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Investing at the Leading Edge of Change

The last several decades have seen dramatic and accelerating change in the investment and economic landscape. Looking back twenty-five years or so, the commercialization of the internet in the 1990's gave rise to the ability to disintermediate virtually everything- how we live, how we play, how we consume, how we communicate, how interact to name just a few broad areas. Along the way, various forms of social media were born, the sharing economy developed, video streaming services emerged, cloud computing went main stream, new communication technologies developed, and basic infrastructure and all its associated technologies changed. Fast forward to today, and as the world economies emerge from the recent pandemic, we see disruptive forces all around us. Not only that, but these powerful forces are accelerating yet again.

If nothing else, the global pandemic taught a number of lessons- the need for inexpensive information access of any kind (text, data, video, etc.) from anywhere; the requirement for secure, stable, and reliable software infrastructure; the necessity for performance enhanced reliable internet access; easy-to-use communications applications; distributed supply chains and manufacturing facilities; and most directly, new techniques for drug development, not to mention that consumer tastes and preferences can change extremely rapidly. These are just a few of the lessons learned.

Underlying these lessons are very powerful investable secular trends: the digitization of most everything, the continued emergence of cloud infrastructure in multiple forms, the adoption of AI (artificial intelligence) in applications and hardware, new communications technologies, the need for secure applications, new approaches to drug development, and changing consumer habits are but a few. Similarly, though not necessarily associated with lessons from the pandemic, it is very clear that alternative energy technologies will accelerate in their development, that the auto industry will move away from fossil fuels, and that new technologies will permit more autonomous driving capabilities.

So, an investment roadmap begins to appear. Its points of interest include new software requirements, new infrastructure in various forms, a renaissance biotechnology/healthcare, changing consumer habits, and the development of alternative energy and the transition away from fossil fuels.

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The Macroeconomic Environment- What's the Bet?

In a masterful performance the Federal Reserve this past week (June 16) signaled that it recognized inflation running well ahead of targets. But the committee members speculate that the price increases will be transitory, suggesting that the onetime re-opening trade, enormous pent-up demand, as well as supply chain shocks are largely to blame, and as such, inflation will moderate shortly. This belief allowed the committee to maintain its current rate and asset purchasing posture. The Fed did, however, signal a timing change for the expectation of rate increases from 2024 to 2023.

All in all, a performance designed to assure investors that the members are aware of the inflation risks but don't want to spook the markets or upset the economic recovery.

It's not surprising that structural interest rate and inflation fears may be overblown given the onetime extraordinary nature of the factors mentioned above. But also remember the very powerful secular forces driving the economy from a technology perspective, are themselves, quite deflationary. Taken in combination with raising labor rate pressure these things tend to offset.

Fiscal policy, on the other hand, could dampen any economic recovery. The excessive tax and spend proposals being bandied about could lead to higher interest rates and slower economic growth, along with dramatic capital misallocation. Certainly, something that bears watching, but we believe cooler economic heads will prevail.

It's Cloudy Out There

An analog world gone digital, delivered in a software-as-a service subscription business model, either over the internet or private networks. This encompasses, at a high level, what's going on in software today. Whether called cloud computing or hybrid cloud (public/private mix) these models are accelerating in their adoption. Ultimately, information access regardless of structure, from anywhere, on any platform, in a cost-effective, easy-to-use, and expeditious manner. Long the goal of many information management systems.

Every decade or so, basic information technology infrastructure changes. And with each change the size of the opportunity gets bigger. The dominance of mainframe computers of the 60's gave way to the minicomputer era of the 70's. The minicomputers of the 70's gave way to the PCs of the 80's. The PCs of

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the 80's eventually gave way to the smart phones of the 90's. Along the way the software changed, the networking protocols changed, even the applications we used changed. Additionally, the business models employed by various participants changed. The internet was born, and everything changed.

Well guess what? Another change is coming, and it will be bigger than anything that came before. The last twenty years have given rise to social media and the shared economy; business models based on giving away free services and then paying for these services by yielding privacy rights to targeted advertising; security breaches that are legendary witness the recent ransomware attacks, extremely complex systems requiring millions and millions of lines of software code; enormous centralized data centers requiring the cooling capabilities of hydroelectric dams; and the dominance of a few technology giants.

Yet underneath the surface, out of plain view, something else is brewing. This brew has been percolating well before the economic upheaval caused by the pandemic flu and associated public policy prescriptions. In fact, coming out of the current economic calamity, the changes we anticipate are in fact accelerating.

What do we expect? Essentially, a new internet designed on peer-to-peer networking technology, built on blockchain infrastructure that is completely decentralized, extremely secure, and more hardware centric than its predecessor. Born of the technology used for evolving cryptocurrencies, like Bitcoin and Ethereum, the transformational opportunities are deep, distributed everywhere, and extremely durable.

A secure decentralized peer-to-peer network will allow for further disintermediation of third parties, particularly when micropayments are possible between network nodes (individuals). New business formation will happen. New application development is likely. Individual control of privacy data is possible. It could mean the end of advertising business models, dramatic changes in the shared economy, new corporate leadership, and a host of other possibilities. And for investors, a new and powerful bull market.

On the surface, we can guess at the changes coming away from the pandemic mandated "shelter-in-place" requirements- more video, more working from home, more in-house entertainment, a move of supply chains back to the United States, and the like. But what you probably haven't thought about is how this incremental infrastructure will be built. What technology will it use? Who specifically will benefit? Whose business will be hurt?

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The emerging world should be more efficient, in some sense, less complex, perhaps less dominated by two or three giant companies, much more secure, and allow individuals to control their own privacy requirements. It will change business models, which in turn, should change leadership. It will unfold under the guise of an economic recovery.

A Healthcare Renaissance

We are entering a golden age in healthcare. Applying modern technologies to procedures, device development, and drug discovery will lead to cures and outcomes heretofore unimaginable. Diseases long thought to be absolute death sentences will be conquered, quality of life for patients will improve, and lifespans, most likely will lengthen. Leading the charge will be developments in the biotechnology industry where new approaches to drug discovery and genetic manipulation will lead to customized treatments, one and done therapies, and once again, positive outcomes, once thought impossible.

As an example, several weeks ago (early June), Biogen, a leading biotech firm, was granted approval for its controversial Alzheimer's drug, Aduhelm, by the FDA. Controversial because the efficacy of the drug was very much in question coming out of its Phase 3 trials. Nonetheless, the FDA approved the drug based on its ability to remove a certain form of plaque associated with the disease. Thinking if Biogen got the mechanism of action right, there would be clinic benefit to the patient. Hailed as the first approved drug in the last twenty years to fight Alzheimer's disease, not just relieve its symptoms, Aduhelm will surely spark patient demand, regardless of efficacy, and could become the bestselling drug in the world in short order. Moreover, while the FDA has, in a sense, made its approval conditional by mandating yet another trial to confirm clinical benefit, the agency has given Biogen nine years to complete the study. All this means that investors may gain more benefit than patients!!

But the real impact may be industrywide. The combination of the success of mRNA technology (the Covid vaccines), new product announcements (Biogen's Aduhelm) and a more flexible FDA should usher in a new era for the healthcare industry in general and biotech in particular sparking renewed investor enthusiasm.

The changes we are about to witness in the coming years will be startling. Perhaps the best analogy to describe these changes, and the speed with which they are likely to occur, is the rise and impact of the

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Internet in the 1990's. Remember how we lived, worked and played before the emergence of Internet, and now appreciate the transformative nature of most everything after its widespread adoption.

We will have moved from tromping around in the rain forests looking for potential medicinal plants to editing an individual's genetic code in the hope for cures. Recognize that we only just recently, the early 2000's, sequenced the human genome. The speed with which the industry has progressed is impressive. Now a number of companies are in late-stage clinical trials in immunotherapy, gene therapy, new monoclonal antibody offerings and the like. Clinical trials have also occurred where first generation gene editing was done in the human body rather than in vitro.

Early results for some of these trials have been promising, while the number of potential treatments entering the clinic is rapidly accelerating. Interestingly, this is happening at a time when the large pharmaceutical firms have limited pipelines of potential products suggesting an increase in partnering activities and/or wholesale buyouts; in other words, a very attractive environment for investors.

Alternate Energy- a De-Emphasis of Fossil Fuels

Most automobile manufacturers have announced ambitious plans to convert their fleets from fossil fuel to electric vehicles (EVs), and this transition will happen faster than most expect. The raise of EVs will also promote more autonomous functionality in these cars and trucks. This, in turn, will require more semiconductors, sensors, processing power, and software. In fact, one can think of these next generation vehicles as mobile software platforms. This also begs the question of who will ultimately be involved. After all, looking at the core competencies required for success, one finds industrial design expertise (the early electric cars were ugly!), integration of hardware and software (early EVs had very real functional limitations), easy-to-use user-friendly technology, and of course, deep technology expertise in a number of areas like battery technology.

Today, while Tesla is the leader, there will be challengers. Could Apple decide the company needs to be involved in this mobile software platform? It certainly has a number of the required skill sets. Time will tell, but the industry transition will occur rapidly, consumer tastes are changing, and once again massive new infrastructure will be required. Another interesting thought here is

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if autonomous, or self-driving technologies, mature and catch on, whole new applications are possible. Driverless Ubers, the disintermediation of vehicle ownership by the sharing phenomenon, the attendant changes required when cars can drive themselves to remote parking areas are but a few of the possibilities. This all may sound very futuristic now, but the future may well be here.

An interesting crossroads in energy. The de-emphasis of fossil fuels at a time when new demands are being placed on power generation. How do we recharge all these EVs? Tradition alternatives- wind, solar, hydroelectric, etc. will not bridge the power generation gap. Battery power and range are improving but work remains to be done. Hydrogen and natural gas my play a role.

Perhaps the only technology that makes sense, despite the legacy negative perception, is nuclear. And more to the point, the new generation of smaller, safer, more efficient reactors in trials around the world bears watching. These reactors can come in a variety of flavors, but they are small modular nuclear fission reactors (SMRs). Unlike their predecessors, they can be manufactured off site and then installed where required. They can employ passive safety features, meaning no operator intervention, in the event a shutdown is required. In short, cheaper, more efficient, safer solutions than traditional reactors. Whether the public is ready to accept these solutions is the overriding question.

Changing Consumer Habits

Economic activity around the world is increasing. Consumer spending is improving. Increase labor rates, though mitigated by deflationary technology implementations in the overall inflation outlook, should further enhance consumer confidence. So where are these consumers likely to spend their money?

Tastes that changed while staying at home are not likely to fully revert to pre-lock down preferences. Casual ware will still dominate, think leggings and Lululemon among others. But “hard pants”, think jeans, could make a comeback.

Data streaming services will still dominate, suggesting the scramble to retain viewers will lead to content as king. Brands that dominated their respective markets pre-pandemic, are still likely to prevail, particularly when using innovative technology in both products and customer outreach approaches, Nike, for example.

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The sharing economy will continue to appeal to Millennials and younger permitting new application development. Social media will still guide the younger demographic. Watch for emerging trends here. Shopping preferences, a visit to a store will spring back initially, but we suspect on-line purchasing will maintain its position. The attendant technology to deliver an acceptable experience will grow in importance. New forms of payment services will continue the secular push replacing traditional approaches. All of this will lead to various investment opportunities.

Concluding Thoughts

When asked why in the face of rising interest rate increases, inflation fears, and economic dampening tax and spend fiscal policies, we are so optimistic about the investing future, we point to the host of fundamental accelerating secular trends. Watching markets and trends for over forty years, we have never seen the confluence of disruptive factors that we can see at work today. The world is changing very rapidly and we hope to take advantage of these changes. There are no guarantees but we think our optimism is well founded.

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