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July 15, 2018

- The press release, press conference and the minutes to the FOMC June meeting along with Chairman Jay Powell's June 20th speech at the ECB Forum on Central Banking, at Sintra, Portugal, all confidently point to a strong U.S. economy.
- Unemployment is expected to remain low and to go lower. This is the brightest spot in the U.S. economy. Over 200,000 new jobs created month after month in the 9th year of an economic recovery is nothing less than spectacular. The June jobs report shows a small uptake in participation rate as well as the unemployment rate. These indicators suggest that there are workers not previously accounted for and now entering the job force or return to looking for a job. If this is true, then the natural employment rate (or NAIRU) has not yet been reached.
- Core inflation is now at the 2% FOMC objective, and the FOMC wants to be sure that this is sustainable. As such, the FOMC continues to use "symmetry" to frame its policy reaction function. This means that the FOMC will tolerate a slightly above 2% core inflation rate for a period of time before reconsidering its monetary stance.
- The long-end of the treasury yield curve is subject to market forces such as rate disparity among central banks, significant demand from pensions due to aging demographics, and the increasing demand for safe assets globally. This drag on the back-end of the yield curve limits the amount of rate hikes the FOMC can effect before the yield curve inverses, which could usher in the next economic slowdown or recession.
- Historically 2-3-4 is a simple rule of thumb for understanding the Fed. The Fed is looking to maintain a 2% core inflation rate, 3% neutral Fed Fund's rate and promote a 4% GDP. In the New Normal environment, the 2% inflation has been difficult to achieve and sustain. Moreover, the Fed Funds rate of 1% above the core inflation rate is even harder to reach with the fear of failing the 2% inflation rate which would impact the 4% economy. We believe going forward in the long run, it is more a 2-2-2 world.
- The January Tax Cuts and Jobs Act gave the already expanding economy a huge boost. This front-loaded, debt-driven gift is expected to push the 2nd and 3rd quarter to a 3.5-4% annualized GDP rate. Then growth is expected to taper through 2019 and beyond. This very positive economic scenario is now facing a self-imposed headwind of impending global trade war. At its most basic level, tariffs will push up inflation (cost-push) which is equivalent to a tax hike. Further, the jump in oil prices is also a drag.
- Uncertainty is rising with interest rate in the front end continuing to rise with positive safe asset returns beginning to bleed into other assets; and at the same time, macro liquidity is shrinking (withdrawal of global QE). The cumulative impact from the reversal of the global central bank policies of the past 9-years will not be symmetric or gradual.

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Fed Speaks

Each year in June, central bankers gather in Sintra, Portugal, for the ECB Forum on Central Banking. This year's prepared remarks by Chairman Jerome Powell of the Federal Reserve (Fed) were decidedly upbeat and consistent with the Federal Open Market Committee (FOMC) Minutes of and the press conference following the June 12-13 meeting.

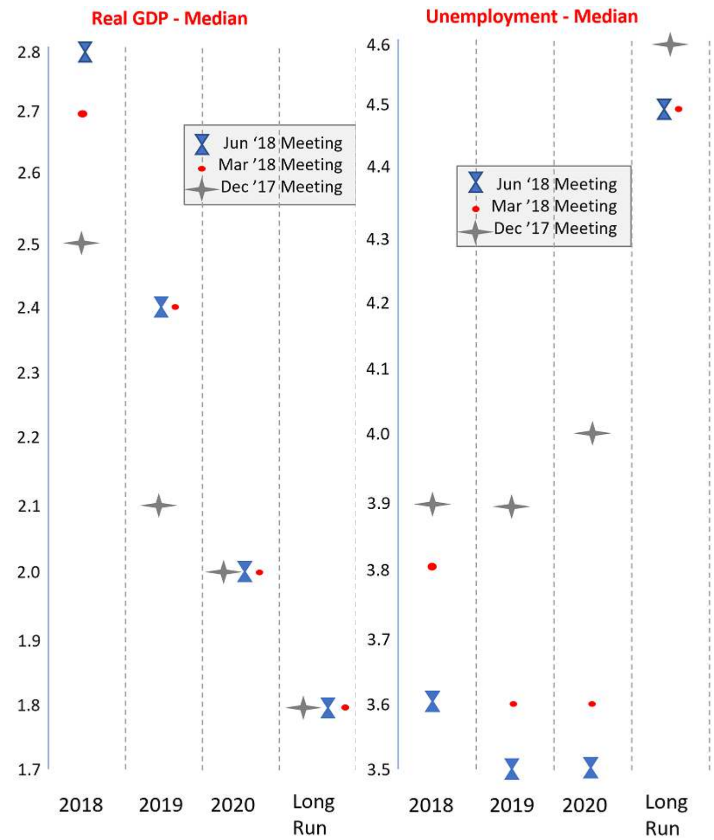
The June 13th press conference by FOMC Chairman Powell and the latest economic projections offer more insights to the FOMC's press release and the Committee's expectations about the U.S. economy and likely monetary policy actions.

In his press conference, Chairman Powell cited the following data which form the basis for the new economic projection:

- Economic growth picked up.
    - Household spending bounced back.
    - Business investment (capital expenditure) continues to grow strongly.
    - Overall outlook remains favorable.
- Several factors contributed to this economic environment:
    - Fiscal policy (the 2018 Tax Cuts and Jobs Act)
    - Ongoing job gains leading to rising income and confidence
    - Foreign economies continue to expand.
    - Financial conditions remain accommodative.
- Labor economy remains strong.
    - Job gains average 180,000 per month over the past 3 months and expect to remain strong.
    - Unemployment rate declined to 3.8%, a two-decade low.
    - Despite downward pressure from aging demographics, labor participation is unchanged.
- Inflation has moved up to the FOMC objective of 2%. Due to the known "base effect", the FOMC expects inflation to run a little higher this and next year. The FOMC wants to ensure that inflation remains near the symmetric 2% long-term objective.
- Risks to the economic outlook appear roughly balanced.

FOMC's Economic Projections[1] (dot plots) for June reflect Chairman Powell's overview of U.S. economic data. It is important to note that the median projections (the middle number among a set of numbers) should not be solely replied upon for predicting policy decisions since Economic Projection medians do not represent the diversity of projections among members and member districts. As such, it is informative to learn the projection of all voting members to gain a better understand of the projection range (tightness). The following graphs show the median projections for GDP, Employment, Inflation and the Fed Fund's rate among the voting members over the past three trailing releases (December 2017, March 2018 and June 2018 meetings).

[1] Economic projections of Federal Reserve Board members and Federal Reserve Bank presidents under their individual assessments of projected appropriate monetary policy



The Real GDP has moved up from 2.5% in December to 2.7% in March and 2.8% in June (range is 2.5% to 3.0%). Many economists, along with the Atlanta Fed (GDPNow) and New York Fed (Nowcasting), are expecting a 4.8% (June 14th) and 2.98% (June 15th) annualized growth for the second quarter, respectively. There are no revisions to 2019, 2020 and the "long run" estimates suggesting that the impact from the fiscal stimulus continues to surprise on the upside in 2018 and may be short lived. (Please refer to this Firm's [2018 Q1 Commentary] regarding the World Bank and CBO's economic projection for the U.S.)

The labor market is a reflection of the general economy. The unemployment rate has moved down from 3.9% (December) to 3.8% (March) to 3.6% for 2018 (range is 3.5% to 3.8%) and is expected to remain at 3.5% for the next two years (down from 3.6% in December and March projections). This is one full percentage point below the long-term projection of 4.5%.

The following two charts from the May Job Situation Report illustrate the progress made since June 2016. As we enter the 10th year since the Great Recession, this economy is still averaging 208,000 in monthly job creation (3-month average).

Chart 1. Unemployment rate, seasonally adjusted, June 2016 – June 2018

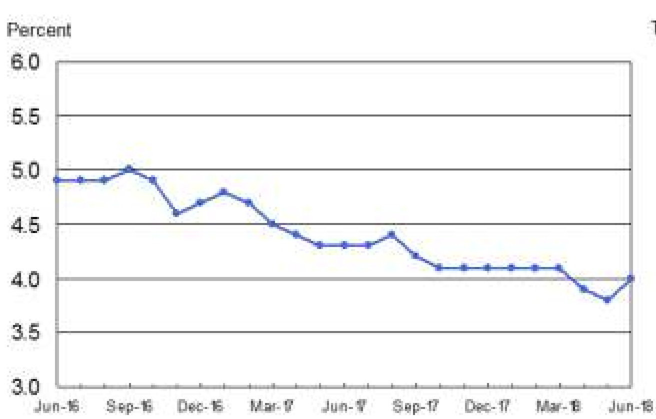
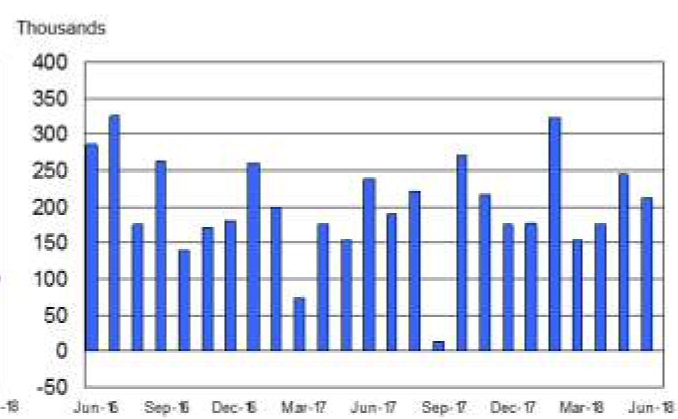
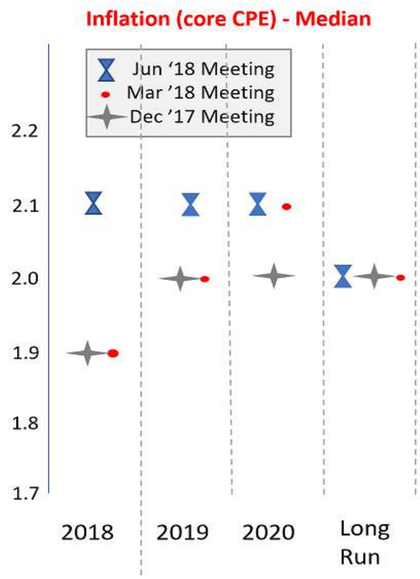
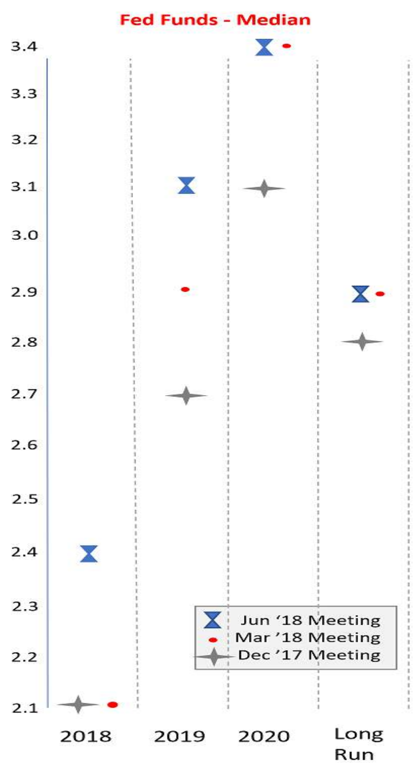


Chart 2. Nonfarm payroll employment over-the-month change, seasonally adjusted, June 2016 – June 2018





Core inflation (inflation excluding volatile food and energy) is now projected to be slightly above the 2% FOMC objective (for 2018 it is at 2.1%, up from 1.9%) and is expected to remain at this slightly elevated level for the next two years. (For 2019 and 2020, it is 2.1% up from 2.0%.) For the long run, inflation is expected to remain at 2%. This is consistent with the notion of symmetry. After years of inflation falling below the 2% objective, the press release for the FOMC March 2017 meeting stated for the first time that the Committee carefully monitors actual and expected inflation developments relative to its "symmetric" inflation goal of 2%. This symmetry means that the FOMC will not immediately react or increase the pace of monetary tightening as soon as the core inflation rate exceeds the 2% objective.



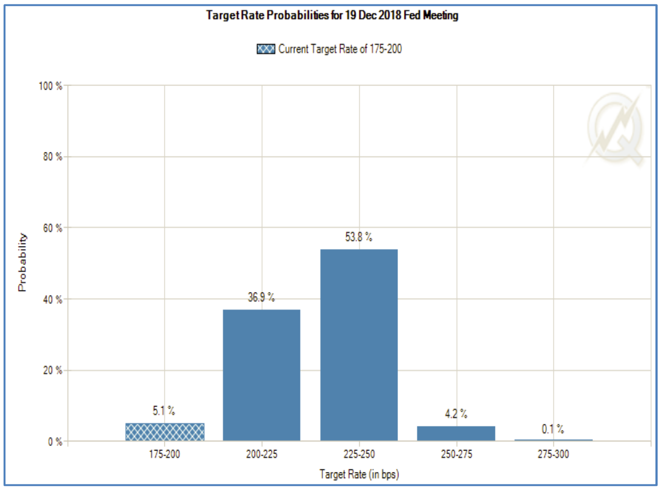
During the Press Conference, Chairman Powell stated that "although raising rates too slowly might raise the risk that monetary policy would need to tighten abruptly down the road in response to an unexpectedly sharp increase in inflation or financial excesses, jeopardizing the economic expansion." Conversely, if rates rise too rapidly, the economy could weaken and inflation could persistently run below the 2% FOMC objective. It is the latter that FOMC is more concerned about during a period of low interest rates. As such, the FOMC is likely to allow the economy to run "hot" for a bit to make sure that reaching the inflation objective is not due to transitory factors and that "price stability' is sustainable at or around 2%.

Chairman Powell affirmed that reducing the Federal Reserve's balance sheet (i.e. reversing Quantitative Easing) is proceeding on schedule since October 2017 and the FOMC continues to calibrate the target range for the federal funds rate as its primary means of adjusting its monetary policy stance.

The June projections show that the Committee's median rate at the end of 2018 is 2.4%. (The range is between 1.9% to 2.6%.) The June 25bp increase has pushed the Fed Fund rate range from 1.75% to 2%. This means that the FOMC is likely seeking two more 25bp rate increases by the end this year with the Fed Fund rate range of 2.25% to 2.5%. This latest projection represents a fourth-rate hike of 25bp from March and December median projections for 2018 at 2.1%.

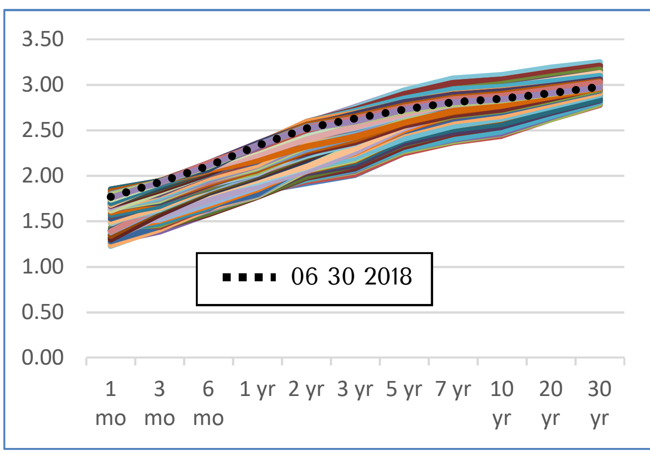
Further, for 2019, the latest projection is for the Fed Fund rate to be at 3.1% or 100bp from where we are today. At this pace, the FOMC is projecting two 25bp rate increases in 2019.

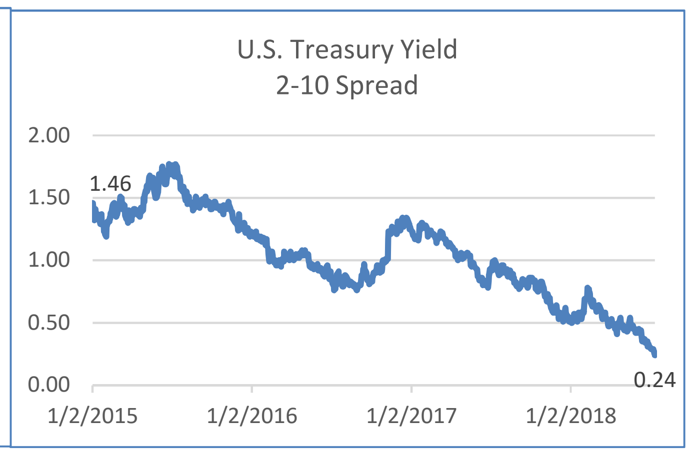
(The range is between 1.9% and 3.6%.) For 2020, the median projection is 3.4% which represents roughly two more 25bp increases. (The range is between 1.9% and 4.1%.) In the aggregate, the median projection suggests 6 more 25bp increases in rates from this point forward through 2019 (2 more in 2018 and 2 each year in 2019 and 2020).



According to the [CME group's FedWatch Tool][2], the market is only counting on a 53.8% chance that by FOMC's December 2018 meeting the Fed Fund rate will be at a 2.25% to 2.5% range. This means that the market is not fully convinced that the FOMC will hike rates four times this year. Of course, market expectations will change if the second and third quarter GDP come in at or exceed 4%. However, if the trade disputes turn into a full blown global trade war and threaten global growth, the FOMC may back off from the 4th rate hike.

Yielding a Vanishing Curve — the missing term premia





As of the end of the second quarter, the short end of the yield curve has moved to its highest range since the first of the year while the longer end, after moving up significantly, has moved back down, resulting in an ever-flattening curve. The FOMC is quite aware of how economic slowdown and recession have historically been preceded by an inverse yield curve. The FOMC may believe that rate normalization and possibly rate hike is needed if the U.S. economy and inflation will surprise on the upside. With a projected 3.6% U3 rate by the end of this year, the tight labor market in a strong domestic economy would likely push real wages higher and lead to greater inflation. Further, if capital expenditure by corporations continues its robust trend, it is a matter of time before labor productivity will move higher, which also supports higher real

[2] Methodology - http://www.cmegroup.com/education/fed-funds-futures-probability-tree-calculator.html

wage growth. However, the longer end of the yield curve is subject to global (full blown trade war, weakening foreign economic growth, foreign central bank non-action, geopolitical risks, favoring safe haven securities, etc.) and secular forces (aging demographics, disinflation caused by digitization/IT/robotics/sharing economy, etc.) that could continue to weigh down yields. There is also evidence that macro liquidity is drying up faster than expected which may likely lead to the Fed stopping its balance sheet normalizing sooner or to alter the schedule. This also adds pressure to the longer end of the yield curve if the Fed allows down its well broadcasted normalization process.

Chairman Powell will continue his balancing act with one foot on the gas and the other on the brake to satisfy the FOMC's dual mandates of full employment and price stability while normalizing interest rates and the balance sheet. Until now, there is no definitive answer as to where NAIRU and what short-term R* are. Perhaps the only way to find out is when they have been exceeded. Chairman Powell favors a more transparent and rule-based FOMC. The change to follow each FOMC meeting with a press conference beginning in 2019 intends to offer more timely insights to FOMC's positioning and reaction function for making policy.

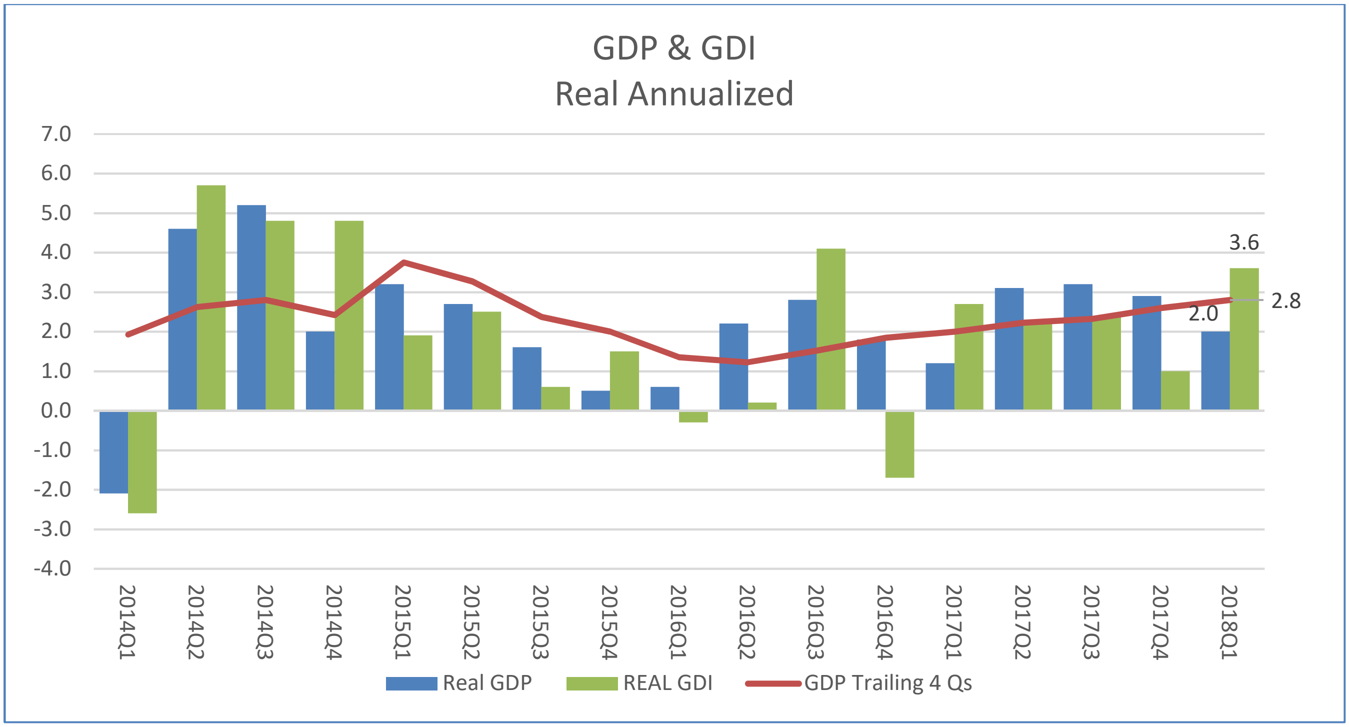
U.S. Economy — Second Quarter Should be (much) Better

On June 28th, the Bureau of Economic Analysis released the final (third) estimate of the Gross Domestic Product (GDP) for the first quarter. It was revised down from the second estimate of 2.2% to now 2.0%. The revision is due to lowering of private inventory investment and personal consumption expenditures (PCE). Private inventory investment represents the difference between goods produced (production) and goods sold (sales) that businesses maintain to support their production and distribution activities[3]. This is typically volatile. Personal consumption expenditures (PCE) is the primary measure of consumer spending on goods and services in the U.S. economy. PCE shows how much of the income earned by households is being spent on current consumption as opposed to how much is being saved for future consumption.

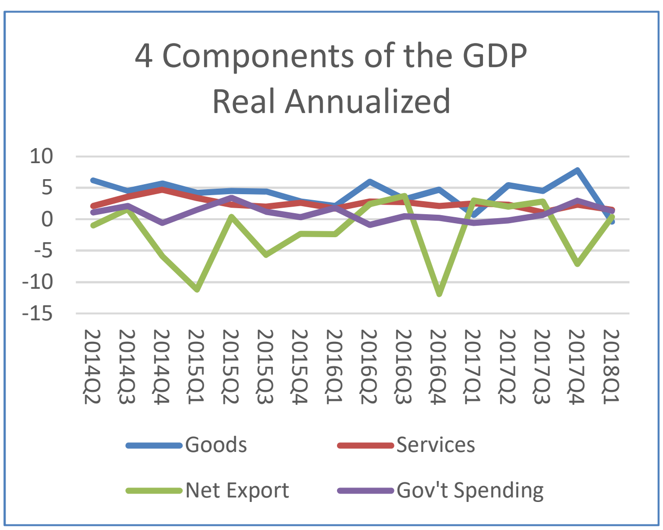
	ADVANCE ESTIMATE	**SECOND ESTIMATE**	**THIRD ESTIMATE**
	(Percent change from preceding quarter)		
REAL GDP	2.3	2.2	2.0
CURRENT-DOLLAR GDP	4.3	4.2	4.2
CURRENT-DOLLAR GDI		2.8	3.6

	JAN-18	**FEB-18**	**MAR-18**	**APR-18**	**MAY-18**
REAL PCE	-0.2	-0.2	0.6	0.3	0

[3] Inventory investment is one of the most volatile components of GDP, giving it an important role in short run variations in GDP growth. Moreover, inventory movement plays a key role in the timing, duration, and magnitude of business cycles, as unanticipated buildups in inventories may signal future cutbacks in production and unanticipated shortages in inventories may signal future pickups in production.

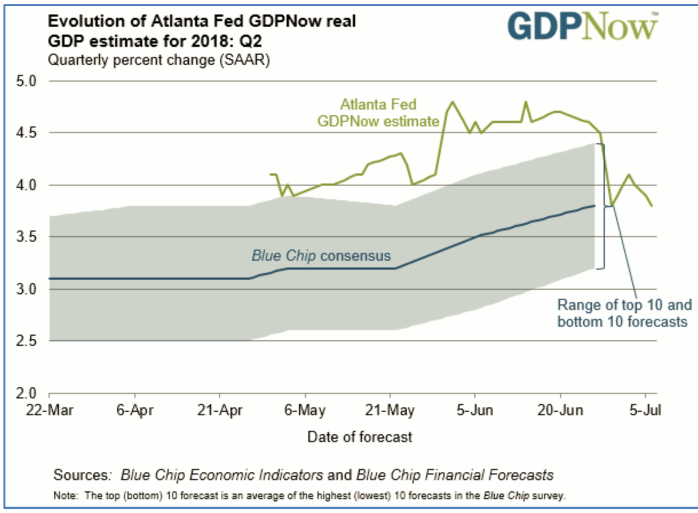


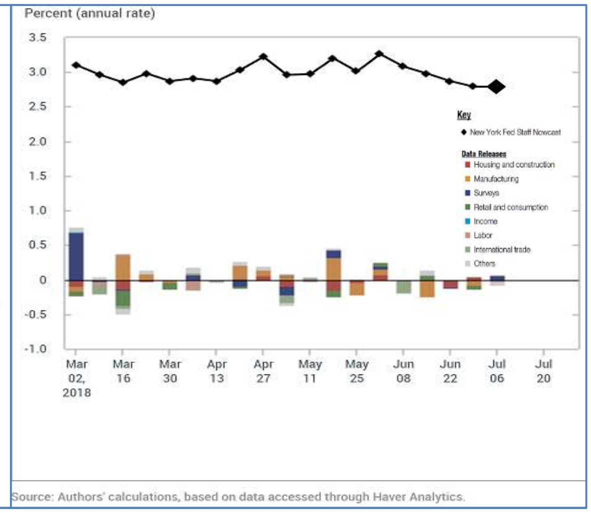
On a trailing 4-quarter basis, the real GDP is growing at an annualized average rate of 2.8%. This is a significant improvement from the recent low of 1.2% reached in the second quarter in 2016. The real Gross Domestic Income (GDI) was revised up from 2.6% to 2.8%. GDP is a measure of consumption of goods and services where GDI is the measure of income growth (sum of all the income earned by employees, profits earned by businesses, all the taxes collected by governments, and subtract all the subsidies paid). They are the flipsides of the same coin and theoretically should be very close. The latest average of GDI and GDP is at 2.8% (coincidently the same as the trailing 4-month average annualized real GDP number).



The four main components that make up the GDP are spending on goods, spending on services, government spending and net export (gross export after adjusting imports). For the first quarter, as compared to the fourth quarter, spending on services and government spending remained positive (even though down from the last quarter) and steady. Spending on goods is down, but net export is up.

All forward indicators of the U.S. economy suggest that there is still plenty of confidence in the domestic economy for the second quarter and forward. The biggest contributor is the fiscal stimulus from the January Tax Cuts and Jobs Act.





The latest Atlanta Federal Reserve Bank's GDPNow estimate for the second quarter GDP is at 3.8%[4] on July 6th. According to GDPNow, since the July 2nd update, the estimates for second quarter real consumer spending growth and second quarter real gross private domestic investment growth have declined from 2.9% and 7.1%, respectively, to 2.7% and 6.0%, respectively. These declines more than offset an increase in the estimate of the contribution of net exports to real GDP growth from 0.62 percentage points to 0.70 percentage points. The latest New York Federal Reserve Bank's Nowcast estimate is at 2.79%[5]. Although these two forecast models have been wide apart for projecting the second quarter GDP, both have seen a revision downward since late May and more pronounced in mid-June until now.

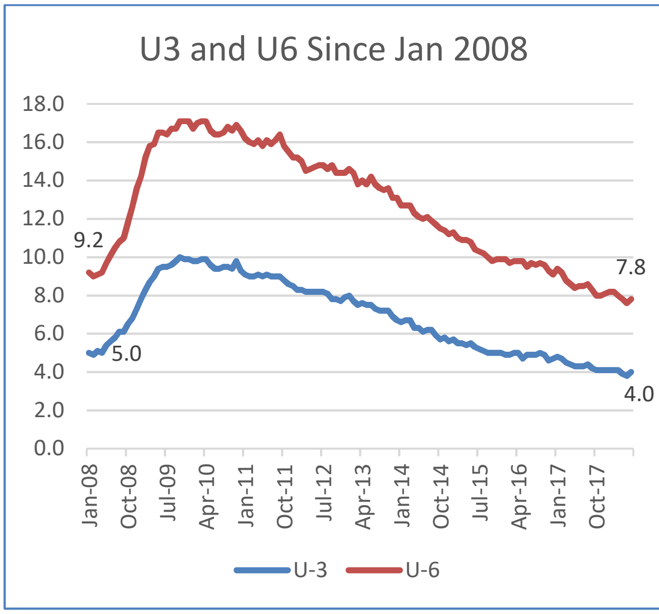
Based on real annualized quarterly real GDP data from the Atlanta Federal Reserve Bank (FRED Economic Data), we found that the average annualized GDP since 1947 Q1 has been 3.2% through the 2018 first quarter. If we leave out the period since the Great Recession, the average real GDP would have been 3.5% through 2007Q4. Then, if we just measure the period after the Great Recession through 2018Q1, the average real GDP would have been 2.2%. For the trailing 4-quarters since 2017Q2, the average annualized real GDP is now at 2.8%. Assuming an average GDP value between the two nowcasting projections, the second quarter may come in at 3.3% which would bring the U.S. back to the multi decade average before the Great Recession. Many economists are projecting an even higher rate of 4 to 4.5%

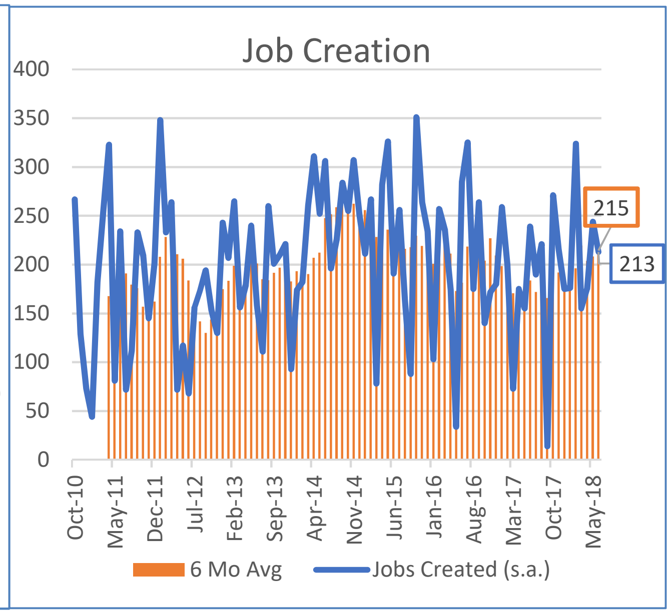
	1947Q1 TO 2018Q1	**1947Q1 TO 2007Q4**	**2009Q3 TO 2018Q1**
QUARTERS	284	243	35
CUMMULATIVE QUARTERLY ANNUALIZED REAL GDP	912.5	851.8	77.4
AVERAGE ANNUALIZED QUARTERLY REAL GDP	3.2	3.5	2.2
TRAILING 4 QUARTERS	2.8	2.8	2.8

4 https://www.frbatlanta.org/-/media/documents/cqer/researchcq/gdpnow/RealGDPTrackingSlides.pdf
5 https://www.newyorkfed.org/medialibrary/media/research/policy/nowcast/nowcast_2018_0706.pdf?la=en

The Bright U.S. Labor Economy is Getting Brighter

The U.S. labor economy has been the most consistent indicator that the economy has recovered from the Great Recession. From February 2008 through September 2009, the U.S. lost 8 million jobs. Since October 2009 to last month, 18.547 million new jobs have been

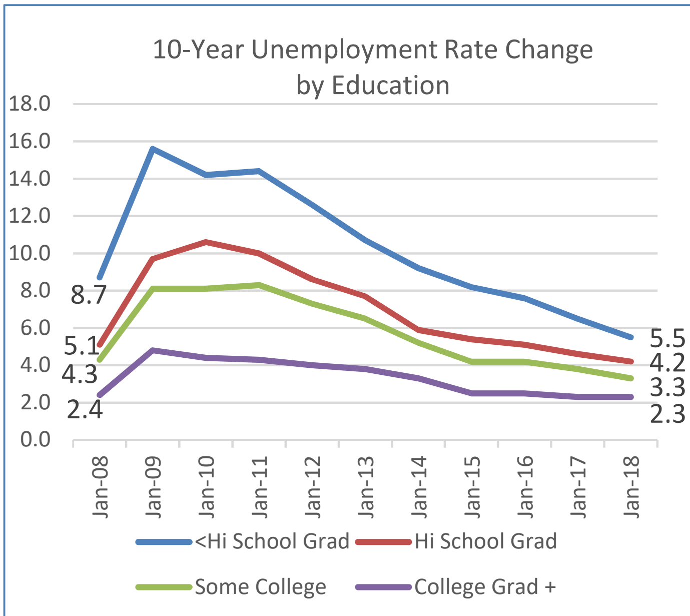


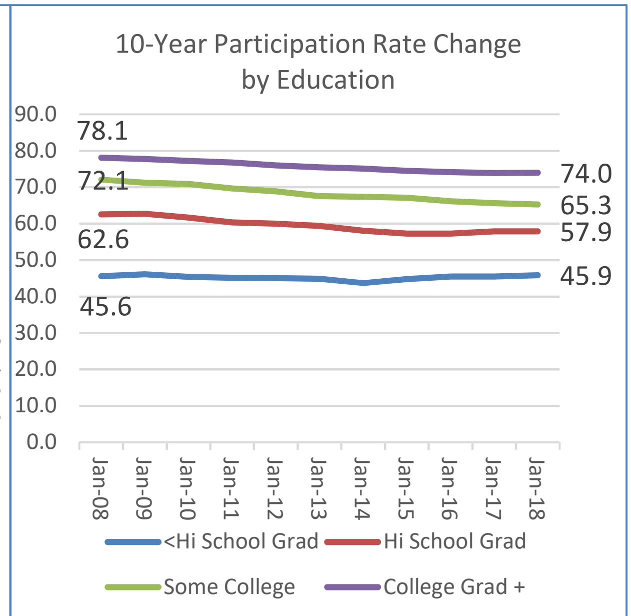


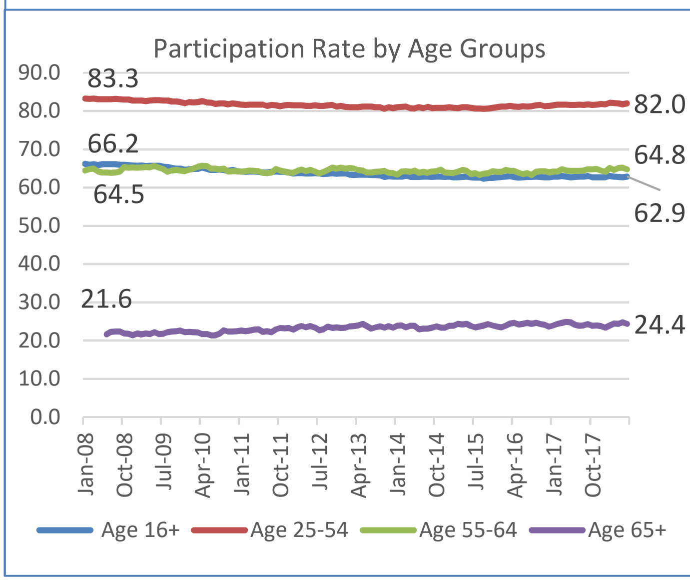
created according to the data from Bureau of Labor Statistics (BLS).
According to the Household Survey Data, the BLS June Employment Situation Summary shows the unemployment rate (U3) rose by 0.2% to 4% in June, and the number of unemployed persons increased by 499,000 to 6.6 million for the month. As compared to June 2017, the jobless rate was 4.3% and the number of unemployed persons was 7.0 million. At the same time, the civilian labor force grew by 601,000 while the labor force participation rate edged up by 0.2% over the month to 62.9%.

Total nonfarm payroll employment increased by 213,000 in June which is more than the market consensus. Even though the unemployment rate ticked up by 2/10th of a percent in June, the corresponding increase by 2/10th of a percent in labor participation rate remains encouraging. The U3 unemployment[6] rate represents the number of unemployed individuals divided by the total number of people in the civilian labor force, whereas the participation rate refers to the total number of individuals who are currently employed or in search of a job. This means that, in June, individuals who were on the sidelines are now looking for jobs again and, as such, being counted in the statistics. Nine years since the Great Recession, on average over the past 6 months, this economy is producing new jobs at a rate of 213,000 per month. This is impressive and, at the same time, shows that there remains slack in the labor force.

[6] Unemployment is defined by the Bureau of Labor Statistics as people who do not have a job, have actively looked for work in the past four weeks, and are currently available for work. Also, people who were temporarily laid off and were waiting to be called back to that job are included in the unemployment statistics.







When the working population (25 years and older) is divided into educational levels, we observe that the unemployment rate among each group: (1) less than a high school diploma, (2) high school graduate but no college, (3) some college or associate degree and (4) college graduate and advance degree, is lower. However, measured in terms of participation level, each group's rate remains below that of 10-years ago with the exception of the < high school group. There is no one single answer that can completely explain the participation rate disparity.

The participation by age category shows that Age 65 and older is the fastest growing group of workers while the participation rates for all remaining age groups are still below the rates 10-years ago, with the exeption of age group 55-64. Although it is without dispute that retiring Baby Boomers are contributing to the drop in the overall participation rate, age 65 and over is also staying in the workforce longer.

Individuals on disability spike whenever there is high unemployment. Getting off disability status and returning to work is one contributing factor in explaining how more jobs are filled month after month.

This table below from BLS - Employment status of the civilian noninstitutional population by disability status and age, 2016 and 2017 annual averages[7] - is the latest information available. From 2016 to 2017, the number of unemployed (due to disability) has dropped by 50,000 while the number of disabled individuals "not in the labor force[8]" has dropped by 247,000. This is a good sign, but there may be limits here.

	2016		**2017**	
PERSONS WITH A DISABILITY (1000)	**16 to 64**	**65 years+**	**16 to 64**	**65 years+**
Civilian noninstitutional population	15746	14225	15697	14654
Civilian labor force	4919	1086	5117	1129
Employed	4356	1016	4603	1066
Unemployed	564	70	514	62
Unemployment rate	11.5%	6.4%	10.0%	5.5%
Not in labor force	10827	13139	10580	13526
Not in labor force rate	68.8%	92.4%	67.4%	92.3%

Princeton economist Alan Krueger, in 2016 and subsequently in September 2017[9], published papers regarding the impact of opioid epidemic on the below average labor participation rate[10]. Kruger concluded that "about half of prime age men who are not in the labor force may have a serious health condition that is a barrier to work. Nearly half of prime age NLF men take pain medication on a daily basis, and in nearly two-thirds of these cases they take prescription pain medication. Labor force participation has fallen more in areas where relatively more opioid pain medication is prescribed, causing the problem of depressed labor force participation and the opioid crisis to become intertwined." Solving the prescription drug dependency issue is costly and difficult, and it is unlikely that a meaningful number of disabled workers will reenter the labor force.

The BLS April 2018 (latest) Job Openings and Labor Turnover Summary (JOLTS) shows the number of job openings was little changed at 6.7 million (a rate of 4.3%), and the number of hires was also little changed at 5.6 million (a rate of 3.8%) from the prior month. During April, hires and separations were little changed at 5.6 million and 5.4 million, respectively. Within separations, the quits rate was unchanged at 2.3% and the layoffs and discharges rate increased to 1.2%.

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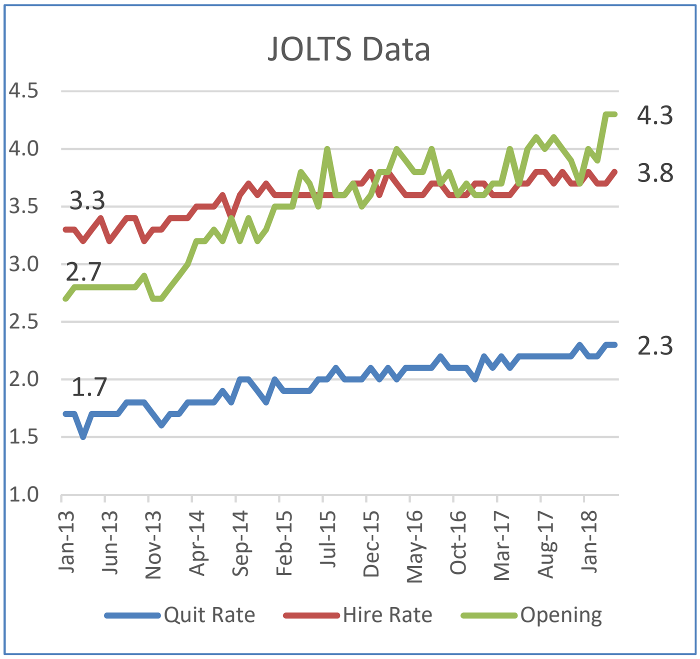
[7] https://www.bls.gov/news.release/disabl.a.htm

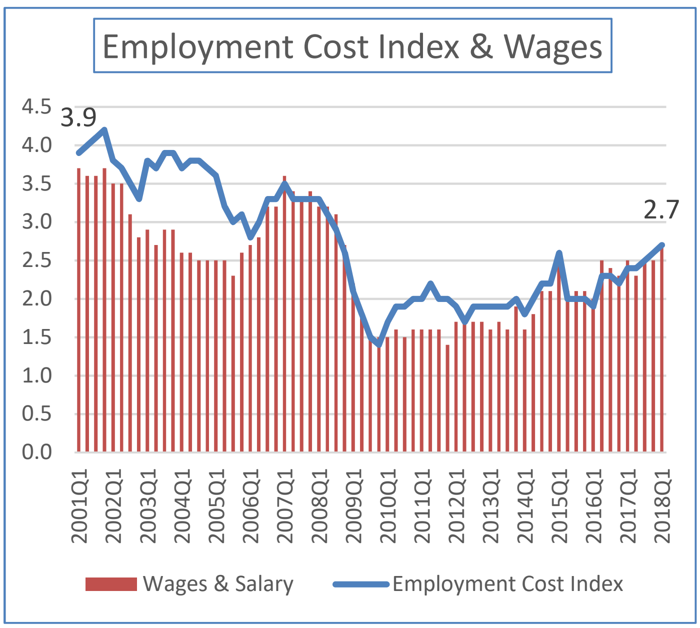
[8] Persons who are neither employed nor unemployed are not in the labor force. This category includes retired persons, students, those taking care of children or other family members, and others who are neither working nor seeking work. Information is collected on their desire for and availability for work, job search activity in the prior year, and reasons for not currently searching.

[9] https://www.brookings.edu/wp-content/uploads/2017/09/1_krueger.pdf

[10] https://www.brookings.edu/bpea-articles/where-have-all-the-workers-gone-an-inquiry-into-the-decline-of-the-u-s-labor-force-participation-rate/



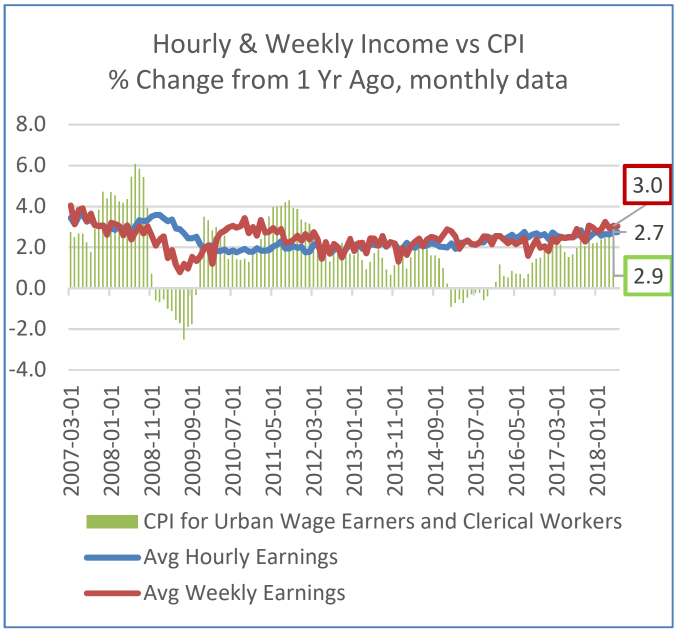
This graph shows the JOLTS data since January 2013. The job opening rate has grown substantially from 2.7% to 4.3%. This suggests that the U.S. economy is expanding and employers are hiring. At the same time, the hire rate, albeit at a slower pace, has moved from 3.3% to 3.8%. This supports the sentiment that employers are looking to hire but the skillset of the applicant pool does not match or the applicants are not qualified for the open jobs. The quit rate provides anecdotal support. Workers tends to be more willing to quit if there are plenty of jobs and they have higher confidence that they will land a better one after quitting. The quit rate has pushed higher over the years.



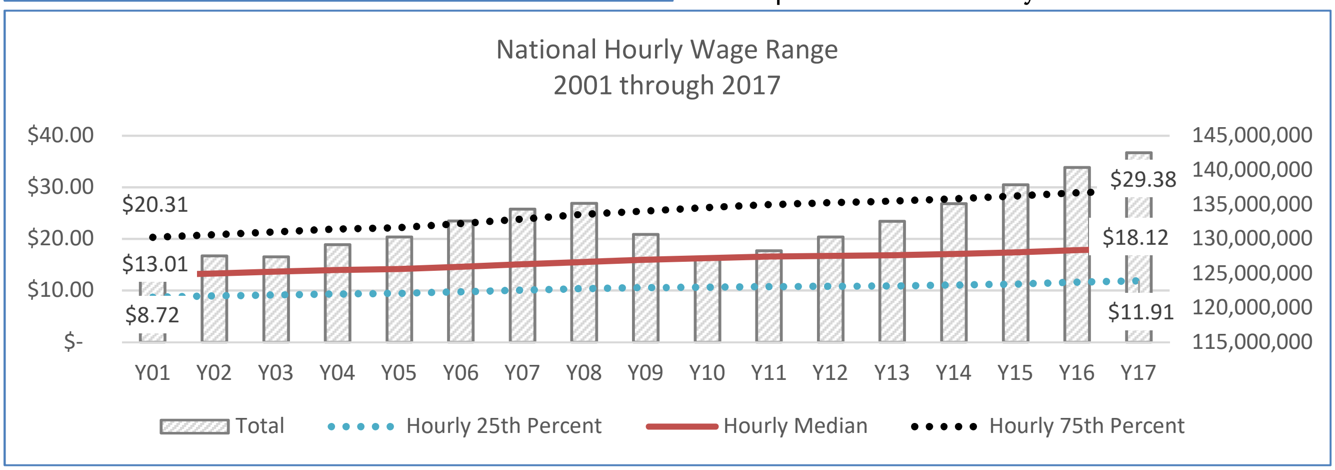
Another indicator to watch is compensation. The latest (March) BLS Employment Cost Index[11] (ECI) shows that, for the first quarter 2018, compensation costs for civilian workers increased by seasonally adjusted 0.8%. Compensation costs for civilian workers increased 2.7% for the 12-month period ending in March 2018 as compared to a compensation costs increase of 2.4% a year prior. Wages and salaries increased 2.7% for the 12-month period ending in March 2018 and increased 2.5% for the prior 12 months in 2017. Benefit costs increased 2.6% for the 12-month period ending in March 2018 as compared to 2.2% a year earlier.

Although the ECI has increased steadily since the low in 2010, it remains significantly below the pre-Great Recession period. This is particularly puzzling with a tight to very tight labor market. In the past, we should see more to much more wage pressure.

[11] https://www.bls.gov/news.release/eci.nr0.htm



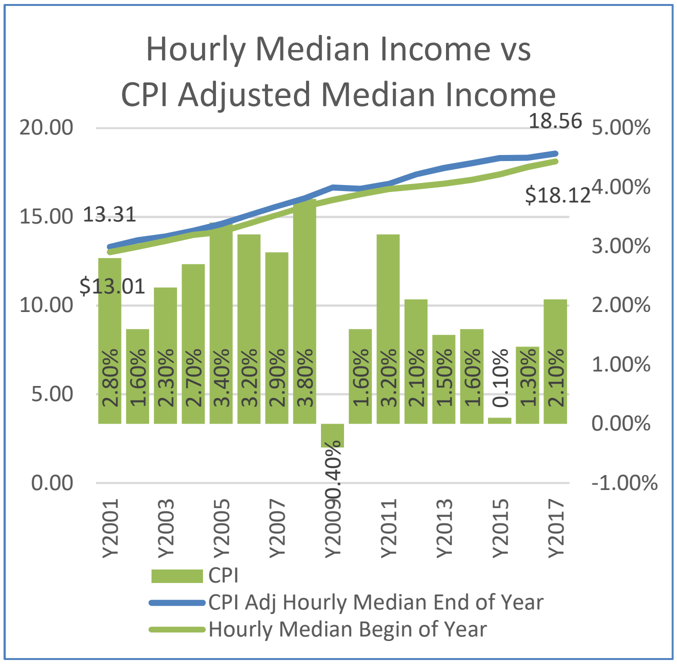
Using BLS and FRED data, the left graph plots the BLS quarterly income data for weekly and hourly wage earners against the CPI for Urban Wage Earners and Clerical Workers. It is clear that the annual change in wages has been hovering around a 2% growth rate until more recently, but we also noticed that the CPI has also been steadily increasing since 2016. For example, although the weekly earners saw an average 12-month trailing wage increase of 3%, the CPI for the same period was 2.9%. In essence, there was no "real" wage increase during that 1-year period. This is the same for those hourly employees. The real hourly wages for the same period declined by 0.3%.



Based on the BLS 2001 through 2017 National Occupational Employment and Wage Estimates[12] data, the above chart shows the wages (reduced to hourly rate) for the 75th, 50th (median) and 25th percentile of all workers. The right-hand axis represented is for the bar chart showing the number of employees in the work force during this 17-year period. It took 7-years to bring the number of workers in the labor force back to the 2008 level (not adjusted for growth in the population). The following table displays an average range of wage increases. This shows that the highest range received the highest increase.

	Y2011 RATE	Y2017 RATE	TOTAL INCREASE (%)
75TH PERCENTILE	$ 20.31	$ 29.38	45%
50TH PERCNTILE	$ 13.01	$ 18.12	39%
25TH PERCENTILE	$ 8.72	$ 11.91	37%

[12] https://www.bls.gov/oes/tables.htm



We took the hourly median wage (50th percentile) and plotted against the same wages adjusted for annual CPI. Taking the same starting average wage of $13.01 per hour in 2001 and applying the annual inflation rate throughout the 17 year period, the data suggests that the wages of the average workers barely kept up with inflation. If the core PCE is used, the real wage number would likely have been better since core PCE has typically been lower than the CPI. Nonetheless, after all the speculation and historically low unemployment level, meaningful wage growth remains absent.

It is reasonable to conclude that, with the participation rate still not fully recovered and the evidence of more workers reentering the workforce every month, there is still more job gains to be had before we reach NAIRU (the non-accelerating inflation rate of unemployment) or the natural unemployment rate. By the way, this can only be known or observed after the fact. We continue to affirm our view that we are headed to 3.5% U3 rate from here (barring significant economic and psychological disruptions from trade disputes).

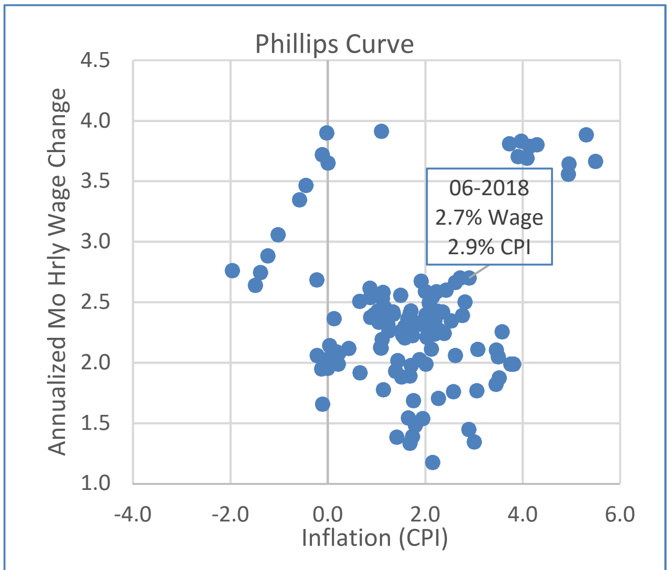
Phillips Curve is (hibernating) not dead

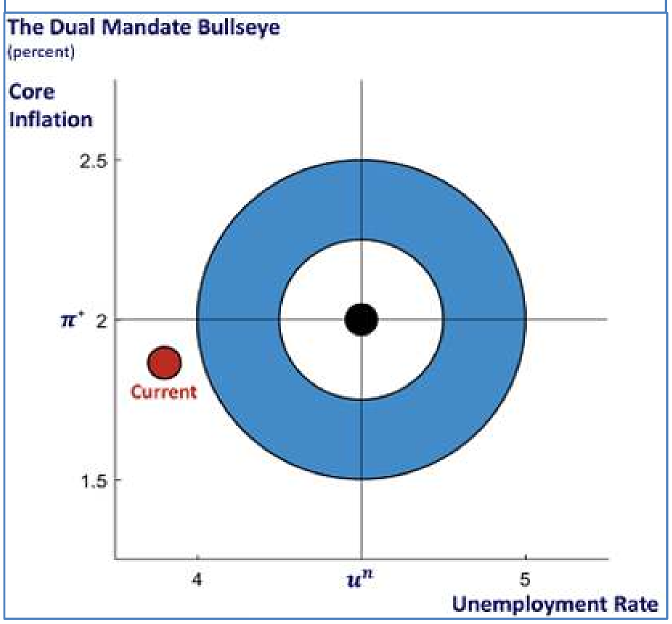
August last year we published a paper[13] regarding the Phillips Curve. A.W. Phillips, an Australian Economist, observed an inverse relationship between the "change of wage rates" and unemployment. The original idea was that, as unemployment reduces or as employment increases, there is natural pressure for employers to increase wages to either retain or attract workers. This should show up in the rate of wage change. This simple idea was then further developed over the years as a framework to link general inflation with unemployment. The concept is that, when employment increases (or when unemployment shrinks), we should expect wages to increase with a lag. As wages and salary move up, workers will have more disposable income to consume. With a lag, this is expected to push costs of goods and services higher. An extreme case of this relationship is the wage/price spiral of the 1970's.

The Great Recession that was triggered by the mortgage finance crisis was so severe that it has taken significant amount of time to "recover", even with unprecedented, über accommodative monetary policies and fiscal injection. The set of challenges were not being faced by the U.S. alone, but they have infected all advanced economies and many developing and emerging economies as well. As illustrated in "The Time Is Different", a financial history

[13] https://chaoco.com/behind-the-headline-phillips-curve/

book by professors Carmen M. Reinhart and Kenneth S. Rogoff regarding financial collapses and their aftermath due to excessive leverage, the economic recovery period is on average 10-years. Of course, each financial crisis is different, and the latest one has affected housing which is a bedrock of the American economy and involved countless numbers of homeowners and the entire housing industry and those lending to it. Although it is too simplistic to suggest that this alone has caused the Great Recession and its aftermath, it should not be surprising that it took years for the U.S. and the world to climb back out of the crater.





The group on the left represents the Phillips Curve using BLS CPI and Hourly Wage data from FRED for the period beginning January 2008 through June 2018. The obvious observation is that there is no discernable pattern or relationship between the two factors. The June unadjusted 12-month CPI change rate is 2.9% and the change rate for wages is 2.7%. This shows that hourly wages, at least for the past 12 months, have not kept pace with general inflation. This has been very frustrating and puzzling for central bankers and economists. Since 1977, the dual mandates for the Federal Reserve are to foster economic conditions that achieve both stable prices and maximum sustainable employment[14].

The maximum sustainable employment is typically thought of as NAIRU. (Historically, this has been around 4.5%, and now is 4%.) NAIRU is based on the relationship expressed by the Phillips Curve. The Bullseye chart, from the Chicago Federal Reserve Bank[15], shows where we are today as compared to where the Fed's objective or expectation is as a guide for making monetary policy. If indeed the natural rate of unemployment is 4.5%, then inflation should be higher to much higher than the 2% core objective. This has just not been the case.

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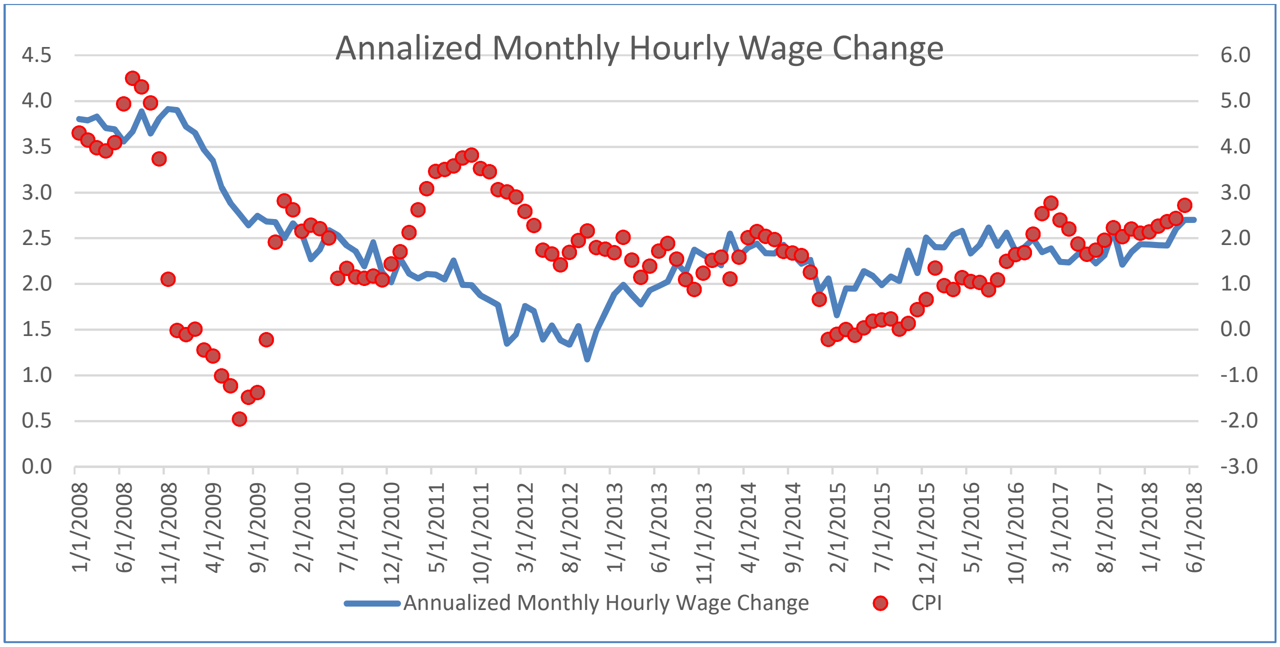
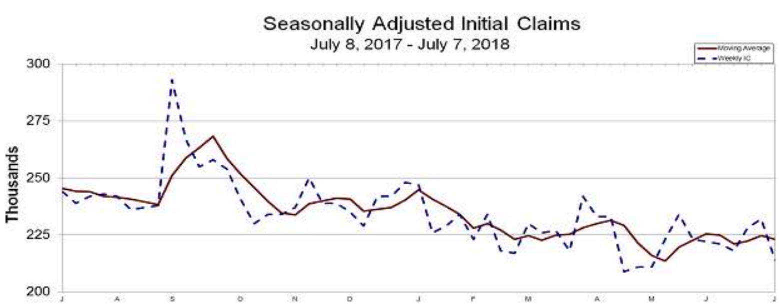
[14] https://www.federalreserve.gov/faqs/money_12848.htm

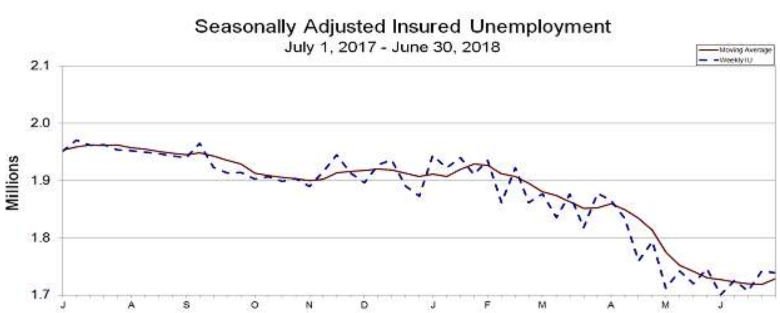
[15] https://www.chicagofed.org/research/dual-mandate/the-bullseye-chart

To express the relationship between inflation and wage changes over the period, the following chart shows a linear relationship. This graph offers an easier view to understand the relationship.



There is no question that the relationship is flatter and wages have not exceeded annual inflation rate. But it is also clear that wages have been keeping up with inflation during the past 3-years, and it is still a reasonable conclusion that, by the time the participation rate recovers more and the remaining slack in the labor force has been wrung out, we would see better real wage growth.

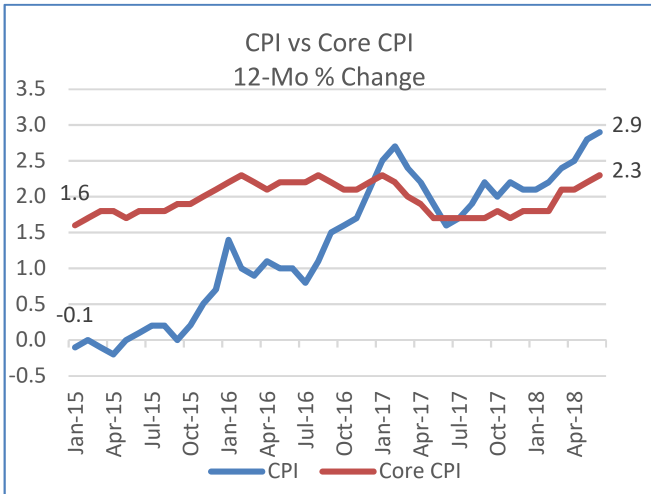


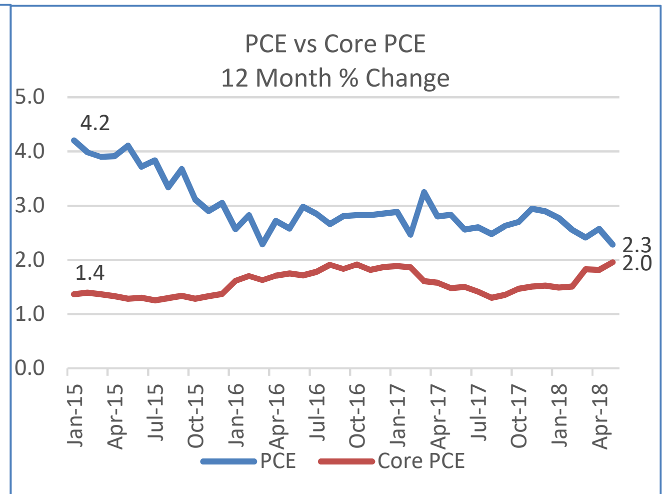


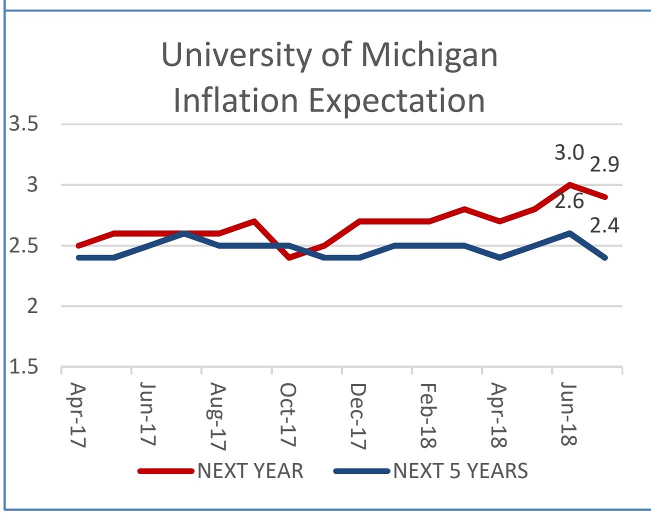
Finally, another indication of the labor market continuing to gain strength is the improvement in weekly unemployment claims[16]. For the week ending July 7, 2018, the seasonally adjusted initial claims were 214,000, a decrease of 18,000 from the previous week's revised level. The insured unemployment rate remains at 1.2% for the week. The total number of people claiming benefits in all programs for the week ending June 23 was 1,672,230. There were 1,900,792 persons claiming benefits in all programs in the comparable week a year ago.

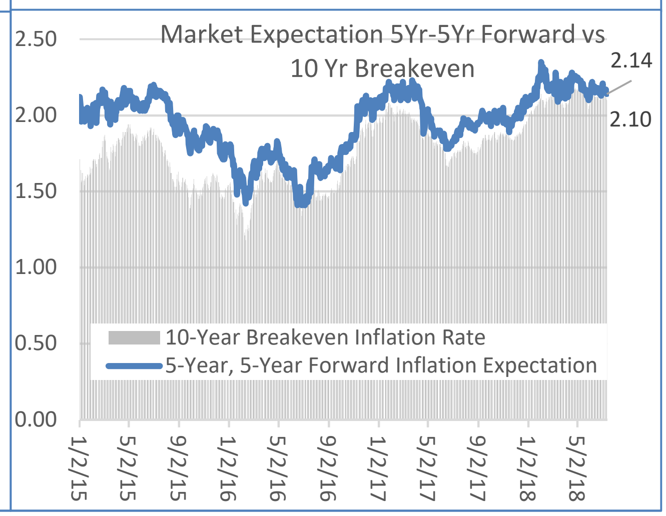
[16] https://www.dol.gov/ui/data.pdf

Inflation — It Is on Its Way









The June core CPI at 2.3% (excluding food and energy) continues the recent re-inflation trend. This is consistent with the May 2% Core CPE (the preferred Fed tracking index for inflation) moving (finally) to the Fed objective. The Fed clearly recognizes the base effect (transitory factors dropping out of the 12-month data set) which statistically boosts inflation data. As such, the Fed suggests patience regarding inflation "symmetry" around the 2%. This means that the Fed is willing to sustain a period of inflation above 2% to make sure that it is sustainable and not due to transitory effects. The challenge is that a trade war based on tariffs will generate input inflation and the Fed is watching the data keenly and this adds uncertainty to monetary decision and its timing.

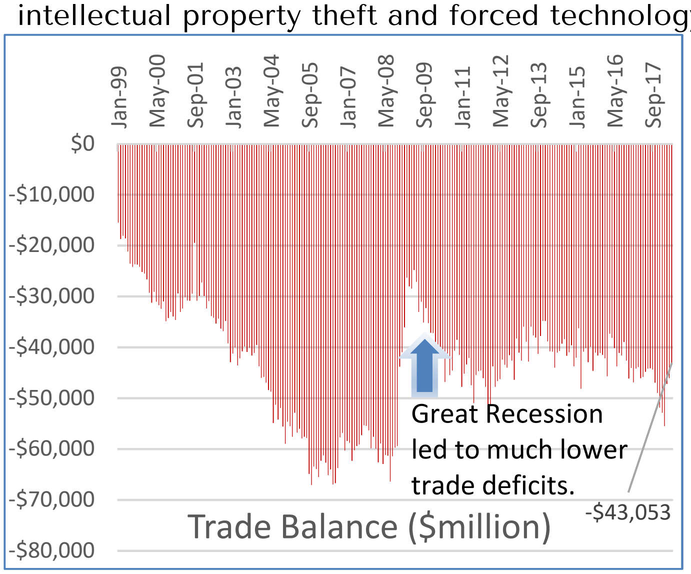
The survey data from University of Michigan is registering a 2.9% inflation expectation for the next 12 months and a 2.4% over the next 5 years. Market participants, however, are pricing in a 2.14% inflation rate (a measure of expected inflation on average over the five-year period that begins five-years from today.) Further, the market is pricing a 10-year inflation break-even of 2.1% (a measure of expected inflation derived from 10-Year Treasury Constant Maturity Securities and 10-Year Treasury Inflation-Indexed Constant Maturity Securities).

This means that consumers' and market participants' expectations for inflation are at or around the Fed target.

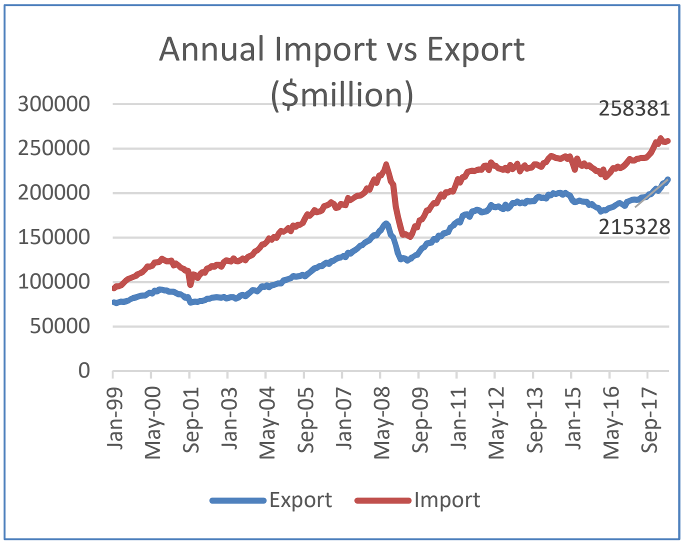
Trade War (Skirmishes, Battles) is Complicated and Hard to Win

(The country is very divided politically today and regardless how careful our writing is, readers can misinterpret the content regarding the Administration or its policies. This section of our writing should not be viewed as support, endorsement or criticism of the President, his vision, tactics or motivation. What President Trump does domestically and internationally have significant impact on our economy, political stability and ultimately investments. Chao & Company strives to offer an independent, fact-based analysis to a very complex subject area.)

The main slogan for Candidate Trump was to "Make America Great Again". To accomplish this vision, President Trump is looking to bring jobs and industry back by making America a competitive and attractive place to invest and do business. His immigration policy and criticism about multi-lateral trade agreements (NATO, WTO, EU, NAFTA) and other international organizations and bodies are all part of his US centric view. For example, by pushing hard on NATO allies to meet their promised 2% GDP (or more) budget for military spending would likely increase purchases from American arms and military equipment dealers; and the push to close our southern boarders as a part of the overall immigration reform would curtail labor and wage competition in the U.S. From his speeches, Tweets and actions, President Trump uses trade deficits as a benchmark to gauge trade "fairness". From China to the EU, Mexico to Canada, he is looking to balance trade by imposing or threatening quotas and tariffs as negotiation tactics to gain "fairer" trade and more open markets for US goods and services abroad. His preference for bilateral trade agreements is obvious. A massive consumption driven economy, such as the US, imports globally, and by negotiating one-on-one (or bilaterally), President Trump believes his Administration would have the upper hand and improve the odds of signing a better deal for the U.S. President Trump suggests the perennial U.S. trade deficits are due to protectionist policies instituted by our trading partners and, unless the partners are willing to lower their barriers to U.S. goods and services, the U.S. must impose tariffs and quotas on their goods and services. In the case of China, intellectual property theft and forced technology transfer must also be stopped, and in the case of Canada and Mexico, the 24-year trade agreement, NAFTA, must be renegotiated.



There are at least a couple of related considerations that are often not included in the America First conversation when dealing with trade. Trade deficit is often not the sole benchmark in measuring trade fairness about countries. Trade deficit is the difference between the value of imported goods and services from foreign countries, and the amount the U.S. exports, but this is too



simplistic a measure. Trade imbalances are affected by relative growth rates of countries, exchange rate differentials, and domestic saving and investment rates. For example, during the years leading up to the Great Recession, escalating housing prices gave rise to significant consumer borrowing which fueled consumption. The trade deficit widened significantly with ever growing imports to satiate consumer demand. But *during* the Great Recession and its aftermath, with the collapse of housing prices and double-digit unemployment, consumption faltered which resulted in a significant shrinkage of the trade deficit.

The other often not well understood factor is the expansion of U.S. companies in-country overseas. This means that companies set up operations in-country overseas to manufacture for domestic consumption and export. (The reverse has also been true — BMW exported a record 287,700 BMW X models from the Spartanburg, SC, plant during 2016 with an export value of $9.53 Billion.) The global supply chain has made "domestic content" a much more complicated topic. The imports from China, for example, contain goods and services of other countries and regions (including U.S.), and any broad restrictions to trade would impact countries beyond China.

In March this year, the President issued Proclamations 9704 and 9705 and subsequently concurred with the Commerce Department findings. He determined that adjusting imports through the imposition of duties on steel and aluminum articles is necessary so that imports of steel and aluminum will no longer threaten to impair the national security. On May 23, 2018, the Secretary of Commerce, under section 232, initiated an investigation to determine the effects on the national security of imports of automobiles, including cars, SUVs, vans and light trucks, and automotive parts.

Since then more trade actions have been brought, announced or contemplated against China to the tune of over $250 billion of imports. China responded in kind and in words. Although the total import to China is less than $150 billion per year from the U.S. and many observers suggest that China has less room to act against U.S. actions. First, the $250 billion of exports represents only 1.3% of the country's GDP and there are many non-tariff or non-trade actions China may consider. For example, allowing the Chinese yuan (RMB) to trend towards the lower range of the central bank's managed float process against a basket of trade currencies. This will soften the impact of the imposed 10% or 25% U.S. tariff. Further, we should not underestimate the nationalistic character of today's China where its leadership wants to be viewed as strong globally (and domestically) and not to be bullied.

The following is a quick summary of the trade actions taken by the U.S. and the retaliatory actions taken by our trading partners thus far.

According to the Commerce Department, the U.S. imported over $2.9 trillion and exported almost $2.4 trillion last year. According to most economists, the amount of imported goods impacted has been small even if the exports subject to retaliatory tariffs are included so far. However, the trade disputes are widening and are aimed at all of U.S. trading partners. The potential collapse of NAFTA renegotiation with Canada and Mexico is yet another battle that would add to the overall stress to the U.S. and global economy. President Trump is fully committed to the view that the U.S. has been taken advantage of and trade is only one of many factors 1n which he is pushing back. When this is coupled with his distaste for political,

Solar Panels & Washing Machines

01-22-17
- USITC recommended (1-22-17) and Trump imposed tariffs on solar panel ($8.5b) and washing machine ($1.8b) imports.

04-17-18
- China announces duties of 178.6% on approx. $1b sorghum (grain feed for livestock) from US.
- 05-18-18 China ended duties on sorghum

05-14-18
- South Korea through WTO challenges US tariffs on solar panels and washing machines.

Steel & Aluminum

02-16-18
- Commerce released two reports confirming national security threat under §232 the 1962 Trade expansion Act.
- 03-01-18 Trump announced a 25% tariff on steel and 10% on aluminum covering $48b of imports primarily from allies (6% from China or $2.8b)

03-07-18
- EU announced possible retaliation on $3.2b of US imports and challenge the use of national security by US through WTO
- 03-08-18 Trump made tariff applicable on 03-23-18 and exempted Mexico & Canada

03-22-18
- Trump undated exemption to EU, S Korea, Brazil, Argentina and Australia through May 1
- 03-28-18 S Korea received permanent exemption agreeing to a 21% export cut of steel
- 04-02-18 China imposes retaliatory tariffs on $2.4b onUS products

04-02-18
- Trump extend exemption to EU, Mexico and Canada to June 1 and permanent exeption to Argentina, Brazil and Australia.
- 06-01-18 tariff applies to EU, Mexico and Canada
- 06-22-18 EU enacts the previously announced tariff on $3.2b of US imports.

Action against China

08-14-17
- Trump memo to US Trade Rep to investigate China has been unreasonable or discriminatory and harming US INP, innovation or tech development.
- 03-22-18 released report citing unfair practices, and Trump suggested tariffs on up to $60b of Chinese imports, a WTO resolution and new investment rules.

04-03-18
- Trump released a list of 1333 Chinese products worth $46b being considered for a possible 25% tariff.
- 04-04-18 China released a list of 106 US products worth $50b being targeted for a retaliatory 25% tariff.

04-05-18
- Trump is considering applying the proposed tariff on an additional $100b in Chinese imports.
- 05-20-18 Trump intends to apply tariff on $50b Chinese imports after the 06-15-18 release of the final list of covered products.

06-15-18
- Trump is considering applying the proposed tariff on an additional $100b in Chinese imports.
- China issued revised list of $45 b US exports and divided the application into 2 phases.
- 05-20-18 Trump intends to apply tariff on $50b Chinese imports after the 06-15-18 release of the final list of covered products.

07-10-18
- Trump releases a list of $200 b of Chinese import to be subject to a new 10% tariff which includes intermediate goods such as auto parts and more consumer goods
- China vowed to fight back.

security and global defense institutions where many of the trading partners are members alongside the U.S., this adds many levels of complications.

It is very clear that trade disputes are escalating and will not be resolved easily or quickly. The full impact cannot be measured since it is still too soon to know the fallout (politically and economically) from our trading partners' retaliatory measures. There is no question that tariff is inflationary for all parties, and although in the short run, there is a small group of winners (industries that are protected) but most are losers. A tariff acts as a tax on consumers, and it will eat away some of the benefits from the January tax cut. If the current trade disputes escalate into a full-blown global trade war where all sides dig in their heels, the U.S. will suffer along with its trading partners with shrinking economies, higher prices, lower productivity and higher unemployment. Of course, there is always an upside — the U.S. and its trading partners could reach an agreement to have freer, fairer and less protective trade among countries and expand global wealth and prosperity. Means to the end matters!

What's Next?

In summary, the U.S. economy is at its best point since the Great Recession. Even though the economy was moving in the right direction, the front-loaded tax cut package boosted economic activities significantly and extends this long economic expansion further. However, the uncertainty of impacts from trade disputes (and the reaction faction of our trading partners and their possible unification) and the steady drum beat of monetary tightening are headwinds to otherwise smooth sailing for 2018 and 2019. We expect continuing market volatility, a larger impact on emerging markets (rising U.S. dollar, slowing economic activities, flight to safety, etc.), the continuing disappearance of "term premia" with an ever-flattening yield curve and the shrinking macro liquidity safety net. America First may end up to be America Alone for a while and that would mean inward looking investments such as smaller capitalized companies that could weather the tariff storm better. It is obvious that the short end of the yield curve provides a better risk-adjusted return (since it is less sensitive to interest rate movements) and the market is pricing in more rate increases at this point. After observing a more serious impact from the escalating trade disputes and a slowdown in corporate investment or consumer confidence, the Fed may pause or reduce rate hikes and/or balance sheet normalization. At the same time, if the rest of the world picks up pace on buying haven assets, the longer maturity U.S. treasuries would see their rates drop causing an inversion of the yield curve which may be the canary in the recession coal mine.

Sincerely yours,
CHAO & COMPANY, LTD.
Philip Chao
Principal & CIO