

Economics Group

MONTHLY OUTLOOK

U.S. Overview

Moving Point A to Point B: Economic Implications

When fly fishing in the streams in Wyoming, one quickly learns that moving from point A to point B is often further and bumpier than the line of vision. In the economy, the dynamics of moving from 2.3 percent growth in 2017 towards 3 percent in 2018 enhances the “cautious tale” we highlighted in our Annual Outlook for 2018. What we have witnessed so far is that small increases in market expectations for growth (see real final sales below), inflation and interest rates have altered the “optimistic outlook” and led to large adjustments in the financial markets. We remain cautious also on the seasonality problem that has plagued first quarter GDP estimates.

Sector Performance: Solid

Recently enacted tax changes have created upside opportunities for consumer spending, business investment and residential investment—all stronger in 2018 relative to 2017—while the increase in growth is now accompanied by a rise in inflation estimates for the PCE deflator. Better growth and higher inflation expectations, along with a recent jump in labor compensation, have moved market expectations to three fed funds rate increases, and may present risks for the economy in the near term—we were already at three hikes. Long-term rates have moved as the additional problem of Treasury debt supply and demand confronts the market going forward. Despite the rise in interest rates, our outlook remains for a weaker trade-weighted dollar in 2018. Any Fed tightening appears to be less supportive than earlier in the cycle. In terms of corporate profits, a rising interest rate environment and a tight labor market cause us to project trend like growth into 2019.

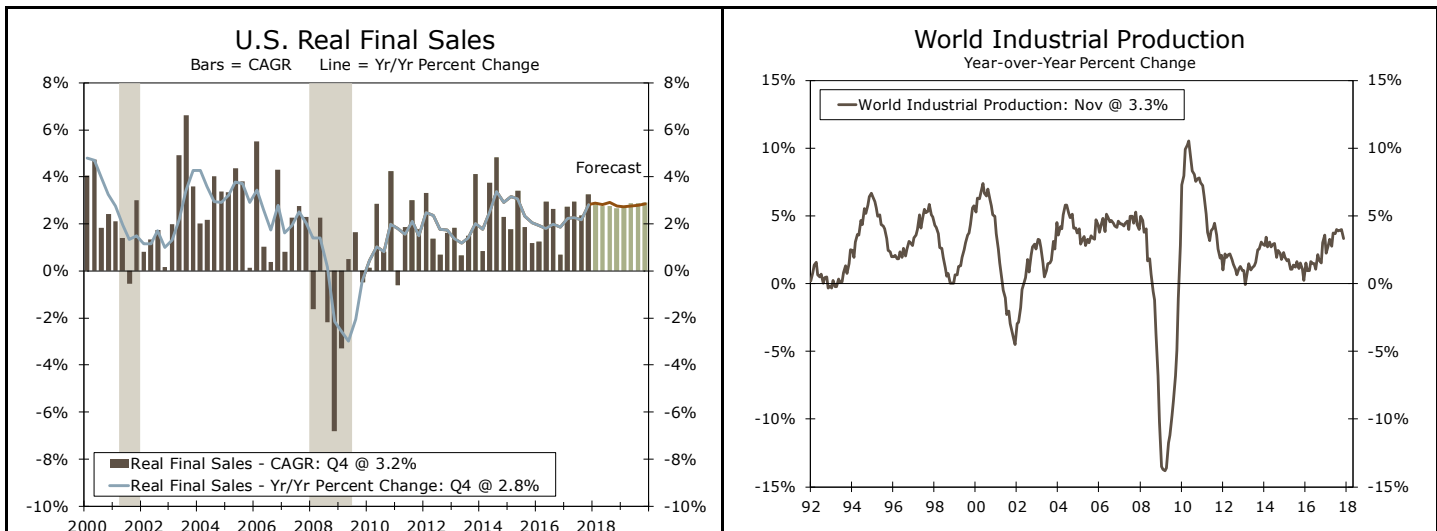
International Overview

Global Economy Came into 2018 with Momentum

A synchronous economic upswing appears to be underway in the global economy at present. The rate of growth in global industrial production strengthened to a six-year high last year, and we estimate that global GDP grew more or less in line with its long-run average in 2017. We look for the global economy to expand at roughly similar rates in 2018 and 2019.

With growth picking up and the threat of deflation receding in most economies, central banks are removing policy accommodation. The Fed has hiked rates by 125 bps over the past two years, and we look for 75 bps of further tightening by the FOMC in 2018. The ECB has been dialing back its bond buying, and we look for it to end its quantitative easing program late this year before beginning a slow process of rate hikes next year. The Bank of Canada and the Bank of England hiked rates last year, and we expect that both central banks will tighten further this year. We look for the downward trend in the dollar to continue as ongoing Fed tightening starts to become less supportive of the dollar and as foreign central banks start to catch up to the Fed with their own removal of policy accommodation.

There clearly are a number of geopolitical events that, if they were to come to pass, could raise risk aversion among investors and businesses, thereby weakening growth prospects. Growth could also weaken if central banks become too aggressive in their removal of policy accommodation. But if these risks do not come to pass, then the global economy should continue to expand this year at a solid pace.



Source: U.S. Department of Commerce, IHS Global Insight and Wells Fargo Securities



Growth: Higher and Broader—Optimistic Outlook

For the consumer, lower marginal tax rates will provide a much needed boost to take-home pay, which has lagged behind consumer spending in recent months. In addition, consumer confidence remains high while gains in home and financial asset prices support, along wide credit availability, a 2.9 percent pace of consumer spending—up a touch from both 2017 and 2016.

On the cautious side, the drop in the saving rate in December raised concerns with the sustainability of consumer demand as the rate hit 2.4 percent of disposable personal income, the lowest level since before the Great Recession. One positive is that household debt as a percentage of disposable personal income has not increased over the past several years, and while high today it does not pose a risk factor for the economy and for the ability of households to continue to consume.

As for business investment, several favorable developments (tax cuts, improved business confidence, a better global backdrop, firming oil prices and a softer U.S. dollar) together make a compelling case for stronger capital spending. Our outlook is for a gain of 8.3 percent in 2018 for equipment spending relative to 4.8 percent in 2017 and down 3.4 percent in 2016 (see graph below). One caution here is that we are late in the economic cycle and that a number of downside risks could still derail the expected pick-up.

On trade, stronger business spending suggests a faster rate of growth in imports, which means that there will be an offset in GDP when taking trade into consideration. Bigger trade deficits also mean increased current account deficits. A negative trade shock is not out of the question. Should the United States walk away from NAFTA or slap tariffs on Chinese goods, it could engender a rise in the price of imported goods, many of them capital goods.

Residential investment is a third sector expected to kick up its pace of growth in 2018—to 6.1 percent compared to 1.7 percent in 2017.

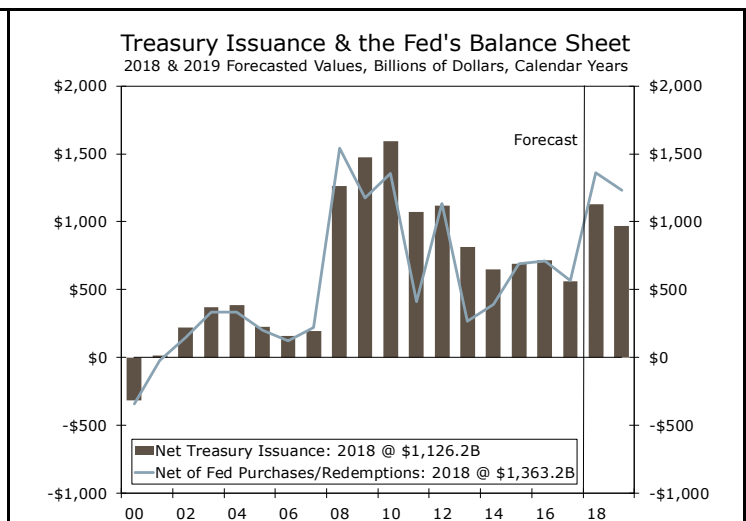
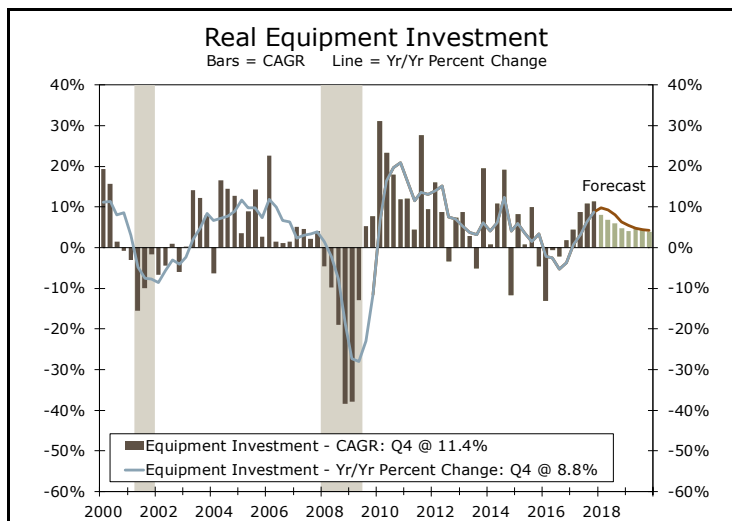
Inflation and Interest Rates: Cautious Tale Indeed

Inflation is expected to edge up in the first quarter with the PCE deflator advancing to 1.9 percent. Higher commodity prices, including energy, are providing a lift, but core inflation has strengthened in recent months. We expect PCE inflation to climb above 2 percent in the second quarter, but further improvement will be limited by a modest retreat in oil prices and slow reflation in the core index. How this pick-up for inflation in the first half of this year impacts Fed policy remains to be seen. We expected three rate hikes already—but if the Fed attempts to be more preemptive in its reaction then rates could rise more.

In the markets, the rapid rise in the 10-year benchmark Treasury rate has reflected the rise in inflation and Fed policy expectations. Moreover, we have been concerned with the coming conflict of rising Treasury supply (fiscal deficit) and the intended reduction in demand as the Fed reduces its balance sheet. This emerging conflict between supply and demand was highlighted in our annual outlook (graph below). “Higher inflation, a tighter Fed policy and a change in the market balance of rising Treasury supply and diminished Fed purchases will prompt a rise in the benchmark (ten-year Treasury) rate.” Our outlook is for the ten-year rate to end the year at 3.05 percent, up slightly from the 2.95 percent in the annual outlook. We remain above the consensus on the interest rate call.

Dollar Depreciation, Taxes and Profits

We continue to expect further depreciation in the U.S. dollar against the major and emerging currencies. While the Federal Reserve should continue to raise interest rates on regular occasions, that tightening appears to be less supportive of the greenback than rate hikes at the earlier stages of the cycle, while we also believe the most positive dollar effects from the U.S. tax cut package could already have been felt. Despite the passage of the tax package, the total effect on corporate profit growth over the next year remains highly uncertain. Our historical analysis, coupled with a rising interest rate environment and a tight labor market cause us to project trend like growth into 2019.



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

Wells Fargo U.S. Economic Forecast

	Actual								Forecast								Actual			Forecast	
	2016				2017				2018				2019				2015	2016	2017	2018	2019
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q					
Real Gross Domestic Product (a)	0.6	2.2	2.8	1.8	1.2	3.1	3.2	2.6	3.1	2.8	2.9	2.7	2.8	2.9	2.9	3.0	2.9	1.5	2.3	2.9	2.8
Personal Consumption	1.8	3.8	2.8	2.9	1.9	3.3	2.2	3.8	3.0	2.5	2.5	2.5	2.7	2.6	2.5	2.5	3.6	2.7	2.7	2.9	2.6
Business Fixed Investment	-4.0	3.3	3.4	0.2	7.2	6.7	4.7	6.8	6.6	5.9	5.4	4.7	4.2	4.6	4.5	4.1	2.3	-0.6	4.7	6.0	4.7
Equipment	-13.1	-0.6	-2.1	1.8	4.4	8.8	10.8	11.4	8.0	6.9	6.0	4.7	4.0	4.6	4.4	3.8	3.5	-3.4	4.8	8.3	4.7
Intellectual Property Products	6.3	11.1	4.2	-0.4	5.7	3.7	5.2	4.5	6.0	6.5	6.5	6.2	5.4	6.0	5.9	5.6	3.8	6.3	4.2	5.6	5.9
Structures	2.3	0.5	14.3	-2.2	14.8	7.0	-7.0	1.4	2.0	2.4	2.4	2.2	2.5	2.4	2.4	2.4	-1.8	-4.1	5.3	1.1	2.4
Residential Construction	13.4	-4.7	-4.5	7.1	11.1	-7.3	-4.7	11.6	9.0	8.0	7.5	7.0	6.5	7.0	7.0	5.5	10.2	5.5	1.7	6.1	6.9
Government Purchases	1.8	-0.9	0.5	0.2	-0.6	-0.2	0.7	3.0	0.8	1.2	1.2	0.9	0.8	0.8	0.8	0.8	1.4	0.8	0.1	1.3	0.9
Net Exports	-584.2	-572.4	-557.3	-631.1	-622.2	-613.6	-597.5	-652.6	-668.5	-680.8	-690.8	-696.7	-699.8	-700.0	-694.9	-684.2	-545.3	-586.2	-621.5	-684.2	-694.7
Pct. Point Contribution to GDP	-0.3	0.3	0.4	-1.6	0.2	0.2	0.4	-1.1	-0.4	-0.3	-0.2	-0.1	-0.1	0.0	0.1	0.2	-0.7	-0.2	-0.2	-0.4	-0.1
Inventory Change	40.6	12.2	17.6	63.1	1.2	5.5	38.5	9.2	38.0	40.0	48.0	50.0	52.0	54.0	56.0	58.0	100.5	33.4	13.6	44.0	55.0
Pct. Point Contribution to GDP	-0.6	-0.7	0.2	1.1	-1.5	0.1	0.8	-0.7	0.7	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.2	-0.4	-0.1	0.2	0.1
Nominal GDP (a)	0.8	4.7	4.2	3.8	3.3	4.1	5.3	5.0	6.3	4.8	4.4	4.2	5.0	5.3	5.3	4.6	4.0	2.8	4.1	5.1	4.8
Real Final Sales	1.2	2.9	2.6	0.7	2.7	3.0	2.4	3.2	2.9	2.8	2.7	2.7	2.7	2.9	2.9	2.9	2.6	1.9	2.4	2.8	2.8
Retail Sales (b)	2.9	2.7	2.6	3.7	5.1	3.9	4.1	5.5	5.5	6.5	6.7	5.2	5.3	5.3	5.1	5.0	2.6	3.0	4.6	6.0	5.2
Inflation Indicators (b)																					
PCE Deflator	1.0	1.0	1.2	1.6	2.0	1.6	1.5	1.7	1.9	2.3	2.3	1.9	1.7	1.8	2.1	2.1	0.3	1.2	1.7	2.1	1.9
"Core" PCE Deflator	1.6	1.7	1.8	1.9	1.8	1.5	1.4	1.5	1.5	1.8	1.9	1.9	1.9	1.8	1.9	1.9	1.3	1.8	1.5	1.8	1.9
Consumer Price Index	1.1	1.1	1.1	1.8	2.6	1.9	2.0	2.1	2.3	2.8	2.6	1.9	1.6	1.7	2.1	2.3	0.1	1.3	2.1	2.4	1.9
"Core" Consumer Price Index	2.2	2.2	2.2	2.2	2.2	1.8	1.7	1.7	1.8	2.2	2.2	2.1	2.1	2.0	2.1	2.1	1.8	2.2	1.8	2.1	2.1
Producer Price Index (Final Demand)	0.0	0.1	0.2	1.4	2.0	2.2	2.4	2.8	2.7	2.6	2.6	2.0	1.9	2.0	2.3	2.4	-0.9	0.4	2.3	2.5	2.2
Employment Cost Index	1.9	2.3	2.3	2.2	2.4	2.4	2.5	2.6	2.4	2.5	2.5	2.6	2.6	2.6	2.7	2.7	2.1	2.2	2.5	2.5	2.7
Real Disposable Income (a)	0.2	1.9	0.7	-1.8	2.9	2.7	0.5	1.1	2.8	3.0	2.5	2.5	2.8	2.6	2.6	2.6	4.2	1.4	1.2	2.2	2.6
Nominal Personal Income (b)	2.9	2.5	2.6	1.6	3.1	2.7	2.6	3.8	3.4	3.8	4.0	3.9	4.2	4.7	4.8	4.8	5.0	2.4	3.1	3.8	4.6
Industrial Production (a)	-1.3	-0.7	0.8	0.7	1.5	5.6	-1.3	8.2	4.6	3.0	2.6	2.4	2.5	2.3	2.3	2.3	-0.7	-1.2	2.0	3.9	2.5
Capacity Utilization	75.8	75.7	75.8	75.8	75.8	76.6	76.2	77.5	77.7	77.5	77.4	77.5	77.7	77.8	78.0	78.0	76.8	75.7	76.5	77.5	77.9
Corporate Profits Before Taxes (b)	-6.2	-8.2	-1.6	8.7	3.3	6.3	5.3	3.8	3.4	3.2	3.1	3.1	3.0	2.9	2.8	2.8	-1.1	-2.1	4.7	3.2	2.9
Corporate Profits After Taxes	-4.2	-8.0	-2.2	14.1	3.7	7.8	7.7	3.2	3.1	3.8	3.6	3.6	3.5	2.6	2.6	2.5	-1.5	-0.5	5.5	3.5	2.8
Federal Budget Balance (c)	-245	60	-187	-210	-317	4	-143	-225	-324	2	-203	-296	-370	-38	-246	-375	-439	-587	-666	-750	-950
Current Account Balance (d)	-119.2	-108.2	-110.3	-114.0	-113.5	-124.4	-100.6	-127.0	-135.0	-135.0	-135.0	-140.0	-140.0	-140.0	-140.0	-140.0	-434.6	-451.7	-465.5	-545.0	-560.0
Trade Weighted Dollar Index (e)	89.7	90.6	89.9	95.7	94.0	90.5	88.1	87.5	84.5	83.3	82.0	80.8	79.5	78.5	77.5	76.5	91.0	91.5	91.1	82.6	78.0
Nonfarm Payroll Change (f)	198	164	255	164	177	190	142	216	180	165	160	155	150	150	145	145	226	195	181	165	148
Unemployment Rate	4.9	4.9	4.9	4.7	4.7	4.3	4.3	4.1	4.1	4.0	3.9	3.8	3.8	3.7	3.8	3.7	5.3	4.9	4.4	4.0	3.8
Housing Starts (g)	1.15	1.16	1.15	1.25	1.24	1.17	1.17	1.25	1.28	1.30	1.31	1.32	1.35	1.37	1.37	1.38	1.11	1.17	1.20	1.31	1.37
Light Vehicle Sales (h)	17.3	17.2	17.5	17.8	17.1	16.8	17.1	17.7	16.6	16.8	16.7	16.7	16.6	16.6	16.5	16.5	17.4	17.5	17.2	16.8	16.5
Crude Oil - Brent - Front Contract (i)	35.2	47.0	47.0	51.0	54.6	50.8	52.2	61.4	66.0	62.0	55.0	58.0	57.0	58.0	57.0	57.0	54.0	45.1	54.7	60.3	57.3
Quarter-End Interest Rates (j)																					
Federal Funds Target Rate	0.50	0.50	0.50	0.75	1.00	1.25	1.25	1.50	1.75	2.00	2.25	2.25	2.50	2.50	2.75	2.75	0.27	0.52	1.13	2.06	2.63
3 Month LIBOR	0.63	0.65	0.85	1.00	1.15	1.30	1.33	1.69	1.90	2.15	2.40	2.40	2.65	2.65	2.90	2.90	0.32	0.74	1.26	2.21	2.78
Prime Rate	3.50	3.50	3.50	3.75	4.00	4.25	4.25	4.50	4.75	5.00	5.25	5.25	5.50	5.50	5.75	5.75	3.27	3.52	4.13	5.06	5.63
Conventional Mortgage Rate	3.69	3.57	3.46	4.20	4.20	3.90	3.81	3.94	4.25	4.25	4.35	4.45	4.55	4.60	4.72	4.77	3.85	3.65	3.99	4.33	4.66
3 Month Bill	0.21	0.26	0.29	0.51	0.76	1.03	1.06	1.39	1.60	1.85	2.10	2.15	2.35	2.40	2.60	2.65	0.05	0.32	0.95	1.93	2.50
6 Month Bill	0.39	0.36	0.45	0.62	0.91	1.14	1.20	1.53	1.70	1.95	2.20	2.25	2.45	2.50	2.70	2.75	0.17	0.46	1.07	2.03	2.60
1 Year Bill	0.59	0.45	0.59	0.85	1.03	1.24	1.31	1.76	1.90	2.05	2.25	2.30	2.50	2.55	2.75	2.80	0.32	0.61	1.20	2.13	2.65
2 Year Note	0.73	0.58	0.77	1.20	1.27	1.38	1.47	1.89	2.20	2.30	2.45	2.55	2.70	2.80	2.93	3.00	0.69	0.83	1.40	2.38	2.86
5 Year Note	1.21	1.01	1.14	1.93	1.93	1.89	1.92	2.20	2.60	2.70	2.80	2.88	2.93	2.97	3.10	3.17	1.53	1.33	1.91	2.75	3.04
10 Year Note	1.78	1.49	1.60	2.45	2.40	2.31	2.33	2.40	2.80	2.85	2.95	3.05	3.15	3.20	3.32	3.37	2.14	1.84	2.33	2.91	3.26
30 Year Bond	2.61	2.30	2.32	3.06	3.02	2.84	2.86	2.74	3.15	3.25	3.35	3.45	3.52	3.55	3.66	3.70	2.84	2.59	2.89	3.30	3.61

Forecast as of: February 7, 2018

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) Quarterly Sum - Billions USD

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

(f) Average Monthly Change

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

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

(i) Quarterly Average of Daily Close

(j) Annual Numbers Represent Averages

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

Global Economy Came into 2018 with Momentum

As is apparent from data on global industrial production (IP) there appears to be a synchronous global upswing underway at present. We do not yet have full-year data for 2017 but it appears that global IP grew in excess of 3 percent last year, the strongest year of IP growth since 2011 when the global economy was rebounding from its deep recession (see chart on front page).

Moreover, the GDP data for individual economies in the fourth quarter that are now trickling in suggest that the global economy came into the New Year with a decent amount of momentum. For starters, real GDP in the United States, the world's largest economy, grew at an annualized rate of 2.6 percent in the fourth quarter relative to Q3. Real GDP in the Eurozone rose 2.3 percent (annualized rate) on a sequential basis in Q4, and the year-over-year rate of economic growth in China remained unchanged at 6.8 percent in the fourth quarter. There are not yet many "hard" data releases for Q1-2018, but the "soft" data for January that are available suggest that growth has remained resilient in most major economies thus far in 2018.

We estimate that the global economy grew near its long-run average of 3.5 percent last year, and we look for roughly similar growth rates in 2018 and 2019. As shown on page 3, we forecast that real GDP growth in the United States will strengthen from 2.3 percent last year to 2.9 percent in 2018. We look for the Eurozone economy to decelerate marginally from the 2.5 percent growth rate it registered in 2017, its strongest growth rate in ten years, to a still respectable 2.3 percent rate of growth this year. We also think that the steady slowdown that has been underway in China for the past seven years will continue in 2018. That said, the 6.4 percent growth rate for China that we forecast for 2018 continues to place it among the fastest growing major economies in the world.

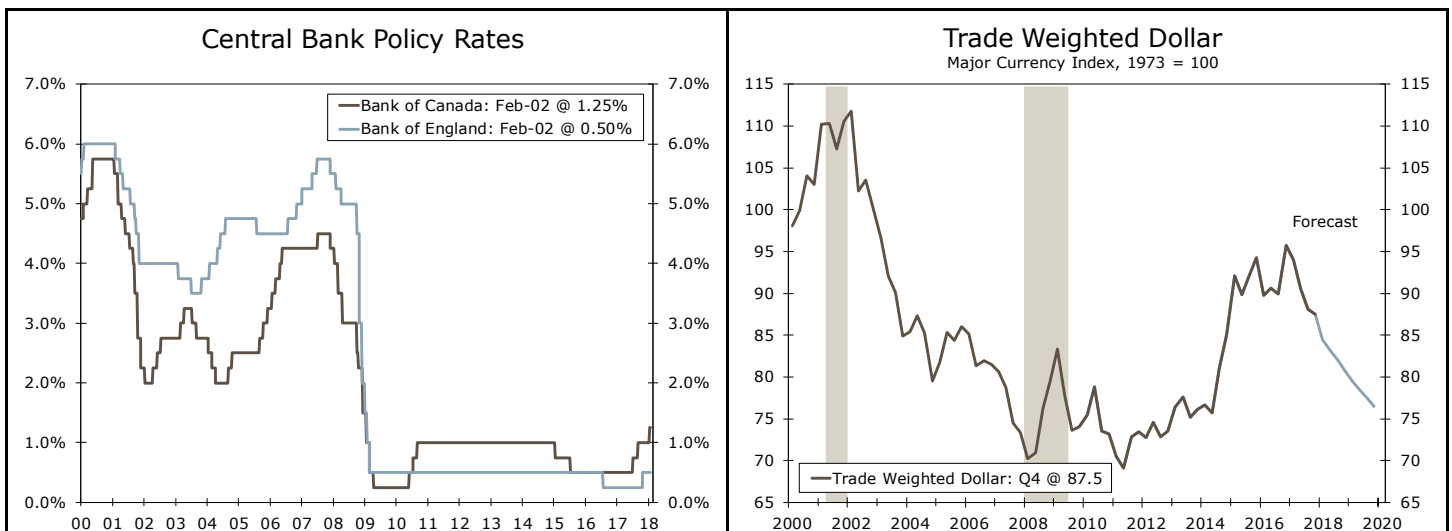
With growth picking up and the threat of deflation receding in most economies, central banks are removing policy accommodation. The Fed has raised its target range for the fed funds rate by 125 bps over the past two years, and we look for

the FOMC to hike rates by another 75 bps this year. The ECB started to dial back its quantitative easing (QE) program last year. We look for the Governing Council to end its QE program late this year, and we forecast that it will begin a slow process of hiking rates in 2019.

The Bank of Canada has raised its main policy rate by 75 bps since last summer (bottom left chart), and we expect it will hike rates at least once more in 2018. The Bank of England (BoE), which cut its main policy rate by 25 bps in the immediate aftermath of the Brexit referendum in June 2016, took back that "insurance" rate cut in November. We look for the BoE to hike rates again later this year. The Bank of Japan has dialed back its pace of bond buying in recent months, but it probably will keep its deposit rate in negative territory for the foreseeable future. (For further details, see our policy outlooks for individual foreign central banks that are posted on our website.)

Despite 75 bps of Fed rate hikes last year, the trade-weighted value of the U.S. dollar fell more than 8 percent in 2017 (bottom right chart). Wells Fargo's currency strategy team looks for the downward trend in the greenback to remain intact in 2018 as ongoing Fed tightening starts to become less supportive of the dollar and as foreign central banks start to catch up to the Fed with their own removal of policy accommodation.

Our base-case forecast for global GDP growth near its long-run average in 2018 and 2019 is generally constructive. So where are the risks to this forecast? There clearly are a number of geopolitical events that, if they were to come to pass, could raise risk aversion among investors and businesses, thereby weakening growth prospects. However, geopolitical events are very difficult to accurately forecast, so we assume that they will not happen. (If they do, then we will change our forecast.) Another risk to our forecast is the potential that central banks, especially the Fed, could tighten "too" fast. This risk would rise if inflation were to shoot higher than central bankers currently expect. But if these risks do not come to pass, then the global economy should continue to expand this year at a solid pace.



Source: Bloomberg LP, Federal Reserve Board and Wells Fargo Securities

Wells Fargo International Economic Forecast

(Year-over-Year Percent Change)

	GDP			CPI		
	2017	2018	2019	2017	2018	2019
Global (PPP Weights)	3.6%	3.5%	3.5%	3.1%	3.5%	3.5%
Global (Market Exchange Rates)	3.4%	3.4%	3.3%	3.1%	3.5%	3.5%
Advanced Economies ¹	2.4%	2.5%	2.4%	1.8%	2.0%	1.9%
United States	2.3%	2.9%	2.8%	2.1%	2.4%	1.9%
Eurozone	2.5%	2.3%	2.1%	1.5%	1.4%	1.8%
United Kingdom	1.8%	1.5%	1.8%	2.7%	2.4%	2.0%
Japan	1.8%	1.3%	1.0%	0.5%	1.3%	1.1%
Korea	3.1%	2.3%	2.7%	1.9%	2.0%	2.1%
Canada	2.9%	2.0%	1.7%	1.6%	1.3%	1.9%
Developing Economies ¹	4.7%	4.5%	4.5%	4.4%	5.1%	5.1%
China	6.9%	6.4%	6.0%	1.6%	2.1%	2.2%
India ²	7.1%	6.6%	7.1%	3.3%	5.3%	4.8%
Mexico	2.1%	2.0%	2.3%	6.0%	5.5%	5.6%
Brazil	1.0%	2.6%	3.0%	3.4%	3.6%	4.2%
Russia	1.8%	2.0%	2.2%	3.7%	3.2%	4.2%

Forecast as of: February 7, 2018

¹Aggregated Using PPP Weights²Forecast Refers to Fiscal Year

Wells Fargo International Interest Rate Forecast

(End of Quarter Rates)

	3-Month LIBOR						10-Year Bond					
	2018				2019		2018				2019	
	Q1	Q2	Q3	Q4	Q1	Q2	Q1	Q2	Q3	Q4	Q1	Q2
U.S.	1.90%	2.15%	2.40%	2.40%	2.65%	2.65%	2.80%	2.85%	2.95%	3.05%	3.15%	3.20%
Japan	-0.02%	-0.01%	0.00%	0.01%	0.01%	0.02%	0.07%	0.08%	0.09%	0.10%	0.11%	0.13%
Euroland ¹	-0.38%	-0.35%	-0.30%	-0.20%	-0.10%	0.15%	0.70%	0.80%	0.95%	1.10%	1.20%	1.30%
U.K.	0.52%	0.55%	0.60%	0.80%	0.90%	1.05%	1.50%	1.60%	1.75%	1.85%	2.00%	2.10%
Canada ²	1.65%	1.75%	1.90%	2.00%	2.15%	2.25%	2.25%	2.30%	2.50%	2.50%	2.60%	2.65%

Forecast as of: February 7, 2018

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

Diane Schumaker-Krieg	Global Head of Research, Economics & Strategy	(704) 410-1801 (212) 214-5070	diane.schumaker@wellsfargo.com
John E. Silvia, Ph.D.	Chief Economist	(704) 410-3275	john.silvia@wellsfargo.com
Mark Vitner	Senior Economist	(704) 410-3277	mark.vitner@wellsfargo.com
Jay H. Bryson, Ph.D.	Global Economist	(704) 410-3274	jay.bryson@wellsfargo.com
Sam Bullard	Senior Economist	(704) 410-3280	sam.bullard@wellsfargo.com
Nick Bennenbroek	Currency Strategist	(212) 214-5636	nicholas.bennenbroek@wellsfargo.com
Eugenio J. Alemán, Ph.D.	Senior Economist	(704) 410-3273	eugenio.j.aleman@wellsfargo.com
Azhar Iqbal	Econometrician	(704) 410-3270	azhar.iqbal@wellsfargo.com
Tim Quinlan	Senior Economist	(704) 410-3283	tim.quinlan@wellsfargo.com
Eric Viloría, CFA	Currency Strategist	(212) 214-5637	eric.viloría@wellsfargo.com
Sarah House	Economist	(704) 410-3282	sarah.house@wellsfargo.com
Michael A. Brown	Economist	(704) 410-3278	michael.a.brown@wellsfargo.com
Jamie Feik	Economist	(704) 410-3291	jamie.feik@wellsfargo.com
Erik Nelson	Currency Strategist	(212) 214-5652	erik.f.nelson@wellsfargo.com
Michael Pugliese	Economic Analyst	(704) 410-3156	michael.d.pugliese@wellsfargo.com
Harry Pershing	Economic Analyst	(704) 410-3034	harry.pershing@wellsfargo.com
Hank Carmichael	Economic Analyst	(704) 410-3059	john.h.carmichael@wellsfargo.com
Ariana Vaisey	Economic Analyst	(704) 410-1309	ariana.b.vaisey@wellsfargo.com
Abigail Kinnaman	Economic Analyst	(704) 410-1570	abigail.kinnaman@wellsfargo.com
Shannon Seery	Economic Analyst	(704) 410-1681	shannon.seery@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 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 © 2018 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. The content of this report has been approved by WFSIL a regulated person under the Act. For purposes of the U.K. Financial Conduct Authority's rules, this report constitutes impartial investment research. WFSIL does not deal with retail clients as defined in the Markets in Financial Instruments Directive 2007. 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. This document and any other materials accompanying this document (collectively, the "Materials") are provided for general informational purposes only.

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