INVESTING IN INNOVATION

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INNOVATION IS ACCELERATING

I looked at my iPhone after a run in Central Park. Good. 57 minutes, and for 33 my heart rate was over 160 beats per minute. I had achieved my daily fitness goal. I pressed “save” on my app so I can monitor my fitness levels over time. I had a small headache and had just bought a blood sugar monitor, so I checked my app and saw that my blood sugar was normal. Also good. My headache was probably from thirst, and I know that sugar headaches take me much longer to recover from than dehydration headaches. My hotel was downtown, so I grabbed an Uber. Getting into the car, my phone alerted me I could check in to tomorrow’s flight to San Francisco. The flight was on time. I checked in. In the cab, I watched a few stories from friends in social feeds. I was reminded to text my friend to see what time we’d have dinner. I made a quick reservation at a Mexican restaurant in SoHo recommended by a location-based app. Traffic wasn’t great, so I absently looked at e-mail and saw that the maker of the cement bookends I really liked was willing to make me three more. I bought them. Arriving at the hotel, I quickly hopped out of my Uber, having already paid the driver through the app. I recalled reading that the average US adult spends 5 hours on their phone. I thought that sounded high, but wondered if it were true...

Over the last decade, smartphones have revolutionized our lives in ways that go well beyond mere audio communication. In addition to Facetime video chats, texting and emailing, billions of people globally use smartphones to shop online, check the weather, hail taxis, navigate, monitor their health, invest, play games, date, find friends, watch movies, listen to music, take pictures and participate in social media.

This is quite remarkable when you think about it—an innovation impacting the world so pervasively that it has transformed our lives in such a short time. Recall it was just thirteen years ago that Steve Jobs—wearing his iconic black turtleneck on the stage of the Moscone Convention Center—introduced the world to the smartphone.

Smartphones are only one example of the many new products and technologies exploding into the economy in recent years. We’ve seen significant breakthroughs in biotechnology, robotics, artificial intelligence, genomics, wireless data speeds, 3D printing, autonomous...
vehicles, cloud computing, e-commerce and more. Innovation is everywhere. As investment managers we’ve witnessed many concepts surge in popularity, and we’ve learned from many that have failed. Industry and technology continue to evolve, creating a rich backdrop for investors.

Three Takeaways
• Innovation drives long-term wealth creation and is accelerating
• We believe investing in innovation requires active management
• Innovation is everywhere: five platforms of growth

THE FOURTH INDUSTRIAL REVOLUTION IS JUST BEGINNING

Innovation has persisted throughout the course of history; but it has not always progressed in a predictable or linear fashion. Innovation is episodic. Periods when we have seen increases in new ideas and technologies typically coincide with sustained and accelerating economic growth. Consider: Growth in the Western world from AD 1 to AD 1820 was approximately 6% per century.³ By comparison, Americans enjoyed a doubling of real output every 32 years throughout the 20th century.⁴ Before then, real output required 12 centuries to double. Economists define these periods as industrial revolutions. Typical of their creativity, they refer to them as the First, Second, Third and Fourth, the First beginning in 1760.

We believe we are living through the Fourth Industrial Revolution today and that it is driving the current pace of innovation in the marketplace. Building on the Third, a digital revolution occurring since the mid-20th century, the Fourth reflects many technologies—blurring the lines between physical, digital and biological spheres.

An iPod with a Phone?
In what has become legend among industry insiders, when Steve Jobs unleashed his creation upon the world in September 2007, he introduced the iPhone as “the best iPod we’ve ever made… it has a phone.” He didn’t talk about the device’s internet capabilities or potential for third-party application development until 30 minutes into the speech.¹ When the App Store was introduced with his famous “just one more thing” aphorism, it wasn’t what reviewers focused on. They were more intrigued by the iPod and phone integration and wondered whether the touchscreen keyboard would work. However, it was the App Store that went on to create over a trillion dollars in wealth—including over US$519 billion in 2019, alone.² New businesses, business models and entire industries were built using the platform.

THE FIRST THREE INDUSTRIAL REVOLUTIONS

First: 1760–1840
Railroads, canals, steam engine, cotton gin, textile mills, iron

Second: Late-19th to Early-20th Centuries
Combustible engine, flight, assembly lines, electricity, photography, telegraph/telephone, antibiotics, anesthesia

Third: 1960–Present
Digital media, personal computers, semiconductors, internet, chemical compounds
INCREASED PRODUCTIVITY INCREASES WEALTH CREATION

As investors in innovation, the transformational impact of the Fourth Industrial Revolution supports the five platforms of growth we discuss later in this piece. Technological and industrial advancements increase economic productivity, which is foundational to wealth creation. Paul Krugman, Nobel Prize winner in economics, noted: “Productivity isn’t everything, but in the long run it is almost everything, as a country’s ability to improve its standard of living over time depends almost entirely on its ability to raise its output per worker.” Today, the average American only needs to work 11 hours per week to match the productivity of a 40-hour work week in the 1950s.

Real World Examples of Increased Productivity

• When I started my career, I was a small-cap bank auditor. In a bank, only the most senior members approved loans. It was typically done in group settings, with highly paid individuals sitting in conference rooms, reviewing files, crunching numbers and deliberating for hours. Today, with FICO (individual credit) scores, virtually no human being looks at any credit request below US$50,000. A computer does it all.

• In the days depicted in the popular TV show Mad Men, which took place in the 1960s and 1970s, advertising was sold based on the number of pages in a magazine or sold as a 30-second television slot. Sales were high touch and it was understood that much of advertising spending was “wasted.” In the current US$600 billion annual advertising market, Google, Facebook and others use algorithms to not only maximize revenue, but to also maximize return on investment (ROI) for their customers. Today, internet ad buying is not only the most automated advertising medium, it’s also the most effective. It can be effective as a branding or a direct response event.

• One of the most important aspects of any business is the pricing of products. Pricing is usually done with sales, finance and senior management working together to maximize profit. Historically, it was a very labor-intensive research exercise. Today, the pricing of enormous markets is entirely automated. Airlines, e-commerce companies (e.g., Wal-Mart and Amazon.com) and hotels, just to name a few, allow machines to price their offerings. These are some of the biggest revenue pools in our economy, all completely automated. Pricing can change based on real-time inventory availability, minute-to-minute demand, and even the weather. Algorithms attempt to maximize elasticity of demand across hundreds of thousands of products in real time.

Mastering the Micro to Change the Macro: Gene, Atom, Byte

For the first time in history, we can manipulate life, material and data in their base forms: Gene. Atom. Byte. We believe our mastery of the micro will allow us to change the macro at an accelerating rate. With these advancements, it’s possible to produce new goods and new materials, and design new elements to fit specific needs. We may start to grow rather than build materials, and design rather than discover new drugs. Genetic engineering, for example, is allowing the development of new diagnostics, new cures, and the design of new drugs to help us live longer and healthier lives. Advancements in microchip design and low-cost data storage may lead to further development in artificial intelligence and virtual reality. And electrons are being manipulated at the sub-atomic level in the quest to create enormously powerful quantum super computers. The potential outcomes and innovations associated with all these technologies are only limited by imagination. Some ideas may be science fiction, but some concepts once considered science fiction are now mainstream. We have begun to close the gap between art and science—where the former tests the limits of human imagination and the latter tests the limits of nature.
This trend toward increasing productivity, a result of the Fourth Industrial Revolution, is only beginning, in our view. Over the next decade, we believe we will see major technology-driven efficiencies or product improvements in many areas. These will include insurance, medical diagnosis, automotive distribution, industrial design, the pricing and exchange of capital, and the analysis of data.

**INVESTING IN INNOVATION DEMANDS ACTIVE MANAGEMENT**

We invest in some of the most covered companies in the world—from a media and public awareness perspective, they are often also some of the most misunderstood. In our view, innovation has been, and continues to be, one of the most misunderstood parts of the market. This disconnect between public perception and fundamental reality creates opportunities for active management.

Some examples of where we find opportunities are highlighted below:

1. **Selecting the Right Innovation at the Right Time**

Innovation is an inherently difficult space in which to invest; change is constant. Many new technologies or industries, while clearly promising conceptually, may not be developed enough to be investable yet. Space exploration or quantum computing are examples. Alternatively, some innovations may present what appears to be an immediate investment opportunity, but ultimately the business models they are attached to are not profitable. Blockchain and cannabis are good examples of this. Still, other innovations that seem promising at first, like fuel cells, never fully materialize, or they may get leapfrogged along the way.

Although the environment for investing in innovation is rich, not all innovations are good investments. We believe experience is necessary to identify ideas and technologies that have true lasting power and meaningful impact. Business model, commercial viability and timing are all key.

Take 3D printing as an example. Early on, we were often asked how or where we were investing in this promising new technology. The answer, initially, was we’re not. 3D printers were suffering from pricing pressures and commoditization. Instead of investing in the 3D printing companies themselves, we looked for companies that could use 3D printing to potentially drive innovation in their own business models. Examples include Nike using the technology to create highly profitable custom shoes, or medical technology companies creating custom prosthetics, on-demand eyewear, or orthodontics. The potential applications are truly endless. The key is investing in the “right” innovation at the right time. We seek companies that have distinct growth drivers, solid business models and the capacity to build revenues and earnings by addressing secular shifts.

2. **Understanding the Pace of Growth**

Innovation is often mispriced, as investors underestimate how quickly something will be adopted in an increasingly global marketplace. New product adoption may accelerate rapidly. However, growth patterns often resemble “s-curves,” rather than straight lines, as seen in Exhibit 1 on the next page. It may feel counterintuitive to suggest that—all things being equal—a successful company exhibiting a high growth rate will grow even faster the following year. In fact, it happens all the time.

We have begun to close the gap between art and science—where the former tests the limits of human imagination and the latter tests the limits of nature.
Facebook is a good case study for this phenomenon. In 1Q 2012, Facebook had ZERO revenue from mobile sales. The company launched mobile ads in 2Q 2012, and generated US$13 million in revenue, or 1.3% of total revenues. From 2012 to 2013, Facebook’s total company revenue growth accelerated from 37% to 55%, driven almost exclusively by mobile ads. Fast forward to today: as seen in Exhibit 2, in the most recent comparable quarter, mobile ads were 94% of Facebook’s revenue.

Facebook is a mobile story. Mobile is better for advertisements as compared to desktop as there is limited inventory and very good targeting. Content costs, after all, are near zero for Facebook. Instead of an expensive, high-production cost TV ad, it’s a photo and ad copy. At Facebook, operating margins are about 50%, because the content is given to them—the content is YOU.


Facebook growth fueled by mobile ads. Mobile advertising has been a significant driver of Facebook’s revenue growth in recent years.
3. Recognizing the DURATION of Growth

In addition to mispricing the pace of innovation, we find the market often underestimates the longevity, or duration, of a company’s growth. We define duration as the length of time a company grows significantly more than gross domestic product (GDP). We have found that many innovative companies may grow revenues or sales for significantly longer periods than average market participants might expect, in many cases decades, due to the creation and utilization of new technologies or business models. We seek companies with durable growth that we believe the rest of the market has not yet recognized. This is where active management plays an important role in investing in innovation.

We consider Salesforce.com (Salesforce) to be a good case study for duration in innovation. Salesforce went public in 2004. From 2005–2018, the company’s revenues grew at a 37% compound annual growth rate (CAGR). Including the great financial crisis, sales never grew less than 20% during that time. If one were to have just read the company’s annual reports during that period (instead of, perhaps, media coverage) they would likely never guess investors questioned Salesforce’s growth prospects. However, the stock collapsed more than 50% on five occasions in its first 10 years. Volatility aside, if you simply held the stock since the initial public offering (IPO), you would have made 15 times your investment.

INNOVATION IS EVERYWHERE: FIVE PLATFORMS FOR GROWTH

Since the DynaTech strategy launched in 1968, we have believed innovation can be found in any part of the economy. We seek to invest wherever innovation occurs, regardless of sector classification, market capitalization or geographical location. There have been significant breakthroughs in many sectors of the economy. To organize the change occurring in the economy, we have outlined five major evolving platforms of growth. These are not intended to be completely inclusive, in fact, we hope they are not. We expect these five platforms of growth to generate considerable economic value over the next five to ten years.

Global E-commerce

We believe global e-commerce is an arena of tremendous opportunity. Per estimates, global sales were only 14% penetrated by e-commerce pre-COVID. Today, with the new reality of COVID, we have seen estimates of between 22%–25% penetration. Even in the US, so-called “highly” penetrated industries, like travel, books, office supplies and media are, on average, only 41% penetrated. And, there are many more industries—like groceries and global transportation—that are only modestly penetrated by e-commerce.

Within global e-commerce, beyond companies like Amazon and Alibaba, we see significant opportunity in industries like fashion, automobiles, travel, ride sharing, restaurant delivery and even textbooks. We also see opportunity in payment companies that significantly remove friction, both in terms of ease of use, security and safety from the system. Other opportunities include business-to-business (B2B) procurement, and software that enables brick-and-mortar companies to have an online presence. Drone manufacturers and other new ways to deliver packages and products could also become potential investments.

The common perception may be that global e-commerce is late stage. In our view, there is so much further to go.
**Genetics Breakthroughs**

The sequencing—or decoding—of the gene is one of the greatest accomplishments of our era. The gene was discovered in 1953, but first sequenced during the Human Genome Project in 2003, at a cost of US$2.7 billion. The cost of gene sequencing—or mapping DNA for diagnostic and curative purposes—has fallen rapidly in recent years. We believe the industry is on the cusp of creating meaningful diagnostics and therapeutics—and, as a result, wealth creation. We are particularly interested in companies within the diagnostics, gene editing and gene silencing arenas that will likely benefit from this dynamic. Today, mapping a genome costs roughly US$1,000; at this price, we believe there should be an explosion of possibilities. These opportunities may go beyond human gene therapeutics, to agricultural and even artificial intelligence applications.

**Intelligent Machines**

Artificial intelligence or machine learning is permeating every layer of product development. From using simulation tools, to advanced graphics, to designing products and getting immediate feedback as to points of weakness in a structure, or real-time intelligence on wear and tear that can feed back into new designs—smart machines are involved.

If the last thirty years were spent organizing data with mainframes, personal computers and mobile phones, we believe the next thirty years could be set up to take that data and change our lives in the physical world. We expect to see opportunities in companies that intelligently design, manufacture, transport and maintain physical machines, in addition to investing, of course, in the machines themselves. We view this as a virtuous cycle, which will have shorter and shorter feedback loops, making improvements to physical goods much faster.

The future of production will include individualized products designed specific to the needs of the customer. Efficiencies created in the design and manufacturing process, employing massive amounts of data, will enable that level of specificity and customization.

**New Finance**

We believe access to capital is one of the fundamental differences between developed and developing countries—the grease that allows efficient transfer of value. We believe there are three vectors that drive access to capital.

The first is our concept of what constitutes money. In the past, people bartered for goods and services, which can be very inefficient. We have moved from barter, to precious metals—backed by their own innate scarcity—to fiat currency backed by the full faith and credit of a government. Today, we are talking about currencies backed by algorithms.

Similarly, the other two vectors, efficient pricing and methods of exchange, have also significantly evolved. In the past, the better barterer determined the price of your goods and services; then it was a loan officer at a bank with all his/her intrinsic biases. Today, we are increasingly using data to appropriately price risk, allowing us to allocate capital in more efficient ways. Methods of exchange are also evolving with the trends in e-commerce, allowing mobile payments and digital wallets to gain traction.

**Exponential Data**

Underlying virtually all our investment themes is the constant of data. Without data, none of these platforms can be successful. But data isn’t virtual—there is a physical component to data that is often ignored. We need to clean the collected data, then store and deliver the same data. That requires massive amounts of datacenters, fiber-optic cable, and
cell towers—among other supporting infrastructure. To use data for something like artificial intelligence, computing power and memory are crucial. Graphics processing units, central processing units and field programmable gate arrays represent some of the many components necessary to process that data more efficiently.

The creation, cleaning, storage and delivery of data will lead to new applications like augmented and virtual reality, artificial intelligence & machine learning, software as a service, and the sharing economy. There are many investment opportunities in companies that play critical roles all along this value chain. Some have postulated data is becoming the oil or gold of the new economy. We agree.

**ANY SECTOR. ANY MARKET CAP. ANYWHERE. RIGHT IN SILICON VALLEY FOR OVER HALF A CENTURY.**

As active managers we recognize the importance of having the flexibility to invest in any sector, any market capitalization, and anywhere—because innovation is everywhere. Outperforming the market is hard and we have designed our process and product to be as flexible as possible. Being in the heart of Silicon Valley allows us to work side-by-side with some of the world's leading innovators. Our team is constantly talking with thought leaders across industries; reading up on the latest developments; and meeting with companies, public and private, to understand the technologies and ideas that could have transformative potential. Change is happening rapidly, only through active management is it possible to identify and capitalize upon significant inflection points.

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**Franklin Templeton Innovation Strategy**

**Innovation-Driven Philosophy**

Our team’s investment philosophy is centered on the belief that innovation drives wealth creation. The three key tenets of the philosophy are:

- Innovation drives long-term wealth creation in the economy and therefore should be at the center of investments that seek to outperform market benchmarks;
- Investing in innovation demands active management in our view: innovation is often mispriced, as it frequently lasts longer and is adopted faster than expected; and
- Innovation is everywhere, occurring in all parts of the economy and every industry.

**Located in Silicon Valley**

Franklin Equity Group’s presence in the heart of Silicon Valley allows better access to leading technology companies, venture capital firms and research universities, and offers a distinct advantage over remote asset managers. The portfolio management team draws on a deep bench of 30 equity research analysts. The analysts scour the market capitalization spectrum for companies on the forefront of innovation and offer focused industry coverage within sector-based teams. The team’s knowledge of innovation can offer an edge in spotting emerging leaders.

**Innovation Theme Complements Core Equity Holdings**

Our approach to investing is differentiated, focused on identifying companies whose growth prospects are poised to benefit from “innovation.” We aim to provide exposure to pockets of growth and dynamic technologies that other funds and the index may not. Our strategies may offer a compelling addition or complement core equity in a client’s portfolio.
WHAT ARE THE RISKS?

All investments involve risks, including possible loss of principal. Stock prices fluctuate, sometimes rapidly and dramatically, due to factors affecting individual companies, particular industries or sectors, or general market conditions. Special risks are associated with foreign investing, including currency fluctuations, economic instability and political developments. Investments in emerging markets involve heightened risks related to the same factors, in addition to those associated with these markets’ smaller size and lesser liquidity. Investments in fast-growing industries like the technology sector (which historically has been volatile) could result in increased price fluctuation, especially over the short term, due to the rapid pace of product change and development and changes in government regulation of companies emphasizing scientific or technological advancement or regulatory approval for new drugs and medical instruments. The companies and case studies shown herein are used solely for illustrative purposes; any investment may or may not be currently held by any portfolio advised by Franklin Templeton Investments. The opinions are intended solely to provide insight into how securities are analyzed. The information provided is not a recommendation or individual investment advice for any particular security, strategy, or investment product and is not an indication of the trading intent of any Franklin Templeton managed portfolio. This is not a complete analysis of every material fact regarding any industry, security or investment and should not be viewed as an investment recommendation. This is intended to provide insight into the portfolio selection and research process. Factual statements are taken from sources considered reliable but have not been independently verified for completeness or accuracy. These opinions may not be relied upon as investment advice or as an offer for any particular security. **Past performance does not guarantee future results.**
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