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March 31, 2018

To Our Clients and Friends:

The Monthly Letter covers three topics this month. First, we look at the relationship between trade, growth, and budget deficits. Popular perception is that increased budget deficits lead to bigger trade deficits and smaller budget deficits lead to smaller trade deficits. However, as in most things that have become ingrained in people's psyche, It Ain't Necessarily So. Second, we take a look at the Consumer and how economic growth will underpin Consumer Spending for the rest of the recovery. Third, after a number of years of famine for the mining industry, which forced companies to cut costs and pay down debt, the tide has turned, with companies moving to expand once again. And Fourth, as always, we close with brief comments of interest to our readers.

Those Damn Laws of Economics: How Manipulating Budget Deficits and Trade Deficits Can Create Investment and Economic Growth, Despite Popular Perception

> "*It ain't what you don't know that gets you into trouble. It's what you know for sure that just ain't so.*"
>
> Attributed to both Mark Twain and Josh Billings, 1870s

Most economists have publicly criticized the US Congress for enacting tax cuts that will significantly increase the budget deficit. They indicate that this will lead to unwanted consequences for the economy, including inflation above 2%. Furthermore, they expect the Federal Reserve to move to offset the positive impact on US growth from the tax cuts. And lastly, they state that the blowout in the budget will lead to higher trade deficits due to an accounting identity in economics as well as the government crowding out investment from the private sector.

While all these criticisms may stem from some past historical events when the economy stood close to potential, such as in the late 1960s, with US growth having averaged only 2% for 8 years under the Obama Administration and experienced an Industrial Production recession in 2015 and 2016, these historical references do not necessarily fit today's circumstances. Today, the economy stands some $3 - $5 trillion dollars below its level if it had grown at its historical rate of 3% - 3.5% during the Obama Administration instead of 2%. Gross Capital, the economist's term for total investment assets in the US such as plants and roads, stands $2+ trillion below where it should, with the concomitant impact on productivity. Lastly, overall US annual Gross Fixed Capital Formation (GFCF), the annual investment made in the US, stands 4% below historical levels as a percent of GDP or almost $800 billion per year

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below normal, before factoring into the equation the ~$4 trillion in missing GDP which would add another $800 billion in annual investment. Given these facts, the historical events used as analogies here bear little resemblance to the current state of affairs. A more relevant historical model may be the late 1930s, post the 1937 – 1938 recession, when investment accelerated, employment grew, and real incomes rose.

Most economists base their conclusions on a static equation that does not take into account the element of Time. This equation is as follows:

$$S + (T-G) = I + (X-M)$$

The symbols in this equation stand for the following:

S = Savings
T = Taxes
G = Government Spending
I = Investment
X = Exports
M = Imports

In other words, at any point in time, the amount of Savings in the economy less the Government budget deficit equals the amount of Investment in the economy less the Trade Deficit. Or so the logic goes according to the economics textbooks. The only problem is that this equation does not necessarily hold in the real world. For example, in the late 1990s when the Government went to a budget surplus under President Clinton and Savings were strong, the Trade Deficit expanded significantly. Theoretically, X-M in the above equation should have gone to a Trade Surplus. And while the Savings rate has fallen from 6.3% of GDP in February 2015 to 3.4% of GDP in February 2018, the Trade Deficit remained static and Investment, as measured by GFCF, went from $885 billion in Q1 2015, 4.95% of GDP, to over $1 trillion in Q1 2018, an estimated 5.03% of GDP. In other words, the equation does not balance in the real world when Time is taken into account. Thus, its practical application seems limited. In fact, there is a whole branch of economics, called Intertemporal Economics, that shows that optimizing these static equations provides sub-optimal results when the element of Time is taken into account. In other words, it gives you the wrong answer.

However, when we return to basics to consider the fundamental equation of the economy, this equation does balance over Time. The equation is as follows:

$$GDP = C + I + G + (X – M)$$

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In this equation, the various symbols stand for the following:

C = Consumption
I = Investment
G = Government Spending
X = Exports
M = Imports

This equation makes intuitive sense. It basically states that the economy consists of how much Consumers spend, how much the Government spends, how much the country Invests, and adjusts for whether we supply our own demand or have it done by another country. (Note: If a country has part of their demand supplied by another country's production by running a trade deficit, the question is the ability to finance the deficit. That is because the other country is accepting IOUs from the deficit country. The surplus country will be willing to finance this so long as it can turn the IOUs into real assets. However, if they cannot turn them into real assets, their willingness to finance the deficit comes into question.) So, the change in GDP over time will look like the following:

$$\Delta GDP = \Delta C + \Delta I + \Delta G + \Delta(X-M)$$

If Consumption and Government spending in the US grow and the Trade Deficit is forced down through tariffs and import restrictions, then to supply the goods that are needed in the economy, the US must increase its productive capacity to cover the shortfall in goods as Net Imports shrink. Thus, Investment growth must accelerate to meet the demand for goods in the economy. And with Consumption growing, Government spending growing, Investment growing, and Net Imports shrinking, the rate of economic growth should accelerate.

If one were to examine the Trump Administration's economic policies, they focus on increasing Investment and decreasing the Trade Deficit over time in exactly the pattern outlined above. Their plan to accomplish this through a 4 Part plan, the first two of which were accomplished through the tax legislation and the third through the budget legislation. In Part 1, they cut taxes on businesses to bring US tax rates in line with Europe to remove the economic incentive to locate plant in Europe instead of the US. By cutting US tax rates for Consumers as well, they insured that consumer incomes and spending would grow. And, given the large tax cut, businesses felt free to share a portion of the tax savings with their employees, further aiding Consumers. In Part 2, the Administration wrote the law to encourage repatriation of the trillions in capital sitting overseas. And while in the short term this will not impact Investment, as demand increases for a variety of consumer goods over time, this will provide the dry powder to increase manufacturing capacity. In Part 3, the government increased spending in real terms,

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something that did not occur during the Obama Administration. This real spending increase will produce government stimulus to the economy on top of the tax cuts, which will become evident in late 2018, 2019, and 2020. And in the last part of the plan, Part 4, the government went after poorly written trade agreements, such as NAFTA and the WTO, to force production back to the US and to put tariffs on Chinese goods that were targeting US industry through government subsidies and the outright theft of Intellectual Property. In this way, the government increased demand for US manufactured goods, encouraged the relocation of capacity back to the US, and provided the incentive to invest to expand US capacity by starting to address the issues in these trade agreements to provide some certainty to manufacturers that their output would not find itself undercut by subsidized products from overseas.

Unlike the commentary in the newspapers and on TV, the above analysis makes clear this economic approach will produce faster growth and begin to close the gap with US Potential GDP which stands $3 - $5 trillion above its current levels. However, there is no free lunch in life. Assuming the US economy produces higher economic growth, the corollary to faster growth is usually higher inflation. They tend to go hand in hand. This means that inflation will likely pick up above the 2% level. In other words, if the US economy is to experience faster growth, it must accept higher inflation, as it has historically in the past. This is where the Federal Reserve comes into the picture. For some reason, the 2% inflation number has become gospel. However, over the past 120 years, the average US inflation is 3.2%, well above the 2% level. Thus, the Federal Reserve will face a choice: choke off the economy when it is just getting going and real incomes are rising for the first time in two decades or allow the economy to exhibit higher levels of inflation to enable fundamental economic growth to accelerate. While the Federal Reserve is raising rates today, they have one eye on the Yield Curve, which is flattening. The flattening Yield Curve signals that the Federal Reserve is going to slow economic growth if it does not relent from its tightening campaign, potentially in a significant manner, as it is also taking Money out of the economy. Should the economy slow significantly or enter a recession, despite the tax cuts and significant government spending growth, the Federal Reserve would find itself the Bullseye of the recession blame target. In this case, the Congress and the President would come down hard and likely act to remove some of the Federal Reserve's powers. Given the politically sensitive nature of the Fed, the likely best course of action will be for the Fed to relent at some point later this year when it becomes apparent their actions are too much too soon. This would lead the economy down the path similar to what happened in 1966 – 1967 when the economy slowed but did not enter a recession, as the following chart demonstrates:

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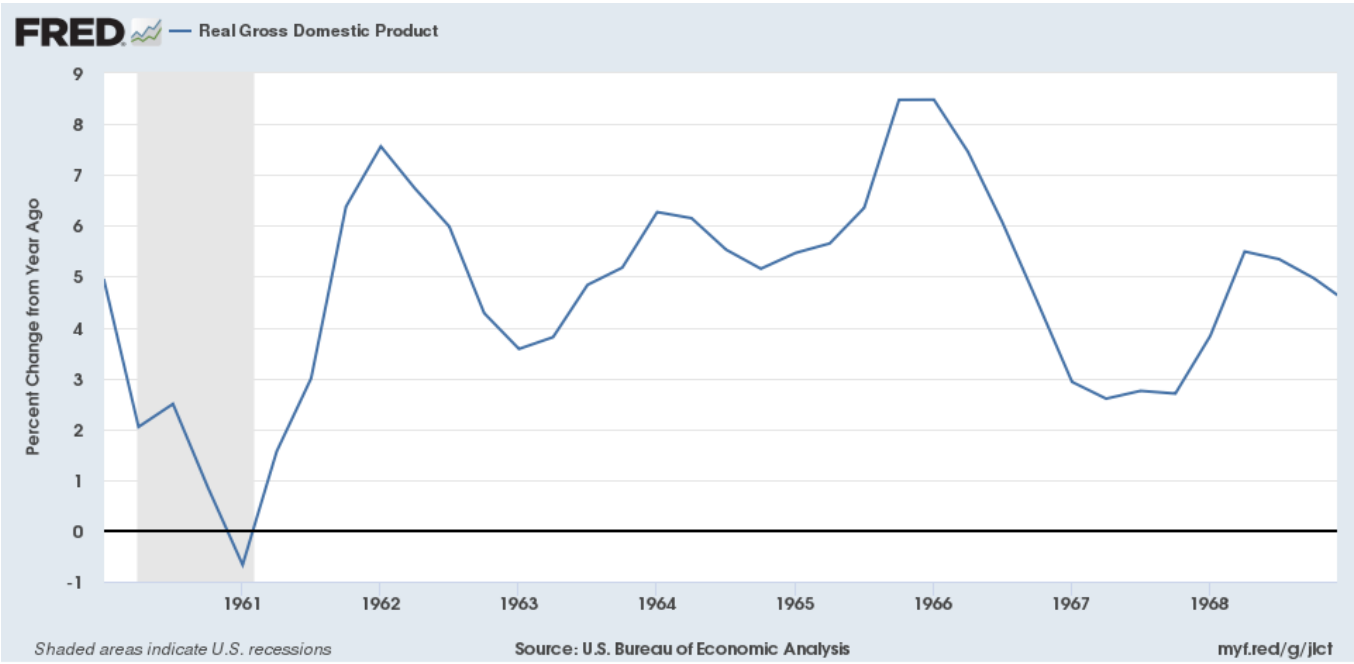

Assuming the Federal Reserve relents, then the economy should begin to reaccelerate in 2019 into the 2020 elections. This action will then allow the economic plan put in place above to truly come to fruition and fundamentally begin to accelerate the US growth rate in a sustainable, long term manner.

Furthermore, with the pickup in Investment and the aging of the Millennials in the workforce, Productivity should fundamentally accelerate, reinforcing the growth dynamic above. As is well known by economists and the Federal Reserve, Investment, what is known in economic parlance as Capital Deepening, leads to Productivity growth as the following chart demonstrates:

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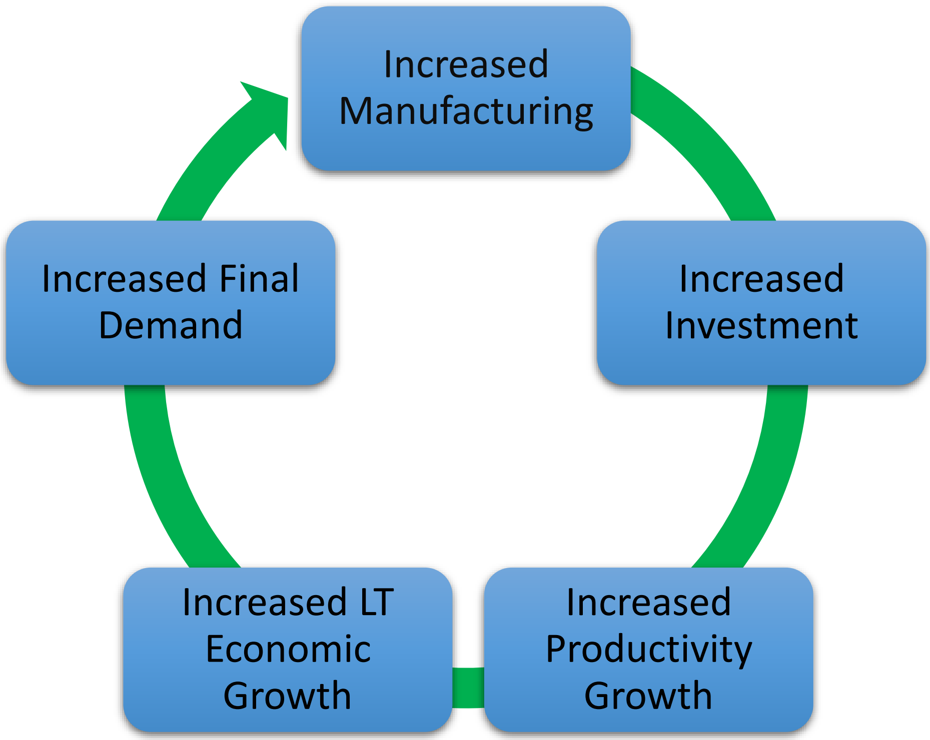

Chart by Green Drake Advisors, LLC. Copyright 2017. All Rights Reserved

In addition to the fundamental acceleration due to the above dynamic, there is an important demographic negative that has been a headwind to Productivity growth that is soon to turn into a tailwind. That is the entry of the Millennials into the workforce. As they entered the workforce over the past decade, economists estimated that they produced a demographic drag of 0.4% per year to overall productivity growth. In other words, highly productive Baby Boomers retired and were replaced by less productive Millennials. However, as they age into the workforce and become more productive, the Millennials will begin to add to overall Productivity. It is estimated that the drag should turn into a positive over the next few years adding up to 0.5% to Productivity growth per year and increasing the long term economic growth rate of the economy by almost 1%.

With the Fed likely to pause later this year or early next and the Trump Administration's economic plan in full swing, the US economy appears headed for its best growth in over a decade. This growth will occur Despite Popular Perception to the contrary focused on Those Damn Laws of Economics which do not have data to back them up. Instead, the fundamental economic equations, proven true time and time again, will hold sway. These equations demonstrate How Manipulating Budget Deficits and Trade Deficits Can Create Investment and Economic Growth. And with these actions riding high and the wind

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in its sails, it is Full Steam Ahead for the US Economy to the horizon and beyond. (Data from Census Bureau, Federal Reserve, and other public sources coupled with Green Drake Advisors analysis.)

The Consumer: Alive and Well and Living In America

> "*Before a man, when he gets up in the morning, can put on a coat, ground must have been enclosed, broken up, drained, tilled, and sown with a particular kind of plant; flocks must have been fed, and have given their wool; this wool must have been spun, woven, dyed, and converted into cloth; this cloth must have been cut, sewed, and made into a garment. And this series of operations implies a number of others; it supposes the employment of instruments for plowing, etc., sheepfolds, sheds, coal, machines, carriages, etc.*
> *If society were not a perfectly real association, a person who wanted a coat would be reduced to the necessity of working in solitude; that is, of performing for himself the innumerable parts of this series, from the first stroke of the pickaxe to the last stitch which concludes the work. But, thanks to the sociability which is the distinguishing character of our race, these operations are distributed amongst a multitude of workers; and they are further subdivided, for the common good, to an extent that, as the consumption becomes more active, one single operation is able to support a new trade.*
> *Then comes the division of the profits, which operates according to the constituent value which each has brought to the entire work. If this is not association, I should like to know what is.*"

That Which Is Seen, and That Which Is Not Seen
Part 6: The Intermediaries
By Claude Frederic Bastiat, 1850

> "*The amount that the community spends on consumption obviously depends (i) partly on the amount of its income, (ii) partly on the other objective attendant circumstances, and (iii) partly on the subjective needs and the psychological propensities and habits of the individuals composing it and the principles on which the income is divided between them (which may suffer modification as output is increased). The motives to spending interact and the attempt to classify them runs the danger of false divisions. Nevertheless it will clear our minds to consider them separately under two broad heads which we shall call the subjective factors and the objective factors. The subjective factors, which we shall consider in more detail in the next Chapter, include those psychological characteristics of human nature and those social practices and institutions which, though not unalterable, are unlikely to undergo a material change over a short period of time except in abnormal or revolutionary circumstances. In an historical enquiry or in comparing one*

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social system with another of a different type, it is necessary to take account of the manner in which changes in the subjective factors may affect the propensity to consume. But, in general, we shall in what follows take the subjective factors as given; and we shall assume that the propensity to consume depends only on changes in the objective factors.

The principal objective factors which influence the propensity to consume appear to be the following:

(1) A change in the wage unit …

(2) A change in the difference between income and net income …

(3) Windfall changes in capital-values not allowed for in calculating net income …

(4) Changes in the rate of time-discounting, i.e, in the ratio of exchange between present goods and future goods …

(5) Changes in fiscal policy …

(6) Changes in expectations of the relation between the present and the future level of income …

The fact that, given the general economic situation, the expenditure on consumption in terms of the wage-unit depends in the main, on the volume of output and employment is the justification for summing up the other factors in the portmanteau function 'propensity to consume'. For whilst the other factors are capable of varying (and this must not be forgotten), the aggregate income measured in terms of the wage-unit is, as a rule, the principal variable upon which the consumption-constituent of the aggregate demand function will depend."

Chapter 8: The Propensity To Consume I: The Objective Factors
The General Theory of Employment, Interest, and Money
By John Maynard Keynes, 1935

For the average American, it has been a tough two decades. However, things are looking up, finally. Fundamental economic growth is accelerating. Wages are rising at a rate in excess of inflation. And, a growing economy coupled with tight labor markets is encouraging businesses to invest, once more, in ways that should improve productivity, accelerate economic growth, and increase wages even more. Whether they live in Elkhart, Indiana or Colorado Springs, CO, or Jacksonville, FL or Sacramento, CA, there are opportunities for Americans across the economic spectrum to participate in the growth of the economy.

While Corporate America has yet to get its financial act together, with Corporate Debt to GDP at record levels, Households have cut their total debt outstanding significantly. And while not back to 1980's levels, it stands significantly below its peak in 2007:

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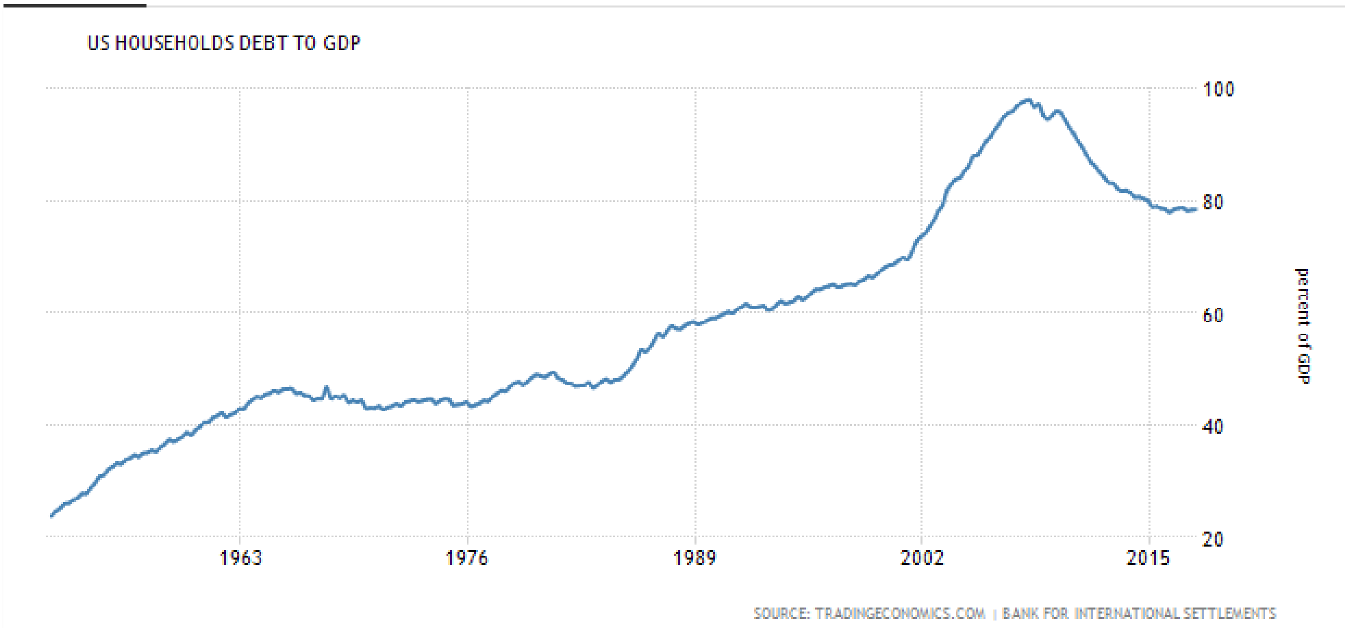
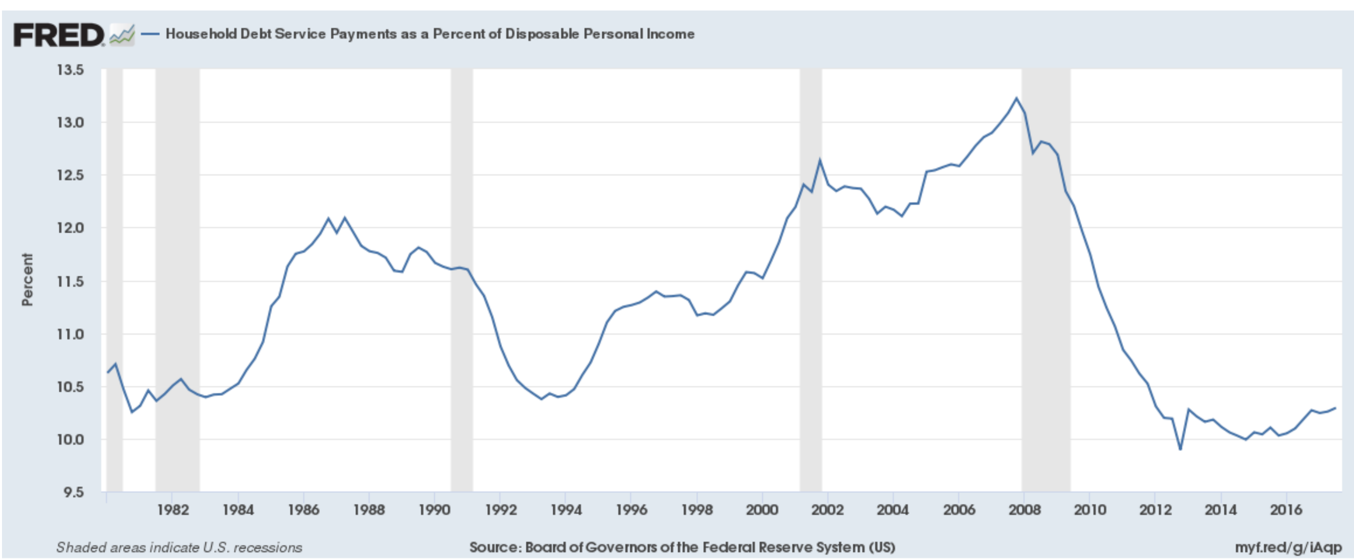


And with the significant drop in interest rates over the past decade, Households interest burden fell even more:



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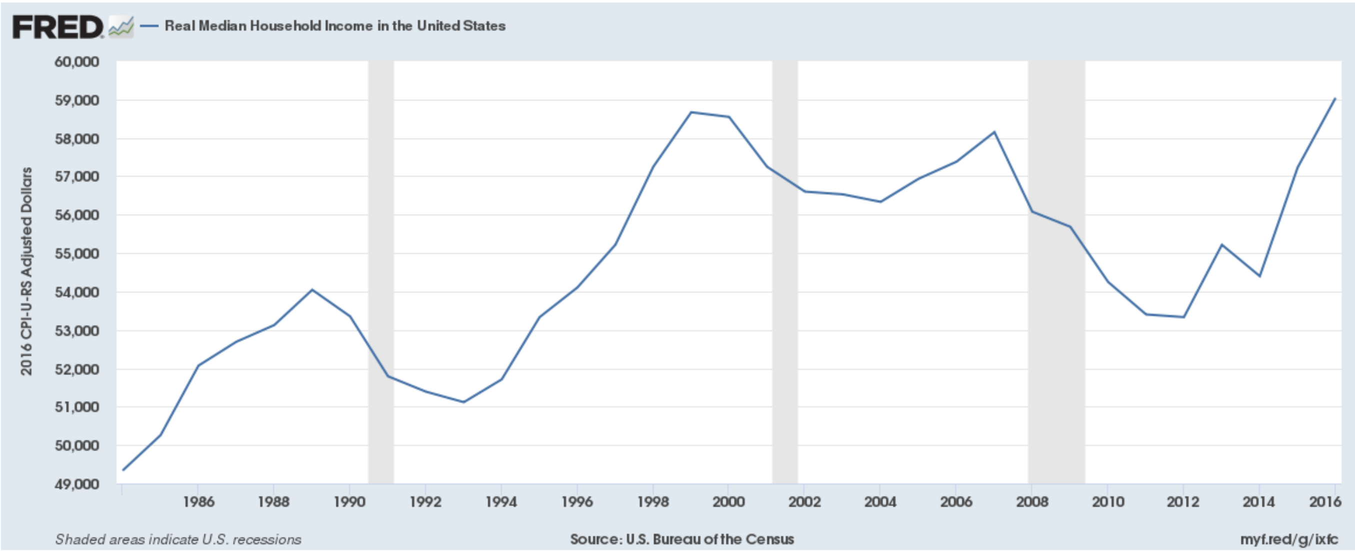
And even should interest rates normalize, as the Federal Reserve raises short term interest rates and allows for shrinkage of its balance sheet, the ratio would only rise slightly, given the rise in consumer incomes. As the chart below illustrates, Consumer Income is rising at a fairly strong rate, similar to the way it rose in the 1990s, allowing it to offset these interest rate increases:



Furthermore, as the chart makes evident, Real Median Household Income stands above its 1999 level for the first time ever. With the growing economy supporting employment and wages, the Consumer can believe that this trend will continue for the foreseeable future. On top of this positive backdrop, the Consumer benefitted from the recent tax cuts as well. This comes in two forms: a direct reduction in the overall taxes they pay and indirectly through increased income as businesses share a portion of their tax cuts with their employees. And this benefit even applies to the lower income earners. So, for a Household earning $40,000 per year, despite the costs of healthcare, rent, and gasoline rising, they will see their after-tax disposable income grow. This contrasts with the period from 2012 – 2016 when healthcare ate all of the incremental income they earned and then some. Given all this, for the first time since the 1990s, the Consumer stands in a strong position with a tail wind at her or his back.

Coupled with the above stands the massive Consumer savings poised to earn interest. Consumers hold over $9 trillion in deposits sitting in banks earning close to nothing.

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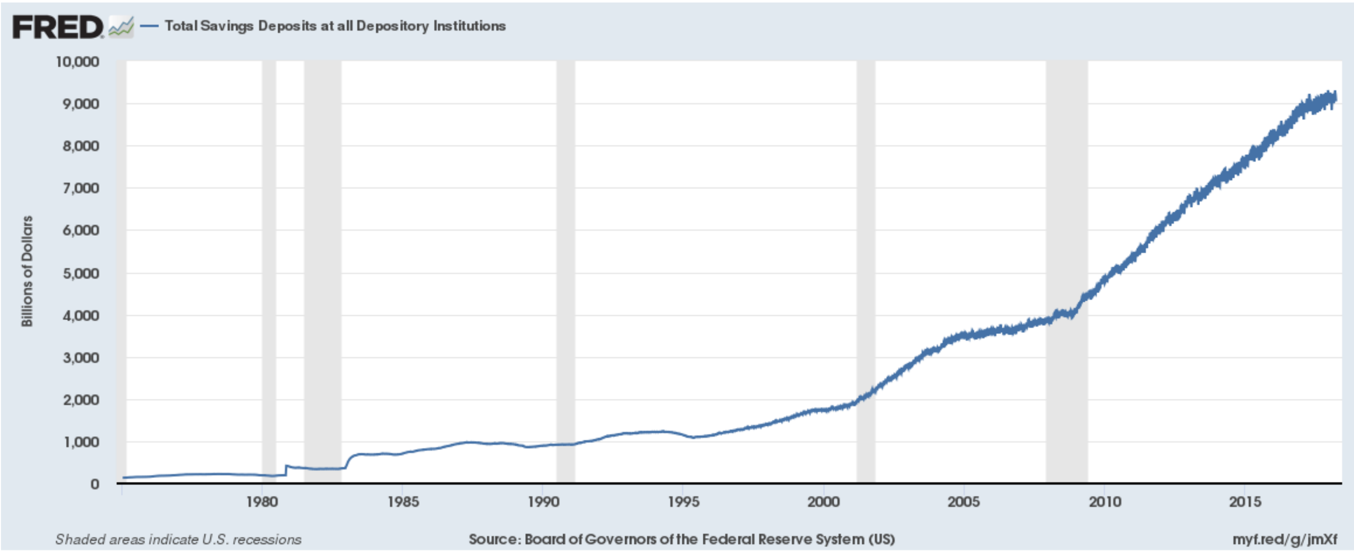

If interest rates on these savings rose just 1%, the Consumer would find an incremental $90+ billion in their pockets pre-tax. Already, numerous institutions outside the banking industry are targeting these deposits, as they can afford to offer more than the largest banks currently offer. Should rates continue to rise, the pressure on the large banks to raise the rates they are paying would rise, lest they see their core deposits walk out the door.

With clean balance sheets, rising incomes, and rising interest income, the consumer stands positioned to sustain economic growth. And with Consumer Debt Service below levels that preceded the consumer boom in the 1990s coupled with relaxation of the draconian rules imposed by Dodd-Frank, the key components to sustain a multi-year bonfire appear in place. All that remains to materialize the flames is the spark to launch such a blaze. With economic growth making the transition to late cycle, which will support consumer incomes, this spark may already be in place. And with the consumer set to take center stage, the script will center around the coming conflagration that reminds all, once more, that The Consumer is Alive And Well and Living In America. (Data from the Federal Reserve, US Census Bureau, and Bureau of Economic Analysis coupled with Green Drake Advisors analysis.)

Eenie, Meenie, Mining, Moe, Catch A Backhoe By The Toe

> "*Over against the prospective yield of the investment we have the supply price of the capital-asset, meaning by this, not the market-price at which an asset of the type in question can actually be*

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> *purchased in the market, but the price which would just induce a manufacturer newly to produce an additional unit of such assets, i.e., what is sometimes called its replacement cost. The relation between the prospective yield of one more unit of that type of capital and the cost of producing that unit, furnishes us with the marginal efficiency of capital of that type. More precisely, I define the marginal efficiency of capital as being equal to that rate of discount which would make the present value of the series of annuities given by the returns expected from the capital-asset during its life just equal to its supply price. This gives us the marginal efficiencies of particular types of capital-assets. The greatest of these marginal efficiencies can then be regarded as the marginal efficiency of capital in general.*
>
> *The reader should note that the marginal efficiency of capital is here defined in terms of the expectation of yield and of the current supply price of the capital-asset. It depends on the rate of return expected to be obtainable on money if it were invested in a newly produced asset; not on the historical result of what an investment has yielded on its original cost if we look back on its record after its life is over.*"

Chapter 11: The Marginal Efficiency of Capital
The General Theory of Employment, Interest, and Money
By John Maynard Keynes, 1935

The Global Mining Industry presents one of the most cyclical industries in the world. When times are good, money rains down upon companies as prices rise to levels well above those needed to justify building new mines. And when times are bad, companies struggle to pay their employees, suppliers, and creditors. Such is life for those companies whose existence depends on the next ore body and whether the costs to produce the ore make the mine globally competitive or not.

From 2011 to 2016, the industry endured one of its periodic swoons, which drove prices down to cash costs for a significant portion of the mining industry. Growth in demand slowed around the world, yet new mines under construction kept opening, making things worse and worse. Reflecting these difficulties, capital spending for the industry collapsed, dropping from ~$170 billion in 2012 to just $50 billion in 2016, the same level last seen during the 2001 – 2002 recession. But, the damage had already been done as a new mine can take 4 years from start to finish to bring online, and the numerous new mines under construction kept coming. Supply across multiple metals rose much faster than demand. However, in every economic disaster for the industry, there is a silver lining. No new mines entered the development stage, exploration spending collapsed, and expansions of existing mines were put on hold. This caused future new supply to take a steep dive, thus ensuring low supply additions through the early 2020s for copper, zinc, and many other base metals.

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With the industrial economy recovering over the past two years, demand rose just as supply growth slowed, a not atypical scenario for a commodity industry. This enabled prices to recover, providing the mining industry a breather. However, for many base metals, despite the price recovery, they still remain below levels needed to justify building a new mine today. In addition, as existing mines age, miners face the necessity to move more rock to produce the same amount of metal, driving their costs upward. Average ore grades (the amount of ore in a given amount of rock) have been falling since 2007 for most base metals. Given this, even though prices recovered to levels that might justify evaluating new mines in the past, prices will need to rise even further to entice mining companies to sanction new mines and increase their exploration spending. In the meantime, they likely will need to increase spending to maintain their current operations, as several years of underspending have pushed their machinery to the limit.

Should the global economy remain strong over the next few years, the mining industry likely will see its fortunes rise as limited supply growth meets strong demand. Prices will soar once more, enabling cash to rain down on the industry. And this cash will lead the industry to expand existing mines, increase exploration for new ore bodies, and dust off new mine plans. With these actions, the roller coaster nature of the industry will be evident once more. As it has been for the past century and more, for the Global Mining Industry it is Eenie, Meenie, Mining, Moe, Catch A Backhoe By The Toe. (Data from Jefferies Group LLC, public sources, and the US Minerals Management Service coupled with Green Drake Advisors analysis.)

The High Cost of Staying Warm, The Valor RX, Thank You ELDs, and Extreme Organics

Finally, we close with brief comments on The Coming Cost of Staying Warm, The Valor RX, Thank You ELDs, and Extreme Organics. First, with the recovery in single family home construction, demand for fiberglass insulation has soared from a low of 70% in 2012 to an estimated 90%+ in 2018. With no new plants in the pipeline, which take 3 years to build, manufacturers have announced 9% - 10% price increases already this year. For the builders of single family homes, it will be The High Cost of Staying Warm. Second, drug manufacturers are adopting a new glass to hold prescription drugs and vaccines. This glass, manufactured by Corning Inc., called Valor Glass, produces 96% less particles in the packaging portion of the manufacturing process as well as providing much improved crack resistance. For pharmaceutical companies, we see them offering the Valor RX soon. Third, orders for new Class 8, heavy duty trucks have gone through the roof. They are up almost 100% year-over-year for the first quarter and annualizing at almost a 500,000 unit rate, which would set a record for the industry. Not only have freight volumes been strong, but the adoption of Electronic Logging Devices (ELDs) that strictly limit the driver hours to legally required maximums is having a large impact. We see the truck

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manufacturers saying: Thank You ELDs. And Fourth, a research scientist at Clemson University created a way to manufacture organic fertilizer. The process uses "extreme bacteria" isolated from the stomachs of cattle to produce an ammonia fertilizer, as good if not better than existing fertilizers made from natural gas. And since the bacteria create their fertilizer in a bioreactor that avoids the use of any fuel, the process is extremely low cost, potentially much lower than today's existing plants. This fertilizer will allow organic farmers to start producing commercial volumes of food immediately, rather than waiting the three years needed for the natural nitrogen fixing bacteria in the soil to make the soil as productive as using traditional fertilizer. For the farming industry, this marks the advent of Extreme Organics that may begin to significantly displace existing crops.

In Closing

Should you have any questions on how the above issues or the items discussed in our accompanying cover letter impact your family's financial position or your business's future as well as the potential actions you could take in response, please do not hesitate to contact us. We welcome the opportunity to discuss this with you.

Yours Truly,

Paul L. Sloate
Chief Executive Officer
& Senior Advisor

Steve Rodia
President
& Senior Advisor