

## QUARTERLY NEWSLETTER

2017: THIRD QUARTER

115<sup>TH</sup> EDITION



### *“Random Gleanings”*

The financial crisis started 10 years ago. Reinhart and Rogoff published a book in 2009 titled “This Time is Different: Eight Centuries of Financial Folly.” Their research on economic cycles shows that, on average, it takes 5 to 10 years to recover from a financial crisis. Ten years are up.

### TABLE OF CONTENTS

CAPITAL MARKETS SCOREBOARD .....	2
FINANCIAL MARKETS RECAP .....	3
INVESTOR WATCH .....	6
The Inflation Enigma	
WALLINGTON PERSPECTIVE .....	10
Artificial Intelligence: Transforming Our Economy and Society	

Equities					
Indices	3Q17 Total Return (%)	2017 Total Return (%)	Index Characteristics		
Domestic			NTM P/E	P/B	Div. Yld. (%)
S&P 500	4.5	14.2	17.7	3.1	1.97
DJIA	5.6	15.5	17.2	3.7	2.15
NASDAQ	6.1	21.7	22.1	3.9	1.03
Russell 1000 Growth	5.9	20.7	20.6	6.2	1.60
Russell 1000 Value	3.1	7.9	15.9	2.0	2.65
Russell 2000	5.7	10.9	25.2	2.2	1.51
International*					
MSCI EAFE	5.5	20.5	14.8	1.7	3.03
MSCI Emerging Markets	8.0	28.1	12.5	1.6	2.31
MSCI United Kingdom	5.2	15.7	14.5	1.8	4.10
MSCI France	8.4	27.9	15.0	1.6	3.10
MSCI Germany	7.7	25.0	13.5	1.8	2.80
MSCI Japan	4.1	14.6	14.1	1.4	2.00

Fixed Income			Commodities		
Indices**	3Q17 Total Return (%)	2017 Total Return (%)	Resource	3Q17 Total Return (%)	2017 Total Return (%)
Domestic			Precious Metals		
U.S. Corp - Gov (1-3 Years)	0.3	1.0	Gold	3.3	11.4
U.S. Corp - Gov (3-5 Years)	0.6	2.2	Silver	2.4	3.8
U.S. Corp - Gov (10+ Years)	1.5	7.6	Industrial Metals		
U.S. Treasuries Master	0.4	2.3	Copper	8.9	17.6
U.S. Corporates Master	1.4	5.3	Aluminum	10.6	23.2
U.S. Municipals Master	1.2	4.6	Energy		
U.S. High Yield Master	2.0	7.0	Brent Crude Oil	20.6	3.3
International*			WTI Crude Oil	12.3	-3.9
Developed Markets Sov Bond	1.5	5.7	Natural Gas	-1.0	-19.1

Key Rates				
Rates	9/30/2017	6/30/2017	12/31/2016	9/30/2016
U.S. Target Fed Funds Rate	1.13	1.13	0.63	0.38
2-Year U.S. Treasury	1.47	1.38	1.20	0.77
10-Year U.S. Treasury	2.33	2.31	2.45	1.60
30-Year U.S. Treasury	2.86	2.84	3.06	2.32
10-Year German Bund	0.46	0.46	0.20	-0.12
10-Year Japanese Bond	0.06	0.08	0.04	-0.08
30-Year Fixed Mortgage	4.11	4.20	4.39	3.66

Currencies				
Indices/ Exchange Rates	9/30/2017	6/30/2017	12/31/2016	9/30/2016
ICE U.S. Dollar Index	93.08	95.63	102.21	95.42
USD per EUR	1.18	1.14	1.05	1.12
USD per GBP	1.34	1.30	1.23	1.30
JPY per USD	112.46	112.35	116.90	101.34
CAD per USD	1.25	1.30	1.34	1.31

\*Returns denominated in U.S. dollars

\*\*Bank of America Merrill Lynch (BofA-ML) indices

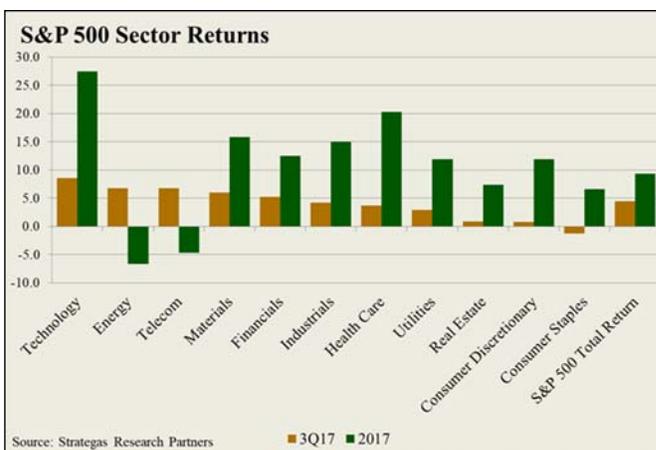
The third quarter marked the 8<sup>th</sup> consecutive quarter and 11<sup>th</sup> consecutive month of positive performance for the Standard and Poor's 500 (S&P 500) index as it finished the quarter with a 1.9% total return (price appreciation plus dividends). Should the streak last through the end of the year, it would mark the first calendar year ever the S&P 500 finished without a down month. The index ended September at an all-time closing high of 2,519.36, bringing the total return for the year to 14.2%. The market continued to exhibit notably low volatility with the S&P 500's average daily change registering at just 0.3%, the lowest level since 1968. In addition to small daily movements, pullbacks in the market have been limited in magnitude. The S&P 500 has not had a 5.0% correction since June 2016, the longest streak since 1996 and fourth longest since the index expanded to 500 stocks in 1957. The largest drawdown through the first three quarters of the year was just -2.8% in April. The Dow Jones Industrial Average and NASDAQ both outperformed the S&P 500 for the quarter, returning 5.6% and 6.1% respectively. Smaller companies also exhibited stronger performance in the third quarter as the Russell 2000 Index returned 5.7%, bringing its year-to-date (YTD) performance to 10.9% after lagging the S&P 500 through the first half of the year.



In regard to international stock markets, the MSCI Europe, Australasia, and Far East (EAFE) Index outperformed the S&P 500 for the third straight quarter when priced in U.S. dollars. In dollar terms, the EAFE Index produced a 5.5% total return for the quarter and 20.5% return for the year. This outperformance was largely driven by the weakening of the U.S. dollar in each of the last three quarters. When priced in local currencies, the index underperformed the S&P 500 in each quarter of 2017. The EAFE Index's returns have remained positive as the index generated a 3.4% gain for the third quarter and 11.6% gain for the year when denominated in local currencies. Emerging market companies outperformed the S&P 500 whether denominated in U.S. dollars or local currencies. The MSCI Emerging Markets Index returned 8.0% when priced in U.S. dollars and 7.7% when priced in local currencies for the quarter. This brought the index's total return for the year to 25.5% when priced in U.S. dollars and 21.3% when priced in local currencies. The MSCI EAFE and the MSCI Emerging Market Indices have not outperformed the S&P 500 over the course of a calendar year since 2012 when denominated in U.S. dollars.

Broad-based earnings growth has been supportive of global equity market gains. Aggregate year-over-year (YOY) earnings growth for companies in the S&P 500 was 10.4% for the second quarter. Although an anticipated recovery in profits within the Energy Sector provided almost 25% of the increase, all 11 economic sectors reported earnings growth. The European STOXX 600 and Japanese Nikkei 225 indices both reported over 30% YOY earnings growth for the second quarter after wading through worse earnings recessions than the S&P 500 in 2015 and 2016. As of September 29, the S&P 500 was expected to report a 4.2% earnings growth rate for the third quarter. This is below the 7.5% growth rate that was expected on June 30, as 76 companies issued negative earnings-per-share (EPS) guidance over the course of the quarter compared to 42 companies that provided positive EPS guidance.

The Information Technology Sector was the strongest sector in the S&P 500 for the quarter and YTD, returning 8.6% and 27.4% respectively. The Energy and Telecommunications Sectors staged a rebound in the third quarter, both returning 6.8% after producing negative returns in each of the first two quarters of the year. The Consumer Staples Sector was the only negative performer with a -1.3% total return. The Consumer Discretionary and Real Estate Sectors also struggled to gain momentum during the quarter, returning 0.8% and 0.9% respectively.



September pointed to a shift in internal momentum within the markets. Much of this has been attributed to President Trump reaching across the aisle to solidify a short-term budget deal and hurricane relief package.

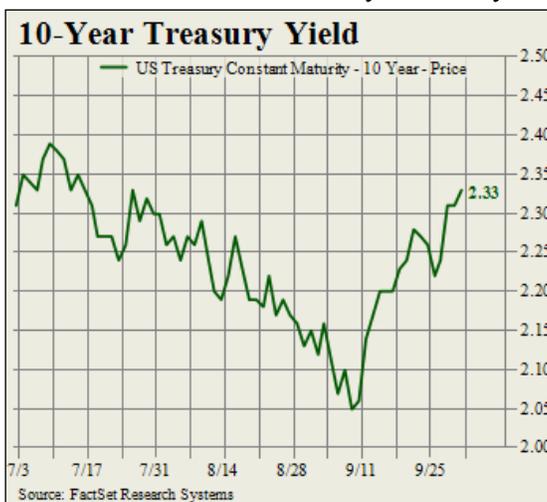


Source: Strategas Research Partners

After lagging the S&P 500 through much of the quarter, the Industrial, Energy, and Financial Sectors all outperformed the index after the deal was reported on September 6. These sectors are all believed to benefit from a broad platform of de-regulation and fiscal stimulus. Strategas Research Partners' High Tax Portfolio, which had been significantly underperforming the S&P 500 YTD, staged a notable rebound to finish September, indicating renewed hope for corporate tax reform. The Russell 2000 Index also staged a significant rally to close the quarter. The smaller companies found in the index, in general, tend to pay higher tax rates and have less international exposure than those companies found in the S&P 500, causing its relative performance to be tied closely to President Trump's perceived ability to impact policy.

A shift towards increased anticipation of economic growth was not just apparent in the equity markets. After starting the quarter at 2.31%, the yield on 10-year U.S. Treasuries (UST) dipped as low as 2.04% on September 7. As prospects for growth were reinvigorated, yields recovered, and the 10-year UST yield finished the quarter with a slightly higher yield than it started at 2.33%. Should the 10-year UST yield close the fourth quarter higher than 2.44%, it would mark the first time since 1981 the 10-year yield finished higher in three consecutive calendar years.

Relatively stable yields allowed most BofA-ML bond indices to generate positive returns. The U.S. Treasury Master index provided a 0.4% total return for the quarter and 2.3% return for the year. Given the relatively stable yields across different maturity tranches (bonds with longer maturities will generally offer higher yields to compensate for increased interest rate risk), longer-term bonds outperformed. Government and corporate bonds with 10+ years until maturity returned 1.5% in the third quarter. Short-term bonds with 1-3 years until maturity returned 0.3%, and intermediate-term bonds with 3-5 years until maturity returned 0.6% for the quarter.

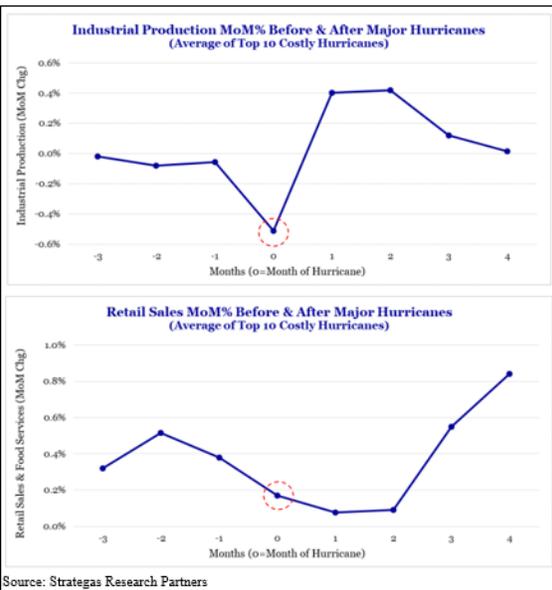


Source: FactSet Research Systems

Investment-grade corporate spreads (the yield differential between corporate bonds and USTs) fell to post-recession lows over the course of the quarter. This led the U.S. Corporate Master index to outperform Treasuries, returning 1.4% for the quarter and 5.3% for the year. High-yield spreads also neared their post-recession lows, allowing for a 2.0% return for the quarter. The U.S. High Yield Master index has returned 7.0% through the first three quarters of the year.

The Federal Reserve (Fed) opted not to raise interest rates in September for the first time in four quarters; however, heightened anticipation of another rate increase in 2017 drove short-term rates higher. While the market-implied probability of a rate hike before year-end was below 25% in early September, Federal Open Market Committee (FOMC) rhetoric and stronger-than-expected August inflation numbers lifted the chance of an increase to 70% by the end of the quarter. The Fed is currently projecting three additional hikes in 2018. Their projections have historically been optimistic throughout this economic recovery and expansion as evidenced by the market currently implying only a 30% chance of more than one rate hike in 2018. The Fed also confirmed plans to begin trimming its \$4.5 trillion balance sheet in October, effectively further tightening monetary policy.

The Core (ex-food and energy) Consumer Price Index (CPI) rose 1.69% YOY in August, well below the Fed's 2% target. This was largely anticipated due to a tough comparable number, as Core CPI increased 2.31% in August 2016. Regardless, market-implied inflation expectations remain contained. The 5-year UST yield was 1.92% to close the quarter, while the 5-year Treasury Inflation-Indexed Security yield was 0.24%. Over the next five years, the bond market expects inflation to roughly equal the differential between these two numbers: 1.69%.



The economy continued its expansionary phase through the second quarter as expected. Gross Domestic Product (GDP) rose 3.1%. This was the highest growth rate since the first quarter of 2015 when GDP grew at a 3.2% rate, and presented notable improvement over the 1.2% report for the first quarter. The effects of Hurricanes Harvey, Irma, and Maria are expected to temper growth expectations slightly for the third quarter, but the consensus still points towards 2.5% growth. Historically, costly hurricanes have caused a slowdown in economic areas such as Industrial Production and Retail Sales growth. The economic drag tends to be short-lived, as the requisite spending to replace and rebuild after a natural disaster can provide stimulus for the economy.

## THE INFLATION ENIGMA

The U.S. economy is in its ninth consecutive year of growth, steady but slow at 2.1%. The unemployment rate remains low at 4.2% and 16 million jobs have been created since 2010. Such conditions would normally result in inflationary pressures, but consumer prices have not gained traction in the U.S. economy. The U.S. CPI is on pace to rise less than 2.0% for the fifth straight year, which has never happened in a non-recessionary five-year period. Outside of the U.S., some of the world's other largest economies have also been experiencing subdued inflation. Japan's economic growth was 4.0% in the second quarter but inflation was zero. Europe's inflation is stuck at 1.5% despite the Eurozone's solid economic growth. Inflation and economic growth moving in separate directions has central banks perplexed, as Fed Chair Janet Yellen admitted in a speech recently.



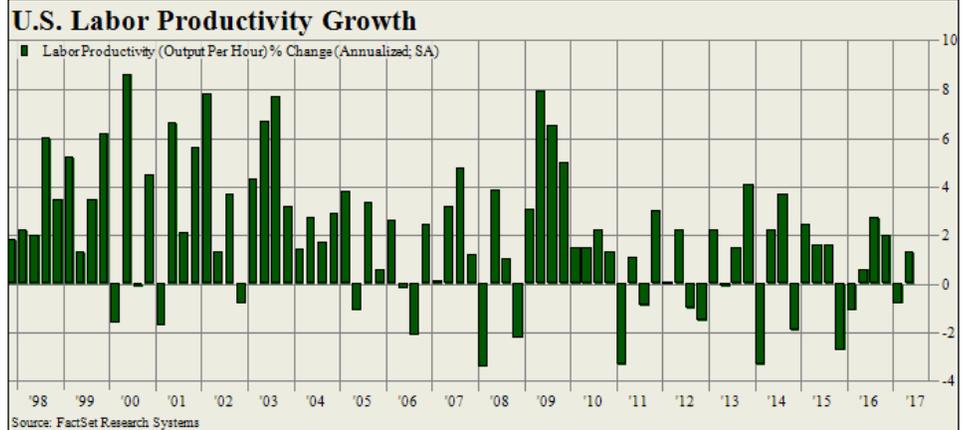
According to economic theory, inflation is generated by the output gap, which is the gap between the demand for goods and services and the economy's capacity to supply them. When the output gap is wide (demand is low), inflation is lower, and when it narrows (demand rises), prices increase at a faster pace. This is considered to be "demand pull" inflation. Central banks have been unable to reach their 2.0% inflation targets in recent years despite their success in boosting economic growth, creating jobs, and lowering unemployment rates. Some economists question whether or not the relationship between the output gap and prices continues to be reliable on a country-by-country basis due to globalization. Globalization is having an impact because the relative output gap is not simply domestic, but now global in nature, and there continues to be a lot of excess industrial capacity in the world, especially in China.

Economic theory also states that inflation is generated by companies raising prices as their input costs increase. This is referred to as "cost-push" inflation. Technological innovation has put downward pressure on the price of many goods, as it has both lowered the cost of production and increased competition by allowing consumers easier access to a wide array of suppliers via e-commerce. The services sector has been responsible for most of the inflation recently, but even there some of the main drivers of service inflation like cellular, rental, and college tuition costs have started to decelerate. Currency and commodity prices have also contributed to subdued inflation. While the U.S. dollar has declined about 9% in 2017 relative to a basket of global currencies, it appreciated about 37% between 2001 and 2016, putting downward pressure on prices, especially goods. A stronger U.S. dollar makes goods manufactured overseas cheaper for U.S. consumers. The fall in commodity prices lately, especially energy, has also helped subdue inflation.

Rising labor costs have historically been one of the primary contributors to cost-push inflation. Economist A.W. Phillips presented evidence in 1958 of an inverse relationship between the unemployment rate and wage growth. When unemployment is high, wage growth is slow, and when unemployment is low, wages grow more quickly. This principal was later extended to the relationship between unemployment and inflation, referred to as the Phillips Curve. There has been much conjecture about the Phillips Curve in the media lately since the relationship does not seem to be holding. Wage growth in much of the world has been tepid even as global economic growth has picked up. In the U.S., wage growth has lagged the pace achieved during other periods of low unemployment. In August, the unemployment rate stood at 4.4%, which at the time was the lowest level in 16 years, yet workers' average hourly wages increased by just 2.5% from the prior August. The most recent September employment report contained more positive metrics as the unemployment rate declined even further to 4.2% and wages increased 2.9% from the previous September. However, it remains to be seen how skewed those numbers were due to the recent weather disruptions.

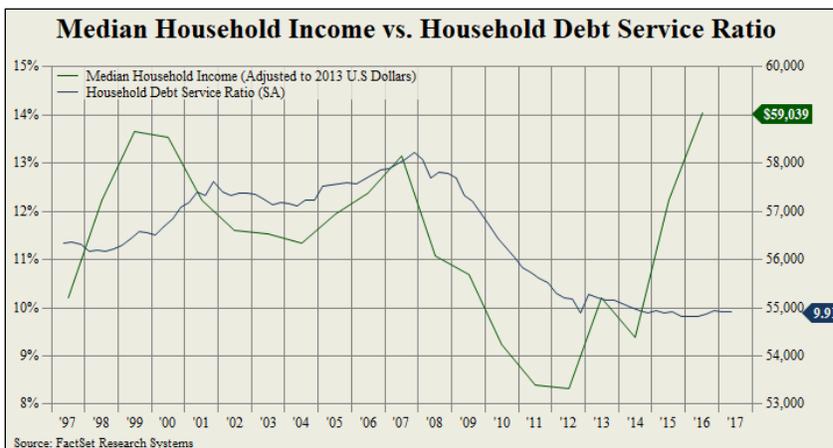
There are a multitude of reasons why the Phillips Curve may no longer hold. Historically, an unemployment rate of 4.2% has meant full employment but there is likely more slack in labor markets today than usual. The number of part-time workers who want full-time employment is still high after eight years of growth in jobs and economic output.

Also, the labor force participation rate, while improving at 62.9%, is still close to historical lows of 62.6% seen in 2015 and 2016. It was 67.3% at its all-time high in 2000. A 1.0% increase would result in roughly 1.5 million more workers. Worker productivity growth has undoubtedly been a factor in slow wage growth. It has been at historically



low levels recently, and in the long term, wage growth is largely determined by productivity growth. Globalization has also been responsible for the low wage growth in the U.S. as domestic workers must increasingly compete against workers abroad; the supply of labor is roughly 2 billion workers globally but only 150 million workers in the U.S. Another factor that may be contributing to low wage growth is the reduced power of unions. According to the U.S. Bureau of Labor Statistics (BLS), the percentage of workers with union membership declined from 20.1% in 1983 to 10.7% in 2016, with only 6.4% of private-sector employees now unionized. Finally, the impact of technology may be slowing wage growth as the labor force finds itself competing more and more against human-replacing machines (see: Wallington Perspective).

Subdued wage growth is a serious problem for U.S. and global economies. Lack of growth in personal disposable income will result in lower consumption and lower economic growth; personal consumption represents about 70% of U.S. GDP. The

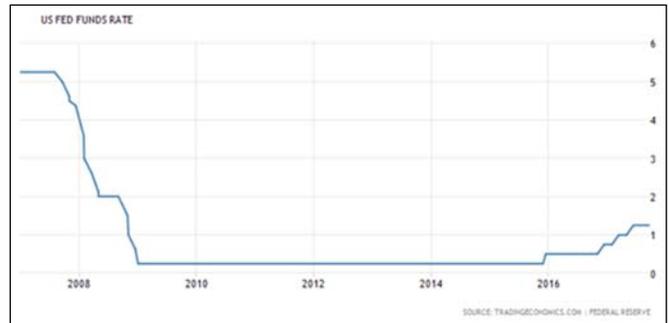


U.S. Census Bureau recently reported that U.S. household income increased by a respectable 3.2% (inflation-adjusted) in 2016 from the prior year. Over the same period, median earnings of full-time workers barely changed; more people are working, but workers are not earning more. Median weekly earnings in the second quarter were only 5.7% higher than a decade earlier when adjusted for inflation. Finally, real median household income of \$59,039 in 2016 was about the same as 1999. The lack

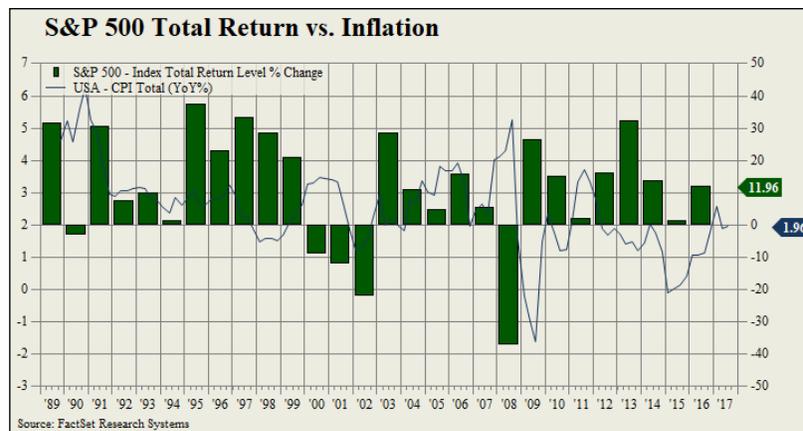
of income growth has resulted in a lower savings rate and higher household debt.

Low inflation coupled with subdued wage growth presents a monetary policy dilemma and puts the Fed in a quandary. Raising interest rates too quickly could risk slowing already anemic economic growth, but leaving interest rates lower for longer could risk causing inflation to increase too rapidly, creating new economic and financial risks.

The Fed has signaled one more rate increase in 2017 and three more in 2018, plus the slow unwinding of its \$4.5 trillion balance sheet beginning in October by allowing some of the bonds in its portfolio to mature without replacing them. The unwinding of the Fed's balance sheet is unprecedented so there is a significant amount of uncertainty in the results. Adding to the uncertainty is fiscal policy whereby governmental adjustments to tax rates and/or spending levels are implemented in order to influence aggregate demand. To increase inflationary pressures, the government can increase spending and/or reduce tax rates. Expansionary policies such as increased infrastructure spending and lower corporate tax rates have already been discussed in Washington D.C. However, fiscal policy is constrained by the looming budget deficit and political gridlock, so while it may be moving in the opposite direction of monetary policy, the impact of fiscal policy on inflation could very likely be limited.



For investors, it will be important to keep a close eye on how these monetary and fiscal policy decisions affect equity and fixed income markets. Strategas Research Partners has mentioned many times that equity prices have been receiving support because of TINA (There Is No Alternative). Should interest rates move appreciably higher, that support for prices will dissipate, potentially reducing demand for stocks by leading to an increase in other suitable investment choices. Also, profit margins may pose a headwind to equities if they are negatively impacted either by wages rising faster than productivity, or by an increase in corporations' cost of capital as interest rates rise. The corporate sector has benefitted from low interest rates in recent years by issuing a substantial amount of low-cost debt. Increasing interest rates raises corporations' cost of issuing debt, thus reducing profit margins. Higher inflation, though, could result in higher earnings growth, which would positively impact the stock market as long as inflation does not increase too fast and too far. On the aggregate, the stock market has historically achieved its best returns with inflation running between 1.0% and 3.0%.



Within the equities market, low inflation has historically favored growth stocks while rising inflation has historically favored value stocks. With the subdued inflationary environment of late, it is no surprise that growth stocks have substantially outperformed their value stock counterparts. This outperformance has resulted in relative valuations between growth and value stocks at a disparity as wide as that seen in late 1999, the end of the Internet bubble. For investors, the tradeoff between momentum and valuations has become quite significant and bears close scrutiny. If inflation and interest rates stay low, technology stocks will likely keep their momentum and continue contributing significantly to the performance of the overall stock market. On the contrary, companies such as banks will benefit from rising interest rates and increasing spreads (the difference between short-term and long-term interest rates) as they borrow short-term and lend long-term.

With the low inflationary backdrop, many fixed income investors have been stretching for yield by investing in long-term bonds, thus subjecting their portfolios to a significant amount of interest rate risk. Interest rates and bond prices move inversely – when interest rates rise, bond prices decline. The longer a bond’s duration, the more its price is impacted by interest rate movements. The future course of inflation will thus have a meaningful impact on fixed income investors’ returns, particularly those who have been chasing yield. Should the inflation backdrop remain subdued, these investors will fare well. Should inflation increase causing a fairly substantial rise in interest rates, much (if not all) of the yield advantage associated with long-duration bonds will be lost. This will be particularly pertinent for those bond investors utilizing mutual funds, which, by definition, have a perpetual maturity risk unlike that of most individual bonds.

The future course of inflation could also have a significant impact on bond investors who have recently been taking on more credit risk. These investors have chosen to move down the credit scale to invest in bonds with higher yields due to their lower credit ratings. Should corporate earnings and the economy remain on solid footing, these bond investors will be treated well. However, should higher interest rates eventually choke off economic growth or cause earnings to falter, fixed income investors choosing lower credits for their portfolio will find that the incremental risk exposure was not advantageous.

The U.S. achieved 3.1% economic growth in the second quarter, labor productivity increased by 1.3%, and the inflation rate hit 1.9% compared to a year ago. One quarter does not make a trend, but coupled with the September employment report, it may be that the slump in inflation and wage growth is ending. The real question is whether the low inflation is transitory (as suggested by Reinhart and Rogoff) or reflects long-term structural changes in the economy. It is likely a combination of both as we have addressed above. Whatever the case, investors today are being forced to navigate uncharted waters and confront significant amounts of uncertainty, which makes a disciplined approach to investing all the more important, particularly one in which risk is an important component in the assessment process.

## ARTIFICIAL INTELLIGENCE: TRANSFORMING OUR ECONOMY AND SOCIETY

Consumption accounts for approximately 70% of GDP and is critical for sustained economic growth. If income rises faster than the rate of inflation, our standard of living will improve. Thus, if a considerable number of jobs are lost without being replaced, consumers' lowered ability and propensity to spend will have a substantial negative impact on the economy. Federal and state deficits will be negatively affected due to the lost revenue that will accompany lower levels of wages and income.

Recent surveys show the majority of American workers are concerned future technological innovations will *negatively impact* their careers, jobs, and income in some fashion. According to a Pricewaterhouse Coopers survey, 37% of respondents say automation has already put their jobs *at risk*, while a recent Gallup Poll reported 13% of Americans are fearful that technology will *eradicate* their work opportunities in the near future. Other concerns have been expressed about technological innovation and the impact it is having on society and humanity. While the data shows technological innovation is indeed disruptive, it also shows technological innovation is currently creating jobs and has the propensity to provide other benefits to society as well.

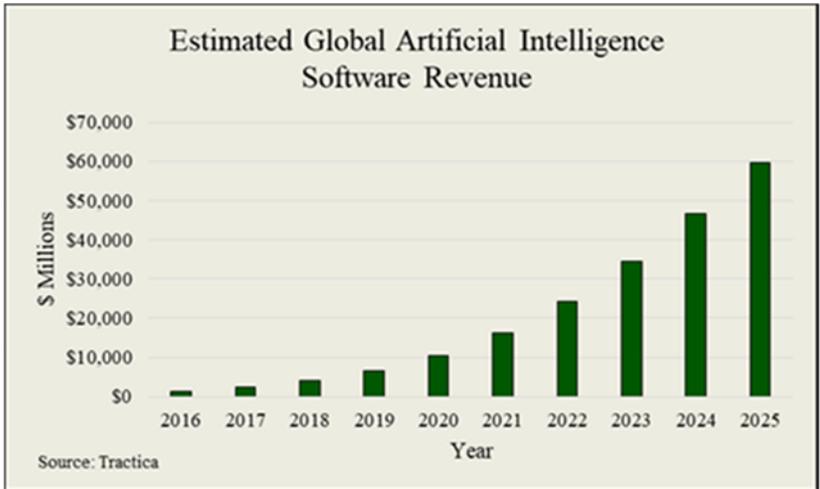
The term Artificial Intelligence (AI) was coined by John McCarthy in the 1950s but its genesis, automation in the workplace, is a centuries-old phenomenon that can be traced back to Jacques de Vaucanson's invention of the automated loom in 1745. Since then, virtually every industry has experienced automation in some fashion. More recently, the impact of automation has been particularly evident in retail and manufacturing, where e-commerce has replaced 200,000 retail workers in the last decade and robots have helped auto companies produce the same number of cars with one-third the number of workers compared to 40 years ago. Today, U.S. manufacturing produces more goods than at the turn of the century, but with 5 million fewer workers. This kind of disruption will continue to migrate to most jobs and professions, including services, in the next few decades.

While AI refers to the ability of machines to perform tasks which have historically required human interaction, it is more accurately described as any technique that enables computers to mimic human intelligence using logic, algorithms, rules, and decision trees. The backbone of AI is machine learning, which includes statistical techniques, algorithms, and computer power to analyze more data than is humanly possible. This enables machines to effectively supplement human thought. The ultimate objective of AI is to perform a task in such a manner that the outcome is as good as or better than an intelligent human being can achieve. In addition to machine learning, the AI umbrella would also include augmented reality, virtual reality, deep learning, robotic technology, big data, facial recognition, speech recognition, self-driving cars, and cryptocurrencies.

AI requires massive amounts of computing power and, as such, has only been possible since the advent of mainframe computers in the 1950s. AI became individualized with the personal computer (PC) in the 1980s and the internet in the 1990s. It gained deeper traction with the arrival of the smartphone in 2007. Globally, enormous amounts of data are created on a daily basis, which has become a foundation of AI and the companies who use it. The total amount of data in existence globally is estimated to be 175 zettabytes (175 + 21 zeros).

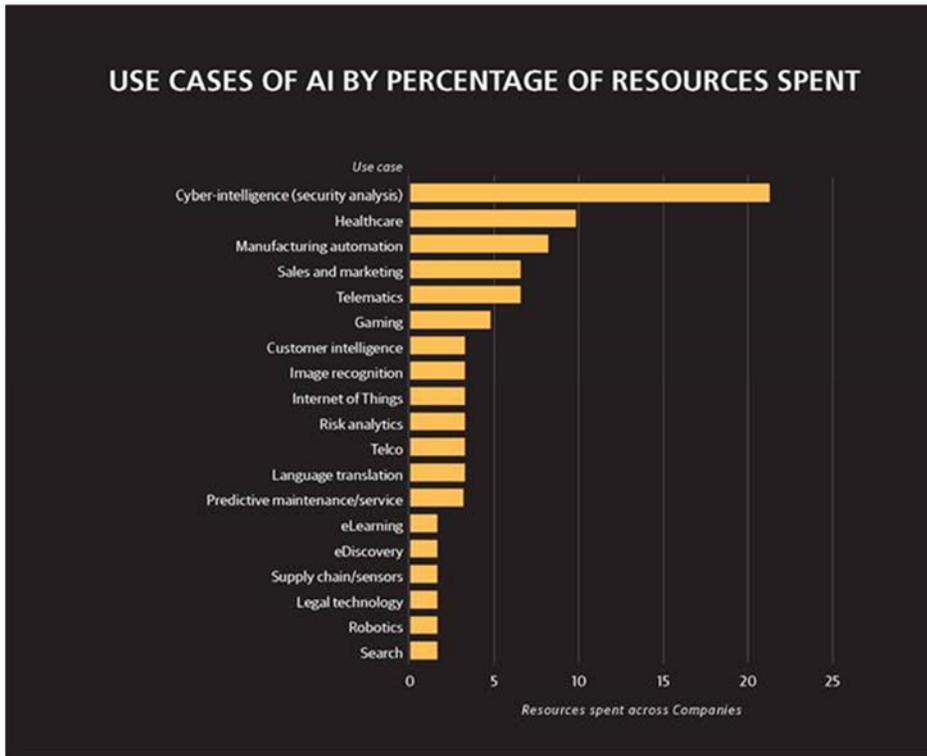
In some industries, "big data" has become the most valuable asset a company or organization can possess. Amazon processes 3 million product orders per second, all heavily dependent upon AI. They use the "big data" base to market other products to their shoppers as AI has allowed them to learn buying habits. Amazon's Echo and Apple's Siri use voice recognition and big data to answer millions of questions daily or play music as requested. Many business calls also rely on voice recognition. Some airlines are starting to verify passengers with facial recognition as does the new Apple iPhone X. Robots assemble most of the automobiles produced today as well as a constantly increasing number of other products. In 2016, 35,000 robots were purchased by U.S. manufacturers, two-thirds of which were by auto companies. As prices of these robots have declined an average of 75% from a decade ago, more and smaller companies have begun utilizing them. Many of today's robots are programmed to perform repetitive tasks, but next on the horizon are those that can learn on the job. Airlines already use algorithms to price tickets based on big data forecasts of future supply and demand. Some grocery and gasoline chains are beginning to use algorithmic pricing as do ride-sharing

services such as Uber and Lyft. AI is already here, but it will continue to become more pervasive. The only question is whether it will increase linearly or exponentially. Early indications substantiate exponential growth, as data from market research firm Tractica forecasts global AI software revenue growing at a 52% compound annual growth rate – from \$1.3 trillion in 2016 to over \$59.7 trillion by the end of 2025.



Without question, the most widespread concern about AI is the replacement of jobs performed by humans. Similar to the wood engravers of the 16<sup>th</sup> century and weavers of the 19<sup>th</sup> century, there are 21<sup>st</sup> century AI “Luddites” who fear mass unemployment as AI progresses. An Oxford University study estimates that 47% of all U.S. jobs are at risk of computerization and automation in the next few decades. A McKinsey Global Institute study focuses on tasks instead of jobs and estimates that by 2055, more than 50% of all work-related tasks will be subject to automation. In the U.S. alone, well over 1 million individuals drive trucks and taxis, including Uber and Lyft, for a living; jobs which are at risk in the development of autonomous, self-driving cars and trucks.

There are other concerns with the progression of AI. Stephen Hawking (famous physicist), Elon Musk (Tesla CEO), and others are worried that AI will not only augment human thought, but may ultimately replace it.



Source: <https://www.oreilly.com/ideas/the-new-artificial-intelligence-market>

In other words, there is a concern AI and computers will become smarter, perform better on average than humans, become self-aware, and ultimately supersede humanity. They worry that authority and control could shift from humans to computer algorithms. While that fear may seem too far in the future to create immediate angst, we should all be concerned with privacy at this time. AI’s reliance on the massive amounts of data stored in “the cloud” creates an environment ripe for privacy breaches, as 143 million people with data at Equifax recently experienced. Cyber-security must progress along with big data and AI. While

maintaining privacy is a paramount concern, AI is widely used in cyberintelligence – an activity which is devoted to breaking through the electronic defenses of hostile or potentially hostile forces or elements. According to Aman Naimat’s article, *The New Artificial Intelligence Market*, published August 29, 2016 on the O’Reilly Media Company website, “There are more companies building, consulting, or

using AI for cyber intelligence than any other use case.” Even without security breaches, some people are worried about big data enabling government and corporate abuses of power with their ability to monitor our daily activities.

While there are many justifiable concerns about AI due to its disruptive and transformative characteristics, it has the potential to make societies more efficient and effective in manufacturing, education, medicine, finance, business, science, and most other areas. For example, under the assumption autonomous vehicle manufacturers are able to successfully incorporate accident-reducing algorithms into the vehicles, travel should become safer. According to a 2008 National Motor Vehicle Crash Causation Survey, 93% of auto accidents involve some sort of driver error or impairment. AI-induced vehicle response times could significantly reduce auto accidents and enhance collision avoidance, resulting not only in a reduction in the loss of life, but also in a reduction in insurance premiums, vehicle repair costs, and down-time. Another potential benefit of AI to society involves hiring and employee health. By monitoring the eye movements, voice inflections, facial expressions, etc. of a prospective employee during the interview process, it is expected that AI will better match employees and employers, resulting in greater job satisfaction, less turnover, and better overall health for employees.

As for jobs, those workers who embrace workplace automation will become much more productive and valued. Others will lose their jobs and be left behind unless they can improve or transfer their skills. While of little solace to those who are currently unemployed due to the advent of AI, if AI progresses as predicted, it will initially augment and create more jobs than it replaces, a trend experienced thus far. For example, 500,000 retail jobs have disappeared since the year 2000, but as many e-commerce jobs have been created including warehouse and logistics jobs. UPS alone has added 100,000 jobs since 2000. In the 30 years since Microsoft released Excel for Windows, the number of bookkeepers and accounting clerks has declined by 700,000; however, the number of financial and managerial analysts who use electronic spreadsheets has increased by 800,000. In addition, the number of accountants and auditors has increased by 1 million. Capgemini Consulting recently conducted a survey of 1,000 organizations with deployed AI systems and found that nearly 80% indicated that AI has not resulted in an overall reduction in jobs. Tom Ivory, the Head of Strategic Innovation at Capgemini recently stated, “The key takeaway is the fact that AI could lead us into arguably one of the biggest social and economic revolutions the world has ever seen.” Job website Indeed.com announced not long ago that there has been nearly a five-fold increase in advertised AI jobs in the past three years in the United Kingdom, with machine learning jobs paying nearly twice the average U.K. salary. Indeed.com economist Mariano Mamertino recently stated, “The AI sector is likely to keep growing as the potential for the widespread application of the technology, across different industries, becomes more clear. Investing in education and the right skills needed to propel the industry forward will be the key to its growth in the coming years.” Obviously, there is a lot to be gained and a lot to be lost by AI and one’s perspective on it will be based upon how the innovation impacts them. Without question, AI is inescapable as everyone is already being impacted by it to varying degrees.

---

*The information contained herein has been compiled from sources Wallington Asset Management, LLC believes to be reliable but no warranty, expressed or implied, is being made that the information is complete or accurate. Wallington Asset Management, LLC and its affiliates, employees and/or directors may have investments in positions associated with securities required to implement and maintain a particular investment strategy. Information presented is not an offer to buy or sell, or a solicitation of any offer to buy or sell any securities which may be mentioned herein. All securities are subject to price and yield change and subject to availability. Any recommendations or opinions expressed herein may be subject to change without notice. Past performance is not to be construed as a guarantee of future results. Wallington Asset Management, LLC does not render tax advice. All rights reserved. Any unauthorized use or any reproduction, modification or distribution of the materials is strictly prohibited.*