.5
Structures	12.8	3.8	-5.7	1.3	13.9	14.5	-3.4	3.0	2.5	3.5	4.5	5.0	4.5	4.0	3.5	3.5	4.6	5.4	3.1	4.2
Residential Construction	11.1	-5.5	-0.5	11.1	-3.4	-1.3	-3.6	-3.0	-1.5	2.0	1.8	1.5	1.5	1.5	1.0	1.0	3.3	-0.2	-0.8	1.5
Government Purchases	-0.8	0.0	-1.0	2.4	1.5	2.5	2.6	2.8	2.3	2.3	1.7	1.2	0.7	0.7	0.3	0.1	-0.1	1.7	2.3	0.9
Net Exports	-845.5	-844.1	-845.9	-899.2	-902.4	-841.0	-949.7	-993.8	-1002.4	-1009.2	-1013.7	-1017.6	-1014.4	-1013.3	-1017.0	-1016.8	-858.7	-921.7	-1010.7	-1015.4
Pct. Point Contribution to GDP	-0.1	0.1	0.0	-0.9	0.0	1.2	-2.0	-0.9	-0.2	-0.1	-0.1	-0.1	0.1	0.0	-0.1	0.0	-0.4	-0.3	-0.5	0.0
Inventory Change	-2.4	11.9	64.4	16.1	30.3	-36.8	89.8	95.0	94.0	84.0	74.0	74.0	72.0	72.0	72.0	72.0	22.5	44.6	81.5	72.0
Pct. Point Contribution to GDP	-0.8	0.2	1.0	-0.9	0.3	-1.2	2.3	0.1	0.0	-0.2	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0
Nominal GDP (a)	3.9	4.2	4.8	5.1	4.3	7.6	4.9	3.8	3.5	4.8	4.9	4.8	4.6	4.4	3.6	3.6	4.2	5.2	4.5	4.5
Real Final Sales	2.6	2.8	1.8	3.2	1.9	5.4	1.0	2.7	2.2	2.7	2.6	2.4	2.3	2.2	1.7	1.7	2.2	2.8	2.5	2.3
Retail Sales (b)	4.9	4.1	4.3	5.6	4.5	5.7	5.7	4.6	4.7	3.8	3.8	3.8	4.1	4.4	4.4	3.7	4.7	5.1	4.0	4.1
Inflation Indicators (b)																				
PCE Deflator	2.0	1.6	1.6	1.8	1.9	2.2	2.2	1.8	1.5	1.6	1.8	2.1	2.3	2.3	2.2	2.1	1.8	2.0	1.8	2.2
"Core" PCE Deflator	1.8	1.6	1.5	1.6	1.7	1.9	2.0	1.9	2.0	2.0	2.1	2.2	2.2	2.2	2.2	2.1	1.6	1.9	2.1	2.2
Consumer Price Index	2.6	1.9	2.0	2.1	2.3	2.6	2.6	2.2	1.8	2.0	2.2	2.5	2.8	2.7	2.5	2.4	2.1	2.4	2.1	2.6
"Core" Consumer Price Index	2.1	1.8	1.7	1.7	1.9	2.2	2.2	2.2	2.1	2.3	2.3	2.4	2.3	2.2	2.2	2.2	1.8	2.1	2.3	2.2
Producer Price Index (Final Demand)	2.0	2.2	2.4	2.8	2.8	3.0	2.9	2.6	1.9	1.7	1.9	2.0	2.5	2.6	2.4	2.2	2.3	2.9	1.9	2.4
Employment Cost Index	2.4	2.4	2.5	2.6	2.7	2.8	2.8	3.0	3.0	3.2	3.3	3.2	3.2	3.3	3.3	3.3	2.5	2.8	3.2	3.3
Real Disposable Income (a)	4.5	2.2	2.2	2.3	4.4	1.8	2.4	3.0	3.1	3.3	3.1	3.0	2.9	2.8	2.7	2.5	2.6	2.8	2.9	2.9
Nominal Personal Income (b)	4.1	4.3	4.5	4.6	4.3	4.5	4.4	4.3	4.1	4.5	4.7	4.6	4.4	4.2	3.9	3.6	4.4	4.4	4.5	4.0
Industrial Production (a)	1.0	5.0	-1.5	7.7	2.5	5.2	4.7	2.7	1.9	2.4	1.2	4.0	2.5	4.7	0.7	0.1	1.6	3.9	2.7	2.6
Capacity Utilization	75.4	76.2	75.8	77.0	77.2	77.8	78.3	78.4	78.5	78.6	78.6	78.8	78.9	79.1	79.0	78.9	76.1	77.9	78.6	79.0
Corporate Profits Before Taxes (b)	3.0	3.6	2.8	3.3	5.9	7.3	10.4	7.0	7.3	4.9	3.9	1.9	0.6	1.0	-1.4	-1.0	3.2	7.7	4.4	-0.2
Corporate Profits After Taxes	6.0	6.2	6.4	7.3	15.1	15.8	19.6	13.2	6.2	4.8	3.6	1.8	0.5	0.9	-1.7	-1.3	6.5	15.9	4.1	-0.4
Federal Budget Balance (c)	-317	4	-143	-225	-375	-7	-172	-351	-422	-60	-216	-313	-463	-79	-245	-339	-666	-779	-1050	-1100
Trade Weighted Dollar Index (d)	94.0	90.5	88.1	87.5	86.3	90.0	90.1	91.9	91.3	90.8	89.8	88.8	87.5	86.8	86.0	85.3	91.1	89.0	90.1	86.4
Nonfarm Payroll Change (e)	177	190	142	221	218	217	190	254	180	170	160	160	150	140	100	90	182	220	168	120
Unemployment Rate	4.6	4.4	4.3	4.1	4.1	3.9	3.8	3.8	3.7	3.6	3.5	3.5	3.4	3.3	3.3	3.3	4.4	3.9	3.6	3.3
Housing Starts (f)	1.23	1.17	1.17	1.26	1.32	1.26	1.23	1.27	1.29	1.30	1.30	1.30	1.30	1.31	1.31	1.31	1.20	1.27	1.30	1.31
Light Vehicle Sales (g)	17.1	16.8	17.1	17.6	17.1	17.2	16.9	17.2	16.8	16.7	16.7	16.6	16.6	16.5	16.4	16.3	17.1	17.1	16.7	16.5
Crude Oil - Brent - Front Contract (h)	54.6	50.8	52.2	61.4	66.9	74.6	75.8	68.6	57.0	62.0	66.0	68.0	68.0	67.0	66.0	65.0	54.7	71.5	63.3	66.5
Quarter-End Interest Rates (i)																				
Federal Funds Target Rate	1.00	1.25	1.25	1.50	1.75	2.00	2.25	2.50	2.50	2.75	2.75	3.00	3.00	3.00	3.00	2.75	1.13	1.96	2.75	2.94
3 Month LIBOR	1.15	1.30	1.33	1.69	2.31	2.34	2.40	2.81	2.70	2.95	2.95	3.20	3.20	3.20	3.20	2.95	1.26	2.31	2.95	3.14
Prime Rate	4.00	4.25	4.25	4.50	4.75	5.00	5.25	5.50	5.50	5.75	5.75	6.00	6.00	6.00	6.00	5.75	4.13	4.96	5.75	5.94
Conventional Mortgage Rate	4.20	3.90	3.81	3.94	4.44	4.57	4.63	4.64	4.55	4.70	4.80	4.90	4.90	4.85	4.85	4.80	3.99	4.54	4.74	4.85
3 Month Bill	0.76	1.03	1.06	1.39	1.73	1.93	2.19	2.45	2.50	2.70	2.70	2.90	2.90	2.90	2.90	2.65	0.95	1.97	2.70	2.84
6 Month Bill	0.91	1.14	1.20	1.53	1.93	2.11	2.36	2.56	2.60	2.75	2.80	2.90	2.90	2.90	2.85	2.70	1.07	2.14	2.76	2.84
1 Year Bill	1.03	1.24	1.31	1.76	2.09	2.33	2.59	2.63	2.70	2.85	2.90	2.95	2.95	2.90	2.85	2.75	1.20	2.33	2.85	2.86
2 Year Note	1.27	1.38	1.47	1.89	2.27	2.52	2.81	2.48	2.75	2.85	2.90	2.95	2.95	2.90	2.85	2.75	1.40	2.53	2.86	2.86
5 Year Note	1.93	1.89	1.92	2.20	2.56	2.73	2.94	2.51	2.80	2.95	3.05	3.10	3.10	3.05	3.00	2.95	1.91	2.75	2.98	3.03
10 Year Note	2.40	2.31	2.33	2.40	2.74	2.85	3.05	2.69	2.95	3.10	3.20	3.30	3.30	3.25	3.25	3.20	2.33	2.91	3.14	3.25
30 Year Bond	3.02	2.84	2.86	2.74	2.97	2.98	3.19	3.02	3.20	3.45	3.55	3.60	3.65	3.70	3.65	3.60	2.89	3.11	3.45	3.65

Forecast as of: January 8, 2019

Notes: (a) Compound Annual Growth Rate Quarter-over-Quarter

(b) Year-over-Year Percentage Change

(c) Quarterly Sum - Billions USD; Annual Data Represents Fiscal Yr.

(d) Federal Reserve Major Currency Index, 1973=100 - Quarter End

(e) Average Monthly Change

(f) Millions of Units - Annual Data - Not Seasonally Adjusted

(g) Quarterly Data - Average Monthly SAAR; Annual Data - Actual Total Vehicles Sold

(h) Quarterly Average of Daily Close

(i) Annual Numbers Represent Averages

Source: Federal Reserve Board, IHS Markit, U.S. Department of Commerce, U.S. Department of Labor and Wells Fargo Securities

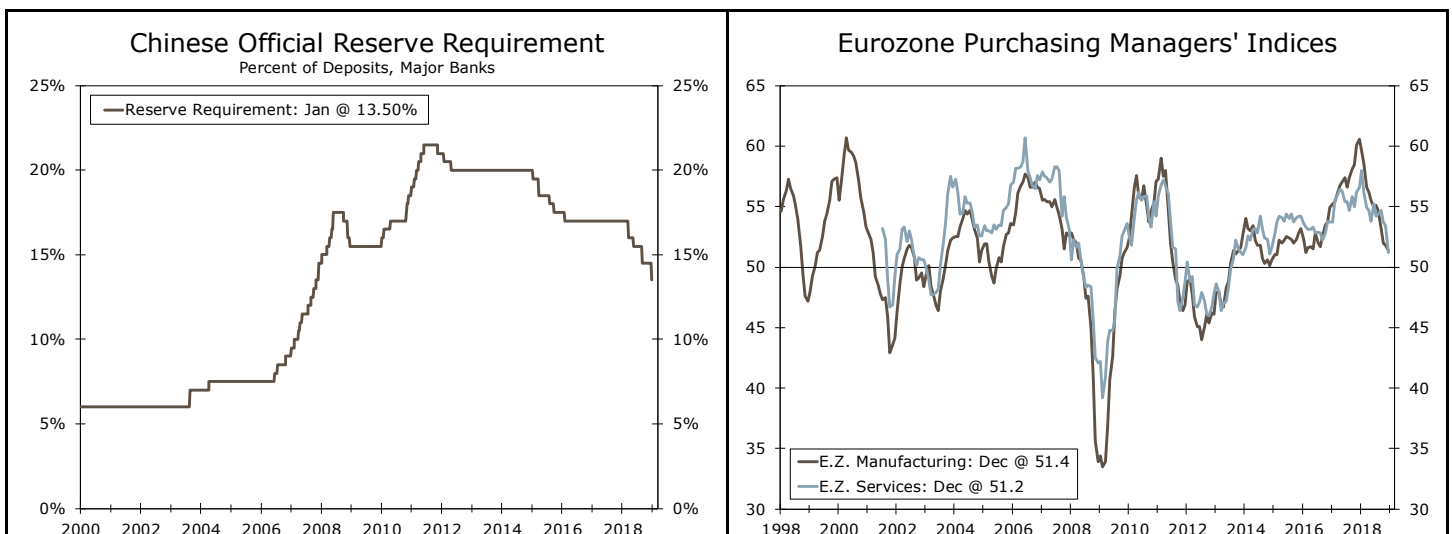
New Year, Same Fears of a Global Slowdown

As the New Year kicks off, many of the same concerns around global economic growth have carried over from 2018. In just the first few days of the year, China released sentiment data that pointed to a further slowdown in factory sector activity, as the manufacturing PMI fell to 49.4. That marks the weakest reading since early 2016, and the first time the index has fallen below the key 50 line demarcating expansion from contraction since then. Following this weak release, Chinese authorities announced a 100-bp cut in the reserve requirement ratio (RRR) for major banks to 13.50%, a move which follows 250 bps worth of RRR cuts and other easing measures from China in 2018. As China's economy continues to show signs of slowing, the stakes remain high for ongoing U.S.-China trade talks. As a reminder, if a deal is not reached by March 1, U.S. President Trump has threatened to raise tariffs on Chinese goods further. Meanwhile, sentiment data from the Eurozone have also been on the soft side in recent weeks, as the December services PMI fell to 51.2 (the lowest reading since 2014) and the manufacturing PMI slipped to 51.4. Amid these concerns around the pace of global growth, foreign central banks have generally followed the Federal Reserve in adopting a more cautious or dovish stance. The European Central Bank (ECB) ended its bond buying program in December as widely expected, but it also noted that risks around the growth outlook were moving to the downside. Given the ongoing weakness in Eurozone economic data and in light of the more cautious central bank language, **we now expect the ECB to raise its deposit rate just once this year by 20 bps to 0.20% from 0.40%, followed by another 20-bp deposit rate hike in Q1-2020.** We had previously looked for two 20-bp deposit rate hikes in the second half of this year. Still, strong wage growth figures from the Eurozone give us comfort that the economic recovery in the currency bloc should continue, and the ECB still remains on course to normalize policy further, even if that normalization occurs at a slower pace.

Meanwhile, the Bank of Canada (BoC) also sounded more dovish in its assessment of the economic situation, with a particular focus on the decline in oil prices as a downside economic risk. The central bank also noted there was “additional room for non-inflationary growth,” signaling it was in no rush to raise interest rates further. Markets are now pricing in less than one 25-bp rate hike from the BoC in 2019. We are not quite as pessimistic on the prospects for BoC policy, **but have changed our call for 2019 to two 25-bp rate hikes instead of our prior estimate of three hikes.** This week's BoC policy announcement could offer clues on how soon that next rate hike could occur.

Global political developments remain in focus as well. In late December, Italy reached a deal with its European partners to target a narrower budget deficit in 2019, revising its deficit target to 2.04% of GDP from 2.4% of GDP. That revision settled a months-long period of conflict between the Italian coalition government and the European Commission, but was met with a muted positive reaction in European financial markets. Indeed, questions remain over Italy's fiscal situation, including how the government will allocate the limited remaining fiscal stimulus among various campaign promises, and moreover whether it will be able to achieve this narrower deficit target.

Little progress has been made in resolving Brexit uncertainty, with U.K. Parliament expected to reject the current withdrawal deal in a vote scheduled for January 15. If the deal is rejected, the next steps are unclear—of course, a “no deal” Brexit is possible, but given the potentially significant downside economic impact, we see it as the least likely outcome. A second referendum is also possible, but we see a repeat parliamentary vote on the withdrawal deal as more likely, particularly if financial market volatility coerces members of U.K. Parliament to vote through the deal. In any event, financial market volatility in the United Kingdom is likely to remain elevated and even push higher in the coming days and weeks until there is a clearer path forward for the Brexit process.



Source: Bloomberg LP and Wells Fargo Securities

Wells Fargo International Economic Forecast

(Year-over-Year Percent Change)

	GDP			CPI		
	2018	2019	2020	2018	2019	2020
Global (PPP Weights)	3.7%	3.5%	3.4%	3.5%	3.6%	3.7%
Advanced Economies ¹	2.4%	2.2%	1.9%	2.2%	2.0%	2.3%
United States	2.9%	2.6%	2.2%	2.4%	2.1%	2.6%
Eurozone	1.9%	1.6%	1.5%	1.8%	1.7%	1.7%
United Kingdom	1.3%	1.5%	1.5%	2.5%	2.2%	2.0%
Japan	0.7%	0.8%	0.5%	1.0%	1.1%	1.8%
Canada	2.0%	1.9%	1.7%	2.2%	2.0%	2.0%
Developing Economies ¹	4.6%	4.5%	4.4%	4.4%	4.7%	4.6%
China	6.6%	6.2%	6.0%	2.2%	2.3%	2.3%
India	7.4%	7.3%	7.1%	4.0%	4.4%	4.6%
Mexico	2.0%	2.3%	1.9%	4.9%	4.1%	3.7%

Forecast as of: January 8, 2019

¹Aggregated Using PPP Weights

Wells Fargo International Interest Rate Forecast

(End of Quarter Rates)

	3-Month LIBOR						10-Year Bond					
	2019				2020		2019				2020	
	Q1	Q2	Q3	Q4	Q1	Q2	Q1	Q2	Q3	Q4	Q1	Q2
U.S.	2.70%	2.95%	2.95%	3.20%	3.20%	3.20%	2.95%	3.10%	3.20%	3.30%	3.30%	3.25%
Japan	-0.08%	0.00%	0.00%	0.00%	0.00%	0.00%	0.05%	0.15%	0.18%	0.20%	0.20%	0.20%
Euroland ¹	-0.35%	-0.30%	-0.15%	-0.15%	0.05%	0.15%	0.35%	0.45%	0.60%	0.70%	0.85%	0.90%
U.K.	0.85%	1.10%	1.10%	1.35%	1.35%	1.35%	1.50%	1.65%	1.75%	1.80%	1.80%	1.85%
Canada ²	2.20%	2.20%	2.20%	2.45%	2.45%	2.45%	2.20%	2.25%	2.30%	2.45%	2.50%	2.50%

Forecast as of: January 8, 2019

¹ 10-year German Government Bond Yield ² 3-Month Canada Bankers' Acceptances

Source: International Monetary Fund and Wells Fargo Securities

Wells Fargo Securities Economics Group

Jay H. Bryson, Ph.D.	Global Economist	(704) 410-3274	jay.bryson@wellsfargo.com
Mark Vitner	Senior Economist	(704) 410-3277	mark.vitner@wellsfargo.com
Sam Bullard	Senior Economist	(704) 410-3280	sam.bullard@wellsfargo.com
Nick Bennenbroek	Macro Strategist	(212) 214-5636	nicholas.bennenbroek@wellsfargo.com
Azhar Iqbal	Econometrician	(212) 214-2029	azhar.iqbal@wellsfargo.com
Tim Quinlan	Senior Economist	(704) 410-3283	tim.quinlan@wellsfargo.com
Sarah House	Senior Economist	(704) 410-3282	sarah.house@wellsfargo.com
Charlie Dougherty	Economist	(704) 410-6542	charles.dougherty@wellsfargo.com
Erik Nelson	Macro Strategist	(212) 214-5652	erik.f.nelson@wellsfargo.com
Michael Pugliese	Economist	(212) 214-5058	michael.d.pugliese@wellsfargo.com
Brendan McKenna	Macro Strategist	(212) 214-5637	brendan.mckenna@wellsfargo.com
Abigail Kinnaman	Economic Analyst	(704) 410-1570	abigail.kinnaman@wellsfargo.com
Shannon Seery	Economic Analyst	(704) 410-1681	shannon.seery@wellsfargo.com
Matthew Honnold	Economic Analyst	(704) 410-3059	matthew.honnold@wellsfargo.com
Donna LaFleur	Executive Assistant	(704) 410-3279	donna.lafleur@wellsfargo.com
Dawne Howes	Administrative Assistant	(704) 410-3272	dawne.howes@wellsfargo.com

Wells Fargo Securities Economics Group publications are produced by Wells Fargo Securities, LLC, a U.S. broker-dealer registered with the U.S. Securities and Exchange Commission, the Financial Industry Regulatory Authority, and the Securities Investor Protection Corp. Wells Fargo Securities, LLC, distributes these publications directly and through subsidiaries including, but not limited to, Wells Fargo & Company, Wells Fargo Bank N.A., Wells Fargo Clearing Services, LLC, Wells Fargo Securities International Limited, Wells Fargo Securities Canada, Ltd., Wells Fargo Securities Asia Limited and Wells Fargo Securities (Japan) Co. Limited. Wells Fargo Securities, LLC is registered with the Commodities Futures Trading Commission as a futures commission merchant and is a member in good standing of the National Futures Association. Wells Fargo Bank, N.A. is registered with the Commodities Futures Trading Commission as a swap dealer and is a member in good standing of the National Futures Association. Wells Fargo Securities, LLC and Wells Fargo Bank, N.A. are generally engaged in the trading of futures and derivative products, any of which may be discussed within this publication. Wells Fargo Securities, LLC does not compensate its research analysts based on specific investment banking transactions. Wells Fargo Securities, LLC's research analysts receive compensation that is based upon and impacted by the overall profitability and revenue of the firm which includes, but is not limited to investment banking revenue. The information and opinions herein are for general information use only. Wells Fargo Securities, LLC does not guarantee their accuracy or completeness, nor does Wells Fargo Securities, LLC assume any liability for any loss that may result from the reliance by any person upon any such information or opinions. Such information and opinions are subject to change without notice, are for general information only and are not intended as an offer or solicitation with respect to the purchase or sales of any security or as personalized investment advice. Wells Fargo Securities, LLC is a separate legal entity and distinct from affiliated banks and is a wholly owned subsidiary of Wells Fargo & Company © 2019 Wells Fargo Securities, LLC.

Important Information for Non-U.S. Recipients

For recipients in the EEA, this report is distributed by Wells Fargo Securities International Limited ("WFSIL"). WFSIL is a U.K. incorporated investment firm authorized and regulated by the Financial Conduct Authority. For the purposes of Section 21 of the UK Financial Services and Markets Act 2000 ("the Act"), the content of this report has been approved by WFSIL, an authorized person under the Act. WFSIL does not deal with retail clients as defined in the Directive 2014/65/EU ("MiFID2"). The FCA rules made under the Financial Services and Markets Act 2000 for the protection of retail clients will therefore not apply, nor will the Financial Services Compensation Scheme be available. This report is not intended for, and should not be relied upon by, retail clients.

SECURITIES: NOT FDIC-INSURED/NOT BANK-GUARANTEED/MAY LOSE VALUE