

# Economics Group

## MONTHLY OUTLOOK

### U.S. Overview

#### Solid Growth Despite Being Late in Economic Cycle

The general theme of a U.S. economy growing above potential in the near term before gradually losing momentum remains more or less intact. The incoming data over the past month have been broadly positive, though admittedly sometimes a mixed bag, and we have updated our forecast accordingly.

Our full-year GDP growth numbers for this year, 2019 and 2020 are unchanged at 2.9%, 2.8% and 2.2% respectively. Our forecast for third quarter GDP growth benefited from a slight upward revision. We now expect the economy grew at a 3.3% annualized rate in the period, up from just 3.1% in our September forecast. Some of the faster Q3 growth is “borrowed” from the current quarter, and we have pared our estimate for Q4 by just a tenth of a percentage point to 2.7%.

Real personal consumption is shaping up a bit stronger than we had anticipated previously and the indicators in this sector have been broadly positive. Retail sales for August came in a bit weaker than expected, but upward revisions to prior data indicated that retailers were having a good year ahead of the key holiday shopping season.

Consumer confidence is firming as well; though the measures of just how well the consumer is faring vary slightly between the two bellwether measures. Michigan consumer sentiment rose to a six-month high, but the Conference Board’s consumer confidence index rose to a new cycle high of 138.4. The last time this measure of consumer confidence was as high as it is today was in the year 2000. A number of financial and economic indicators from that era are similar to where they are today.

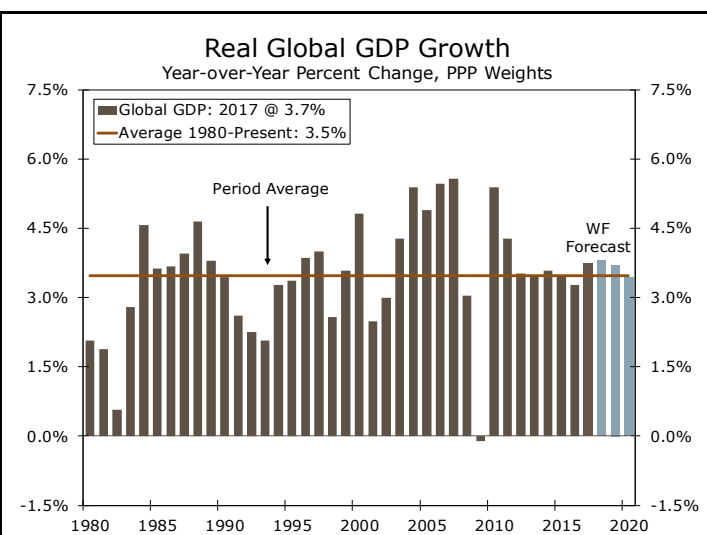
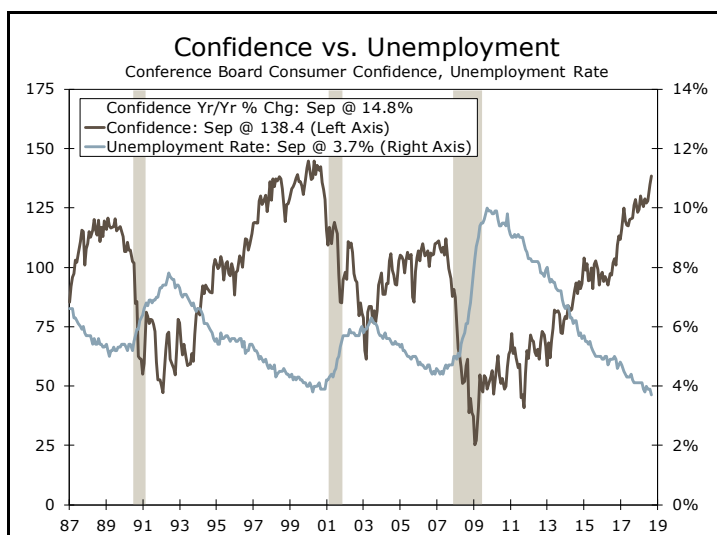
### International Overview

#### Global Growth Stirs Beneath a Calmer Surface

The global economy maintained a steady and solid pace during the first half of 2018, with Q2 GDP growth for the G20 economies at 3.9% year-over-year, near the fastest rate of growth since mid-2011. Still, this relative calmness on the surface masks some areas of instability among the details. U.S. growth has been particularly strong this year, boosted by fiscal stimulus, but growth for the other G7 economies has slowed noticeably. There is also a similar split among the emerging economies, with areas of both strength and weakness.

There are some important downside risks that could lead to a faster global slowdown. Trade tensions between the U.S. and China have continued to escalate, although the latest data for July (which captures the early rounds of tariffs) shows a still-respectable pace of export volume growth. Meanwhile, there are hints of stronger wage growth starting to emerge from some of the major economies. Were that to lead to a more rapid removal of monetary policy accommodation than we currently expect, that could unsettle markets and hurt global economic growth.

There are some reasons for optimism as well. The recently announced trade agreement between the U.S., Canada and Mexico has perhaps eased trade tensions at the margin, and boosted our outlook for the Canadian economy. Meanwhile, with only moderate financial headwinds and as Brexit uncertainty lessens, we expect Eurozone and U.K. growth will firm going forward. Our overall global GDP growth forecasts are unchanged from last month—we see a modest slowing to 3.7% in 2019 and 3.4% in 2020.



Source: The Conference Board, U.S. Department of Labor, International Monetary Fund and Wells Fargo Securities



**Consumer Spending Stronger...at Least for Now**

The stock market was soaring to all-time record highs, the unemployment rate was below 4% and the economy was in its 10th year of uninterrupted expansion. Then, as now, there were few people seeing an end in sight.

For now, the surge in consumer dynamics cannot be denied and we would be foolish to bet against the consumer with such a solid backdrop. But there are some things that are different from 2000. The bottom chart plots consumer confidence alongside both retail sales (ex-autos) and real income growth on a per-capita basis.

Here we see something that Fed policymakers have been wringing their hands over throughout this cycle, which is: if the labor market is so hot, how come income growth is so tepid? That slower income growth tempers our enthusiasm for the ability of consumer spending to sustain growth indefinitely. Personal income grew just 0.3% in August, which was shy of the 0.4% growth that had been expected and the jobs report revealed that despite the lowest jobless rate since the 1960s, average hourly earnings are still growing at less than 3% on a year-over-year basis. As the benefit of tax cuts begins to fade, and without a significant pick-up in earnings, we have limited expectations for the long-term sustainability of spending growth. In the meantime, we expect slightly faster consumer spending in the third quarter at the expense of fourth quarter consumer spending, which we have pared slightly.

**Trade Giveth and Trade Taketh Away**

We had already expected trade to go from being a help (as it was in Q2) to a hindrance (as we expect it to be in Q3). Net exports added 1.2 percentage points to the blockbuster headline GDP print of 4.2%. It appears that at least some of the pick-up in exports during the second quarter was an attempt by some businesses to get merchandise out the door ahead of the expected retaliatory tariffs. The higher frequency data confirm that some of these vulnerable categories, particularly soybeans,

are already retrenching. We expect trade to be a 1.6 percentage point drag on headline GDP in the third quarter.

**Inventories to the Rescue**

That might ordinarily be enough to derail the headline growth rate, but despite the big drag from trade we still have a 3-handle for third quarter GDP, thanks to a boost from inventories.

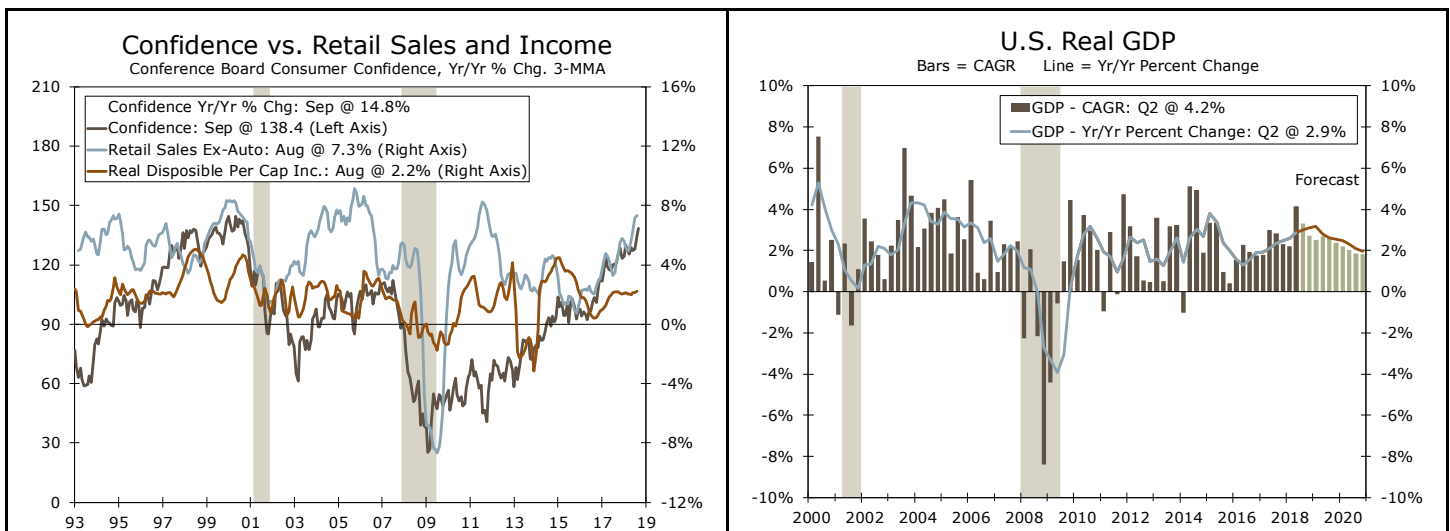
After a big inventory drawdown in the second quarter, even a modest build in the third quarter can translate into a big contribution to headline GDP. The average quarterly change in inventories in this cycle is about \$60 billion. We are penciling in a number of closer to \$50 billion, but even that would result in a nearly 2 percentage point boost to the headline number.

**Big Picture: Expansion Intact, No Change in Fed Call**

If the economy is still in expansion by next summer, this expansion will break the record for the longest uninterrupted expansion on record. Not only do we not have a recession, we have above-trend growth. Our expectation at this point is that with the job market remaining white hot and inflation cresting above the Fed's 2.0% target, policymakers will continue to raise the fed funds rate a quarter of a point in each of the next four quarters.

If that proves accurate, that would put the fed funds rate at 3.25% by this time next year. We forecast that GDP growth will generally remain solid in coming quarters, but that it will slow somewhat from its current above-potential pace as fiscal stimulus fades and as monetary tightening exerts some headwinds on the economy (bottom right chart).

Looking into 2020, we believe that growth will slow enough to lead the Fed to reverse itself by cutting rates 25 bps at the end of 2020. That is admittedly pretty far out into the forecast horizon and there is a lot that could change. But by that point the current expansion would have exceeded the record for longest duration by about a year and a half, so a circumspect Fed at that stage would not be unusual. In the meantime, the FOMC will continue to hike rates at a gradual pace.



Source: The Conference Board, U.S. Department of Commerce 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	3.3	2.7	2.5	2.7	2.6	2.4	2.2	2.0	1.9	1.8	2.2		2.9	2.8	2.2			
Personal Consumption	1.8	2.9	2.2	3.9	0.5	3.8	3.4	2.8	2.2	2.9	2.6	2.5	2.1	2.2	1.8	1.7	2.5		2.6	2.8	2.2			
Business Fixed Investment	9.6	7.3	3.4	4.8	11.5	8.7	5.5	5.4	4.7	4.9	4.4	4.0	3.7	3.6	2.9	2.8	5.3		7.3	5.1	3.7			
Equipment	9.1	9.7	9.8	9.9	8.5	4.6	4.1	4.8	3.8	4.2	3.7	3.1	2.7	2.6	2.1	2.0	6.1		7.4	4.1	2.8			
Intellectual Property Products	8.0	6.6	1.7	0.7	14.1	10.5	7.1	5.2	4.8	5.3	4.7	4.6	4.7	4.6	3.7	3.6	4.6		7.4	5.6	4.5			
Structures	12.8	3.8	-5.7	1.3	13.9	14.5	7.0	7.0	6.5	6.0	5.5	5.0	4.5	4.0	3.5	3.5	4.6		7.1	6.8	4.5			
Residential Construction	11.1	-5.5	-0.5	11.1	-3.4	-1.3	0.5	2.5	4.5	5.0	4.5	4.0	3.5	3.0	2.5	2.0	3.3		0.7	3.3	3.5			
Government Purchases	-0.8	0.0	-1.0	2.4	1.5	2.5	3.2	3.1	2.4	1.6	1.0	0.8	0.7	0.5	0.3	0.1	-0.1		1.8	2.2	0.7			
Net Exports	-845.5	-844.1	-845.9	-899.2	-902.4	-841.0	-916.6	-945.8	-960.3	-982.8	-997.6	-1008.1	-1009.6	-1019.1	-1016.5	-1010.6	-858.7		-901.4	-987.2	-1013.9			
Pct. Point Contribution to GDP	-0.1	0.1	0.0	-0.9	0.0	1.2	-1.6	-0.6	-0.3	-0.5	-0.3	-0.2	0.0	-0.2	0.1	0.1	-0.4		-0.2	-0.5	-0.1			
Inventory Change	-2.4	11.9	64.4	16.1	30.3	-36.8	48.0	50.0	51.0	52.0	57.0	56.0	56.0	55.0	55.0	55.0	22.5		22.9	54.0	55.3			
Pct. Point Contribution to GDP	-0.8	0.2	1.0	-0.9	0.3	-1.2	1.8	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.2	0.0			
Nominal GDP (a)	3.9	4.2	4.8	5.1	4.3	7.6	4.7	5.5	5.7	5.2	5.3	4.9	4.6	4.4	4.4	4.2	4.2		5.2	5.4	4.7			
Real Final Sales	2.6	2.8	1.8	3.2	1.9	5.4	2.2	2.7	2.5	2.7	2.5	2.4	2.2	2.0	1.9	1.8	2.2		2.9	2.7	2.2			
Retail Sales (b)	4.9	4.1	4.2	5.6	4.5	5.7	6.1	4.9	5.4	4.8	4.4	4.5	4.5	4.4	4.4	3.7	4.7		5.3	4.8	4.2			
Inflation Indicators (b)																								
PCE Deflator	2.0	1.6	1.6	1.8	1.9	2.2	2.2	2.2	2.4	2.5	2.7	2.6	2.5	2.4	2.4	2.4	1.8		2.1	2.5	2.4			
"Core" PCE Deflator	1.8	1.6	1.5	1.6	1.7	1.9	2.0	2.0	2.2	2.2	2.3	2.3	2.2	2.2	2.2	2.1	1.6		1.9	2.2	2.2			
Consumer Price Index	2.6	1.9	2.0	2.1	2.3	2.6	2.7	2.6	2.6	2.8	3.0	2.9	2.7	2.7	2.5	2.5	2.1		2.5	2.8	2.6			
"Core" Consumer Price Index	2.1	1.8	1.7	1.7	1.9	2.2	2.3	2.3	2.4	2.6	2.7	2.7	2.5	2.3	2.4	2.4	1.8		2.2	2.6	2.4			
Producer Price Index (Final Demand)	2.0	2.2	2.4	2.8	2.8	3.0	2.9	2.7	2.8	2.8	3.1	3.1	2.9	2.9	2.7	2.6	2.3		2.9	2.9	2.8			
Employment Cost Index	2.4	2.4	2.5	2.6	2.7	2.8	2.8	2.9	2.9	3.0	3.1	3.2	3.2	3.3	3.3	3.3	2.5		2.8	3.1	3.3			
Real Disposable Income (a)	4.5	2.2	2.2	2.3	4.4	2.5	2.5	2.5	2.8	2.6	2.6	2.6	2.6	2.5	2.2	2.0	2.6		2.9	2.6	2.5			
Nominal Personal Income (b)	4.1	4.3	4.5	4.6	4.3	4.7	4.6	4.3	4.5	4.7	4.8	4.8	4.6	4.3	4.2	3.9	4.4		4.5	4.7	4.2			
Industrial Production (a)	1.0	5.0	-1.5	7.7	2.5	5.1	3.4	3.7	2.4	4.2	1.2	4.0	2.5	4.7	0.7	0.1	1.6		3.8	3.2	2.8			
Capacity Utilization	75.4	76.2	75.8	77.0	77.2	77.8	78.1	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	8.0	6.2	5.6	1.8	0.5	-0.8	-1.6	-2.2	-2.6	-3.4	3.2		6.9	1.7	-2.4			
Corporate Profits After Taxes	6.0	6.2	6.4	7.3	15.1	15.8	17.0	12.5	4.7	1.9	0.3	-1.0	-1.8	-2.4	-2.9	-3.7	6.5		15.1	1.4	-2.7			
Federal Budget Balance (c)	-317	4	-143	-225	-375	-7	-168	-321	-396	-63	-270	-337	-416	-63	-283	-364	-666		-775	-1050	-1100			
Trade Weighted Dollar Index (d)	94.0	90.5	88.1	87.5	86.3	90.0	90.1	90.5	89.8	88.5	87.3	86.3	84.8	84.0	82.8	81.8	91.1		89.2	87.9	83.3			
Nonfarm Payroll Change (e)	177	190	142	221	218	217	190	180	170	170	160	160	150	140	100	90	182		201	165	120			
Unemployment Rate	4.7	4.3	4.3	4.1	4.1	3.9	3.8	3.8	3.7	3.6	3.6	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	1.25	1.33	1.34	1.36	1.36	1.38	1.39	1.40	1.41	1.42	1.20		1.29	1.36	1.41			
Light Vehicle Sales (g)	17.1	16.8	17.1	17.6	17.1	17.2	16.9	16.8	16.8	16.7	16.7	16.6	16.6	16.5	16.4	16.3	17.1		17.0	16.7	16.5			
Crude Oil - Brent - Front Contract (h)	54.6	50.8	52.2	61.4	66.9	74.6	75.8	82.0	80.0	85.0	88.0	82.0	80.0	74.0	70.0	70.0	54.7		74.9	83.8	73.5			
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	2.75	3.00	3.25	3.25	3.25	3.25	3.25	3.00	1.13		2.13	3.06	3.19			
3 Month LIBOR	1.15	1.30	1.33	1.69	2.31	2.34	2.40	2.70	2.95	3.15	3.40	3.40	3.40	3.40	3.40	3.15	1.26		2.44	3.23	3.34			
Prime Rate	4.00	4.25	4.25	4.50	4.75	5.00	5.25	5.50	5.75	6.00	6.25	6.25	6.25	6.25	6.25	6.00	4.13		5.13	6.06	6.19			
Conventional Mortgage Rate	4.20	3.90	3.81	3.94	4.44	4.57	4.63	4.95	5.05	5.15	5.25	5.30	5.30	5.25	5.20	5.15	3.99		4.65	5.19	5.23			
3 Month Bill	0.76	1.03	1.06	1.39	1.73	1.93	2.19	2.40	2.65	2.90	3.05	3.10	3.05	3.00	2.95	2.75	0.95		2.06	2.93	2.94			
6 Month Bill	0.91	1.14	1.20	1.53	1.93	2.11	2.36	2.60	2.80	2.95	3.10	3.15	3.10	3.05	3.00	2.80	1.07		2.25	3.00	2.99			
1 Year Bill	1.03	1.24	1.31	1.76	2.09	2.33	2.59	2.80	3.00	3.05	3.15	3.20	3.15	3.10	3.05	2.90	1.20		2.45	3.10	3.05			
2 Year Note	1.27	1.38	1.47	1.89	2.27	2.52	2.81	3.00	3.10	3.15	3.25	3.25	3.20	3.15	3.10	3.00	1.40		2.65	3.19	3.11			
5 Year Note	1.93	1.89	1.92	2.20	2.56	2.73	2.94	3.15	3.25	3.35	3.45	3.50	3.45	3.40	3.35	3.25	1.91		2.85	3.39	3.36			
10 Year Note	2.40	2.31	2.33	2.40	2.74	2.85	3.05	3.35	3.45	3.55	3.65	3.70	3.70	3.65	3.60	3.55	2.33		3.00	3.59	3.63			
30 Year Bond	3.02	2.84	2.86	2.74	2.97	2.98	3.19	3.55	3.65	3.80	3.90	3.95	4.00	4.00	3.95	3.90	2.89		3.17	3.83	3.96			

Forecast as of: October 10, 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) 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

### Global Growth Stirs Beneath a Calmer Surface

Our outlook for the global economy is little changed from our last update, and we continue to see a slow deceleration in global GDP growth to 3.7% in 2019 and 3.4% in 2020. The global economy maintained steady and solid momentum through the first half of 2018, with Q2 GDP for the G20 economies rising 1.0% quarter over quarter (not annualized), and 3.9% year over year—the latter still near the fastest pace of annual growth since mid-2011. Even areas of significant focus and concern have shown only a modest slowing. Global export volumes rose 3.8% year-over-year in July, down from the pace seen through much of 2017, but still respectable. The July figures capture the initial round of aluminum and steel tariffs, and the initial tariffs on a wider range of goods between the U.S. and China, although there is likely some lag and admittedly, does not encompass the more recent escalation in U.S./China trade tensions.

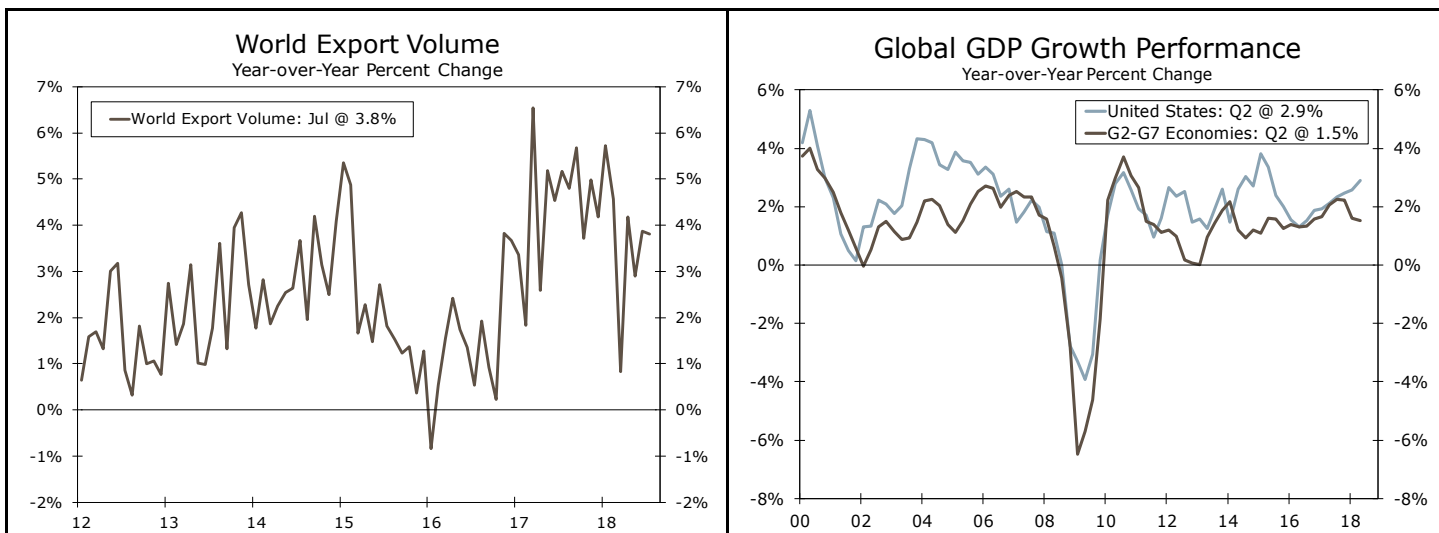
While looking calm and steady on the surface, a closer examination hints at some areas of instability across the global economy. U.S. economic growth has been particularly strong in 2018, boosted by fiscal stimulus, but growth for the other G7 economies has slowed noticeably (see chart at bottom right). A similar dichotomy is apparent among the emerging economies, which have shown areas of strength (India), steadiness (China), and weakness (Argentina). That said, there has not so far been strong evidence of widespread contagion—either economic or financial market—across emerging countries.

With some variation in economic performance, major central banks have also adopted a varied approach to removing monetary policy accommodation. The Federal Reserve continues to lead the way, followed by the Bank of Canada, where we expect one more rate hike in 2018 and three rate hikes in 2019. The European Central Bank and Bank of England are expected to be more cautious, with their initial or next rate hike not seen until well into 2019, due to subdued growth and Brexit uncertainty. Meanwhile, China's central bank has paused its deleveraging efforts in recent months.

There are some important downside risks that could lead to a faster global slowdown than we currently expect. Should trade tensions between the U.S. and China continue to escalate for an extended period, export volumes could slow noticeably further or perhaps even move into outright contraction, a dynamic that would likely restrain emerging economy performance more broadly. In addition, with some signs of wage growth starting to emerge (including in the U.S., Canada and Eurozone, among others) there remains some risk that major central banks could remove monetary policy accommodation more quickly than currently expected, a risk scenario that could both unsettle markets and hurt economic growth.

There are, however, also some reasons for optimism. The recently announced trade agreement between the U.S., Canada and Mexico has perhaps eased trade tensions at the margin. Moreover, it has led us to increase our GDP growth forecast for Canada, while we also expect Mexican economic growth to remain relatively resilient. In addition, given only moderate financial headwinds we see potential for the Eurozone to emerge from its soft patch early this year, and forecast Eurozone GDP growth of 2.1% in 2019. U.K. economic growth could also improve as Brexit uncertainty lessens, while in China easier liquidity and increased government spending should ensure that economy's slowdown remains gradual. Taking a balanced approach to the pessimistic and optimistic factors above, our global growth forecast is unchanged from last month, and continues to envisage only a gradual slowdown.

Finally, we see potential for foreign central banks to be more active next year, which could help foreign currencies to strengthen versus the U.S. dollar. In addition to policy moves from Canada, the Eurozone and the U.K., Norway's central bank recently hiked rates, and Sweden's central bank is expected to do so by early 2019. The other G10 central banks could be less active. We do not expect significant policy moves from Japan and Switzerland, while little to no change is expected from the Australian and New Zealand central banks in 2019 as well.



Source: IHS Markit, Datastream 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)	3.8%	3.7%	3.4%	3.6%	3.8%	3.7%
Advanced Economies <sup>1</sup>	2.5%	2.5%	2.0%	2.2%	2.4%	2.4%
United States	2.9%	2.8%	2.2%	2.5%	2.8%	2.6%
Eurozone	2.0%	2.1%	1.7%	1.8%	1.9%	1.8%
United Kingdom	1.2%	1.5%	1.5%	2.4%	2.1%	2.0%
Japan	1.2%	1.2%	0.5%	1.0%	1.2%	2.0%
Canada	2.2%	2.2%	1.7%	2.5%	2.2%	2.0%
Developing Economies <sup>1</sup>	4.7%	4.6%	4.5%	4.5%	4.8%	4.7%
China	6.6%	6.3%	6.1%	2.1%	2.3%	2.3%
India	7.7%	7.5%	7.3%	4.9%	5.1%	4.8%
Mexico	2.0%	2.4%	2.3%	4.8%	4.0%	3.7%

Forecast as of: October 10, 2018

<sup>1</sup>Aggregated Using PPP Weights

## Wells Fargo International Interest Rate Forecast

(End of Quarter Rates)

	3-Month LIBOR						10-Year Bond					
	2018	2019				2020	2018	2019				2020
	Q4	Q1	Q2	Q3	Q4	Q1	Q4	Q1	Q2	Q3	Q4	Q1
U.S.	2.70%	2.95%	3.15%	3.40%	3.40%	3.40%	3.35%	3.45%	3.55%	3.65%	3.70%	3.70%
Japan	-0.01%	0.00%	0.00%	0.00%	0.01%	0.01%	0.18%	0.20%	0.24%	0.27%	0.30%	0.30%
Euroland <sup>1</sup>	-0.35%	-0.30%	-0.25%	-0.15%	0.05%	0.30%	0.65%	0.80%	0.95%	1.05%	1.15%	1.25%
U.K.	0.80%	0.85%	0.95%	1.05%	1.10%	1.10%	1.70%	1.80%	1.85%	2.00%	2.10%	2.15%
Canada <sup>2</sup>	2.15%	2.40%	2.65%	2.90%	2.85%	2.85%	2.70%	2.80%	2.90%	3.00%	3.05%	3.05%

Forecast as of: October 10, 2018

<sup>1</sup> 10-year German Government Bond Yield    <sup>2</sup> 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
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	Currency Strategist	(212) 214-5636	nicholas.bennenbroek@wellsfargo.com
Azhar Iqbal	Econometrician	(704) 410-3270	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	Currency Strategist	(212) 214-5652	erik.f.nelson@wellsfargo.com
Michael Pugliese	Economist	(212) 214-5058	michael.d.pugliese@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 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

WELLS  
FARGO

SECURITIES