IQ

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NEUBERGER | BERMAN

Investing Through the Pandemic

THE HEALTH CRISIS AND ITS AFTERMATH WILL TAKE TIME TO RESOLVE. UNDERSTANDING THE DYNAMICS AND FOCUSING ON THE LONG TERM CAN HELP INVESTORS STAY THE COURSE.

IN THIS ISSUE

JOHN F. GEER, JR., *Managing Editor*

Facing Current Challenges

An emphasis on safety, functionality and perspective may be essential at a time of profound turbulence.

This issue of *Investment Quarterly* comes in a period of extreme dislocation, both from the spread of the coronavirus and its economic and market fallout. Health and safety are of the utmost importance, and we hope that you and your loved ones are well. Our admiration and thanks go out to the health care professionals and other frontline workers who are pressing on despite the dangers.

As communicated previously, we at Neuberger Berman have taken many steps to ensure that client portfolios are being managed effectively and that our operations remain fully functional. The vast majority of our people are now working from home. I am pleased to report that all of them—portfolio managers, traders, advisors and others—are able to do their jobs with their typical focus and energy.

Importantly, our systems have also performed well: Market data, trading platforms and portfolio information are available in real time, and we are keeping in constant contact via email, instant messaging, video conferencing and voice. Behind the scenes, our business continuity team has made sure that all these functions have more than enough capacity and safeguards to keep running smoothly as we conduct operations from numerous individual locations.

More than ever, communication with clients is essential. We have been experimenting with a range of methods to connect, including webinars and videos, many of which are housed on our website at www.nb.com/2020volatility. This webpage is frequently refreshed with timely views from our CIOs, portfolio managers and analysts. In particular, I would highlight the insights of Terri Towers, senior health care analyst, and Michael Recce, chief data scientist, whose teams have been working together to track the spread of COVID-19 and assess mitigation and treatment strategies.

While projections vary, we believe the pandemic has a ways to go in the United States. Our base case is that a peak will likely occur in May or June, but that timetable could change materially. Actions by central banks and governments have been extensive, and should help the economy get through a unique period of inactivity. However, markets are likely to remain highly volatile until there is more clarity on the trajectory of the outbreak and path toward economic recovery.

In this issue of *IQ,* Joe Amato, our chief investment officer for equities, provides an overview of our thinking on current conditions, while other articles focus on planning strategies tied to volatility and recent legislation. We also highlight technological innovations, including "big data," that have become increasingly visible and relevant in the midst of crisis.

As always, I hope that the publication proves useful, and urge that you reach out to your Neuberger Berman team with any questions about its contents or the market environment.

STEPHANIE B. LUEDKE, CFA
Head of Private Wealth Management

Market Focus

Investing Through the Pandemic

The health crisis and its aftermath will take time to resolve. Understanding the dynamics and focusing on the long term can help investors stay the course.

JOSEPH V. AMATO — *President and Chief Investment Officer—Equities*

The spread of the coronavirus has caused global disruption unfamiliar in the modern era, with massive efforts at containment and mitigation across whole populations, as medical professionals struggle to care for the sick and work toward treatment. On an economic level, travel bans, population controls and social distancing have contributed to a sharp drop in growth, while the stock market ended its long bull run, moving wildly amid uncertainty as to the timeline and ultimate impacts of the pandemic.

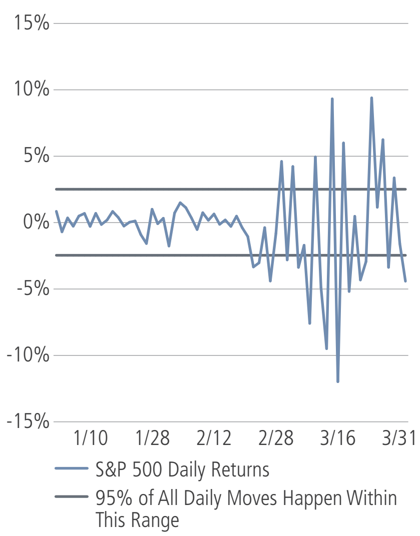
For investors, we believe it is important to take a step back—to understand the current dynamics in relation to history, and to assess portfolio positioning in light of risk exposures and long-term goals.

A DIFFERENT CHALLENGE

As a health matter, the coronavirus crisis represents a challenge that is very different from what investors have experienced in previous decades, whether the financial crisis of 2008, the technology stock bubble of 2001 or the real estate crisis of 1990 (see "Previous U.S. Bear Markets," on page 3). Rather than being triggered by economic or market excesses, or by sharp rate cuts by the Federal Reserve, it has involved a systemic shutdown by governments designed to stifle a deadly contagion. The global pause has led to startling projections of U.S. GDP contraction (our base case is a 25–30% decline in the second quarter) and unemployment (about 20%). In theory, the economy could recover sharply once the "all clear" is sounded—something that is built into our Asset Allocation Committee's base case for a 6% full-year contraction. But much depends how long recovery takes—and the damage that occurs in the meantime.

VOLATILITY SPIKED WITH VIRUS' SPREAD

S&P 500 Daily Returns



Source: FactSet.

PREVIOUS U.S. BEAR MARKETS: CHARACTERISTICS AND PERFORMANCE

PEAK	TROUGH	MONTHS: PEAK TO TROUGH	MAX. DRAWDOWN	MONTHS: PEAK TO RECOVERY	CAUSES
Sep '29	Jun '32	33	-86%	300	Great Crash, following excessive stock market speculation and margin lending amid declining economic fundamentals
Sep '32	Feb '33	6	-41%	9	Great Depression; very volatile markets with short bull and bear cycles within the secular bear market
Jul '33	Oct '33	3	-29%	27	
Feb '34	Mar '35	13	-32%	19	
Mar '37	Mar '38	13	-54%	107	
Nov '38	Apr '39	5	-24%	75	
Oct '39	Jun '40	8	-32%	56	World War II
Nov '40	Apr '42	18	-34%	29	
May '46	Oct '46	4	-27%	48	Anticipation of economic downturn due to drop in military spending
Jun '48	Jun '49	12	-21%	20	First post-WWII recession
Aug '56	Oct '57	15	-22%	25	Recession, sharply rising bond yields
Dec '61	Jun '62	6	-28%	21	Cold War tension escalations
Feb '66	Oct '66	8	-22%	15	Fed tightening; bear market was brief as spending drove earnings upward
Nov '68	May '70	18	-36%	39	Mild recession with high inflation; Vietnam unrest
Jan '73	Oct '74	21	-48%	90	Oil embargo sent energy prices skyrocketing, leading to a long recession and high inflation; Watergate scandal
Nov '80	Aug '82	20	-27%	23	Volcker tightening in an effort to tame inflation pushed economy into recession (fed funds rate hit 20%)
Aug '87	Dec '87	3	-34%	23	Black Monday, exacerbated by "portfolio insurance" program trading that called for selling stocks into falling markets
Jul '90	Oct '90	3	-20%	7	Iraq War, oil price shock after Iraq invaded Kuwait led to a brief recession
Mar '00	Oct '02	30	-49%	86	Dot-com crash following a period of excessive speculation on emerging Internet companies
Oct '07	Mar '09	17	-57%	65	Collapse of the housing bubble led to the collapse of the subprime mortgage market and grew into the Global Financial Crisis
Mean		13	-36%	54	
Median		13	-32%	28	

Source: Bloomberg, general news sources, St. Louis Fed, NBC News, the Motley Fool. Drawdown and recovery data is based on the S&P 500 price index (excluding dividends). Nothing herein constitutes a prediction or projection of future events or future market or economic behavior. The duration and characteristics of past market/economic cycles and market behavior, including length and recovery time of past recessions and market downturns, are no indication of the duration and characteristics of any current or future market/economic cycles or behavior. Due to a variety of factors, actual events or market behavior may differ significantly from any views expressed or any historical results. Investing entails risks, including possible loss of principal. Indexes are unmanaged and are not available for direct investment. **Past performance is not indicative of future results.**

The need to mitigate those impacts has driven enormous monetary and fiscal interventions. The U.S. Federal Reserve has not only cut short-term interest rates back to zero, but has pledged its unlimited support to preserving liquidity in the markets. In fact, it has already purchased more bonds than it did during its post-global financial crisis bond-buying, and by some estimates will increase its balance sheet to as much as $9 billion by late 2021, or more than double its previous peak. Other central banks have done their part as well, with aggressive easing by the ECB, Bank of England and the Japanese Central Bank (see page 8).

Meanwhile, Congress and the president have put aside partisanship to approve some $2 trillion in stimulus, with more on the way. The Coronavirus Aid, Relief and Economic Security (CARES) Act, passed on March 27, has something for nearly everyone—including medical funding, $1,200 checks for most taxpaying adults (and $500 additionally for their children), expanded unemployment benefits for gig workers, forgivable bridge loans to small businesses who retain their employees, and payments to airlines and other particularly stressed industries (see display). At the time of writing, Congress was negotiating regarding further aid to small businesses. Authorities appear willing to do everything in their power to keep the economy afloat while the coronavirus rages on.

WHAT'S IN THE $2 TRILLION CARES ACT?

Coronavirus Aid, Relief and Economic Security Act: Funding Allocations (Billions)

INDIVIDUALS
$604 *(30%)*

- $300 CASH PAYMENTS
- $260 EXTRA UNEMPLOYMENT PAYMENTS
- $44 STUDENT LOANS, OTHER

LARGE COMPANIES
$500 *(25%)*

- $425 LOANS
- $58 AIRLINES (WAGES AND BENEFITS, CONTRACTORS, OTHER)
- $17 REQUIRED FOR NATIONAL SECURITY

SMALL BUSINESSES
$377 *(19%)*

- $350 NEW LOANS
- $17 RELIEF FOR EXISTING LOANS
- $10 GRANTS

STATE AND LOCAL GOVERNMENTS
$340 *(17%)*

- $274 COVID-19 RESPONSE
- $14 HIGHER EDUCATION
- $13 K – 12 SCHOOLS
- $5 FAMILY PROGRAMS
- $5 BLOCK GRANTS
- $29 OTHER

PUBLIC SERVICES
$179 *(9%)*

- $100 HOSPITALS
- $20 VETERANS' HEALTH
- $16 STOCKPILED EQUIPMENT
- $16 NUTRITION ASSISTANCE
- $11 DRUG ACCESS
- $9 CHILD NUTRITION
- $4 CDC PROGRAMS AND RESPONSE
- $4 OTHER

Source: Visual Capitalist.

WATCHING FOR PROGRESS

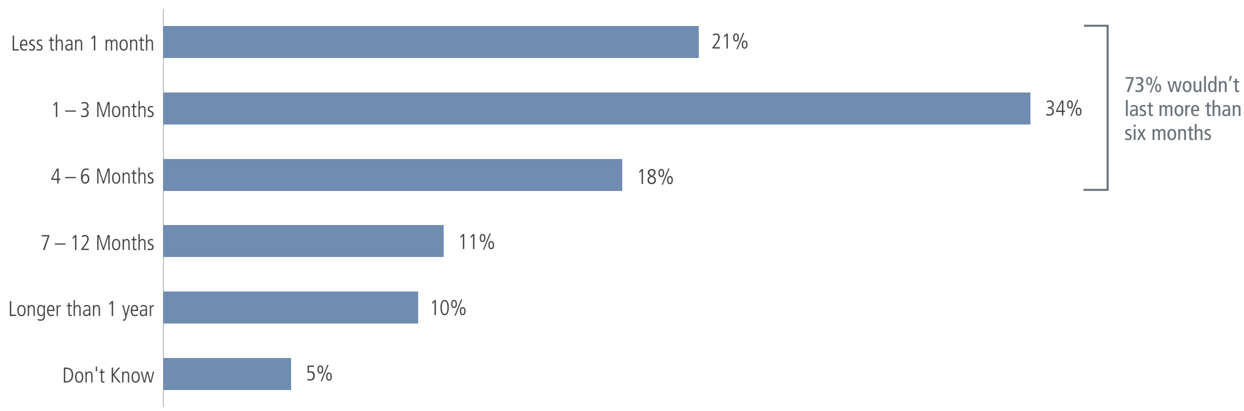
This is such a rapidly evolving situation that anything written now may seem dated by the time it is read. With that caveat, much depends on how the coronavirus crisis unfolds in the coming weeks and months. Worldwide, as of April 17, there were 2.2 million reported cases and 146,000 deaths. Since the first U.S. case was revealed in January, known infections have exploded with the spread of the disease and wider testing to 671,000 cases and 33,000 deaths (again as of April 17). Initial hotspots in Washington state and New York have broadened to include Louisiana, Illinois and Florida, among others, although new cases are slowing in some areas. At this time, our best estimate is that the virus could peak in the United States in May or June, followed by a gradual decline. Transitions back to workplaces in some regions could occur by summer, but that depends on many factors.

The success of containment efforts and the avoidance of unforced errors, including overly optimistic returns to work, will be essential to flatten the curve of the disease, so we avoid overwhelming our health care system and seek to limit the death toll. Also crucial will be progress on developing treatments, including the use of medicines that resist the virus and reduce the lung inflammation that can come with it. A vaccine may be down the road as well, which could help with management of future surges and hopefully reduce COVID-19 to a seasonal flu-like risk. More testing kits to better track the contagion and more ventilators and other medical equipment to help with identification and isolation are needed so lockdowns become less necessary. Our Health Care and Big Data research teams have been working closely to track the course of the disease and the efficacy of possible treatments. You can read their analysis, and the views of other Neuberger Berman analysts and portfolio managers, at www.nb.com/2020volatility.

Although saving lives is paramount, limiting economic damage is also of great importance. As we look ahead, there are two key issues to focus on from a research perspective. The first is supply chain disruption, and how the virus will impact the ability of companies to produce goods and generate revenues and profits. The second relates to "demand destruction." If people are staying home and not traveling or buying discretionary goods, how is that going to affect the economy? If you skip dinner at a restaurant, you aren't going to go back and have two dinners the next night. Multiply that concept by millions of people and a period that stretches from weeks to months and you see the potential damage that may occur—particularly at small businesses. They are the ones most vulnerable to this crisis if it drags on, employing about half of all U.S. workers; so, the fact that there is fiscal support for small business—as well as employees—in addition to larger companies is huge.

STIMULUS IS KEY FOR SMALL BUSINESS

"How long would your business survive if sales stopped completely?"



Source: Womply survey of 2,300 small business owners across 50 states, womply.com, March 31, 2020.

With the virus trajectory noted above, we would anticipate that economic recovery could begin in the second half of the year with a sharp acceleration in 2021, built on extraordinary stimulus and pent-up demand. However, a full return to normalcy would take time. Many businesses are likely to close and not reopen. Many people will fall behind on the rental payments, forgo major purchases, begin work on rebuilding their savings. Some industries like energy that were previously under stress could see consolidation. The migration to online shopping that was decimating many retailers may accelerate. There are many variables here, and "unknown unknowns," as Donald Rumsfeld might say.

As for the markets, we anticipate continued volatility going forward. Investors hate uncertainty, and companies thus far have not been comfortable providing much guidance in a rapidly changing environment. While many investors have asked us about a time to "get back in," we believe that this is a long game. The markets dropped precipitously and then roared back part of the way with stimulus, but there remains potential for considerable bad news ahead—perhaps more than investors are willing to acknowledge. As our Asset Allocation Committee has indicated,[1] there should be plenty of time to reallocate on a tactical basis when there is greater clarity that we are emerging from the crisis.

WHAT INVESTORS CAN DO

How can investors approach the current environment? First, we would suggest close interaction with your advisors and portfolio managers, to ensure that your asset allocation is well diversified and aligned with long-term goals. Diversification across stocks and bonds has historically softened the impact of periodic equity weakness, while broad exposure to assets within those categories and to alternative assets has further spread risk exposure. If, at this point, you remain overly exposed to risky assets, it may make sense to take advantage of periodic rallies to rebalance. If, after equity declines, you are over-weighted in bonds or cash, we would favor holding steady until there are signs that the other side of current turbulence is within sight.

[1] See the Committee's outlook at www.nb.com/aac.

AVERAGE PERFORMANCE DURING RECENT SEVERE DOWNTURNS (HYPOTHETICAL PORTFOLIOS)
(1980 – 82, 1987, 1990, 2000 – 02 and 2007 – 09)

Equity/Fixed Income Allocation

	0%/100%	25%/75%	50%/50%	75%/25%	100%/0%
Average Maximum Drawdown	-1.2%	-5.6%	-14.0%	-22.7%	-31.0%
Average Months to Recover	2	7	22	30	37
Annualized Return 1980 – 2019	7.5%	8.8%	9.9%	11.0%	11.8%

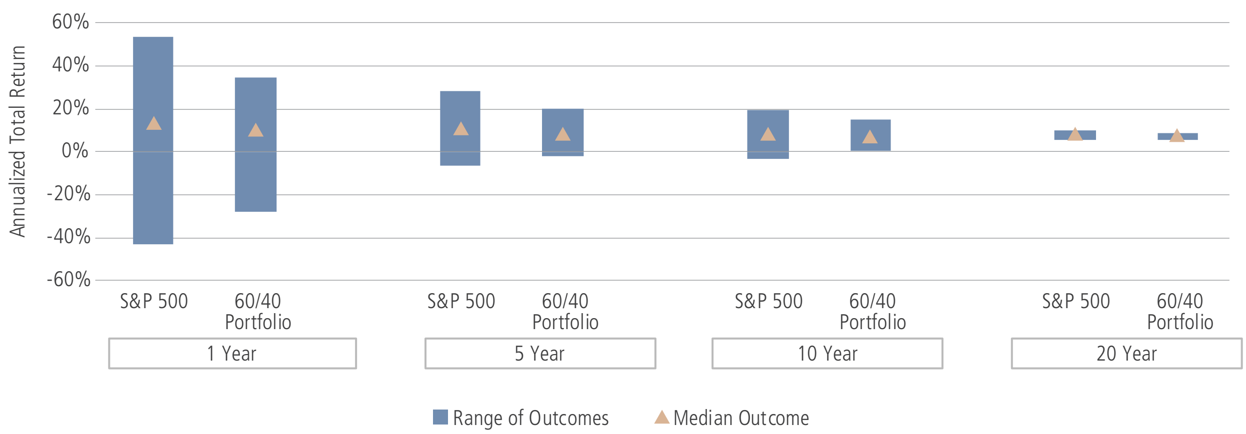
Source: Neuberger Berman, Bloomberg. Specific periods covered: Nov. 1980 – Aug. 1982, Aug. – Dec. 1987, July – Oct. 1990, Mar. 2000 – Oct. 2002, and Oct. 2007 – Mar. 2009. Based on monthly total return data (including dividends and interest income) for the S&P 500 and the U.S. Barclays Aggregate Bond Index. Peak-to-trough may be different than if computed using daily data. Portfolios are allocated to the indices in the percentages shown. Nothing herein constitutes a prediction or projection of future events or future market or economic behavior. The duration and characteristics of past market/economic cycles and market behavior, including length and recovery time of past recessions and market downturns, are no indication of the duration and characteristics of any current or future be market/economic cycles or behavior. Due to a variety of factors, actual events or market behavior may differ significantly from any views expressed or any historical results. The returns shown are gross of fee and do not reflect the fees and expenses associated with managing a portfolio. Investing entails risks, including possible loss of principal. Indexes are unmanaged and not available for direct investment. **Past performance is not indicative of future results.**

Keep in mind that the path out of the coronavirus pandemic is liable to be long and winding. Economies simply need time to rebuild from the demand destruction noted above, and may take paths divergent from what might have been expected even a couple months ago. Even in the best of scenarios, markets will likely need to see signs of improvement before they become more comfortable with riskier assets.

LOOKING TO THE LONG TERM

That leads to another key idea, which is the long-term investment horizon. Contrary to popular perception, few (if any) investors have any idea what specifically is going to happen to the markets over short periods. There are just too many factors at play, many of which have nothing to do with underlying fundamentals. However, over the long term, it's generally acknowledged that stocks have historically increased in value—even from the peaks prior to bear markets. For those with effective risk-managed asset allocations, time is likely to be a friend.

LONG TIMEFRAMES HAVE LIMITED PORTFOLIO DECLINES
Market Returns Over Multiple Time Periods (1988 – 2020)



Source: Bloomberg, monthly data as of February 28, 2020. For illustrative purposes only. Nothing herein constitutes a prediction or projection of future events or future market or economic behavior. The duration and characteristics of past market/economic cycles and market behavior, including length and recovery time of past recessions and market downturns, are no indication of the duration and characteristics of any current or future market/economic cycles or behavior. Due to a variety of factors, actual events or market behavior may differ significantly from any views expressed or any historical results. The returns shown are gross of fee and do not reflect the fees and expenses associated with managing a portfolio. Investing entails risks, including possible loss of principal. Indexes are unmanaged and not available for direct investment. **Past performance is not indicative of future results.**

KEEPING PERSPECTIVE

The COVID-19 pandemic represents an extraordinary human challenge, and requires all our efforts to avert loss of life. The virus' economic implications are also profound, and if not addressed, could threaten the well-being of billions of people. We are heartened by the aggressive steps taken by central banks and governments, and believe that they will be sufficient to avert worst-case scenarios and set the world back on a path toward growth.

Today, as always, we believe that investors should be informed about the macro and financial environment, but try to avoid worrying too much about day-to-day changes in sentiment. That's the job of advisors and portfolio managers, who can help you feel comfortable with your investments and asset allocation in relation to personal investment goals and needs. Providing yourself with a little psychological "separation" can leave time for more meaningful activities, like cheering on our brave health care workers and catching up with family members, as we wait out this difficult period.

TODAY, AS ALWAYS, WE BELIEVE THAT INVESTORS SHOULD BE INFORMED ABOUT THE MACRO AND FINANCIAL ENVIRONMENT, BUT TRY TO AVOID WORRYING TOO MUCH ABOUT DAY-TO-DAY CHANGES IN SENTIMENT.

POLICYMAKERS STEP UP—BUT WILL IT BE ENOUGH?

Adapted from the 2Q20 Asset Allocation Committee Outlook

In facing the effects of the coronavirus pandemic, central banks and governments have moved aggressively to shore up the global markets and economy.

Monetary Stimulus

The immediate priority of monetary authorities was to stabilize markets and provide liquidity as investors sought to sell everything—including traditional safe havens such as U.S. Treasuries. They re-opened the 2008 playbook, led by the Federal Reserve, which cut rates to zero, loosened the terms on international dollar swap lines, committed to unlimited quantitative easing and provided liquidity to money market mutual funds. These moves calmed Treasuries, but credit markets, while improved, may require more action.

The Fed also set up a Commercial Paper Funding Facility to address strains on companies' short-term operational financing, and later extended support to mid-cap companies, "fallen angel" corporate bonds and the municipal market. The Bank of England introduced its own commercial paper measure for the U.K. and the Bank of Japan opened a new, zero-percent lending facility. The European Central Bank came out with a new €750 billion public and private securities purchasing program and pledged to buy high-quality commercial paper.

Fiscal Stimulus

The fiscal response needed to be just as rapid, and focus on small businesses and individuals. The U.S. passed stimulus worth trillions of dollars, including small business loans, tax deferrals, stabilization funds and direct payments to individuals. The U.K. Treasury effectively promised to pay 80% of the wages of any worker furloughed due to the crisis. And Germany set out plans to remove constitutional debt limits for a support program worth almost 10% of GDP, focused on providing equity capital to companies and backing loans. It also urged a joint euro zone debt issuance, which would likely be bought by the ECB. Around the world, countries are attempting similar fiscal measures, often amounting to several percentage points of national GDP.

Gauging the Impact

The speed of this response has been remarkable. During the 2008 – 09 financial crisis, the Fed cut rates to zero only in December 2008, and the G20 meeting that started a global coordinated response came in April of 2009, a full seven months after the peak of the crisis. But will it be enough this time?

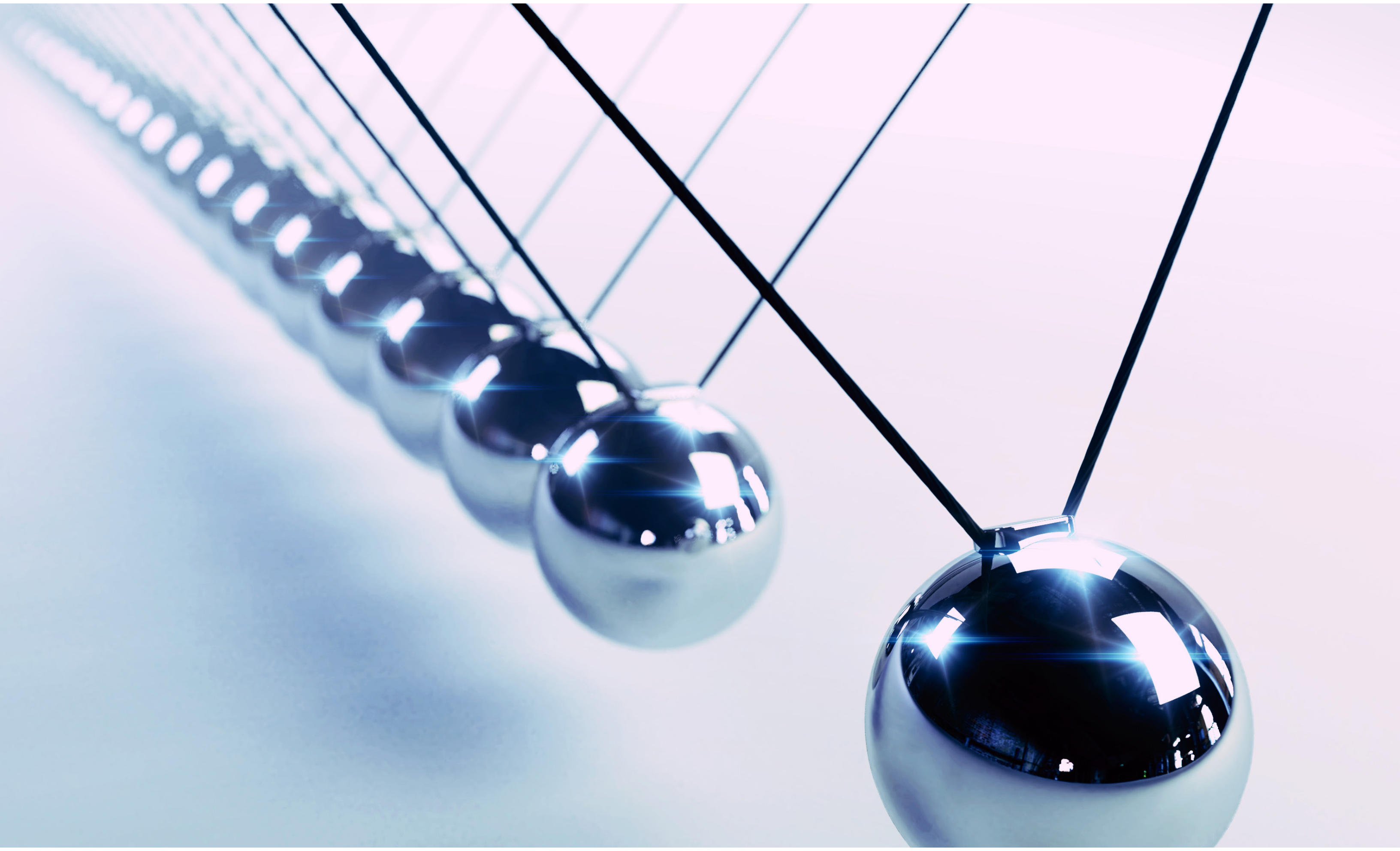
We believe that, as long as fiscal support prevents unemployment from exceeding low double figures, and supply chains remain intact, there could be potential for powerful pent-up demand to drive renewed consumption growth in the second half of the year.

Our base case is that second-quarter U.S. GDP could decline by 25 – 30% annualized, which assumes a sharp decline in goods spending and an even more significant contraction in services—with demand coming largely for health care, food and consumer essentials. For the full year, U.S. GDP may finish down 6% versus 2019. This would imply a strong clawback in the second half—but it is important to recognize that much depends on the effectiveness of the stimulus, and that the fallout for small businesses in particular means a full recovery to the pre-crisis GDP trends is likely to take many months.

See a summary of the Committee's asset class views on the inside back cover of this publication and its full views in the Q2 2020 Asset Allocation Committee Outlook at www.nb.com/aac.

See disclosures at the end of this publication, which are an important part of this article.

Financial Fitness



Planning Ideas for a Volatile Market

The current downturn may offer opportunities for tax savings and portfolio enhancements.

PRIVATE WEALTH MANAGEMENT

The spread of the coronavirus has been a traumatic event across the globe. In addition to health and safety concerns, we've seen the rapid and severe dislocation of financial markets. For investors, this has been a particularly difficult time, and we urge calm and careful assessment of asset allocations, with emphasis where possible on a long-term investment horizon. Beyond those ideas, we believe it is important to consider capitalizing on planning opportunities as they present themselves. In this article, we provide a number of ideas that we believe are particularly well suited to an environment where asset valuations have been reduced and interest rates are low.

Convert to a Roth. Now may be a time to consider converting your traditional IRA to a Roth IRA. Conversions are taxed in the year they take place, so converting when asset levels are lower can help reduce the current tax cost. Moreover, due to the SECURE Act of 2019, non-spouse beneficiaries (with certain exceptions[1]) are now required to withdraw 100% of inherited IRA assets within 10 years of the death of the original owner. Conversion allows beneficiaries who may be in their peak earning years to receive those assets income tax-free—making for especially tax-efficient transfer. (See "Estate Planning Under the SECURE Act," on page 26.)

[1] Exceptions include the surviving spouse; children of the account owner until they reach majority, at which point the 10-year window applies; the disabled or chronically ill (as defined by the tax code); and anyone less than 10 years younger than the IRA owner.

Reassess Your Portfolio. In times of market turbulence, it may be appropriate to take stock of your investment portfolio to help ensure that your risk profile is aligned with your asset allocations. Take this opportunity to assess what you own and consider adjusting your portfolio with investments that make sense from a risk/return standpoint, and, for those at or nearing retirement, which may emphasize income generation.

Accelerate Equity Compensation Exercises. If you are paid with incentive stock options and nonqualified stock option grants, it may make sense to exercise shares in light of recent market declines. Income is recognized at the time of exercise, so such an acceleration could potentially reduce the overall tax consequences. In addition, you can start the clock for the required holding period (12 months) prior to sale in which any capital gains can be treated at the preferential long-term tax rate.

Consider Dollar-Cost Averaging. Regularly contributing to your portfolio can help take the emotion out of investing in volatile markets. Through dollar-cost averaging, investors can acquire more shares with the same fixed dollar amount as markets decline (and fewer shares as markets advance). Over time, this could reduce average cost per share and hopefully lessen anxiety levels.

Watch Mortgage Rates. A "flight to safety" in bonds and aggressive easing by the Federal Reserve have helped move Treasury yields to near historic lows. Mortgage rates, which are often heavily influenced by 10-year Treasuries, may move lower in the coming months, providing an opportunity to refinance and reduce the carrying cost of your home. Remember to consider closing expenses and the period you plan to stay in the home (and benefit from lower rates) in assessing whether the transaction is worthwhile.

Gift Depreciated Stocks. Many stocks have declined significantly in the current market. For those who are willing to part with some assets, this may be an opportunity to gift them away at lower valuations and move their future appreciation out of your estate. Such gifts can be made directly to individuals or to trusts to leverage additional planning advantages. Note that for older individuals who have low-basis securities with sizable gains, it may be better to hold onto them even if they have recently declined. State estate tax survivorship rules should also be considered.[2]

Create a SLAT to Transfer Assets. For those not as comfortable making gifts exclusively for heirs at this time, spousal limited access trusts, or SLATs, may be particularly useful. This type of trust may be attractive in light of its flexibility and the recent decline in asset values. A SLAT is a variation of a credit shelter trust or a generation-skipping tax (GST)-exempt trust or dynasty trust. Using his or her federal estate and gift tax exemption (and GST exemption), an individual creates and funds the trust to benefit a spouse and descendants. Upon the spouse's death, the remainder passes to the descendants outright or in continuing trusts free of gift, estate and GST tax, no matter the value of the trust at that time.

Capitalize on Low Rates Through Trusts. A number of trusts have become more attractive with the sharp decline of interest rates. Grantor retained annuity trusts and charitable lead annuity trusts are among the vehicles where it is possible to transfer appreciation on assets beyond the assumed growth rate free of gift tax. This growth rate is determined based on a government interest rate, published monthly, of just 1.2% for April—its lowest level since 2013—providing a low hurdle rate to achieve excess growth for heirs.

Make Loans to Family Members. With lower interest rates, making or refinancing loans to family members or trusts for their benefit has also become a more attractive way to transfer assets. In making such a loan, you must charge a minimum interest rate—the "applicable federal rates" of 0.91% (short-term), 0.99% (mid-term) and 1.44% for (long-term) in April—to assure that there is an "arm's length" transaction and the loan is not considered a disguised gift. Any appreciation on the amounts loaned is not a gift, and escapes gift and estate tax, while lower rates create a greater opportunity for the borrower to grow additional capital. This type of transaction can be done with certain types of trusts so that the interest payment is not subject to income tax for the lender. However, given current low rates, this may not be a concern.

NEXT STEPS

We are all living in anxious and logistically challenging times, and given current market volatility, you may be unsure about how to proceed with regard to planning strategies. Fortunately, financial, tax and estate planning advisors can help you explore these ideas in greater detail; legal and accounting consultation is particularly important. We would encourage you to have those conversations, and take preparatory steps if interested. Finally, please do not hesitate to reach out to your Neuberger Berman team if you have any questions about the ideas we have discussed.

See disclosures at the end of this publication, which are an important part of this article.

[2] A stock that has depreciated in value below its cost is not an ideal candidate to gift. The fair market value of the stock on the date of the gift will become the cost basis for determining the loss that can be recognized in the hands of the recipient.

Insights and Innovation

The New 'Fusion'

As the physical and digital worlds merge, companies, investors and society will need to adapt.

DANIEL E. FLAX — *Research Analyst, Global Equity Research Department*

Recent responses to the coronavirus have illuminated the enormous changes that technology has introduced in the ways we live and work. "Big data" and advanced computer modeling are proving to be crucial in tracking the disease; live video is helping health care workers to treat and monitor patients; remote work applications are letting millions of people do their jobs at home; and social networks are maintaining the vital personal connections impeded by distancing measures.

These examples are tied to advances that appear to be reaching critical mass in a range of areas: the growth of smartphones, the accumulation of detailed data, the spread of sensors, the use of artificial intelligence, the development of the "internet of things" and the widespread employment of video. All of these trends are driving an upgrade of digital networks, which in turn may be creating new capabilities and further accelerating usage demand—something that the coronavirus will likely only accelerate.

RECENT RESPONSES TO THE CORONAVIRUS HAVE ILLUMINATED THE ENORMOUS CHANGES THAT TECHNOLOGY HAS INTRODUCED IN THE WAYS WE LIVE AND WORK.

Nearly two years ago, I wrote about the coming of 5G,[1] and how an increase in connectivity would facilitate this changing landscape. The transition, with impacts across many spheres, from technology, to politics, to social interaction, to the environment,

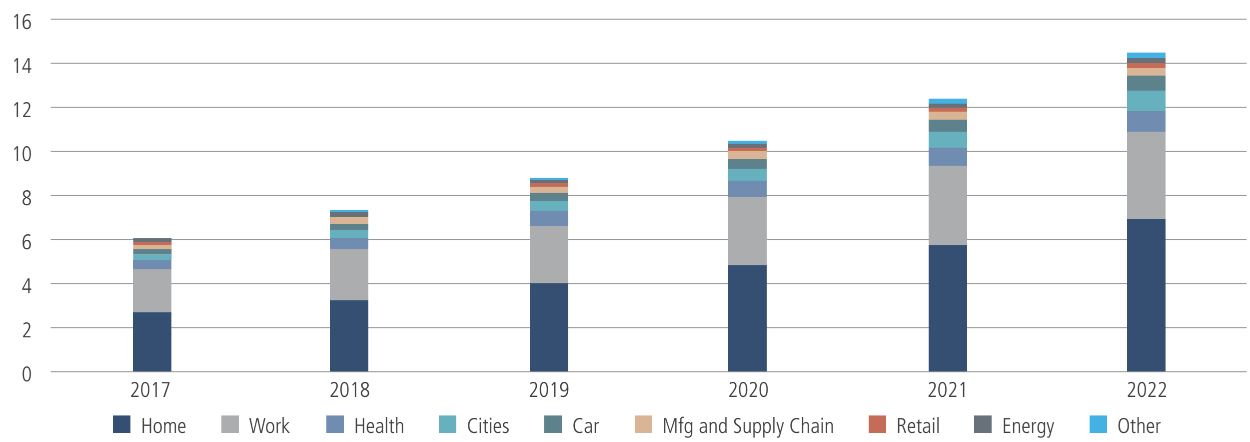
[1] "The Coming 5G World," *Investment Quarterly*, Summer 2018.

will likely be a multiyear journey. Current networks labeled as 5G are really an amalgam of multiple standards, and critical mass will require significant buildout and capital expenditure over the next decade. Increasingly, however, we are getting a better a sense of the contours of the new world that the combination of capability and connectivity could facilitate.

If I chose one term to describe this new environment, it would be "the new fusion," in which digital information would be applied to the physical world and physical information would strengthen and inform digital analysis and application. The result could be a whole new set of capabilities, experiences and possibilities across health care, entertainment, transportation, housing and more. This evolution could also carry significant risks, and not just relating to cybersecurity. Business transformation may become more pervasive in the future, dwarfing past changes achieved via personal computers and other innovations.

THINGS THAT TALK (TO EACH OTHER)

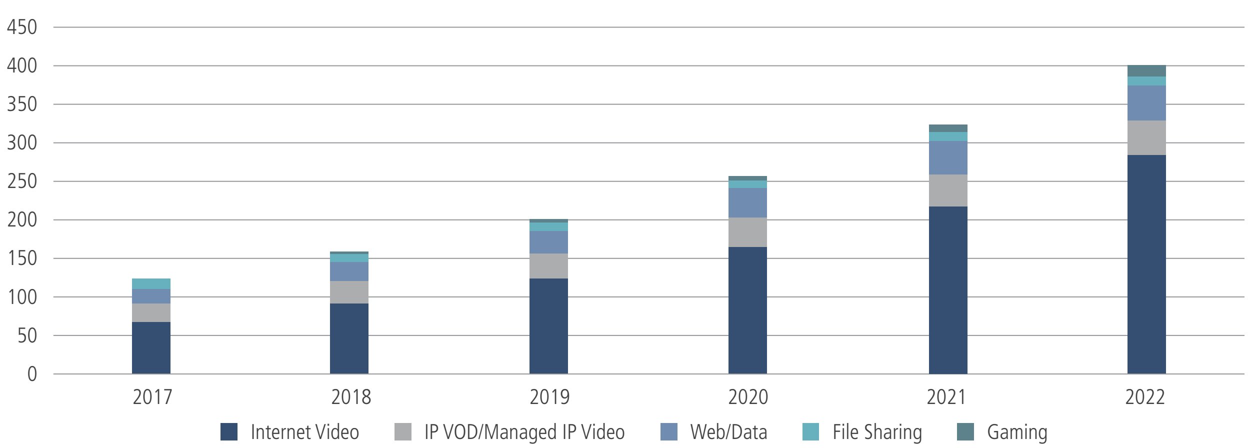
Global Machine-to-Machine Connection Growth by Industry (Billions of Connections)



Source: Cisco VNI Global IP Traffic Forecast, 2017 – 2022.

VIDEO IS HELPING DRIVE CONNECTIVITY

Global IP Traffic by Application Category (Exabytes per Month)



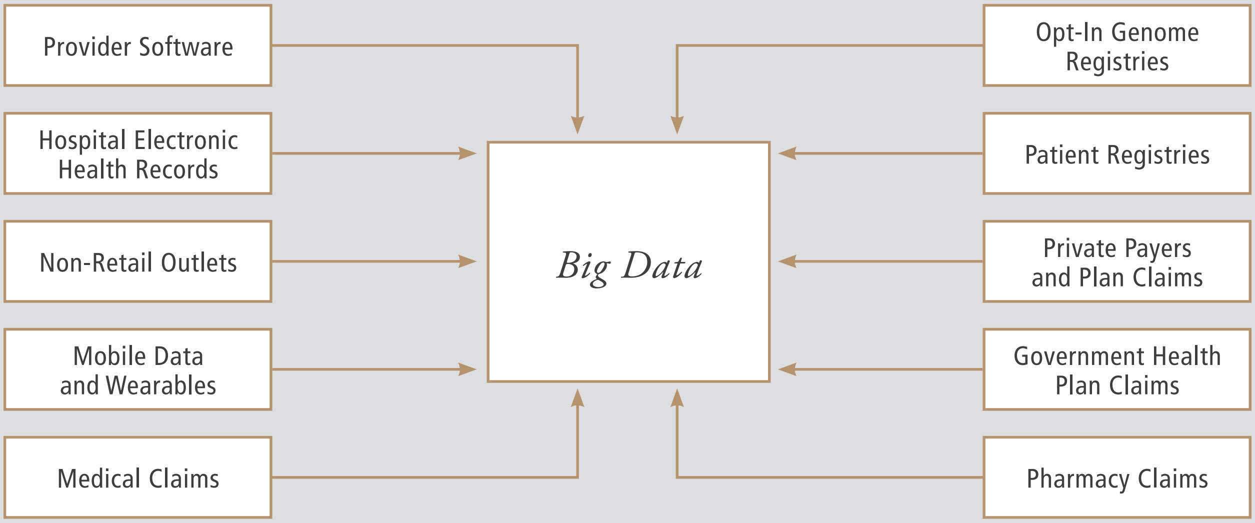
Source: Cisco VNI Global IP Traffic Forecast, 2017 – 2022.

PERSONALIZED HEALTH CARE

Although the transition looks to be pervasive, I believe a few areas are both important and indicative of general trends. Consider health care, which, especially with the focus on COVID-19, is likely to experience enormous digital change, leveraging the power of the cloud, big data and artificial intelligence, to help provide more insights and allow medical professionals and individuals to make better decisions about treatment and lifestyle.

You may have read about Google's pending acquisition of Fitbit, which makes wearable "activity trackers" that help consumers monitor steps taken, heart rate, quality of sleep and other fitness-related data. Apple has also generated enthusiasm in "wearables" with its Apple Watch, which can monitor health information while offering other mobile functions. These devices are fun and intuitive—something that doesn't exactly come to mind when you think of health care. They could provide a far richer experience, and encourage more self-monitoring, which, combined with robust analytics and extensive data sets, could drive better, faster insights. In addition, the system could provide significant cost savings, to the extent medical issues are identified before they become acute and require an emergency visit or more intense intervention. As mentioned, the power of digital diagnosis and delivery is becoming more apparent with video communications taking place between health care professionals and patients in the fight against COVID-19.

SOURCES OF BIG DATA IN HEALTH CARE



Source: IMS, BofAML.

REDESIGNING THE FACTORY FLOOR

Artificial Intelligence

"Deep learning" allows intelligent machines to act autonomously

Industrial Software

Specialized software to design, operate and visualize the manufacturing process

Semiconductors

New capabilities drive an exponential increase in data, requiring more processing and storage

Internet of Things Hardware

The "factory of the future" is connected, with sensors, "programmable logic controllers," edge and cloud functionality

Robotics

Robots are lighter, faster and safer than before; application potential has radically improved

Source: Morgan Stanley Research.

AUGMENTING EXPERIENCES

Augmented reality is another area with considerable potential. Distinct from the submersive experience of virtual reality, "AR" weaves a digital overlay onto the real world.

Four years ago, with the release of Pokemon Go, millions of young people were observed staring at their smartphones as they walked through public spaces and roads in search of game characters. The technology was rudimentary, but the application was new, with an electronic treasure hunt superimposed on physical places. The potential of this and similar apps was not lost on the many companies (including Apple) where gaming is a substantial source of revenues.

Augmented reality (and virtual reality), however, will be about more than just gaming. As a basic rule, popular apps and platforms (think SnapChat) are often initially aimed at specific targets—teens, singles, etc.—before their ideas and technologies move to broader audiences. AR should be no different, and the building blocks appear to be solidifying with each passing day.

Sensors are key hardware that is improving and becoming more pervasive with successive generations of products, including the smartphones that many of us increasingly rely on. With greater capabilities, phones can become a window through which to impose digital images on the physical world. A promising example might be in interior decorating, where you can move beyond basic floor plans to really see how a piece of furniture may look in your living room. AR might also provide real-time background on historical sights, the restaurants or shops you visit, or (at the risk of sounding creepy) the people you meet.

The concept could become even more compelling with smart glasses. These were received with amazement and curiosity a few years ago. Some models are currently available, although they have not yet reached the mass market. In light of their convenience, they could potentially augment smartphones and other devices as a means of interpreting the world. As technical issues are overcome (e.g., motion sickness), improving technology and declining prices could lead to broader acceptance.

AUGMENTING EFFECTIVENESS

Beyond entertainment and personal use, augmented reality has meaningful potential for the ways companies do business. Workflows have already seen major improvement with automation, AI and wireless connection. Faster, large-capacity 5G networks should enhance the ability to share digital information more quickly, whether on the factory floor, in the office or at a remote worksite; and AR will likely take the video experience to a higher level, with detailed, lifelike interactions—potentially from continents away.

Let's say, for example, that a critical piece of machinery breaks down on an oil rig. Lacking onsite experts, the company might choose to "beam" someone in via AR, for a discussion with local personnel in which she is able to examine the part virtually and then provide a solution. 3D printing makes this scenario even more intriguing, allowing upload of specifications and the creation of the physical spare part without resorting to the traditional supply-chain delays. 3D printing has actually been around for decades, but has become far more effective because of connectivity and sophisticated software and materials. The net result, along with other digital improvements, could be reduced downtime and more effective, profitable production.

RETHINKING BUSINESS MODELS

This brings us to a broader conversation about how companies can adapt to the new environment over time. The use of AR is just one element in a theme of change in corporate operations driven by the fusion of digital and physical. Increasingly, all the elements of a manufacturing plant or supply chain are likely to be connected with smarter networks, informed by artificial intelligence, which could enable management and employees to make better choices. By necessity, this is prompting new conversations about how to redesign workflows and the factory floor. Meanwhile, office buildings (and homes, for that matter) are increasingly connected to systems and devices on premises as well as the broader "smart grid" in ways that help reduce their carbon footprint and make them more cost-efficient to operate.

SMART BUILDINGS, SMART GRID

Source: Getty Images.

In retail, upheaval among brick-and-mortar providers is obvious to anyone who visits a mall. But the notion that electronic commerce is replacing a physical presence is an oversimplification. Despite the availability of its products online, Apple's stores have proven to be popular with customers looking to try products and engage with sales and technical staff. Amazon, while the "grim reaper" for many competitors, has built its business not just on digital storefronts but through infrastructure and delivery capabilities, and (in addition to its Whole Foods grocery chain) has even opened physical retail outlets. In effect, a fusion of digital and physical appears to be critical in attempting to achieve full potential in an omni-channel world.

Interestingly, digital trends are also changing how companies are categorized. Amazon and Apple are generally thought to be technology companies, but really operate in multiple sectors. Meanwhile, companies in traditional areas like manufacturing and transportation are becoming more tech-oriented, blurring the lines further. Is Airbnb a hotel or a services company? Is Uber a transportation or technology firm? What matters more than their description is whether (and in what form) they can stick around, and how strategic they will be to their customers.

FROM MY PERSPECTIVE, MANAGEMENTS NEED TO REIMAGINE THE UNDERLYING PILLARS OF THEIR BUSINESSES, INCLUDING THEIR CORE OFFERINGS, HOW THEY CREATE VALUE AND HOW THEY ACHIEVE DIFFERENTIATION.

LOOKING AHEAD, NOT BACKWARD

As a research analyst, I seek to develop a deep understanding of the mosaic of factors affecting a company's prospects, drawing on both traditional inputs and big data for insights. One of my most important jobs is to assess whether the company is prepared for change. Past performance is often an incomplete yardstick, while factors like brand dominance, business "moats" and available capital can go only so far. In addition, considerations including the ability to attract talent globally, or to operate effectively without harming the environment, may come into play. A good attitude helps: I much prefer leadership that understands its vulnerabilities and is constantly searching for answers. However, even forward-looking companies often have extensive infrastructure and processes that have become obsolete. Wanting to adapt and doing so are often very different.

Recently, auto parts manufacturer BorgWarner agreed to acquire competitor Delphi Technologies, and I believe similar transactions are likely to occur across industries as companies seek to cut costs and become more competitive. This has occurred repeatedly in the technology sector, where business cycles are relatively short, but now it is happening more broadly amid pressure from Amazon and other dominant players. In the end, some incumbents are likely to make it, but many probably won't—at least not in their existing forms. These companies often can't move fast enough, and their processes, supply chains, incentives and intellectual property may not be set up for the "fused" world that we are entering.

For those with a chance to survive, the road may be difficult. From my perspective, managements need to reimagine the underlying pillars of their businesses, including their core offerings, how they create value and how they achieve differentiation. Shifts in mindset, incentives and personnel may be needed, and even a willingness to cannibalize their own businesses.

Sometimes, companies can be their own worst enemy, not only maintaining outdated business models, but operating with many layers of management and/or incentive structures that reinforce the status quo—often at a high cost. In an unforgiving environment, this is probably not a formula for success.

Ironically, a "willingness to fail" can help. I'm not talking about failure with no purpose, but rather an orientation toward innovation in which initial failure is used to gain perspective and information, which can then be leveraged to come up with something better. It's the essence of creativity. In my view, the companies that are able to embed this philosophy throughout the organization should have a better chance of being the winners in coming decades.

SECURITY AND POLITICS

When thinking about trends such as digital health care, smart glasses or AR, I believe that the security of personal and corporate data will be crucial. This is already a source of much attention, not only because of the detailed information revealed through digital activity, but given data breaches by profiteers and rogue actors.

To some degree, societies have to come to grips with the tradeoffs between safety and the free flow of information and commerce. What's good for China may not be good for the U.S., and what flies in San Francisco may not be right for Mobile, Alabama.

Community-wide standards are important, but so is a diversity of ideas, and it will likely take time to find a balance. Part of the puzzle is education and greater transparency to help consumers gain more understanding of the value of their data and the importance of safeguards.

Security, however, does not just mean data. Terrorist threats have not gone away, and the coronavirus has highlighted the efficacy of data in tracking aggressive disease. It is humbling to see how far we *haven't* come. For example, many 911 centers still cannot receive texts or videos—which have become standard modes of communication for just about everybody else. And parts of our critical infrastructure, such as airports and utilities, could use far more protections than are currently in place. In short, security needs to move into the 21st century—both in digital and physical dimensions.

Politics is another challenging issue. Countries historically understood that technology was useful, but its broad ramifications for nearly every aspect of the economy, politics and social behavior have recently become more evident—whether as a platform for opinion, a vehicle for protest or a mechanism for control. Those best able to leverage technology may exert influence far beyond what their resources or size might otherwise suggest. The debates around using technology from some vendors attest to the importance of trust in a world that is becoming increasingly concerned about spying and data falling into the wrong hands.

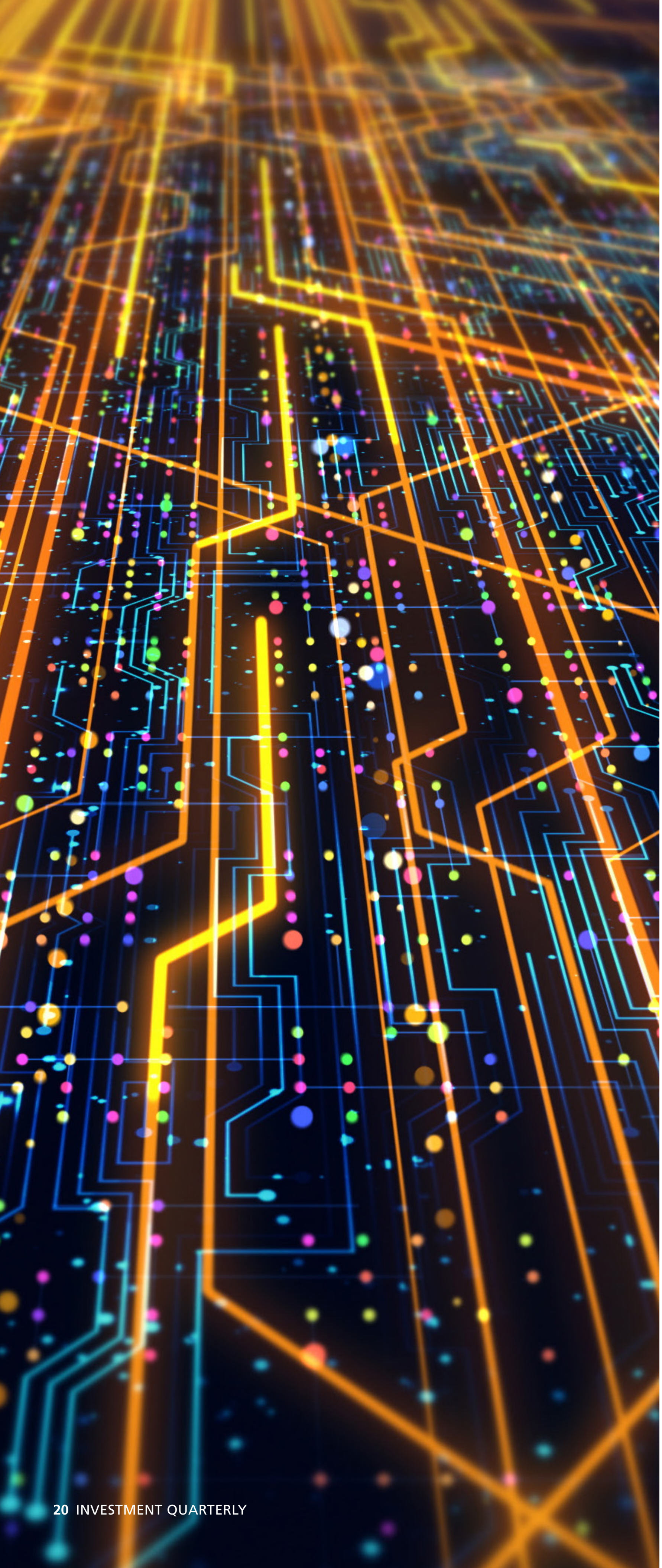
With so much at stake, nations need to think about how they want to invest in technology, how they can incentivize companies and how they can attract talent. Part of this may involve developing sustainable infrastructure, including a smart grid and buildings that draw on alternative energy and connectivity to operate efficiently, as well as fostering relevant education, and setting regulation that provides guardrails, but avoids suppressing innovation and risk-taking.

The competitive implications are enormous, as recent maneuvering over trade and 5G dominance makes clear. Beyond external rivals, however, countries may have trouble bringing their own citizens along. Brexit and the 2016 U.S. election were to some degree a rebellion against elites, governance and globalization at the expense of working people, while one byproduct of the digital explosion has been to exacerbate the wealth gap that is all too visible in our cities. To have potential for success in the coming environment, governments and the private sector will likely need to work together to address damaging side effects, and to build more trust and a sense of community around digital platforms. More basically, I believe politicians need to look past today's short-term-oriented discourse to talk more about the techno-economic challenges ahead so that they can secure electoral buy-in to crucial choices.

CHANGE IS COMING

In anticipating the landscape ahead, it's possible to disagree about the details: how communication will evolve, what form infrastructure will take, how people choose to live. However, the notion that things will be different—often radically so—is hard to dispute. On a global basis, technology and ingenuity are altering our world. Even if one company, government or society chooses to remain static, others will likely step in and eventually force the laggards into action. For investors, that makes for an exciting, if challenging time; more broadly, in my view it means that careful research, flexibility and a well-considered approach to portfolio construction will remain crucial.

See disclosures at the end of this publication, which are an important part of this article.



Capturing the Potential of 'Big Data'

Drawing investment insights from digital information is all the rage, but analysis and execution may be crucial to achieving success.

MICHAEL RECCE, PhD — *Chief Data Scientist*

Investors increasingly seek to capitalize on the vast troves of data now available due to the migration of activity and commerce to the digital world. So-called "big data" is the information that we leave behind when we browse the internet, buy things online or at the store, use our smartphones and generally live our modern lives. With advances in cloud computing, machine learning and artificial intelligence, it's now possible to extract coherent, strategic insights from these digital traces. However, whether managers can actually capitalize may depend on both the relevance and quality of the data they choose to access and their ability to use it to further investment goals.

WHAT'S RELEVANT?

A wide range of big data is potentially useful in the investment context. This includes "hard" data such as supplier payments, prescriptions and health care insurance claims, and laboratory results; but there is also rich information in "softer" data, such as news and social media keywords or satellite imagery. Overall, the categories that we see getting the most mileage for long-term investors include credit/debit cards and bank accounts, online transactions, internet content and search, online job postings, and investment conference call transcripts and filings.

WHAT'S USEFUL?

Typically, the first major task of any data scientist is to determine which data has the potential to be useful—and which may not. A particular dataset may be of poor quality; it may be very interesting but immaterial; it may be useful for one manager type (e.g., a high volume trader) but not for another (a long-term value investor).

The next task is to take *potentially* useful data and make it *actually* useful. This requires the development of clear research hypotheses; it also requires the cleaning and interpretation of raw datasets. Having the expertise and the infrastructure to do that is, in our opinion, clearly vital. But so is being an engaged, responsive and demanding consumer of data, rather than a passive one.

BENEFITS TO FUNDAMENTAL AND QUANT INVESTORS

We believe that getting the most out of big data is not just a matter of investing in personnel and computing power, but also of fully integrating data science into traditional disciplines—whether fundamental or quantitative. Analysts with a fundamental approach often consider a vast array of information and data to understand the condition of, and prospects for, a given company—they are what most people think of when they hear the term "securities analyst." The knowledge of such professionals is typically very deep, but comparatively narrow, encompassing a small number of companies.

Quantitative investors, in contrast, tend to be among the PhDs in the office, generally using advanced mathematical modeling, computer systems and data analysis to identify and execute on potentially profitable investment positions. Their knowledge is often broad but comparatively shallow, with an understanding of a few key things about every listed company in their investment universe. Data science can help fill the gaps in each approach by providing a more detailed view of the world, offering more texture to fundamental investment hypotheses and potentially corroborating or challenging the signals that quants may identify based on other metrics.

Importantly, portfolio managers and analysts from both camps are a vital source of the research hypotheses that define the scope of data scientists' work and bring shape and coherence to otherwise raw data sets. Data science can help provide many answers, but it would not even know the questions without the insights of experienced investors.

CASE STUDIES: BIG DATA IN ACTION

Thus far, we've talked in general terms about big data and its ability, in the right hands, to develop meaningful investment insights. However, it's probably best understood through the use of concrete examples. The rest of this article provides an array of real-life instances in which our data scientists were able to identify patterns that informed the views of our research analysts and portfolio managers.

Bank Deposits Point to Oil Production Levels

It is fairly intuitive that credit card and bank account data can tell us something about who is buying what and from whom, giving us insights into brand loyalty and sales performance for companies, stores and products. But would you have guessed that it can also provide a real-time insight into how much oil the U.S. is producing?

Some 20,000 – 50,000 Americans lease their land to petroleum fracking companies. A number of trusts manage this process, paying them royalties that are proportionate to the amount of oil being extracted at any point in time. By analyzing the aggregate trust deposits into these lessors' bank accounts, it was possible to figure out the statistical relationship between the payments and oil extraction generally, thus creating a daily estimate of U.S. oil production.

We believe there is more to bank account data than consumer spending insights coming from payments out of accounts. Payments into accounts include things like these oil royalties and paychecks—key information for exploring what's happening behind some of the most important macroeconomic data releases.

Job Postings Reveal Capex Commitments

When the economy was powered by traditional manufacturing, we could get a good sense of business confidence from the capital expenditures that companies reported. Investments might start to show up in revenues six or 12 months later, and in aggregate, could provide insight into where we were in the business cycle.

Those signals are much weaker in our new economy of services and technology. This is a world of operational expenditure—wages, salaries, rents and the like—rather than capital expenditure. Hiring engineers and designers is the modern world's capex, but that information is not reported in quarterly corporate filings.

It is available in the form of job postings, however. We can now collect these from more than 8,000 U.S. public companies, representing almost three-quarters of all the job advertisements in the U.S. That can help us to see whether a company is hiring lots of engineers and designers in its early life and then filling positions in sales and marketing as it matures, providing insight into management's confidence in its business model.

Job postings can also tell us about the performance of certain suppliers to the companies that are hiring. For example, when

Microsoft's Azure started to surprise with its success in the cloud computing market, our technology analysts looked for real-time confirmation of the sustainability of this trend in IT job postings, the nature of which could shed light on future cloud expenditures. Based on our results, we believed that Azure was likely to sustain its success—but also that it was a preferred solution in the financial sector.

The Downside of 'Very Optimistic' Earnings Calls

Our firm has developed a natural language processing model that has identified more than 5,000 phrases of two or more words, which, when they appear in the transcripts of quarterly earnings calls, it may consider to carry positive or negative implications about the company.

Sometimes it is intuitive that these phrases should be construed as positive or negative. For example, "raise guidance" is seen as positive and "reduce guidance" is seen as negative. Similarly, "ahead of schedule" is better than "slower than." We would rather see "repurchase shares" than "equity offering."

But is "very optimistic" positive or negative? Correlation between this bigram (two-word combination) and subsequent stock performance, picked up from thousands of transcripts, indicates that it is a bad sign, on average. Management tends to say it when results have been poor and they want to persuade investors that a turnaround is on the way. Bigrams such as "closer look," "briefly review" or "quick update" may seem completely neutral, but analysis shows that the first tends to be positive and the other two negative—because management likes to get into details that reflect well on the business and gloss over the problems.

EXTRACT FROM AN EARNINGS CALL

half of the year. Let's now look at our segment operating results, starting with our Communications segment on Slide 8. The story of our Communications segment this quarter is stable revenues, growing EBITDA and expanding margins. Mobility continues to build momentum and deliver solid results across the board with revenue, EBITDA and margin growth while adding phone subscribers. Our Entertainment Group is delivering EBITDA growth, and Business Wireline revenue trends improved in the quarter, thanks to strength in strategic and managed services and about $125 million from IP licensing. But even without those licensing proceeds, Business Wireline revenue trends were the best that we've seen in years. And when you factor in strong business wireless performance, our Business Solutions revenue grew 2.3%. On the cost side, the team is doing great work in controlling content, promotions and other operating costs. Solid cost management was evident throughout the business, especially in our Entertainment and Business Wireline units. Let me give you some more details, starting with Mobility on Slide 9. Our Mobility business continues to perform very well. Service revenues grew by 2.4%. EBITDA growth was even higher at 3.1% and EBITDA margins margins expanded by 80 basis points with service margins of 56.1%. We had a strong quarter with 355,000 phone net adds, including 72,000 postpaid and 283,000 prepaid. And we added 388,000 smartphones in the quarter, further strengthening our customer base. Postpaid phone churn was up slightly to 0.86%, but was down sequentially. And at the same time, our prepaid business, especially Cricket, continues to perform at strong, consistent levels. Prepaid revenues were up nearly 10%. We had our 18th consecutive quarter of phone growth, and churn hit an all-time low at both Cricket and AT&T prepaid. With the network leadership and FirstNet expansion that Randall talked about earlier, we're confident that our wireless business will get even stronger as we evolve to 5G. In short, our network investments, particularly our spectrum deployment, are paying off, and we're not done yet. Now let's go on to our Entertainment Group results on Slide 10. Our focus on long-term customer value continues to impact our Entertainment Group. EBITDA grew both year-over-year and sequentially. This was the second straight quarter of EBITDA growth. Year-to-date, EBITDA is up about 4%. Expense reduction outpaced revenue declines, setting the stage for EBITDA growth. Broadband revenue growth helped us as well as continued growth in video ARPUs. The number of premium TV customers on the 2-year

Source: Thinknum. For illustrative purposes only.

ARE REWARDED CUSTOMERS GOOD CUSTOMERS?

One of our portfolio management teams wanted to know what benefits Starbucks was getting from its customer loyalty program. Our data science team turned to credit and debit card transactions for answers.

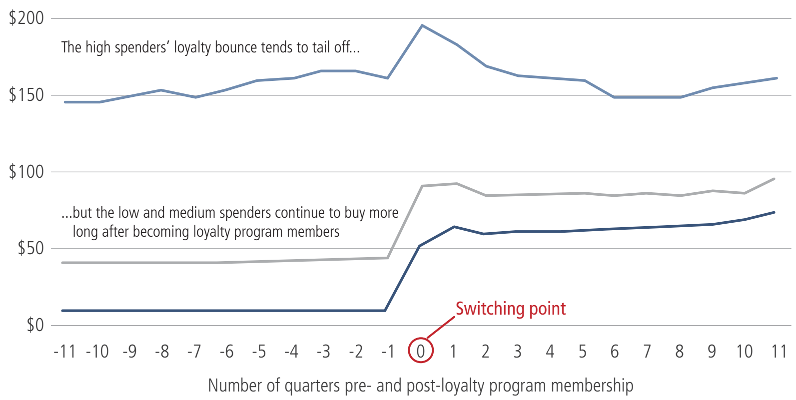
After identifying loyalty-program members, it found that they spent around $88 on average each quarter versus the non-member spend of around $30. We were also able to show that average revenue per user jumped substantially at the point of conversion to loyalty-program membership and that, for all but the very highest-spending customers, it remained high and even rose further over subsequent years.

CORONAVIRUS: LOOKING TO THE DATA

In asset management, data science and large-scale data engineering make it possible to understand and evaluate businesses at a larger scale and in more detail. This has never been more important than in the current business environment that is undergoing an unprecedented rate of change driven by the COVID-19 epidemic. Some businesses will emerge stronger and better positioned to succeed, and other businesses will fail. These changes may occur rapidly, but it will all be in the data. We are currently evaluating news and commercial activity across all sectors, globally and through several different lenses. For example, one thesis is that companies who treat their customers and employees well during this period of distress will be rewarded as the crisis passes. The data science team is working closely with the investment teams to focus our efforts.

Furthermore, the revenue growth associated with our sample of reward members closely tracked revenue growth subsequently reported by Starbucks. In our view, this correlation could be a tool when analyzing future performance.

LOYALTY PAYS AT STARBUCKS
Quarterly Average Revenue per User



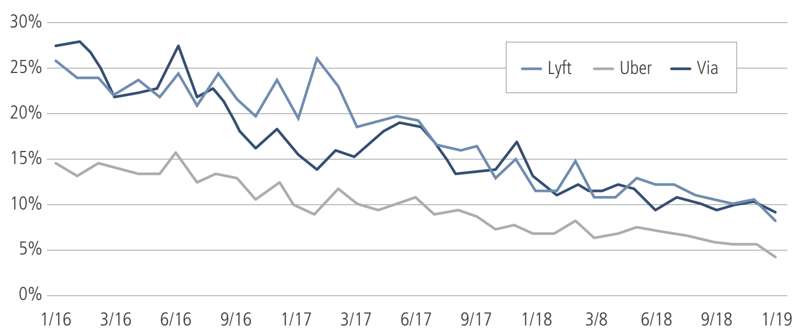
Source: Second Measure, Neuberger Berman.

Would Investors Pick Up Lyft and Uber?
The market leaders in ride-hailing apps both took their stock public last year, and both similarly suffered inauspicious first-day trading. Our analysts were not surprised by this because our data science team had confirmed their existing concerns about potential rising costs and declining sales growth.

On the costs side, from direct deposit information we were able to identify Lyft and Uber drivers from our sample of bank account data. Through 2017 and 2018 that data showed a rising percentage of drivers working for both companies, which points to declining driver loyalty and increasing driver churn even as the absolute number of drivers was rising.

On the sales side, from credit and debit card transactions we found evidence of rapidly declining new customer growth for all three of the leading ride-hailing firms. That suggests that future revenue growth could be ever more reliant on increasing use by existing customers.

DWINDLING CUSTOMER GROWTH
New Customer Rate: Rideshare Rivals



Source: Second Measure, Neuberger Berman.

BIG DATA IS ENJOYING A SURGE OF POPULARITY, BUT WHETHER THIS TREND LASTS MAY DEPEND ON EXPERTISE AND EXECUTION.

This example shows how data can help provide a unique window into the true performance of pre-IPO companies before they begin reporting publicly. It is also a great reminder that there may be more to bank account data than consumer spending insights. Payments into accounts include paychecks—key information for exploring what's happening to the labor mix and labor costs for individual companies, sectors and the economy as a whole.

Is Comcast a Good Place to Work?

Big data has a key role to play in analyzing environmental, social and governance (ESG) factors because many of them are either not reported or not standardized to afford useful comparison. The problem is most acute when it comes to "softer" social factors like human capital management.

U.S. telecom giant Comcast appears to have good reason to promote itself as a rewarding place to work, ranking high in multiple corporate and workplace comparisons, including for disabled employees. However, ESG rating agencies saw a different picture. One agency pointed out a planned acquisition and "multiple labor controversies" in rating the company far lower on labor management than the sector average.

Whom to believe? Big data provided some perspective through the opinions, reviews and ratings left by employees on the recruitment website Glassdoor. When we "scraped" those for the telecom sector, we found that Comcast ranked well above average. A look at job postings also helped. We like to compare the proportion of a company's workforce that is represented by currently live job postings with subsequent expense growth. We believe that gives us an insight into how many of those job postings relate to genuine expansion of employment at the company and how many are due to churning of the same role. On that metric, Comcast's ratio of 0.38 compared well with its sector peers, ranking seventh out of 22 companies.

CONCLUSION: CAPITALIZING ON BIG DATA

Big data is enjoying a surge of popularity, but whether this trend lasts may depend on expertise and execution. Indeed, many of the players that have tiptoed into data science could eventually become disillusioned when they find that data can be hard to read and potentially misleading without the right people and infrastructure to make sense of things. A real pitfall also would be to assume that big data can be an end in itself. Yes, it has great potential, but from our perspective it will likely prove more useful if integrated with more traditional research and quantitative techniques in seeking to produce genuine insights with meaningful investment implications. Managers who understand this dynamic, and are willing to commit sufficient time and resources, are more likely to enjoy success in capitalizing on big data over the long haul.

See disclosures and the end of this publication, which are an important part of this article.

Trust Company Corner

Estate Planning Under the SECURE Act

A number of rules for retirement accounts have changed, requiring a reassessment of beneficiary designations and estate planning strategies.

ELIZABETH M. SOMMER — *Chief Fiduciary Officer, Head of Personal Trust, New York, Neuberger Berman Trust Company*

The SECURE Act[1] spent a long time floating around Capitol Hill last year, and almost slipped through the cracks. But late in December, lawmakers made good on their intention to pass the federal government's most significant retirement savings-related legislation in more than a decade.

The new law has some positive news for retirees (and those hoping to retire), in particular raising the age at which they must start withdrawals from retirement accounts (so-called Required Minimum Distributions, or RMDs) from 70½ to 72 years. This change reflects the reality that many people now work beyond 70 years old, and thus should not be forced to begin spending down accounts before they need to. (Note that RMDs have been suspended for 2020 under the recently enacted Coronavirus Aid, Relief and Economic Security [CARES] Act. You should speak with your tax advisor for details.) The SECURE Act also includes a provision expanding the list of permissible expenditures from 529 Accounts and reversing the 2017 tax reform's much-maligned changes to the "Kiddie tax" rules. (See "SECURE Act: Key Provisions," on page 27.) All the rules became effective on January 1, 2020. This piece will focus on the changes with respect to retirement benefits.

On the downside, the law has introduced major limitations to popular "stretch IRA" strategies, which allowed individuals to leave retirement accounts to beneficiaries who could then base the schedule of RMDs on their own, presumably longer, life expectancies. Trusts were often named as the beneficiary so as to shield payments from potential creditors or limit access to the IRA on the part of younger, less prepared or spendthrift family members.

Now, instead of allowing withdrawals over the course of a lifetime, most beneficiaries (herein, non-eligible beneficiaries) are required to take the assets out of the IRA within 10 years. Beneficiaries who can still make withdrawals based on life expectancy are limited to:

- The surviving spouse
- Minor children of the account owner until they reach majority (under applicable law), at which point the 10-year window applies
- The disabled or chronically ill (as defined by the tax code)
- Anyone less than 10 years younger than the IRA owner (for example, a sibling)

For those who have retirement accounts, it is an opportune time to take a close look at their beneficiaries and planning strategies, including existing trusts. Certain trusts that were previously named as beneficiaries on retirement accounts may no longer be appropriate. We outline some specific considerations below.

BENEFICIARY CHOICE

It is common practice to name a spouse as primary beneficiary on retirement accounts, and that remains viable under the new rules. Previously, grandchildren were sometimes named as contingent beneficiaries instead of children to capitalize on their longer life expectancy and the compound growth potential in these tax-deferred vehicles. However, because grandchildren are now subject to the 10-year limitation, those who selected the younger generation because of the stretch-out may wish to revisit their choice.

Account owners who want to name disabled or chronically ill persons as beneficiaries should keep in mind that such beneficiaries must fit definitions provided by the tax code to be eligible for the stretch-out. It is also essential that account owners take care to avoid potentially disqualifying a disabled person from receiving government benefits. For that reason, leaving the accounts to a special needs trust rather than directly to disabled individuals may make sense in some cases.

TRUST ASSESSMENT

As mentioned, many individuals have historically left their retirement accounts to trusts in order to insulate them from beneficiaries' potential creditors or to avoid leaving assets to individuals who may not manage or use them prudently. Such trusts have typically come in two forms: conduit trusts, where distributions from the retirement account must be distributed immediately to the beneficiary, and accumulation trusts, which can hold onto distributions from retirement accounts in the discretion of the trustee or rules set forth in the trust document.

[1] The Setting Every Community Up for Retirement Enhancement Act of 2019.

Under the new law, conduit trusts may still be attractive, and are the necessary vehicle to enable a trust for the benefit of a spouse to qualify for the estate-tax marital deduction. Accumulation trusts still serve the useful purpose of asset protection and controlling the distribution of assets to the beneficiaries; the required 10-year withdrawal comes out of the IRA, but with an accumulation trust, it does not have to be distributed to the beneficiaries.[2]

More broadly, we believe individuals should look at the terms of any trusts created to serve as a retirement account beneficiary for their children and other non-eligible individuals; they may wish to convert conduit trusts to accumulation trusts to prevent circumstances in which an entire IRA balance could be paid out to children or grandchildren much earlier than originally anticipated. Strategic selection of your primary and contingent beneficiaries could greatly enhance the flexibility of your overall estate plan even with the latest changes to the retirement rules. Careful consideration of all the options should be undertaken when structuring your estate plan.

ROTH CONVERSION

The SECURE Act may also make Roth conversions worth another look.

When converting a traditional retirement account to a Roth, the account owner suffers an immediate tax hit (applying ordinary income tax rates to pretax contributions and investment earnings). Historically, this created some reluctance to execute conversions, with the added rationale that, although beneficiaries may eventually face income tax consequences from inheriting a traditional retirement account, they could stretch out distributions based on their own longer lifespans.

With the new 10-year payout window, the taxes faced by non-eligible beneficiaries are potentially more immediate, and for those in their prime earning years (in higher tax brackets), likely more costly. As such, account owners may want to balance their own tax cost against that of their children. In some cases it may make sense to pay income taxes today on a partial or full conversion to reduce a taxable estate (for example, if a taxpayer is vulnerable to New York's estate tax "cliff," which unwinds the state estate tax exemption rapidly above certain asset levels). The stock market's recent decline may also tip the scales toward current conversion, given the potentially reduced asset levels subject to taxation. Once the conversion has taken place, beneficiaries could enjoy up to 10 years of potential income tax-exempt growth before withdrawing the asset income tax-free.

Keep in mind that, with a Roth, neither the account owner nor, after his or her death, the spouse (if named as the primary beneficiary) must take RMDs. So, assuming the money is not needed, the opportunity for tax-exempt growth on Roth IRAs could be substantial—and can potentially be extended another 10 years when the account goes to children or other non-eligible beneficiaries.

GIVING TO CHARITY

Rather than converting or maximizing retirement account legacies for individual beneficiaries, next year (when RMDs resume) account owners may prefer to donate their annual RMD amounts to charity, starting at age 70½. (This age minimum for donations does not increase with the RMD age under the SECURE Act.) The RMDs will not be recognized as taxable income, which may be especially valuable to those who are not itemizing deductions and thus would otherwise fail to get a tax benefit from the donations. Historically, account owners could donate up to $100,000 per year, although provisions in the SECURE Act may reduce this amount.

CONCLUSION: TIME FOR REVIEW

The SECURE Act is an important piece of legislation, which warrants a fresh review of beneficiary designations, documents and planning arrangements. It could be that current choices remain optimal, or that they are still worth keeping in place despite perhaps less favorable tax treatment. On the other hand, documents may need significant changes to avoid unanticipated results. Talking with financial, tax or trust and estate advisors, sooner rather than later, can help resolve these issues and reorient retirement and estate planning to suit overall personal goals.

SECURE ACT: KEY PROVISIONS

- The age to begin taking RMDs has increased from 70½ to 72 for those turning 70½ after 2019. The option to take a first RMD by April 1 of the following year remains in place. Note that RMDs have been suspended for 2020 under the CARES Act.
- Individuals working past age 70½ can continue to make contributions to their traditional IRA from earned income. In general, they can also make contributions to spousal IRAs.
- Most beneficiaries must receive retirement account distributions within 10 years, but can do so at any time during that period.
- Permissible uses of 529 Account proceeds now include the cost of apprenticeship programs and repaying student loan debt in limited amounts.
- Kiddie Tax treatment reverts to pre-2018 rules, applying the parents' income tax rate to the child's unearned income above certain thresholds rather than less favorable trust rates. For 2018 and 2019, taxpayers can apply either approach, amending past returns as necessary.

[2] Those who draft these trusts may need to be careful to avoid including now non-eligible entities, including the estate, charities or non-"see-through" trusts, to prevent acceleration of the distribution schedule to a mere five years, which may occur in certain situations.

'CARES' AFFECTS RMDS, CHARITABLE DEDUCTIONS

The federal government recently approved a massive fiscal stimulus package to alleviate financial impacts of the COVID-19 outbreak. Some elements of the Coronavirus Aid, Relief and Economic Security (CARES) Act relate to retirement accounts and charitable donations:

No RMDs for 2020

The law has waived required minimum distributions (RMDs) for the current tax year. This waiver not only provides income tax savings to retirees, but helps avoid withdrawals based on high end-of-year (2019) levels at a time when many accounts are down substantially since then.

Individuals who have already taken their 2020 RMDs may be able to unwind them. Specifically, the withdrawal must have been within the past 60 days, and there cannot have been a rollover in the last 12 months. This relief is not available for inherited IRAs.

Those whose RMD beginning dates were in 2019, and were waiting until April 1 to take their distributions, do not have to do so.[1]

Charitable Deductions

On a temporary basis, it's possible to make cash contributions to public charities of up to 100% of adjusted gross income (versus the previous 60%). The contributions must occur during 2020 and cannot be paid to a Donor Advised Fund, a Public Support Organization or any other support organization. Payments above the yearly limit can carry forward for five years. Also, for those who do not itemize, donations of up to $300 in cash per year will now be allowed.

We suggest you speak with your financial, tax, or trust and estate planning advisors before taking any actions.

[1] The Act also provides for penalty waivers of early withdrawals up to certain levels, and increases loan maximums from retirement accounts, although, depending on the circumstances, removing assets at a time of market weakness may be counterproductive for long-term savings goals.

Highlights 2Q 2020

FROM THE ASSET ALLOCATION COMMITTEE

- Our base case is that reported COVID-19 infections will peak in the U.S. in May or June.

- Given containment efforts, we expect a global recession that affects small business and consumers directly, although rapid extensive response by fiscal and monetary authorities can absorb the worst of the shock.

- Equity and credit markets are likely to remain volatile and may take another leg down before rebounding after a peak of infections is confirmed.

- We favor a two-step approach, focused on risk management and diversification until infections peak, followed by increasing allocations to higher-quality risk assets, including:

  - **INVESTMENT GRADE CREDIT:** Once liquidity issues ease, potential compression of elevated spreads and coupon payments could make risk-adjusted returns competitive with equities on a risk-adjusted basis (modest overweight view).

  - **LARGE-CAP EQUITIES:** Larger companies (modest overweight) are generally less leveraged and vulnerable to the epidemic than smaller names (neutral). Given uncertainty reflected in valuations, we think it won't be necessary to chase cyclical sectors early in the market recovery.

- We have downgraded our 12-month views on segments including:

  - **HIGH YIELD FIXED INCOME:** The asset class (neutral) is vulnerable to defaults, the oil price war and credit crunch.

  - **EMERGING MARKETS:** Health care systems, supply chains, commodity weakness and U.S. dollar strength are potential headwinds for debt and equity (both neutral).

  - **PRIVATE EQUITY:** With public market declines, private equity (neutral) may be overly weighted in many portfolios. The use of available capital should help general partners support portfolio companies but may affect investor returns.

All views are over the next 12 months. See disclosures at the end of this publication, which include additional information regarding the Asset Allocation Committee and the views expressed.

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