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Bailard Institutional
Quarterly Review of Economic and Market Developments*

Q3 2017

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Q & A

WITH BAILARD'S VP OF DOMESTIC EQUITIES

Artificial Intelligence: The Next Wave of Technological Change

Vice President David H. Smith, CFA explores how the rapidly developing field of Artificial Intelligence is likely to transform America.

The phrase 'artificial intelligence' has been in the news quite a bit recently. What does that phrase mean to you?

Artificial intelligence (AI) is a bit of a broad term. As I define it, it's when a machine is able to simulate human cognitive functions like learning and problem solving. This doesn't mean a computer is thinking the way we do; instead, AI is the ability for computers to derive insights from patterns and interact with the world. AI is more prevalent in your life than you may realize: each time a product is recommended to you on an e-commerce site, a spam e-mail is automatically detected or you enter a query into your favorite search engine, you are witnessing AI at work.

In traditional computer programming, a human has to explicitly craft rules for how the program will operate given an input. Recent dramatic developments in a field known as machine learning, along with increases in data availability and compute power, have led to programs that are adept at learning from data without explicit human guidance. At its most basic level, these programs are given goals (e.g., 'display the most relevant search result' or 'determine if this e-mail is spam') and fed enormous amounts of data — then, as the program processes the data, it defines its own rules. By design, these programs are *not* given detailed, explicit instructions; instead, they learn as they go.

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The progress in this field has been amazing in recent years. IBM's Watson computer defeated two Jeopardy champions in 2011. Last year, Google's AlphaGo beat world champion Lee Sedol in the challenging board game Go. And this year, Google announced that its software recently achieved a 95% accuracy rate in speech recognition, on par with human accuracy. These achievements were once thought to be either impossible or at least improbable; the technology has progressed more rapidly than most experts predicted.

You mentioned that the technology seems to be advancing at a very rapid pace. How might it shape our world?

AI may come to shape our world in more ways than we realize, although long-term prognostications of technological impacts are notoriously difficult to make. It's easy to chuckle when Google releases a paper about using machine learning to recognize cat faces in YouTube videos, but these same techniques are now being used to detect cancerous tumors in biological tissue samples at a significantly better rate than that of human pathologists (92.4% versus 73.2% tumor detection rate). For patients where an algorithm correctly identifies a cancerous tumor that a human pathologist has missed, this technology is profoundly life changing.

One fear that many have is that the rapid advancement of AI may lead to automation of higher skilled labor. As an example, take the transportation industry. AI and machine learning have made autonomous vehicles a realistic possibility in the near future. The progress within this field over the last ten years has been nothing short of astounding. As autonomous driving makes inroads, so does the possibility of autonomous commercial freight trucking, leading multiple large tech companies to push forward with self-driving tractor trailers. It is not difficult to imagine a future where the majority of miles driven by commercial trucks are done without human assistance.

The benefits to society of autonomous trucking would be enormous. According to the National Highway Traffic Safety Administration, in 2015, 4,067 people were killed and 116,000 people were injured in crashes involving large trucks. AI could significantly reduce these casualty rates. Costs for transporting goods could also fall: the American Transportation Research Institute has estimated that 39 cents of each marginal dollar of cost goes to driver salary and benefits.

But, if autonomous trucking gains significant market share and computers begin replacing drivers, these drivers will be forced to find new jobs, perhaps in entirely new industries. This can lead to what economists call structural unemployment, where the skill sets of the displaced workers do not match with the needs of a shifting job market. As of 2016, according to the Bureau of Labor Statistics, there were just over 1.7 million employees designated as either heavy or tractor-trailer truck drivers, with another 850,000 designated as Light Truck drivers.

There's little doubt in my mind that AI will have an enormous net positive impact on society.

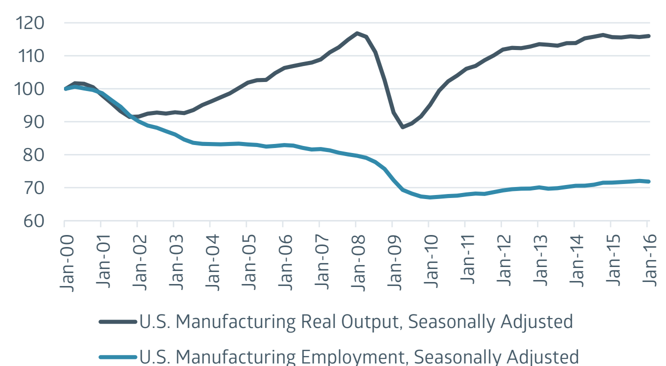
Does that mean AI will lead to rising unemployment? Will the overall impact be positive or negative?

There's little doubt in my mind that automation, machine learning and AI will have an enormous net positive impact on society. Researchers believe that the vast majority of jobs will benefit from automation rather than be replaced – that the human pathologists mentioned above will be working in tandem with a machine to help improve tumor detection rates. A McKinsey report has estimated that automation could raise global productivity growth by 0.8% to 1.4% annually.

That said, I worry about the short-term impact of automation and AI, particularly on lower income workers. Indeed, we may already be feeling some pain from the automation of manufacturing and other manual tasks. One of President Trump's frequent campaign talking points was the need for the return of manufacturing jobs lost overseas. While indeed some jobs have been outsourced, research suggests that a large portion of the jobs have simply been lost to automation.

The graph below paints an interesting picture: U.S. manufacturing jobs have fallen from 17.0 million in the early 2000s to 12.5 million as of August 2017, a decline of 26%. But over that time period, manufacturing output in the U.S. has actually risen, which would lend credence to the theory that many jobs have been automated, not outsourced. Areas of the American Midwest have yet to recover from this shift.

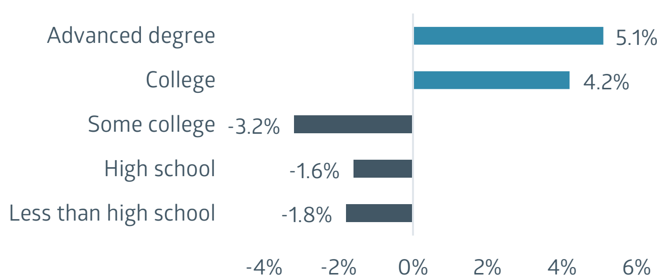
U.S. Manufacturing Output vs Employment, Indexed to 100



Source: U.S. Bureau of Labor Statistics, Manufacturing Sector: Real Output and Employment, retrieved October 9, 2017.

This example may provide a proxy for the impact of AI on the labor markets. The Council of Economic Advisors found that 83% of the jobs making less than $20 an hour would be subject to pressure from AI, compared to 31% of jobs making $20 to $40 an hour and only 4% of jobs making above $40 an hour. The implementation of AI technologies could exacerbate already persistent divergent wage pressures. As depicted by the graph below, U.S. wage growth since 2007 has been dramatically different based on education level. Workers categorized as either completing some college, completing high school or completing less than a high school degree have seen their respective hourly wages *shrink* by 3.2%, 1.6% and 1.8% annually. From a policy perspective, we need to be aware of the true forces at work.

Change in Hourly Wages by Education, 2007-2016



Source: EPI analysis of Current Population Survey Outgoing Rotation Group microdata

Looking back at previous technological evolutions, the net jobs number (jobs created - jobs destroyed) has been resoundingly positive in most instances. One of the most often cited examples is the agricultural revolution in the early 20th century. From 1910 to 2000, the percent of American employees working as farmers or farm laborers declined dramatically, from 33% to 1.2% of the workforce, as technological advancements like the tractor enhanced productivity and replaced human labor. At the same time, agricultural output increased, productivity soared and employment in professional, service and management categories grew to replace the lost jobs. The increase in labor productivity drove costs down and improved the overall quality of life for the majority of citizens, while new technologies and increased demand created new jobs over time. But, one does not need to read *The Grapes of Wrath* to envision how destructive this transition was for many agricultural workers.

Overall, how do you think about AI as an economic force? Are there any investment implications?

As I mentioned above, AI and automation can have a tremendously positive effect on the economy across a wide variety of fields from medicine to agriculture. In my opinion, trying to suppress this tremendous technological development would be detrimental to society. Instead, I believe U.S. policy should allow for innovation and investment in the technology while also recognizing the risk of shifting demand for employee skills. Job retraining, where the U.S. currently lags its OECD (Organization for Economic Cooperation and Development) counterparts, may reduce structural unemployment by helping workers feeling pressure from AI to hone new skills. Emphasizing STEM (science, technology, engineering and mathematics) majors in our school systems can help ensure that not only is the current generation sufficiently equipped for an AI future, but that the next generation of companies has a skilled workforce to successfully compete with international firms. We should encourage investment in AI while also investing appropriately in the American economy and workforce.

We believe this technological shift is creating investment opportunities.

From an investment perspective, these rapid shifts are not unusual in the technology sector; we believe this helps create a fertile environment for active stock selection. Thus far, one of the most evident opportunities for investment has not been in AI itself but instead in the tools that AI requires. The processor architectures that are dominant in the market today are not particularly well suited for the type of processing AI demands. However, the GPU and FPGA chips that are better suited for this process are seeing astounding growth. We saw a similar shift in the chip market in the early 2000s when mobile computing began to experience rapid expansion. The desirable attributes for mobile computing chips were fundamentally different than the attributes desired for traditional PCs; mobile users demanded efficient chips in small form factors, while PC users generally prioritized compute power. With AI, we're seeing a similar type of change, and we believe this technological shift is creating investment opportunities. As the saying goes, sometimes it is better to sell pickaxes than to mine gold.

U.S. ECONOMY

Slow Growth Likely to Continue Despite Better Second Quarter

Final GDP growth in the second quarter was revised up to 3.1%, after rising only 1.2% in the first quarter. Year-over-year growth increased 2.2%, in-line with our slow growth projection. Economic activity has likely slowed since then, as the Atlanta Fed and the New York Fed are currently estimating third quarter GDP growth of between 1.6% and 2.2%. We continue to expect the economy to remain on a secular slow growth trajectory with transitory spurts like we saw in the second quarter.

Secular Drags on Growth

Our economic outlook is based in part on a number of longer term impediments to growth:

- Growth should be constrained by excessive levels of debt. Borrowing money front-loads demand, and, as debt is repaid in the future, growth should be below the long-term trend. This is what we have seen since the Great Financial Crisis (GFC). Over that time, the U.S.'s excessive debt has gone to record highs rather than being brought under control. There has been no deleveraging. Given debt constraints on growth, cyclical excesses of rising interest rates and inflation have been contained.
- Excess debt is not restricted to the U.S., which is actually in better shape than most developed nations. With most countries uncomfortably indebted, the world has no clear engine of growth. Taking on more debt to solve a debt problem is counterintuitive.
- The deterioration in productivity is neither pro-growth nor inflationary. While corporations have added more debt to their balance sheets, proceeds have been used to buy back stocks and increase dividends, not to increase capital spending. Without capital spending, productivity gains are difficult to achieve. Total business debt has increased 71% since 2008 and is at a record high, while real investment in property, plant and equipment has been falling.
- Developed countries have weak population growth, aging populations and an unprecedented percentage of 18- to 34-year-olds living with parents. All of these demographic trends negatively affect economic growth.
- Finally, we are eight years into an economic recovery. Even if the recovery has been anemic, a lot of pent-up demand has probably already been met. Auto and home sales appear to have hit their cyclical peak and have been starting to falter.

These secular forces have created an environment in which price inflation cannot gain traction and interest rates remain near historic lows. Where we have seen inflation is in financial markets which have been supported by central bank liquidity.

Tightening Monetary Policy a Risk

Despite these secular drags on growth, the Fed has embarked on a tightening cycle. Since late 2015 the central bank has raised interest rates four times, pushing the Fed Funds rate up to 1.25% from 0.25%. This is about half of where the Fed thought it would be at this time. All but one of the eighteen recorded U.S. recessions since 1915 were proceeded by monetary tightening. Given the economy's soft starting point, the Fed's tightening policy could inadvertently trigger a recession.

To make matters worse, at its September meeting, the Fed announced plans to raise rates three more times over the next year and to begin unwinding its balance sheet, which holds the debt purchased via quantitative easing programs earlier in the recovery. The Fed plans to start reducing its balance sheet by $10 billion per month and to increase the amount every quarter until the central bank is retiring $50 billion per month in debt. Assuming debt reduction averages $30 billion per month, $360 billion in debt will roll over in the next year and not be reinvested by the Fed. (To return to pre-GFC levels, the Fed's balance sheet would have to be reduced by about $3.5 trillion.) With the budget deficit rising again, there is a lot of debt that has to be financed. This could put upward pressure on interest rates and downward pressure on growth.

Some Cyclical Forces Are Problematic, Too

In addition to these long-term issues, cyclical forces are also of concern. Real personal income in the second quarter increased at a 2.4% annualized rate, up from the first quarter's 1.3% annualized rate. This is hardly robust growth, and we expect real income growth to fall back to around 1.5%. Real personal consumption has been rising more quickly at a 3% year-over-year pace. Consumption has continued to outstrip income, as

households have reduced their saving rates from 5.5% a year ago to 3.5% in August. At the same time, household credit card debt has jumped, and over the last two years has been the strongest growing sector of consumer debt. Consumers, unable to support their spending from income, have resorted to more credit card use and less saving to maintain their standard of living. Spending more than one earns is not a prescription for sustainable growth.

Other sectors of the economy are also problematic. As mentioned above, capital spending has been slow despite a massive expansion in corporate debt. Corporations appear to be more concerned about their stock price than earnings growth. The housing sector appears to have topped out and auto production has been sliding. In addition, inventories, after having shrunk relative to sales, have been starting to rise again. The inventory-to-sales ratio remains relatively high and needs to be reduced further. Inventory reduction is a drag on growth.

Tax Reform Unlikely to Meet Expectations

Finally, while there is some hope of tax reform providing an economic boost, the financial markets have more than discounted it. Investors could be subject to disappointment if tax reform fails to pass or if it does not have the expected positive effect. Cutting taxes is normally a pro-growth fiscal measure. However, other tax cuts, such as the Mellon, Kennedy and Reagan tax cuts, occurred in a lower debt environment in which growth could be supported by increased leverage. The tax cuts also occurred when interest rates were high and had room to fall. We are now facing tax cuts in a high debt, low interest rate environment.

Investors could be subject to disappointment if tax reform fails to pass or if it does not have the expected positive effect.

In addition, tax reform will probably be accompanied by revenue offsets, which limit deductions and credits, in an effort to finance the tax cuts. The tax system is likely to be simpler, but, if the reform is revenue neutral, the net impact on growth will probably be less than expected. If there are no revenue offsets to the tax cuts, deficits are likely to rise further and put additional upward pressure on interest rates.

INTERNATIONAL ECONOMIES

Second Quarter Improvement Unlikely to Last

JAPAN

Japan's economy accelerated in the second quarter to a 2.4% annualized rate, but the year-over-year growth rate slipped to 1.4%. More recent economic data out of Japan suggests continued slow growth. The third quarter started off on a slow note, with retail sales decelerating to a 1.8% year-over-year growth rate. Industrial production fell 0.8% in July and its year-over-year pace slowed to 4.7%. Real household income grew 2.1% year over year, while household spending fell 0.2% over the same time period.

Demographic and Debt Challenges to Growth

Japan faces the same structural headwinds as the U.S., but is further down the road. Its debt burden, at more than 500% of GDP, is higher than that of other developed markets. Japan is also facing the demographic challenges of an aging population and low birth rates. These demographic trends lead those in Europe by about five years and those in the U.S. by nine years, making Japan the canary in the coal mine.

Japan has been able to avoid the pitfalls of excessive debt through unorthodox monetary policies, which are now being widely imitated. The country's secular stagnation and monetary policy responses are no longer the exception but the rule. Japan has negotiated its minefield of excess debt by financializing every economic sector, creating permanent excess capacity through fiscal policy and monetizing stocks and bonds.

The Bank of Japan(BOJ) has been adding over $1 trillion per year to its balance sheet, effectively printing money to keep interest rates low. Due to its quantitative easing asset purchase program, the central bank now owns 45% of total outstanding government debt, up from less than 10% five years ago. The BOJ has not limited its asset purchases to bonds only; it is also active in the equity market, buying exchange-traded funds (ETFs) at a $55 billion annual pace. The central bank now controls 75% of all Japanese ETFs and 4% of total equities. This has put a bid under stock prices and suppressed interest rates.

> Japan faces the same structural headwinds as the U.S., but is further down the road.

Interest rate suppression has allowed the mass accumulation of debt without increasing its financing burden. In 1995, interest expense was 11% of government expenditure and has since fallen to 5%. With money essentially free (ten-year bond yield of 0.02%), even a modest increase in interest rates could make the country's debt unmanageable. Since the BOJ realizes that a normalization of interest rates is not feasible, its monetary policy is likely to remain accommodative.

EUROPE

A new wave of optimism has swept across Europe, as second quarter GDP growth beat expectations, rising 2.4% annualized and 2.3% year over year. This followed a disappointing first quarter growth rate of 0.8% annualized. Although the second quarter's better results were at the upper end of Europe's historic GDP range, they should still be considered slow growth by most standards.

Available data suggest Europe's third quarter is off to a slow start:

- Real retail sales fell 0.3% in July, with the year-over-year pace slowing to 2.6%.
- Real industrial production was up only 0.1% in July but began deteriorating in June, when it fell 0.6%. With auto inventories spiking, slower auto production can be expected.
- New orders have been growing, so production may receive a boost in coming months. Nevertheless, we expect production growth to remain on a slow trajectory.
- The trade surplus with non-euro countries peaked last year and has been in a modest decline. This suggests a small drag on growth. Most of the surplus has been attributed to Germany.
- Slow growth is supported by wages and salaries, which decelerated in June to a just under 2% year-over-year rate of increase before inflation.

- Nominal construction activity grew at a 2.4% year-over-year pace in July.

Populism Still an Issue

Investor optimism during the third quarter was also boosted by increased political certainty. Elections throughout Europe ended with statist candidates winning and overcoming challenges from new populist parties that have been calling for an end to the euro, decentralization and stricter control over immigration. Since the populists' proposed policies could create the potential for more disruption in the short term, investors looked at the elections' outcomes as a positive.

Nevertheless, we do not believe that the elections' outcomes indicate that the nationalist, anti-euro movement is now dead. The Five Star Movement in Italy, the National Front in France and the Alternative for Germany Party have all moved from being virtually non-existent to being serious players on the political scene. They are not going away anytime soon.

The National Front lost to Emmanuel Macron's centrist party 66.1% to 33.9% in the second round of French elections. This can be compared to the 3.7% vote the populist party garnered in 2012. Although the Nationalist Front has a lot of ground to make up to be victorious, the gap is not insurmountable, given job-killing labor laws, the refugee crisis and other problems in France.

The Alternative for Germany Party (AfD), which was founded in 2013, won only 4.7% of the vote in that year, narrowly missing the 5% threshold for seats in the Bundestag. The AfD is now represented in thirteen of the sixteen German states. In the recent federal election, the AfD received 13% of the vote and 94 seats in the Bundestag, where it is now represented for the first time in its history.

The Five Star Movement (M5S) in Italy has seen similar success since its founding in 2009. During the 2013 general election, M5S received the most votes for the Chamber of Deputies but obtained just 109 deputies out of 630 after accounting for coalitions. The party is now a major player in Italian politics.

> We do not believe that the nationalist, anti-euro movement is now dead.

CHINA

China's GDP growth has steadily declined since its infrastructure-driven high of 12% in 2010. It has drifted downward to 6.9% year over year in the second quarter of 2017. Growth did rebound during the quarter from 5.2% annualized to 6.8% annualized. It picked up as the government instituted a mini-stimulus package and the People's Bank of China increased credit expansion to provide a positive glide path for the economy ahead of the 19th Party Congress in October.

Slower Growth Likely

Recent data indicate that the Chinese economy is once again waning, and a moderate slowdown into the final months of the year and beyond is likely. Although China still enjoys one of the fastest growth rates in the world, the government is targeting slower growth, as it is committed to deleveraging. This is particularly evident in the corporate sector, where policymakers are trying to deleverage state owned enterprises. While the government has managed to stabilize the corporate debt to income ratio, total credit to nonfinancial sectors has continued to rise, reaching almost 275% of GDP. Like the rest of the world, overall deleveraging has yet to get off the ground. Nevertheless, the cutback in corporate debt has been accompanied by a slowdown in capital spending.

After a lackluster July, August data for industrial production, retail sales and capital investment were lower than expected. Industrial production slowed to 6% year over year, retail sales missed expectations and increased 10.1% year over year, and fixed investment slowed to 7.8% year over year. Slower growth has also been confirmed by falling industrial metal prices and the slowdown in containerized shipping. After surging late last year, China's Li Keqiang Economic Index has started to slow again. The index includes electricity usage, rail freight and credit growth. The consensus forecast is for China's economy to continue to grow just under 7% or drift a bit lower.

FIXED INCOME

Bond Returns Were Relatively Flat in the Third Quarter

Interest rate volatility was subdued in the third quarter. Geopolitical concerns drove ten-year U.S. Treasury yields to a low of 2.04% in early September. Rates then reverted higher as investors focused on tax cuts, the Fed's plan to unwind its massive balance sheet and expectations that the European Central Bank (ECB) may reduce its bond purchases. For the quarter as a whole, ten-year U.S. Treasury rates fluctuated between 2.0% and 2.6%, the same range experienced since Trump's November presidential election win. Relatively slow economic growth and low inflation have continued to support these historically low interest rates. Short-dated maturity rates rose slightly over the quarter as investors anticipated further increases in the Federal Funds rate; however, intermediate and longer-dated rates ended the quarter largely unchanged.

The Barclay's U.S. Aggregate Bond index (a broadly diversified index which includes Treasuries, agencies, corporates and mortgage-backed securities) increased 0.85% over the third quarter and 3.14% year to date. The BofA Merrill Lynch 1-10 Year U.S. Corporate index returned 1.07% for the quarter and 3.87% year to date. The Barclay's 1-15 Year Municipal Blend index gained 0.93% for the quarter and 4.17% year to date.

Federal Reserve Monetary Policy

The Fed has announced that it is going to start reducing its $4.5 trillion balance sheet of Treasury and mortgage-backed bonds. The central bank will allow $6 billion of Treasuries and $4 billion of mortgage-backed securities to mature each month without reinvesting the principal. The maximum amount allowed to roll off the Fed's balance sheet will most likely be increased on a quarterly basis. Reducing the amount of bonds the Fed is reinvesting may cause intermediate and long-term interest rates to move higher; however, the bulk of the impact will probably be felt in the area of the yield curve that the Fed has been most aggressively purchasing – in the five and seven year maturities.

> The Fed is going to start reducing its $4.5 trillion balance sheet of Treasury and mortgage-backed bonds.

The market is expecting one more rate hike at year end – most likely after the December 13th FOMC (Federal Open Market Committee) meeting. Interestingly, the market is predicting only one or two rate hikes in 2018. This is significantly fewer than the four hikes expected by the Fed.

The market is concerned about who will serve as the Chairperson of the Federal Reserve when Yellen's term ends on February 3, 2018. President Trump has stated he will announce his nomination sometime in the next two to three weeks. Previously, many pundits thought Gary Cohn, Director of the National Economic Council, was the lead candidate. However, Cohn's criticism of Trump's handling of the Charlottesville shooting incident is thought to have bumped him from the lead spot. The President may still consider Cohn if the latter can successfully usher through an effective tax plan before a final decision is made. Trump could also reappoint Janet Yellen. Most Fed Chairs are reappointed for more than one term; however, the current front-runners for the position seem to be Kevin Warsh and Jerome Powell. Warsh is known for being somewhat hawkish, so his appointment could mean a quicker normalization of monetary policy and a potentially less bond friendly Fed than if another candidate was chosen.

Bond Market Recap

Another factor driving rates higher has been increased investor speculation that the ECB may soon reduce its Quantitative Easing (QE) asset purchasing program. ECB President Mario Draghi said at his September news conference that the central bank was looking at how to wind down its current 60 billion euros per month asset purchase program, with the goal of having a wind-down plan ready by October. Many analysts expect the buying program to be reduced to 40 billion euros per month. The ECB is also expected to announce a six-month extension to the QE program to continue it through the end of June of 2018. A reduction in bond purchases could cause further upward drift in interest rates. The reduction is expected as the ECB already owns a large amount of the Eurozone government bond market, and a continuation of the program, in its present form, could present scarcity and liquidity issues.

President Trump's proposed tax reform has the potential to reduce government revenues as well as to

increase economic growth. Analyzing this policy proposal is difficult given the lack of details and the high probability of modifications before any legislation is finalized. Nevertheless, the non-impartial Center on Budget and Policy Priorities has concluded that the Senate GOP budget's regressive tax cuts would swell deficits and that 80% of the tax cuts would benefit only the top 1% of households by 2027. The tax reform plan does not address either the tax exemption of municipal bonds or the tax deductibility of state and local taxes (SALT). However, the administration has verbally announced that it supports the municipal tax exemption but would seek to repeal the SALT deduction. Overall, the tax plan would likely lead to higher federal deficits and the need for increased debt issuance at a time when the U.S. has over $20 trillion in Federal debt.

In September, Trump signed into law a deal to extend the suspension of the debt limit until December 8, 2017. The Treasury could then start using extraordinary spending measures to prevent the U.S. from defaulting on its debt until probably March of 2018. Congress and the White House will need to work together to determine how to resolve this issue.

The Treasury yield curve has continued to flatten as short-maturity bonds have risen with the Funds rate, while longer-maturity bonds have stayed low in response to slow economic growth and inflation. This flattening has helped bond portfolios with barbell positions – that is a concentration of bonds maturing near term and then another concentration longer out on the maturity curve – in the 10+ year range.

> We believe low, but positive, global growth and inflation should keep a lid on the absolute level of rates.

Bond Market Outlook

Despite higher than expected U.S. economic growth under the Trump Presidency, we believe low, but positive, global growth and inflation should keep a lid on the absolute level of rates. With so many foreign sovereign bonds trading at negative yield levels, demand for U.S. bonds should remain high. However, as more central banks around the world move from their current stimulative policies to more normal monetary policies, rates may come under some pressure to rise moderately from current historically low levels.

DOMESTIC EQUITIES

Cognitive Insights for the Time When Stocks Aren't Enjoying Another Robust Quarter

Does it seem like summer just breezed by? The familiar adage, “time flies when you’re having fun” seems equally as applicable to a pleasant summer vacation as it does to investors enjoying recent stock market returns. The S&P 500 index continued its low-volatility upward climb, returning 4.5% for the third quarter. Tech investors had most of their fun earlier in the quarter, with the S&P North American Technology index up 7.7% for the full period, but up only 1.1% in September. Small cap value performance was almost a mirror image of tech, with the party just starting as the quarter wound down. The Morningstar U.S. Small Value index was up 5.8% in September but rose only 4.8% for the quarter.

The Science of Time Perception

The perception of time is influenced by a variety of factors. A primary method the brain uses to gauge the passage of time is the amount of mental processing required to comprehend and categorize a situation. Novel or oddball stimuli (something unfamiliar, like seeing a self-driving car for the first time, or out of place, like seeing a horse standing on a roof) require more mental processing and result in more memory creation. Conversely, familiar and repetitive stimuli can be managed with fewer cerebral resources, resulting in fewer memories being produced. The more processing required and memories created, the more slowly times seems to pass. This is why most people experience time as elapsing faster as they age. The young are continually faced with novel situations, while the elderly spend most of their time in the realm of the familiar.

The awareness of potential or actual danger similarly requires a great deal of mental energy, and is accompanied again by a perception of time passing more slowly. “My whole life passed before my eyes” or “time seemed to slow down or stand still” are commonly heard descriptions when victims recount their experiences in an accident. Some clever researchers at the Baylor College of Medicine in Houston devised a test to examine this phenomenon. They had volunteers fall backwards off of a high platform into a safety net. The volunteers were first asked to estimate how long their fellow subjects took to hit the net and then to estimate how long their own fall required. For everyone, the 150-foot drop took three seconds, but, on average, the volunteers estimated that their own fall took 1/3 longer than the falls of others they had witnessed.

While the rush of adrenaline prompted by fear can result in extraordinary feats of strength and agility, it does not appear, at least as experiments have so far been able to gauge, to increase mental processing speed. Instead, when a person is stimulated by adrenaline, the amygdala, the emotional center of the brain, produces an extra set of memories beyond those typically created by the hippocampus and cerebellum. This additional processing and memory creation above and beyond the usual rate gives the impression of time slowing down.

Applying this Science to Investing

These insights can be applied to the investing world. With investors experiencing a U.S. stock market that has behaved in a familiar, repetitive and unthreatening fashion for a very long period of time, is it any wonder that time seems to be flying by?

At some point in the future, however, the stock market will have a sizable correction. No one knows when it will happen, nor how long it will last. When it finally occurs, keep in mind that investors’ perception of time will slow down and their anxiety levels will rise. This will likely cause the bear market to seem longer than it will actually last. By visualizing this in advance, and anticipating a calm and positive response to this adversity, investors should be able to navigate a better long-term outcome for themselves.

They will remember, for example, that any frequently repriced investment, stocks included, has the paradoxical characteristic of typically offering higher future returns when it is least appealing to investors. This is why contrarian investing can be a successful strategy. By cheaply buying the proverbial winter coat in June when no one wants one, instead of paying full price in October when demand is high, the contrarian is visualizing future value and acting in his or her long-term best interests.

At some point in the future, however, the stock market will have a sizable correction.

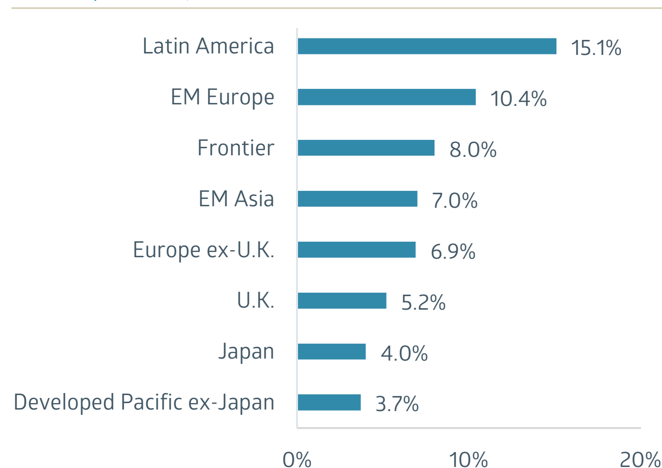
INTERNATIONAL EQUITIES & FOREIGN EXCHANGE*

Both Developed and Emerging Market Stocks Enjoyed Stellar Returns

Although international stocks had a stellar third quarter, their potential for making "easy" returns versus U.S. equity investing is at risk of losing some of its momentum as global central banks begin the process of deleveraging their balance sheets and North Korean aggressions cast a pall over stock markets beyond East Asia. During the quarter, developed market stocks, as represented by the MSCI EAFE index, advanced 5.4%, a result which pales in comparison to the MSCI Emerging Markets index's 7.9% return over the same time period. Nevertheless, results begin to look more tepid focusing on the quarter's final month, when developed stocks rose a respectable 2.5% while emerging market stocks declined 0.4%, according to their respective MSCI indices.

For the quarter, every region within the emerging markets universe outpaced developed markets. This continued a strong run emerging markets have enjoyed since the end of 2015. From December 31, 2015 to September 30, 2017, the MSCI Emerging Markets index has returned 42.1%, the S&P 500 index has risen 27.9%, and the MSCI EAFE index of developed markets is up 21.1%. Isolating year-to-date advances of non-U.S. stocks make the comparisons even more stark: the MSCI EAFE index's 20.0% return and the MSCI Emerging Market index's 27.8% return dwarfed the S&P 500's 11.9% result for the first three quarters of the year.

Total Returns for Selected MSCI International Stock Indices, Third Quarter 2017



Source: Bloomberg. ***Past performance is no indication of future results.*** *All investments have the risk of loss.*

The question investors now face is, has this been another short-term burst of positive international stock returns or can this rally continue? As noted in *the 9:05* last quarter, we believe a convergence of better earnings overseas, superior valuations and a currency tailwind point to the likelihood of a longer-term rally. However, as discussed below, investors are currently facing a potential headwind from a stronger dollar.

Central Bank Tapering

In mid-September, the Fed formally announced its intent to begin tapering its balance sheet by systematically reducing its holdings of Treasury and mortgage debt. A previous hint of this in 2013 led to a broad sell-off in international stocks, especially emerging markets (EMs), as investors questioned whether money would tend to flow out of EMs and toward the U.S.'s potentially rising interest rates. The risk of a stronger dollar also raised concern as to these nations' abilities to pay their U.S. dollar denominated debt given some large current account deficits at that time. In the next month following the Fed's 2013 announcement, emerging market equities declined more than 15% only to recover completely in the next four months as the central bank chose to remain on course with its QE program.

This time Fed tapering is for real and, on October 26th, the ECB may announce a slowdown in its asset purchases. Since a likely outcome of this for both markets is upward pressure on interest rates, these unwinding actions may make the central banks less likely to raise short-term interest rates. (That said, the Fed is looking increasingly wedded to one more rate hike in 2017.)

Developed Markets

Continued risk in Europe's political landscape has held back some investor enthusiasm for the region's equity markets. Even though corporate earnings have been rising smartly, investors haven't been willing to bid up valuations on stocks as the specter of populism

remains. On the Continent, earnings grew by almost 12% for the third quarter, with even better results from the U.K. and strong numbers out of Asia as well.

However, Angela Merkel's "victory" in September's German parliamentary elections was anything but. Her party, the Christian Democrats, lost seats and its coalition partner. To govern she is trying to build what has been dubbed a "Jamaica coalition" (a reference to the symbolic colors of three major German political parties, which together are the same as those of Jamaica's national flag). If successful, Merkel will have to bring together the more conservative wing of her own party, the more liberal Free Democratic Party and the Greens. This will be challenging and will likely weaken Merkel's leadership. Additionally, as a result of the election, the far-right, nationalist AfD became the first such party to enter the Bundestag in sixty years, garnering 94 of 709 seats.

On October 1st, Spain's Catalonia province went to the polls seeking independence. The contentious results there are a reminder that within the core of Europe, even within individual countries, centuries-old regionalism is more meaningful to many citizens than living under a national or supranational flag. That said, the financial markets have historically tended to react to actions like this locally rather than paint all of Europe with the same brush. The Catalonian controversy may increase turnout in next Spring's Italian elections, which will pit the traditionally anti-EU north against other mainstream parties. As we've noted in the past, this is probably the most critical vote on the upcoming calendar to test the short-to-mid-term sentiment towards the European Union.

Prime Minister Shinzo Abe dissolved Japan's parliament in late September and called for an early election. He is trying to leverage his current burst of support from a populace that looks to him as a military hawk to stand up to North Korean aggressions. Keeping his seat should be easy; the real goal is to sustain the Liberal Democratic Party's two-thirds majority in Japan's parliament. Without this, the decision to call the election now could look as bad as Theresa May's choice for a snap election earlier this year.

Emerging Markets

Global economic growth usually bodes well for emerging market equities, and the third quarter witnessed the publication of some very positive growth indicators. The global manufacturing Purchasing Managers' Index rose to 55.3 in August, its highest reading since 2011. Levels of trade also tell us much about prospects for emerging markets: an important indicator, the Baltic Dry Index, reached a 2 ½ year high during September after hitting its lowest level in at least thirty years in early 2016.

> A weak dollar continued to provide a tailwind to international equity investors.

Great Disparity in Quarterly Returns

Emerging markets exhibited a great divergence in returns for the quarter, led by Brazil's 23.0% advance and bookended by Pakistan's 16.5% decline. Brazil had the best local market returns among emerging markets and the second best currency result. The factors supporting this were many. With inflation better under control, Brazil's central bank has been able to cut short rates 6% over the past year to a current level just above 8%, Latin America broadly enjoyed a good quarter on the back of continued strong base metals pricing, and sentiment towards Brazilian companies was positive due to rising earnings. All of this occurred as President Michel Temer's approval rating hovered at 3%. Strong commodity price increases for the quarter drove other Latin American markets, including Chile and Peru, to strong results and helped Russia rebound after a miserable second quarter.

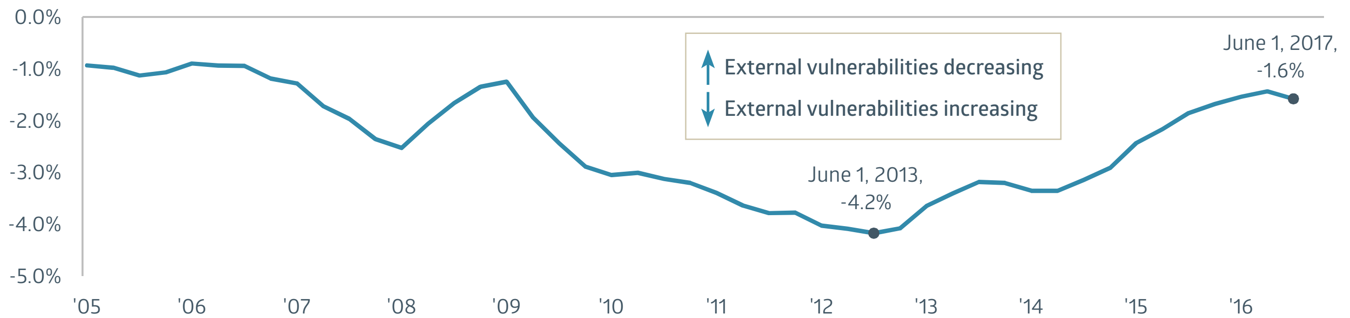
At the other end of the return spectrum, Pakistan experienced a hangover from a multi-year rally that had been primarily fueled by Chinese-driven infrastructure spending and strong economic growth. The third quarter market consolidation had at least two drivers. The judiciary ousted former Prime Minister Nawaz Sharif at the end of last quarter. In a September by-election, his wife won his parliamentary seat but with only relatively weak support. Any sense that economic success had led to improved governance has been dramatically undermined. Additionally, Pakistan's previously "frontier" equity market formally graduated to become part of MSCI's Emerging Markets index at the end of the second quarter. As is often the case, markets rise prior to actual inclusion and struggle for a period after.

FOREIGN EXCHANGE

A weak dollar continued to provide a tailwind to international equity investors for the third quarter, especially in the developed markets, where it contributed more than 2% to total returns. This relationship turned around in September as central bank concerns and interest in President Trump's tax proposal put a bid under the greenback.

The euro advanced 3.7% versus the dollar for the quarter due to quickening economic growth and the prospect of an October tapering announcement. Among the major currencies, only the Japanese yen declined for the quarter; the largest laggards were emerging market currencies.

Fragile Five Current Account Deficit



Sources: Bloomberg, World Bank. Current accounts as % of GDP, GDP weighted (quarterly data).

Four of the weakest performing emerging market currencies were from countries (South Africa, Turkey, India and Indonesia) that, along with Brazil, first became known as the Fragile Five during 2013's tapering scare. The four currencies' poor performance in the third quarter may have been a knee-jerk reaction to the same concerns about debt repayment capabilities that earned the Fragile Five economies their unwanted moniker in the first place. The economic situation of the Fragile Five has improved since 2013 as evinced by the above chart showing a composite of these countries' current account deficits. The upward slope and less negative number both indicate a diminished need for foreign capital, a critical consideration when higher U.S. rates could draw money onto our shores.

** Unless otherwise indicated, the equity returns cited in this section of the 9:05 are based on their respective MSCI region or country indices. The returns of these indices along with those of the MSCI EAFE and the MSCI Emerging Markets indices are presented in U.S. dollar terms on a total return basis (with net dividends reinvested).*

REAL ESTATE

Disruption in the Retail Sector

A modest twist on a famous quote from the great American humorist Mark Twain: "The reports of the death of in-store retail are an exaggeration."

The exponential growth of e-commerce (embodied most especially by Amazon) is grabbing headlines. According to the media, the growth in e-commerce is causing the demise of once-dominant retailers like Sears, JCPenney and Toys "R" Us, to name a few, pulling customers out of the "bricks and mortar" stores and into their living rooms to shop. The long slide into oblivion of some large prominent retailers is giving the impression that the future for traditional bricks and mortar retail is bleak. While it is true that online retail is growing at a faster pace than in-store retail and that its share of overall retail sales is increasing, it is also true that physical stores still account for approximately 90% of all retail sales. And even the most optimistic observers acknowledge that, in spite of the anticipated continued spectacular growth of internet retail sales, e-commerce will still likely amount to less than 15% of all retail sales five years from now. In other words, hardly an apocalyptic future for bricks and mortar dependent retailers.

1.5x, 5x & 12x

The U.S. has the highest retail square footage per capita, with 1.5x, 5x and 12x the square footage of Canada, the U.K. and Germany, respectively.

The Real Reason Retailers Fail

The reality is that the story is the same as it's always been; retailers that do a poor job of attracting customers, whether in-store or e-commerce, will struggle and many will die. "Creative destruction" was going on in the retail sector long before the internet was invented and e-commerce emerged as a powerful shopping tool. Anyone over 50 years old doesn't have to think very hard to come up with a long list of once-iconic retailers that lost their way and went out of business well before the genesis of online retail, e.g., Woolworth/Woolco, E.J. Korvette, Zayre, Venture, Montgomery Ward, Thom McAn, Bonwit Teller, Levitz Furniture, Trak Auto, Dart Drug, Bradlees, Service Merchandise, County Seat, Merry-Go-Round, Kids "R" Us, Fashion Bug, Mervyn's, The Wiz, Computer City and Linens 'n Things.

These extremely successful retailing businesses sold sporting goods, children's clothes, toys, shoes, apparel, electronics, auto parts, home furnishings and high fashion. They were widely revered and/or emulated in their heyday until, for a variety of reasons, they were no longer able to compete. They either went out of business and/or were gobbled up by stronger, bigger and/or more creative retail companies.

In fact, most experts agree that e-commerce is not going to put creative, nimble and forward-looking retailers out of business, but rather help them augment their traditional bricks and mortar retailing execution to increase overall sales. Several traditional bricks and mortar retailers understand this and are evolving and adapting at record speeds to maintain their market share. Best Buy has three times the market share in electronics as Amazon, and Costco reportedly has close to 85 million members compared to 50 million Amazon Prime members. Lastly, in relation to the grocery sector, Walmart and Kroger have nearly $330 billion in sales combined compared to the $20 billion of Amazon/Whole Foods.

Another factor leading to the misconception that traditional bricks and mortar retail is failing is that the U.S. is and has been for a very long time over-built in retail space. A multitude of retailers have had to consolidate their operations and close numerous stores over the last several years because of this fact. Based on an analysis completed by HFF, the U.S. has the highest retail square footage per capita, exceeding Canada, the U.K., and Germany by multiples of 1.5x, 5x and 12x, respectively as of year-end 2016. Quite simply, the U.S. is awash in retail space at a time when most retailers are under more pressure than usual. It should be noted that these consolidations would have happened irrespective of the growth in e-commerce; the stores were marginal and redundant and needed to be closed.

The reports of the death of in-store retail are an exaggeration.

Blurring the Lines Between Physical Stores and E-Commerce

The picture is cloudy and rapidly evolving and complicated by the fact that traditional bricks and mortar retailers (e.g., Walmart, Nordstrom, Target, Macy's and Best Buy) are growing their online presence at different speeds and with varying degrees of success, while, at the same time, "traditional" e-tailers like Amazon, Warby Parker and Bonobos are opening physical stores to sell more goods and extend their brands. Many so called "omni-channel" consumers move seamlessly between online and in-store shopping to complete their purchases. The reality is that physical stores drive more internet sales and e-commerce drives in-store activity. This blurring of the lines was recently highlighted by the alliance between Kohls and Amazon, in which Kohls agreed to allow 82 of its stores to be return centers for Amazon. While some observers have characterized Kohls' move as a reactive "bargain with the devil", others see it as a brilliant strategic initiative to ally itself with the e-commerce gorilla and drive traffic to its stores by many customers who might not otherwise find their way to Kohls.

Succeeding in a Time of Dislocation

It is clear that this is a time of market dislocation for both retailers and retail properties. Retailers (online or in-store) that offer quality products, a pleasant, convenient shopping experience, good value and the utmost in customer service will likely continue to thrive. And to that end, we believe there are several trends worth paying attention to when deciding where to invest in the retail industry.

First, shoppers have continued to demonstrate a demand for experiences, highlighted by the fact that last year restaurant sales exceeded grocery sales for the first time ever. Retail centers that offer entertainment, restaurants and community spaces should have more appeal for the retail consumer of today. According to a study completed by HFF, over 50% of shoppers want to see bowling alleys, spas and breweries in regional shopping centers. Secondly, there is a shift in the amount of space required to serve the retail needs of today. More stores are opening than closing, primarily driven by growth in the fast casual restaurant space and discount retailers, among others. However, these businesses typically require less space than the large format department stores and big box chain stores. This has resulted in a market dislocation as the market sorts out the best use for the defunct spaces.

The key is to find properties that attract shoppers ... regardless of what's going on with the internet.

Implications for Investors in Retail Properties

So what does this mean for real estate investors who want to buy, own and operate retail centers? From a macro perspective, we believe that shopping centers that have good access and visibility, are well designed with a flexible layout, offer ample convenient parking, have good circulation, are well constructed, offer shoppers a pleasant and safe shopping environment, and are tenanted by retailers that understand and cater to their shoppers' needs to maximize the overall shopping experience will likely not only survive, but will thrive in the months and years ahead. The key is to find properties that have the locational/demographic attributes and innovative and nimble and engaging retailers that attract shoppers ... regardless of what's going on with the internet.

There is no "one size fits all solution", as the foregoing characteristics could exist at a regional mall, a grocery-anchored neighborhood center, an unanchored specialty center, a "lifestyle" center, a high street urban retail promenade or even a "big box" community center. The common theme is that the real estate and the retailers occupying it have the ability to offer a combination of convenience, value and an "experience" that can draw shoppers out of their living rooms and to the physical retail location.

9/30/17
MARKET PERFORMANCE

U.S. Interest Rates/Yields	12/31/2016	3/31/2017	6/30/2017	9/30/2017
Federal Funds Target	0.75%	1.00%	1.25%	1.25%
Bank Prime Rate	3.75%	4.00%	4.25%	4.25%
90-Day Treasury Bills	0.50%	0.75%	1.01%	1.05%
10-Year U.S. Treasury	2.45%	2.39%	2.31%	2.33%
30-Year U.S. Treasury	3.07%	3.01%	2.84%	2.86%

Source: Bloomberg, L.P.

U.S. Bond Market Total Returns (US$) through 9/30/17	QUARTER	SIX MONTHS	YEAR TO DATE	ONE YEAR
Barclays U.S. Aggregate Index	0.85%	2.31%	3.14%	0.07%
Barclays U.S. Government Index	0.38%	1.56%	2.25%	-1.56%
Barclays U.S. Credit Index	1.35%	3.73%	5.08%	1.96%
Barclays U.S. Treasury Long Index	0.38%	1.58%	2.26%	-1.67%
Barclays U.S. Corporate High Yield Index	1.98%	4.19%	7.00%	8.88%

Source: Morningstar Direct

Stock Market Total Returns (US$) through 9/30/17	QUARTER	SIX MONTHS	YEAR TO DATE	ONE YEAR
U.S. Stocks				
S&P 500 Index	4.48%	7.71%	14.24%	18.61%
Morningstar US Small Cap Index	4.67%	6.43%	9.78%	17.41%
Morningstar US Small Value Index	4.75%	2.71%	4.21%	15.55%
Morningstar US Small Growth Index	5.40%	11.25%	17.66%	19.38%
International Stocks				
MSCI ACWI ex-U.S. Index, net dividends	6.16%	12.30%	21.13%	19.61%
MSCI EAFE Index, net dividends	5.40%	11.86%	19.96%	19.10%
MSCI Emerging Markets Index, net dividends	7.89%	14.66%	27.78%	22.46%

Sources: Bloomberg, L.P. and Morningstar Direct

Real Estate Total Returns (US$) through 9/30/17 (estimated)	QUARTER	SIX MONTHS	YEAR TO DATE	ONE YEAR
NFI-ODCE Index*	1.70%	3.43%	5.26%	7.48%

Source: The National Council of Real Estate Investment Fiduciaries

**Since the third quarter 2017 NFI-ODCE index return is not yet available, we have estimated it by using the previous quarter's return. This estimate is used for all time periods presented.*

Past performance is no indication of future results. All investments have the risk of loss.

DISCLOSURES

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ABOUT *THE 9:05*

Since 1978, we've held a weekly company wide meeting during which we talk about the prior week's activities and those anticipated in the week to come. We refer to this meeting, which begins just after nine each Monday morning, as "the 9:05". Just as the 9:05 enables us to share our knowledge and insights with each other, this newsletter provides us with a valuable means of communicating with our clients. Hence its title: *the 9:05*.

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