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Dear Clients:

For the past four months, a vast fog has made the world difficult to see. The pandemic has rendered normal global events nearly irrelevant, respecting neither power nor money. Some governments have been more successful at protecting its citizens than others, but in truth, there is no protection other than what we provide ourselves. The virus has yet to be defeated and will run whatever course it runs until that milestone is crossed. Between now and then, willpower alone is not a winning strategy.

What we do know is that the damage to the world economy is so vast and deep that adding April's data to the historical series makes the economic cycles since the end of the Great Depression effectively disappear. While there is never a "good time" for what so many of us continue to endure, this has hit a world already under duress from the full-frontal assault on trade agreements, social justice, and environmental regulation. Before this pandemic -- recently labeled the Great Virus Crisis (GVC) -- markets were focused primarily on the U.S./China trade negotiations. The timing of the virus ensures that those phase one trade goals cannot likely be met and, with protectionist determinism on the rise, will likely serve as an accelerant for further retrenchment.

As things stand, the world's first truly global pandemic has immobilized a world-wide economy inextricably intertwined with massively interconnected supply chains. The repercussions have impacted every aspect of societies and economies and exposed a lack of control over critical areas of national health and security. Despite the challenges and trade tensions, manufacturers, importers, exporters, and the panoply of globalists are focused on the process of playing catch-up. This includes much of the bulk freight shipping industry -- the veins of global trade -- that were frozen in place from this global stoppage and are now trying to work around a truly massive transportation dis-equilibrium. Only time will determine how businesses and globally-scattered supply chains endure.

As to the consumer, we didn't break a leg so restoring a $21 trillion economy and its pre-virus employment levels requires more than the passage of time. It requires a vaccine. That's not to say we won't adapt to these adverse conditions, but our behavior will be drastically altered should this stretch into 2021 (Florida, Texas, and Arizona's pre-emptive efforts notwithstanding). The scope of unemployment isn't clear and, without a treatment, will not likely improve. No one knows how many businesses will fail permanently, rather than shut down temporarily, or how many laid-off workers really will be able to return to their old jobs. We do know that the longer the economy and that of our trade partners operates at half speed or less, the more lasting the damage to discretionary demand.

While we can hope and pray this tragedy is not long-lasting, the breathtaking scale of fiscal support in tandem with a far-reaching monetary intervention will be with us for generations. As we saw with the "temporary" sums provided in the Great Financial Crisis (GFC), the Fed's massive misallocation of capital -- what amounts to bailing out its 2009 bailout -- will once again be added to our tab when growth fails to reach overly optimistic expectations.

Unlike the liquidity crisis which characterized the GFC, today we face a solvency crisis, where some companies are impaired and likely cannot survive no matter how much they can borrow -- they need revenue. This is the crisis our economy faces today and a whole lot of damage is being done. What isn't clear yet is the extent of the damage, the duration of the impact, and the cost of recovery. With this construct in mind and an unforgettable Q2 at its close, we provide our annotations for this, our second quarterly letter **West of the Hudson** *TM* in 2020.

- Supply Chains: Global

> The world economy is an infinitely complicated web of interconnections. We each have a series of direct economic relationships we can see: the stores we buy from, the employer that pays our salary, the bank that makes us a home loan. But once you get two or three levels out, it's really impossible to know with any confidence how those connections work. -- Neil Irwin, *New York Times*, 04/20/20

While there are typically two sides to every story, this is actually the same story told from opposite ends of the spectrum that happen to suffer the same malady: the fragility of perfection. We'll start global and end local.

This first factoid helps frame the enormity of the conundrum faced: the Chinese provinces most impacted from the virus account for over 90% of all active businesses in China. These provinces -- Guangdong, Jiangsu, Zhejiang, Beijing, and Shandong -- play host to the bulk of global physical goods. Fifty-one thousand global companies have one or more direct or Tier 1 suppliers in these regions, and at least five million have one or more Tier 2 suppliers. The region plays host to 50% of total Chinese employment (Dun & Bradstreet, February 2020).

It is a remarkable fact that virtually every global business that sought comparative advantages in production and supply that increase efficiencies and reduce costs *all* ended up in the same corner of the world. It is also an unavoidable fact that when China was driven into lockdown, the business models that had grown so reliant on just-in-time manufacturing, single-country concentration, and over-engineered single-source supply chains, were laid bare.

The obvious problem is that China offers significant advantages over every other nation. Its industrial base is unparalleled in breadth and depth, churning out everything from low-end footwear to high-end biotech. Even as wages have increased, China's combination of manufacturing clusters, first-class infrastructure and modern factories have made it hard to beat so that many made-in-China products can't realistically be produced at a similar cost or scale anywhere else.

The protective gear of the year -- the facemask -- offers a vivid illustration. At the start of February, China produced half the global supply (10M/day) but within a month was able to increase output to nearly 120M/day (Bloomberg). If, like us, you dissected a surgical face mask in the prior months, you will know that it consists of a woven layer fused to a non-woven layer, elastic loops that go around your ears and a thin metal band to fasten it to your nose. Sounds simple enough but there are a lot of disciplines involved requiring a network of companies with expertise in textiles, chemicals, metallurgy and machining, along with sufficient supplies of raw materials, factory space, trained workers, and engineers. That story plays out across thousands of products, many at a far higher value-added level.

No industry has embraced this globalization like healthcare where, it is estimated, 97% of antibiotics come from China and 45% of generic drugs come from India…who in turn relies heavily on China for the active ingredients. One drug at the epicenter of potential Covid-19 treatments -- Remdesivir -- requires seventy raw materials, reagents, and catalysts, *all* Chinese in origin. Medical device maker Medtronic revealed that its ventilators include 1,600 parts from suppliers in fourteen different countries. The fact that these parts arrive where the need to be when they need to be is symphonic perfection. But ventilators, as we now appreciate, are critical medical infrastructure in a pandemic.

It is an undeniable fact that manufacturing has grown so complex and many suppliers specialize in a specific part or product in order to remain at the cutting edge of technology and produce at volume and the lowest possible cost. As we learned with the bottlenecks in the assembly of Boeing's 787 years ago, companies often have suppliers, who rely on suppliers, who rely on suppliers, who rely on suppliers.

Lest we forget, the two years leading up to the GVC were beset by nationalist and nativist forces whose voices are only growing louder as the knock-on effects of the virus nourish Twitter feeds and stoke

ideological pyres. Not acknowledged is that reinventing supply chains or building redundancies is difficult, expensive, and may even result in former partners becoming competitors.

Realistically, companies will not relocate to an extent that sounds the death-knell for globalization, but we have seen in real time how these bottlenecks proved the importance of having stockpiles on hand and, other than a determined re-shoring of key businesses, maintaining large stores of key parts and supplies will become a national priority. This conundrum of balancing the opportunity costs and capacity to grow globally versus meeting the larger societal needs are evident in our domestic supply networks as well.

- Supply Chains: Domestic

Turning our gaze Stateside, this same dance of supply chain efficiencies and manageable production costs was an obstacle in the national food-supply chain. While the shuttered food processing plants, restocking delays and panic buying have largely dissipated, like the global supply chain for manufactured goods, the U.S. food system wasn't developed this way by accident. It's a complex and interconnected web that thrives on huge economies of scale, allowing everything from dairy to meat to vegetables to be produced quickly, cheaply, and efficiently. The problem is, the industry has become so intertwined that this viral hitch triggered a series of chokepoints. No one was aware of it its fragility until it was unfolding.

The problems highlight the vulnerability of the complicated process needed to take goods from farm to table. Almost all food and agricultural products are transported by road at some point, whether that's from a field to a grain terminal, a processing plant to a port, or from a wholesaler to a store. This crisis exposed a transportation network out of sync with the needs of the moment. The majority of all food stuffs (non-export) are sold to restaurants/chains and schools (70%), not supermarkets (30%), which are an entirely separate supply chain. That lack of adaptability and poor transport network is certainly in focus now.

The cascade of unexpected impacts forced food manufacturers to rethink production methods, whether it be pulling forward and storing months of critical ingredients, seeking out new sources of carbon dioxide, or reformulating livestock feed. It has also heightened calls for production to be carried out on a smaller localized scale. Sharply higher consumer prices notwithstanding, as with the global supply chain, localized production eliminates economies of scale and sacrifices efficiencies that have been built to make food quickly, safely, and with less waste. Keeping food affordable is so acute that even the austere loaf of sliced bread is mechanized and supra-regional (sadly, the corner boulangerie is not a societal obligation).

The price of foods has gone parabolic in some regions and this is important from a socioeconomic perspective. Food inflation is a tax that hits the low end of the income stack the hardest, where food absorb ~36% of household cash flow, versus ~7% for the highest earners. In fact, people in the bottom 20% of the income strata spend five times more on food than they do on clothing, three times as much as on entertainment, 10% more than all of their transportation expenses, almost double their utilities bill and almost as much as they spend on rent (Rosenberg Research, 06/08/20).

Taken together, whether its globally produced goods or nationally produced food, todays supply chains worked flawlessly with all parts operating in unison. And then they were disrupted, seemingly all at once. The question is, does the cost to societies that have benefited from this arrangement outweigh the need to never let an extreme disruption such as this disable so much for so long?

- Additional Costs

The cost to businesses in a post-GVC world are not limited to recreating supply chains and a higher corporate cost curve. Whether it's a global bank or the kids schools, what comes next is a work in progress: how to reorganize lobbies and get people up elevators; contactless doors; reorganize seating and shared spaces; checking temperatures; requiring masks; providing on-site testing; and daily deep-cleans.

Then there is the issue of older employees and those with pre-existing conditions who will likely have to work from home indefinitely, so add the cost to run a physical and online operations.

For many, sharply higher operational and manufacturing costs point toward a disruption in cash flows, and the preservation of, or access to, working capital will come into focus. The most likely offsets would include less capital spending, less inventory, and a rationing of labor -- all at odds with the mantra to re-shore, re-hire, and move on.

This is less of a worry for the very large companies in our investment universe, however, who have several off-setting levers at their disposal and have already begun to articulate their cost calculus. These expenses are varied and include commercial real-estate needs, travel, sponsorship, and fewer input requirements as a result of manufacturing fewer SKUs. These are all beneficial to profits and should eventually lead to higher margins and healthier companies. Businesses with the wherewithall are making seemingly smart decisions based on demand, cost, complexity, and other variables, but the costs will not be small.

- Management of Perceptions: Of Moral Hazzard and Zombies

While we focus our energies on U.S. large-cap companies, it is the very small businesses that are the anchor of the U.S. economy. According to an April working paper from the Bureau of Economic Analysis, small business share of private non-farm GDP is 44% and it accounts for 47% of the workforce. The smallest of small businesses -- i.e. <99 employees -- are the largest cohort, accounting for 30% of wages and 35% of total employment.

Lacking scale, small firms are often at a competitive disadvantage relative to large firms yet generate a disproportionately large share of economic activity -- so it makes sense that small businesses were the focus of Congress' PPP bailout program meant to buoy consumers and small businesses during this tumultuous time. The PPP represents an income-replacement support mechanism designed to fix a leaky boat and carry an expiration date (the end of July) unless Washington doles out more, which looks increasingly likely.

While the PPP is not to be mistaken with a sudden surge in personal income, the stock market is less discerning. The GVC has caused nearly half of S&P500 companies to pull guidance for the remainder of the year but the stock market has hardly taken notice, leading to a recent Businessweek article titled "The Great Disconnect" which questions why stocks keep going up when the economic news has been so awful. The cause and effect appear evident: while Congress' fiscal largesse has delivered the proverbial helicopter's share of free money, the Fed brought a B-52 to its monetary show, expanding its balance sheet by $3 *trillion* in three months. Concurrently, the S&P 500 market capitalization has jumped nearly in lockstep ($2.8T) meaning that the correlation between the S&P 500 and the Fed's balance sheet is 93% while the correlation between the market and the economy is close to zero. (Foreign Policy, 5/29/20). That the stock market does not reflect the economy has been clear for many years and now more than ever, the slogan that "money makes the world go around" is at play, as in, money supply (M2) has soared +24% YoY and bank credit has risen +10%. With rates at the zero-bound, that excess is going once again into financial assets. (Yardeni Research, 06/24/20).

The scale of stimuli is spectacular: what is expected to be a $3-4 trillion virus-related hit to GDP has been more than offset by what will ultimately be at least $10 trillion in fiscal and monetary policy stimuli. Some people are literally being paid more to *not* work with potentially more to come to get back to work. If these numbers are impossible to process, a more remarkable statistic is this: in inflation-adjusted dollars, the fiscal response is twenty times that spent on the Marshall Plan, five times the New Deal, and four times the cost of the Vietnam War. Understandably, the impression is that Fed Chairman Powell will not let the markets collapse and feeds the belief that investment risk has been removed. There has been no talking investors out of the hardened view that this entire mess is just a blip on a trend -- a transitory hit to

the economy and earnings. That is the power of the Powell Put, and the disconnect between markets and reality.

Monetary policy is thus running fast and loose and capital markets are riding that understanding for all it's worth. When it comes to stepping into the lowest rungs of investment grade bonds and into junk's domain however, it's hard to understand why the Fed feels obliged to support both the buyers and the sellers of these dodgy bonds since *they all understood* the risk of owning and issuing BBB-rated debt. This policy is, as always, treating the symptoms of the problem, not the source. Many companies were already sitting at record levels of leverage which resulted from the Fed's low interest rate policies of the past decade and were in no position to pass a stress test of any magnitude, particularly this one.

Now as ever though, the Fed cannot turn bad debt into good debt and it can only keep fallen companies alive for so long (revenue is still required). These are known as zombie companies and earn this distinction when the cost of debt service exceeds internally-generated cash flow. They survive by relentlessly borrowing more capital and the market is a full time buyer as they chase yields higher. Current data shows an unconscionable 20% of U.S. businesses meet this definition, a statistic that has *tripled* since the pandemic (Barron's 06/19/20).

The Fed has once again used a crisis to create another layer of moral hazard by socializing the poor underwriting of credit. There are no losers with the Fed becoming an explicit market participant -- especially the many fallen angels, who may still fail without a viable business product or service, but for whom there will be no shortage of capital until then. The thing is, zombie companies are the financial equivalent of spare capacity, meaning there is little room for new entities in this bailout nation.

One consequence of this sort of "functioning market" has been a loss of price discovery. How can "fair value" be measured when the fed funds rate is zero, the 10YR U.S. Treasury bond is below 1.00%, and the Fed is providing unlimited amounts of liquidity? That this crisis morphed from a health shock to an economic shock is understandable, but the high-drama to such a gargantuan financial shock to the point of the Fed taking on the role of banker for the entire economy attests to our long-standing concern that balance sheets were in dour shape and that this cycle, like its two predecessors, was built on excessive leverage.

- Some Perspective

> So far, United States efforts to contain the virus have not been particularly successful. With the spread of the disease continuing and the acceleration of new cases in many states, I expect the economic rebound in the second half of the year to be less than was hoped for at the outset of the pandemic.
>
> -- Eric Rosengren, Boston Federal Reserve President, 06/18/20

As we are seeing in a handful of defiant U.S. states, the virus took over as soon as they let their guard down, leading to the re-imposition of quarantines. This is occurring at a critical moment because the path back to full re-employment requires a relatively quick resolution, and that window will soon close. We have been in this crisis for four months and, if we remain in this state of flux into September, it will be seven months. Forecasters expect that a vaccine will be developed before election day and, with 180 clinical trials in various stages and modest 50% efficacy bar, that is a possibility. The problem is supply is unlikely to match demand quickly enough (recall how long it took to manufacture and distribute ventilators). The end of November would mark nine months from the time the country was shut down. That's a *long time* for a business with thin margins to survive without layoffs, and a long time for the unemployed to wait for reemployment. Push this out to Q1'21 and it's hard to imagine that we would be able to rapidly reconstruct the economy under those circumstances. Obviously, the government could print more money, and that would basically fulfill both John Maynard Keynes *and* Milton Friedman's prescription: Keynes called it "increasing demand" and Friedman called it "monetary management", but in both cases it uses increased money to prime demand.

However, today's exorbitant government investment is directionless and not the second-coming of the New Deal, when stimulus financed the building of canals, tunnels, dams, bridges, highways, streets, and sewage systems, and put millions of idle laborers to work. The Empire State Building, Lincoln Tunnel, Detroit-Windsor Tunnel, Golden Gate Bridge, Hoover Dam, Route 66, and Mississippi's River Locks & Dams, were all built in the 1930's and are still vital assets today (Jesse Jones, *Fifty Billion Dollars: My Thirteen Years with the RFC*). And who paid for the fiscal New Deal largesse? Corporate income tax rates from 1929 to 1939 rose from 11% to 19%. Capital gains tax rates rose from 12.5% to 22.5%. And top personal income tax rates went from 24% to 63%. (Rosenberg Research 06/08/20).

Today's debt-financed social policy does not provide any future multiplier impact or payback. It has staved off the downward economic pull for now but an actual recovery will only take place in fits and starts and, as we have seen in countries ahead of us on the curve, beginning with the supply side as manufacturing gets off the mat and transportation gets back into position. But only a viral remedy provides a path towards normal demand, and normalcy is essential if millions of lost jobs are to return.

When a vaccine is found, we have to hit the ground running in order to produce 330 million domestic doses. While new capacity is now being built, American vaccine plants collectively produce fewer than ten million doses per year. Returning to our earlier example of one promising treatment -- Gilead's Remdesivir (originally developed to treat hepatitis and respiratory viruses) -- they have doubled production output and expect to produce 1.5M doses by year-end. Only, it requires nine shots per course of treatment, so that's only 140,000 total treatments. Adding to this challenge is the delivery system (syringe) where huge volumes are needed and well beyond current capacity. While production has ramped here too, there is a long road ahead. Multiply these targets exponentially for global supplies.

There are so many medical and production variables and many things have to go perfectly for there to be a bounce-back hiring cycle and a good dollop of demand. The ability of people to rally is enormous and the power of science is remarkable. Still the COVID-19 disease seems likely to be with us for longer than we'd like -- especially in our high-density and economically vital cities where the highest mortality rates reside. The death toll is significant but it does not threaten to annihilate the populace as we first feared. It has, however, inflicted an economic blow that will take years to repair. Either science will defeat it or we will adjust to living with it, but that adjustment may well change the structure and function of national wealth and identity.

This evolution will not happen overnight and, as it relates to our general view of the equity landscape, the very well run companies that populate our investment universe will evolve with the dreams and needs of the market. We expect the largest companies to grow still further at the expense of smaller, often financially less-advantaged competitors. Whether the depth of the supply chain, the breadth of products, markets served, or higher rates of return on invested dollars, today's very largest companies will continue to add functionality, value, and scale. If there is one long-standing notion that perhaps needs updating, it's that larger does not mean less nimble and the law of large numbers is often a benefit, not a burden.

From our families to yours, we wish you all continued good health in the coming months.

Yours truly,

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