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February 28, 2019

To Our Clients and Friends:

The Monthly Letter covers three topics this month. First, we look at state of the Currency Wars. With Emerging Markets depreciating their currencies once more to solve their economic problems at the expense of the Developed Economies, a response is brewing. The US, as part of its proposed new trade relationship with China, fixed the value of China's currency against the US Dollar, removing depreciation as an acceptable action by China's government. With China and the US now having currencies locked in trading ranges against each other, the ability of the rest of the globe to manipulate their currencies stands at risk. We expect the US, along with China, to act aggressively in the markets to address this issue. This likely will lead to currency chaos as the undervaluation of the European and Japanese currencies come under attack followed by the currencies of key Emerging Economies such as Brazil and India. Second, we take a brief look at cloud spending. With the cloud maturing, spending will become more tied to physical upgrades than to the buildout of infrastructure, as well as the mass adoption of machine learning and artificial intelligence, changing the dynamics of the industry. Third, we examine the fiscal state of the States given the massive promises made to workers through retirement benefits and pensions. With the states underfunding these liabilities over the past 20 years, a crisis lies ahead in which these promises come up against the limitations of the States and Cities to tax to pay them. And Fourth, as always, we close with brief comments of interest to our readers.

Currency Wars Part VII: Populism and The Coming Un-Civil War

> "*Princes and sovereign states have frequently fancied that they had a temporary interest to diminish the quantity of pure metal contained in their coins; but they seldom have fancied that they had any to augment it. The quantity of metal contained in the coins, I believe of all nation, has accordingly been almost continually diminishing, and hardly ever augmenting. Such variations, therefore, tend almost always to diminish the value of a money rent.*"
>
> Chapter V: Of the Real and Nominal Price of Commodities, Or
> Of Their Price in Labour, And Their Price in Money
> Book I: Of The Causes of Improvement In The Productive Powers of Labour,
> And of the Order According To Which Its Produce Is Naturally Distributed
> Among The Different Ranks of the People
> The Wealth of Nations, Adam Smith, 1776

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"*Nevertheless, if we contemplate a society with a somewhat stable wage-unit, with national characteristics which determine the propensity to consume and the preference for liquidity, and with a monetary system which rigidly links the quantity of money to the stock of precious metals, it will be essential for the maintenance of prosperity that the authorities should pay close attention to the state of the balance of trade. For a favourable balance, provided it is not too large, will prove extremely stimulating; whilst an unfavourable balance may soon produce a state of persistent depression.*
…
Regarded as the theory of the individual firm and of the distribution of the product resulting from the employment of a given quantity of resources, the classical theory has made a contribution to economic thinking which cannot be impugned. It is impossible to think clearly on the subject without this theory as a part of one's apparatus of thought. I must not be supposed to question this in calling attention to their neglect of what was valuable in their predecessors. Nevertheless, as a contribution to statecraft, which is concerned with the economic system as a whole and with securing the optimum employment of the system's entire resources, the methods of the early pioneers of economic thinking in the sixteenth and seventeenth centuries may have attained to fragments of practical wisdom which the unrealistic abstractions of Ricardo first forgot and then obliterated. There was wisdom in their intense preoccupation with keeping down the rate of interest by means of usury laws (to which we will return later in this chapter), by maintaining the domestic stock of money and by discouraging rises in the wage-unit; and in their readiness in the last resort to restore the stock of money by devaluation, if it had become plainly deficient through an unavoidable foreign drain, a rise in the wage-unit, or any other cause."

Chapter 23: Notes on Mercantilism, The Usury Laws, Stamped Money, And Theories of Under-Consumption
The General Theory of Employment, Interest, and Money
By John Maynard Keynes, 1935

To date, a relative truce stands in the Currency Markets. Developed Economy currencies fluctuate within a band, traveling from the low end to the high end of the band and back over time. Thus, the value of the Euro and the currencies that made up the Euro prior to its creation have fluctuated between $0.90 to $1.50 with a central tendency of $1.20. Given that the Purchasing Power Parity exchange rate between the US Dollar and Euro equals $1.18, this makes sense. Emerging Economy currencies can depreciate should these economies run into difficulties as a way to stimulate exports and investment in their economies. While this leads to undervalued currencies, prior to the past 20 years, this did not create an issue for Developed Economies, as the Emerging Economies did not have access to these

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markets. And even when granted access, Developed Market economies allowed EM Depreciations to continue. Thus, with a set of rules in place to govern actions, each government knows which policies it can access given its place in the world order, preserving the peace.

There exist two fundamental problems with this. First, due to the massive growth in Emerging Market Economies over the past 20 years, the impact of such policies has grown significantly, whereby it harmed DM growth over the past decade. Second, due to the massive growth in Emerging Market Economies, the world economic order sits in flux with a new order yet to emerge. Thus, the lines that define a country's place appear blurry today and the assumptions used to set up the rules no longer hold. Simply put, these assumptions, which fit the world of 1980, stand inconsistent with reality, given the massive change in the global economic order that occurred over the past 40 years. In 1980, the Emerging Economies truly were emerging and comprised less than 37% of the Global Economy. However, as the following chart demonstrates, Emerging Economies, when measured under PPP, which measures their real economic output, now comprise the majority of the Global Economy:

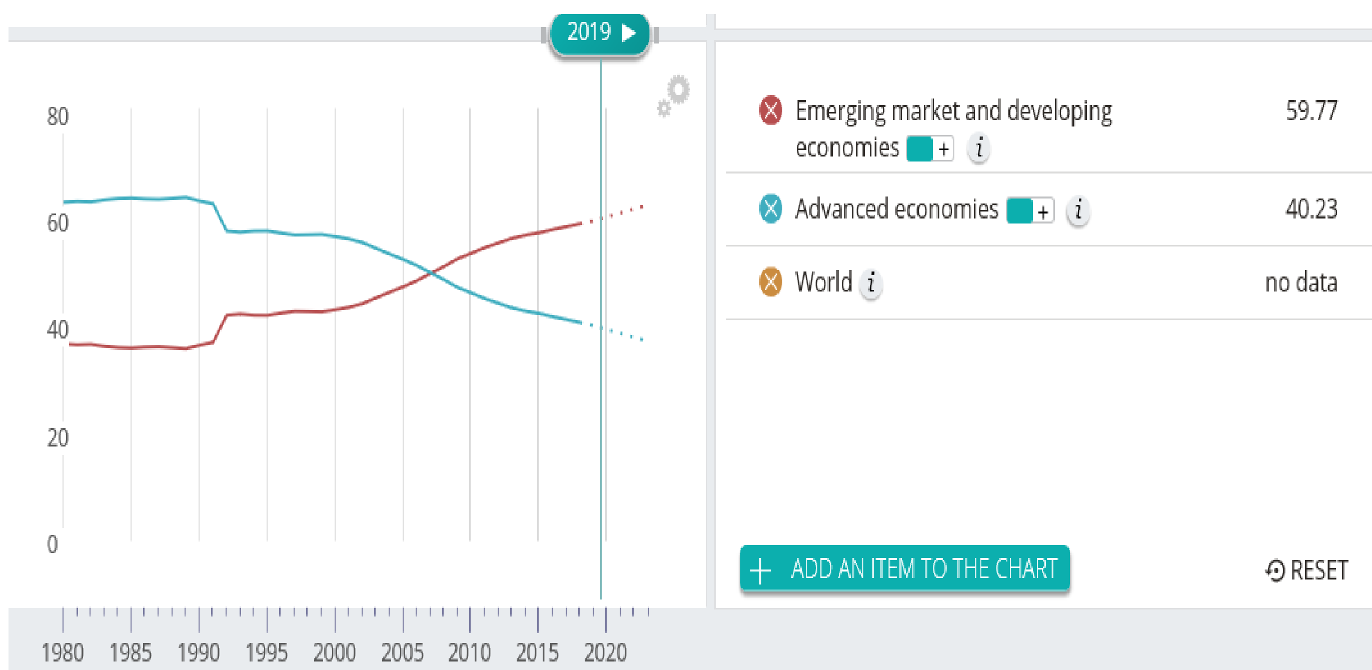

Chart courtesy of IMF, www.imf.org.

In fact, as the chart demonstrates, the EM now accounts for ~60% of Global Economic Output. This result should come as no surprise, as it is merely the Law of Compounding writ large. If Country A

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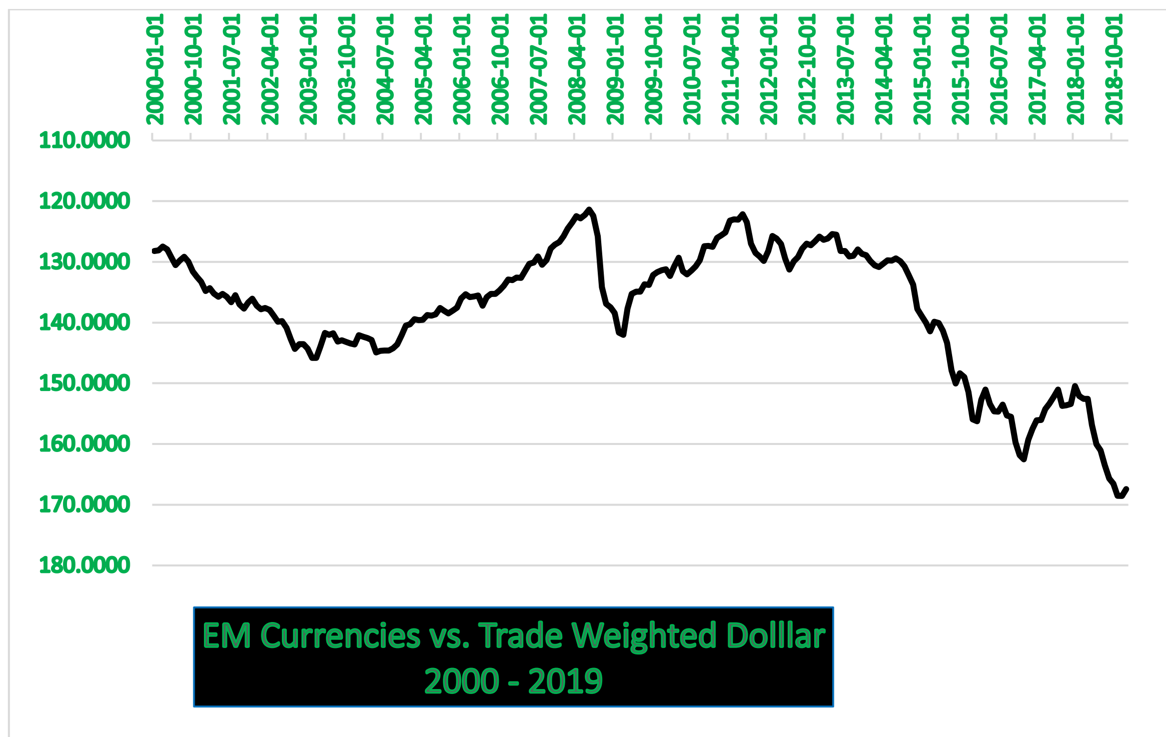
grows at 5% and Country B grows at 3% over a long enough time period, Country A will always become bigger than Country B, even if Country B was 2 – 3x its size to start. With the DM allowing the EM into their markets, through NAFTA and the WTO, this became the inevitable end point, as the DM institutionalized the EM growing at 4% - 6% while limiting DM growth to 2% - 3% or less. With the EM already 37% of Global GDP in 1980, it was only a question of when, not if, it would become bigger.

On top of this, the EM did not play by the rules of the game, as the DM expected, when these trade agreements were put in place. This came mainly through the currency depreciation channel. The EM Economies massively cut the value of their currencies in the 1990s in order to benefit their manufacturers once market access was granted. However, as the benefits of this depreciation wore off by 2012 – 2013, they could not resist the temptation to use this lever once more in 2014 – 2018, despite having become the majority of the global economy. The following chart demonstrates these Currency actions:



Data care of Federal Reserve Economic Database, St. Louis Federal Reserve.

While this solved the EM economies short term economic problems, it created a new, long term bigger issue for the EM economies relative to the DM economies. With a decade of little to no economic

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growth combined with stagnating or declining living standards, delivered to the average citizen in most major DM economies, DM populations began to grow restless. They watched the rest of the world prosper while they suffered under the treaties that were sold to them as creating a better life. Then, just as the party was starting in 2013 – 2014, their economies took another blow as the EM Economies used currency depreciation to have the DM shoulder the burden of the EM slowdown. As one might say, not what the doctor ordered.

While global elites preached the virtues of globalization to the average citizen over the past two decades, they delivered lemons. Or in the well known words of Marie Antoinette, they said, "Qu'ils mangent de la brioche." (Let them eat cake.) Unfortunately, this did not go over well with the French peasants. Due to crop failure, the 1789 French peasant did not have the flour to make the cake. So, telling them to solve their problem using something they did not possess came across as callous and uncaring. As one might say, this ended badly for the French aristocracy in a small bloodbath called the French Revolution. In a similar vein, the citizens of today's DM Economies do not have the ability to benefit from the movement of factories out of their home countries to around the world. If anything, they suffered a crop failure, in the closure of factories and the loss of high paying jobs. In response, the governments run by the elites told them to get a job. It is hard to get a job that no longer exists, even if you are willing to relocate within a country. And the only jobs available were low paying, low skill positions. If anyone wonders at the populist revolt moving around the DM world, understanding this fundamental failure of governments provides clarity as to the cause and to the reason populism will not go away anytime soon.

With Populism in ascendance, new governments have begun to replace those dominated by global elites. The one thing these new DM governments find in common, whether on the right or the left, is a dislike for the current rules of the global economy. They appear one sided, with the DM populations on the short end of the stick. And, these new DM governments appear ready to act upon this to move things in a direction that would aid their citizens. In addition, these new populist governments have begun to recognize the importance of currency in solving these issues. There is already a mini-revolt in Europe against the Euro. For those who missed it, Italy proposed putting in place an IOU from the government called the BOT, that would act just like currency. However, the leader in this area is the United States, which already issued a warning to China on depreciating its currency. With the US having taken a large hit from the WTO and the currency devaluations, such a move became inevitable. It seems logical that the US, having recognized the currency issue in attempting to deal with China, will systematically address other key currencies from countries like Brazil, India, … For the US, there will be no choice if it wants to address trade. The EM represents almost 60% of US imported goods. And China does not represent the critical country for a number of US sectors. For example, China buying some US soybeans will not solve the US farmers fundamental global competitive problem. However, undoing the 50% cut in the value of the Brazilian currency will, as Brazil stands the number one rival to the US globally in soybean exports. Such a correction, across the board against a basket of currencies, would

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make the US extremely competitive on a global basis and likely displace numerous counties' exports. Imagine what would occur if the US undid the 30% currency devaluation executed by the EM over the past 4 years. Such a move would vastly improve the global competitive position of the United States at the expense of many EM economies, making the US the low cost producer globally in many industries. And if the US devalued against the EM, the European Union (EU) and Japan would have no choice but to follow, lest the US displace their goods in global markets. For the EM, it would come as a shock as they found themselves on the wrong side of currency moves for the first time in 40 years.

Given the ascendance of Populism, it appears only a matter of time until the DM economies focus on currency devaluation by the EM. The mandate for these populist governments focuses on faster economic growth and improved living standards. Inflation stands as a second order consideration and only if it gets out of hand. Given this mandate, they will act to remove all impediments to such an outcome. Clearly, EM devaluation acts as a massive impediment to this outcome. And, as such, it must become one of the principal foci for these governments. With the EM economies using currency over the past 40 years as one of the principal means to solve their problems and maintain their growth, DM retaliation in the currency markets logically lies ahead. For the US and other DM economies, these actions would end the massive drag that put their economies on the defensive, merely serving the same medicine to the EM economies as they endured. However, this Coming Un-Civil War over currency would represent a true escalation, as the DM economies fought back to reclaim their economic growth. Such a move would leave the EM economies in shock, as the policy channels followed over the past 30 years shut, forcing these countries to take the bitter pill of true economic adjustment and watching their hyper-charged economic growth come to an end. They would become the victims of their own success as well as feeling the brunt of The Golden Rule: "Do Unto Others As You Would Have Them Do Unto You." Having followed "Do Unto Others" for over 40 years, they will now have to endure "Do Unto You" with all the messy economic consequences. For the world, this will look familiar as the globe once more experiences a true currency war with all its messy fallout. (Data based on information form US Census Bureau, Federal Reserve, and US Bureau of Economic Analysis coupled with Green Drake Advisors analysis.)

Technology: It Is Getting Cloudy Outside

> "*Cloud computing is actually a spectrum of things complementing one another and building on a foundation of sharing. Inherent dualities in the cloud computing phenomenon are spawning divergent strategies for cloud computing success. The public cloud, hybrid clouds, and private clouds now dot the landscape of IT based solutions. Because of that, the basic issues have moved from 'what is cloud' to how will cloud projects evolve.*"

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Chris Howard,
Chief of Research
Gartner's CIO Research Group, 2017

For the last 10 years, technology investment focused on the cloud. Whether becoming part of the public cloud, care of Amazon, Microsoft, or Google, or part of a private cloud, controlled internally by a company, everything revolved around moving data and computing to the cloud. This enabled growth in cloud computing at 25% - 50% per year, as companies sought to lower their technology costs and remain competitive. From handling less than 10% of all computing loads in 2008, cloud data centers will process over 94% of all computing workloads and "compute instances" by 2021. This move signifies a massive victory for cloud computing over traditional data centers.

However, this massive success represents a two-edged sword. Once an area of technology captures 94% market share in a particular market, growth must slow to close to overall technology market growth of 3% to 5%, given the limited share gains possible and the significant share of overall capital expenditures represented by technology. With the cloud over 80% of the market today, industry growth in 2019 already began to exhibit a slowdown. According to Gartner Group, after growing ~25% in 2017 and almost 21% in 2018, growth is expected to slow to 17% in 2019, then slow further in 2020. So far this year, vendors to the hyperscale cloud data centers reported a significant slowdown in volumes. In semiconductors, both Intel and Nvidia reported a downturn in orders for their data center chips. Optical vendors, such as Ciena and Applied Optoelectronics, also reported a pause in orders for the optical equipment. This story finds itself repeated across all the various areas of the cloud oriented, technology supply chain. And while the order pause should end by year end, as Amazon and Microsoft upgrade to 400 Gigabyte inside the data center, the Year 2021 and saturation rapidly approaches.

For the vendors that rode the cloud wave over the past decade, the wave appears close to cresting, with growth set to crash to industry norms. And with the attention of Chief Information Officers (CIOs) moving to a new focus, given the maturation of their cloud infrastructure, incremental technology spending likely will move to security, AI, and other more critical areas. According to Gartner Group, Data Center Systems spending will grow only 1.6% in 2019 with overall IT spending up 3.2%. For cloud vendors who enjoyed 20%+ growth for a decade, slowing down to these industry norms will come as a shock to the system, requiring companies to rapidly adjust to little to no growth in revenue. For the industry, 1 – 2 more good years appear left. But after that, It Is Getting Cloudy Outside. (Data from Gartner Group public statements and Cisco Global Cloud Index White Paper coupled with Green Drake Advisors analysis.)

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I Can Tell A Lie Part II: Government Pensions, The Taxpayer, and Broken Promises

> "*The practice of funding has gradually enfeebled every state which has adopted it. The Italian republics seem to have begun it. Genoa and Venice, the only two remaining which can pretend to an independent existence, have both been enfeebled by it. Spain seems to have learned the practice from the Italian republics, and (its taxes being probably less judicious than theirs) it has, in proportion to its natural strength, been still more enfeebled. The debts of Spain are of very old standing. It was deeply in debt before the end of the sixteenth century, about a hundred years before England owed a shilling. France, not withstanding all its natural resources, languishes under an oppressive load of the same kind. The republic of the United Provinces is as much enfeebled by its debts as either Genoa or Venice. Is it likely that in Great Britain alone a practice, which has brought either weakness or desolation into every other country, should prove altogether innocent?*"

Book V: Of the Revenue of the Sovereign or Commonwealth
Chapter III: Of Public Debts, Part V
The Wealth of Nations
By Adam Smith, 1776

> "*Our Constitution protects aliens, drunks, and U.S. Senators. There ought to be one day (just one) when there is open season on Senators.*"

Will Rogers, Daily Telegram #2678, March 6, 1935

Politicians like to promise things. They like to promise more spending on roads, schools, police, services, labor peace, and everything else under the sun. They don't like to pay for them or to tell the voters what these things might actually cost the voters in taxes, fees, or interest down the line. From a politician's standpoint, telling these truths might cost them votes or, even worse, an election. So, politicians do their best to kick the can down the road, pushing the costs onto some future generation of voters long after they have retired from office.

Unfortunately, in kicking the can down the road, eventually the bill does come due. One of those areas now coming due relates to the pension promises politicians made to government workers to buy labor peace over the past 30 years. For private workers, these promises long ago went away, as companies went bankrupt trying to meet their obligations or terminated their plans in order to survive. But, for politicians, the beauty of pensions relates to their long term nature. It takes 20 or more years before the bill comes due and the government entity must shell out money to pay them. Thus, making large

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pension promises today becomes the ultimate kick the can down the road as taxes and fees will need to rise 20+ years from now. When those bills come due, the current politician will have retired and not have to address them. Some unlucky office holder in the future will need to tell the public the truth.

For municipalities and states, the moment of truth appears at hand, as the pension promises of the 1980s and 1990s come due. For the average municipality or state, this will not represent an issue as they have funded 80%+ of their pension obligations or limited their obligation by terminating the plan and funding the hole with a long term sinking fund. However, for a significant minority, there exists a problem. They did not fund their pensions as needed, in order to pay for everyday expenses without needing to increase taxes. Think of this as working, for the average citizen, but not putting a penny into retirement savings. As retirement approaches, the costs of such a choice become apparent. For politicians, this fell under the rubric: avoid the voters wrath. However, the problem with not funding properly comes down to the size of the liability. The liability, unfortunately, compounds over time. In other words, it grows and grows and grows. And so does the dollar amount between the liability and the amount of money to pay for it. The following example will show what happens assuming that the liability grows at just 6% per year:

	Initial Liability	*Year 1*	*Year 2*	*Year 5*	*Year 10*
Liability	*$100.00*	*$106.00*	*$112.36*	*$133.82*	*$179.08*
80% Funding	*$ 80.00*	*$ 84.80*	*$ 89.89*	*$107.06*	*$143.26*
Funding Gap	*$ 20.00*	*$ 21.20*	*$ 22.47*	*$ 26.76*	*$ 35.82*
Real Funding Gap (3% inflation)	*$ 20.00*	*$ 20.58*	*$ 21.18*	*$ 23.08*	*$ 26.65*

As this simple example makes clear, the funding gap almost doubles over 10 years on a nominal basis. But, more importantly, increases over 30% in real terms. The typical government pension plan steps up payments as the worker's tenure increases coupled with a recognition of higher wages. This means the Pension Liability grows faster than inflation. So, even though a municipality or state may contribute regularly to maintain funding at a specific level, 80% in the above example, not only does the Gap grow in nominal terms, but it grows in real terms. In other words, even though funding payments are growing at twice the level of inflation, the Gap continues to grow. Should tax revenue growth slow or a recession intervene to cause funding to fall short, the Gap will grow even faster. Thus, the percent of tax

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revenue dedicated to employee pensions will naturally rise, unless the government raises taxes to cover the shortfall. This is just what every politician wants on her or his watch.

As one might imagine, this is not popular with the citizens of any city, state, or town that must increase taxes just to continue to provide the same level of service. In fact, one might say that any administration that pursues such a plan of action might find itself an endangered species. Thus, most pensions sit underfunded across the nation. For those who believe that such problems confront only Democratic cities, the numbers reveal a different conclusion. Assuming that a major city wants to close the gap over 30 years, the following cities, representing the Top 10 underfunders, would need to raise taxes 20% to 27% and dedicate these funds to worker pensions only: Chicago, Houston, Austin, Dallas, Baton Rouge, Fort Worth, Oakland, Phoenix, Jersey City, and Pittsburgh. As one can observe, four of the top 10 cities are in Texas, a traditionally Republican state. In contrast, the Democratic moniker does appear to apply at the state level. The following states have issues that would require a tax increase of 10% - 25% to solve. In order of greatest tax increase to least, the states are: Illinois, New Jersey, Hawaii, Connecticut, Kentucky, Massachusetts, and Pennsylvania. Of these seven states, only Kentucky is traditionally Republican, while Pennsylvania swings back and forth. (One should would note that Pennsylvania has one of the lowest state tax rates in the country at ~3%. So, while solving the state's problem would require a 10% increase in taxes to 3.3%, it is tiny compared to Illinois where taxes are already ~5% and an increase of 27% would raise rates to 6.3%.) The issue comes down to the voting booth. Municipal employees only make up 3% to 7% of any city or state work force. It is difficult to get the other 90% of the population to subsidize pensions for a small portion of the work force, when they are not eligible for pensions in general. In fact, much of the populace questions why public workers get a pension and they must fund their 401(k)s. This creates a natural conflict between the promises politicians made to buy labor peace and the willingness of the populace at large to honor those promises when the bill comes due. And when states, such as New Jersey, attempt to solve the problem by raising taxes on a small portion of their citizens, these citizens have a tendency to flee to lower tax jurisdictions, surprising only the politicians that enacted the solution as tax revenues massively fall short of plan.

As the above analysis illustrates, Government Pensions sit underfunded across the land. While this appears manageable for the majority of jurisdictions, a real minority stand in financial straights with a high likelihood of Broken Promises to government workers as The Taxpayer revolts. For the politicians who bought labor peace through pension promises, little stands in the way of them enjoying a long, prosperous retirement. However, for The Taxpayers who were promised labor peace with little cost to them, such deliberate actions by the politicians exemplify the "I Can Tell A Lie" mentality as politicians demonstrate that their primary goal is to get reelected and not the best interests of The Taxpayer, their constituent. (Data from Center for Retirement Research, State Annual Reports, Moody's, and S&P coupled with Green Drake Advisors analysis.)

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Truck Stop, Being Negative, and A Costly Foundation

Finally, we close with brief comments on Truck Stop, Being Negative, and The Costly Foundation. First, Heavy Duty Truck Orders have collapsed in 2019. According to ACT Research, Class 8 Truck Orders fell 58% in February year over year. For truck manufacturers, we see them visiting the Truck Stop. Second, Negative Yield Bonds soared over the past 5 months. From a trough of $7.9 trillion in October they have risen to over $10 trillion today as the ECB and BOJ continue to meddle in their bond markets. For Europe and Japan, we see their central banks as Being Negative. And Third, Lafarge Corporation, the largest manufacturer of cement in the US, recently announced price increase of 7% per ton. With the US market close to being sold out, the probability of success continues to rise. Should LaFarge succeed, we see builders having to endure A Costly Foundation for every building they build.

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

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