CARLYLE

January 2021

Global Insights

5 Questions for 2021

Predictions are difficult, especially when they're about the future.[1] But sometimes predictions do not suffice even when they're accurate. A year ago, those who bucked conventional wisdom and predicted a recession in 2020 were proven right, but probably not for the reasons they specified. Last April, many forecasters expected a strong rebound in the second half of 2020 as the pandemic was brought under control and social distancing restrictions were lifted. The rebound largely materialized even as the predicate for it did not; the U.S. finished the year with 3,500 new fatalities and 230,000 new infections each day, with offices in central business districts operating at 15% capacity, air passenger traffic down -60%, and nearly 20% of restaurants in the country permanently closed.[2]

While there is little doubt that the number of vials of vaccine(s) manufactured, distributed and shot into arms will be among the most important macroeconomic variables of 2021, we know from last year's experience that it's not all that matters. The pandemic changed the way we live, work and entertain ourselves. Advance knowledge of vaccination rates would not be sufficient to predict where the economy or asset prices finish the year. Additional questions need to be answered.

1 Old Danish proverb traditionally attributed to physicist Niels Bohr.
2 National Restaurant Association, Kastle, and COVID Tracking Project, January 2021.

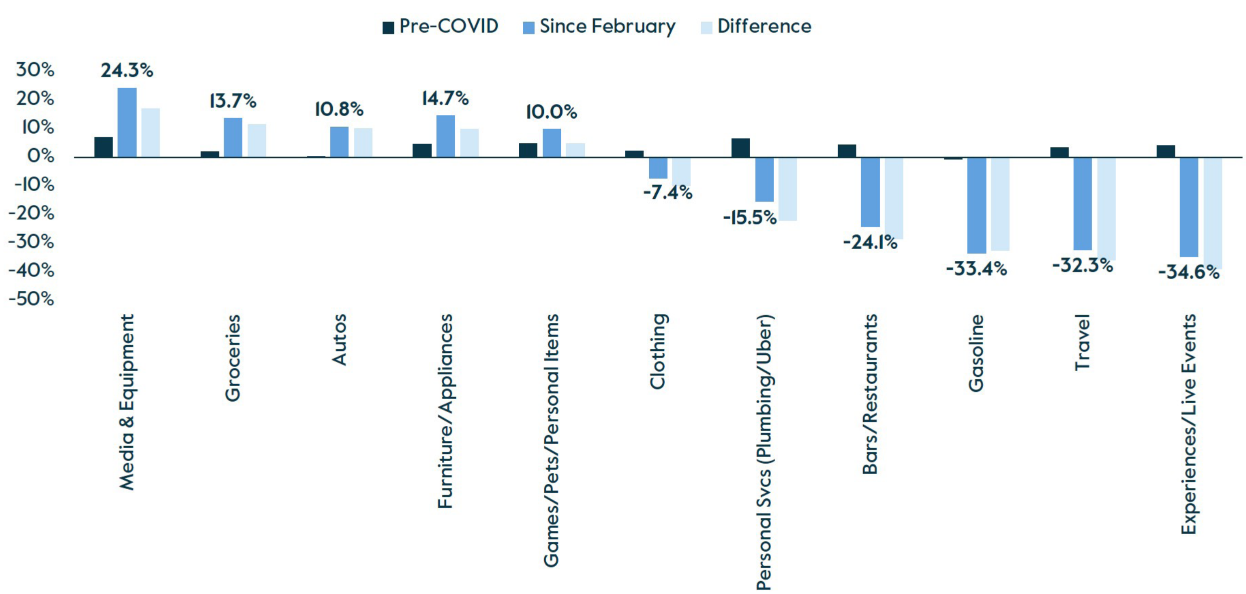
I

Will the post-vaccine rebound halt momentum for industries that thrived in 2020?

Overall business revenues fell more in 2020 than in any 12-month period during the Global Financial Crisis (2007-09), but the more salient difference was the *dispersion* in results across sectors. In 2008-09, only one-in-20 public companies experienced revenue declines in excess of 50%.[3] In 2020, twice as many businesses endured losses of this magnitude, but more than 5% of public companies also reported revenue *growth* of over 50%.[3] This means that there were more businesses with greater than 50% revenue growth in 2020 than companies whose revenues fell by -50% in the GFC.

The same dispersion is evident in the household consumption data. The *reallocation* in spending across categories exceeds the *contraction* in total household spending itself (Figure 1). The savings from sharply reduced travel spending, and fewer visits to bars, restaurants, movie theatres and amusement parks financed a boom in digital media and equipment (+24%), new and used auto sales (+11%), furniture and home appliances (+15%) and even pets and related supplies (+10%). So while total U.S. consumption finished 2020 down -1.5% from year-ago levels, spending in these categories was 11% higher, on

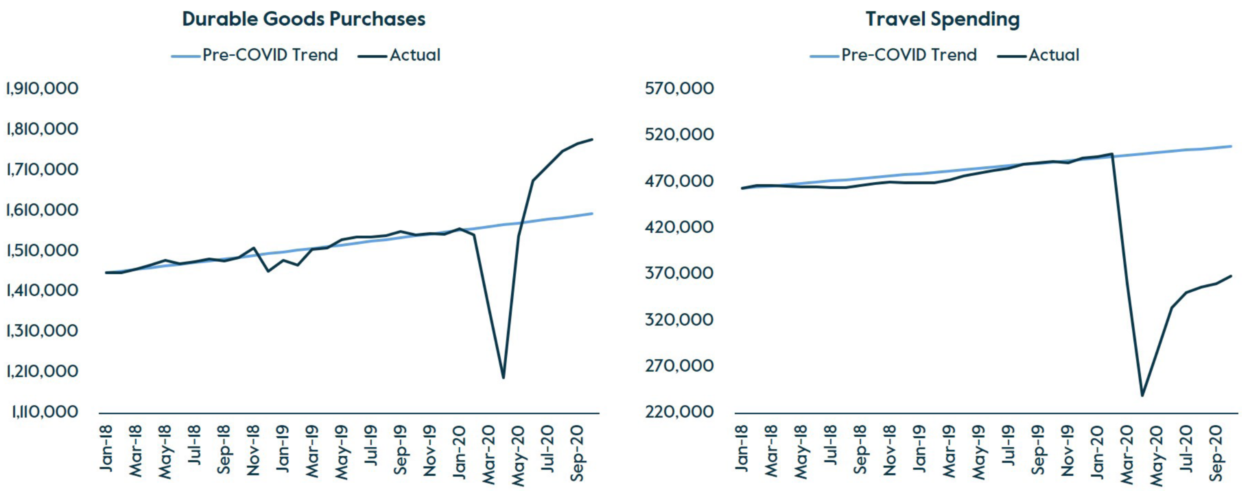
Figure 1.
Annualized Spending Growth by Category



3 Measured on a year-over-year basis to trough in activity. Greenwood, R. et al. (2020), Sizing Up Corporate Restructuring in the COVID Crisis," NBER Working Paper 28104.

Figure 1. Source: Carlyle Analysis; Bureau of Economic Analysis, January 2021. There is no guarantee these trends will continue.

Figure 2.
Decline in Travel Spending Financed Durable Goods Purchases in 2020



average, than one would have expected at the start of the year (Figure 2).

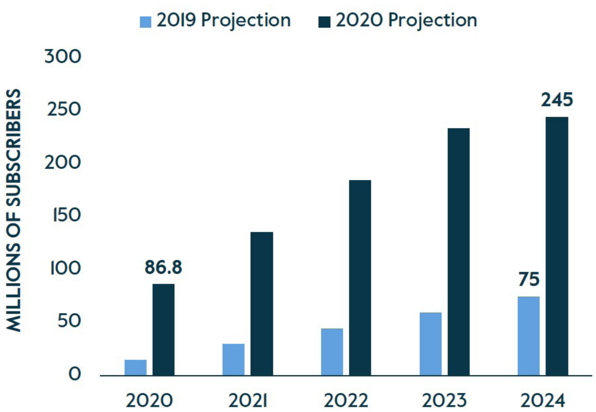
As a result, the 2021 recovery is likely to prove far more complicated than the one that followed the GFC, when "consumer discretionary" spending on autos, boats, airline tickets and resort bookings rose in tandem. A rising post-vaccine tide is unlikely to lift all boats; the stronger the post-pandemic rebound in the hardest-hit categories, the greater the likelihood that revenues will not only slow but actually contract for 2020's winners. Likewise, the more persistent some of pandemic-induced lifestyle changes prove to be, the greater the number of insolvencies among the sectors banking on a sharp recovery.

In just nine months since the start of the pandemic, some digital streaming services experienced what they would have previously considered to be *five years'* worth of subscriber growth. Did the pandemic "frontload" future growth into 2020 by depriving consumers of other entertainment options? Or is this the new run rate to expect going forward? Many analysts now expect cumulative subscriber growth to be 3x to 4x larger than expected a year ago. While these projections may come to fruition, they are not likely to coexist with the 4x to 6x rebound in spending at theatres, sports venues and live events implied by bottom-up EPS estimates (Figure 3). There is some risk that the market today is discounting mutual exclusive realities: a linear extrapolation of 2020 results for the winners in digital media and durable goods and a full rebound to pre-pandemic trends in travel, leisure and in-person experiences (Figure 4).

Figure 2. Source: Carlyle Analysis; BEA Data, December 2020. There is no guarantee these trends will continue.

Figure 3.
Persistence of 2020 Trends or Reversion to Normal?

Disney+ Subscriber Growth Revised Up 3.25x



22% Expected EPS Growth on Vaccine Rebound

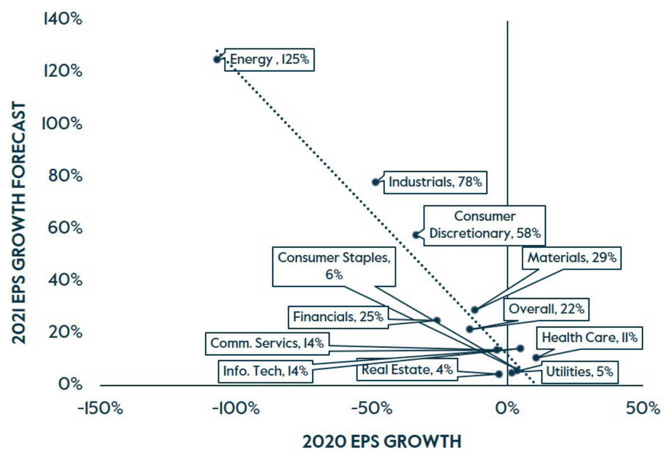
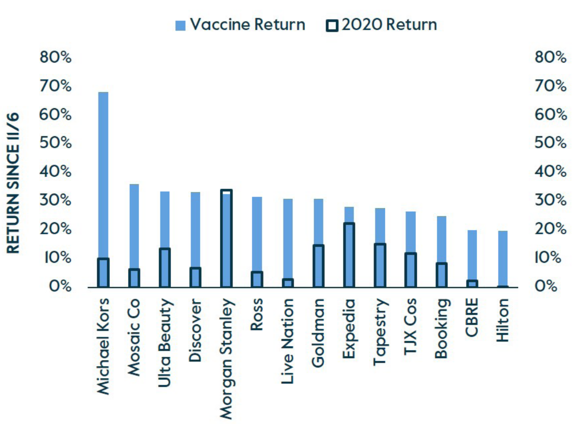


Figure 4.
Markets Erase Losses in Hard-Hit Sectors Without Taking Back Gains Among 2020's Winners

Vaccine Beneficiaries



"Social Distancing" Stocks

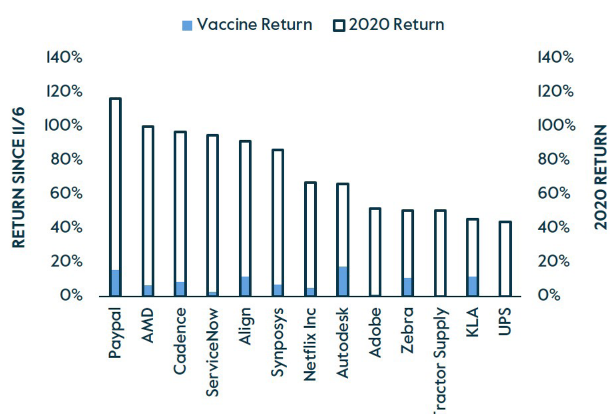


Figure 3. Source: Carlyle Analysis; Walt Disney Company Investor Day; FactSet, January 2021. There is no guarantee these projections will materialize.
Figure 4. Source: Carlyle; Bloomberg, January 5, 2021. There is no guarantee these trends will continue.

2

What Does the Fed's New Policy Framework Mean for Asset Prices?

One could argue that ultra-low interest rates and central bank liquidity backstops have resulted in a market that's *rationally* Pollyannaish. With downside risks seemingly truncated by the free option written by policymakers, it should be no surprise that each asset gets priced to its best outcome in the best of all possible worlds. And with overall economic activity depressed relative to long-run potential, the runway for growth may be long enough to allow each and every optimistic narrative to play itself out over the next several years.

One doesn't need to subscribe to this argument to recognize that today's record high purchase price multiples are almost exactly where one would expect based on the historic relationship between corporate earnings yields and long-term interest rates (Figure 5). Lower (real) interest rates boost asset prices by depressing the discount rates applied to all future cash flows. While economy-wide expected returns may have declined with the fall in bond yields, the premium from bearing market, liquidity and macroeconomic risks has not. Indeed, the return on

Figure 5.
Record Valuations Consistent with Low Bond Yields

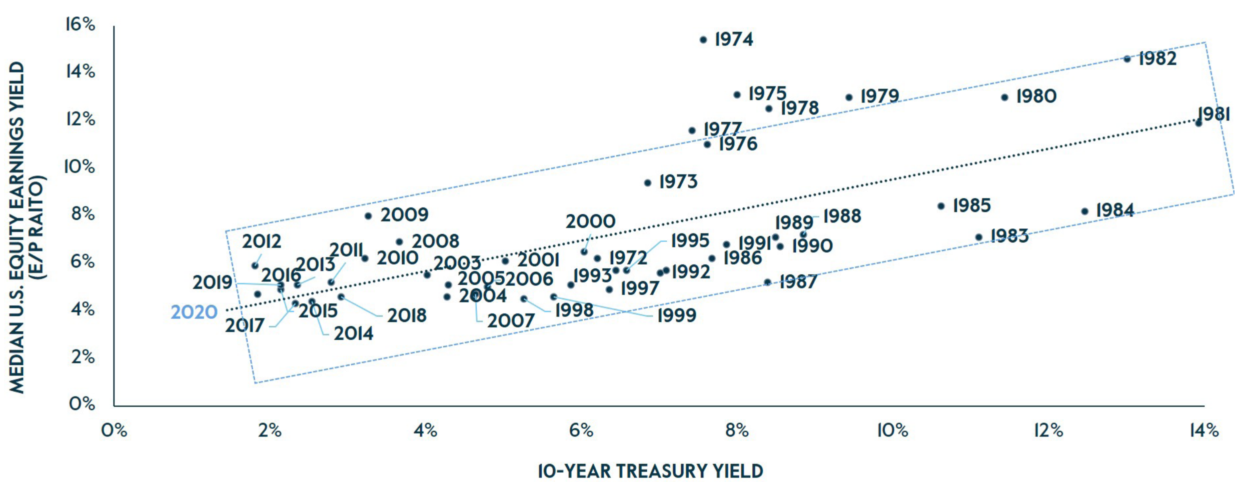
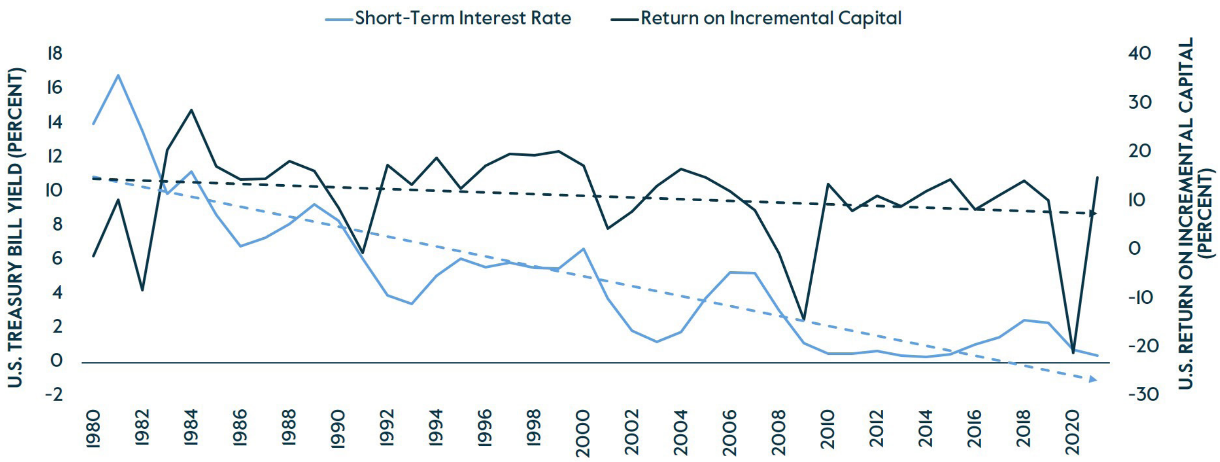


Figure 5. Source: Carlyle Analysis of Ken French, U.S. Treasury Data, 2020. There is no guarantee any trends will continue.

Figure 6.
Risk-Free Rates Fall 40% More than the Real Return on Capital



discretionary risk capital has been steadily widening relative to the risk-free rate for years (Figure 6).

With asset prices so leveraged to low rates, should investors worry about a sudden and unforeseen change in monetary policy? As Marx wrote of revolutionaries, central banks make their own history but not under self-selected circumstances. Savings-investment fundamentals dictate the appropriate level of interest rates, not the whims of policymakers.

The Fed's cardinal mistake of the last decade was not stoking inflation by "printing money" – as many commentators feared in 2010-13 – but failing to appreciate how structural economic changes had depressed "equilibrium" interest rates (Figure 7). Interest rates that seem "too low" relative to historic experience can be perfectly appropriate, even restrictive, when desired savings increases relative to investment demand. The sustained increase in corporate cash holdings (Figure 8) offers perhaps the clearest evidence of this shift, as the nearly infinite scalability of digital platforms increases retained earnings (corporate savings) relative to corporate investment.

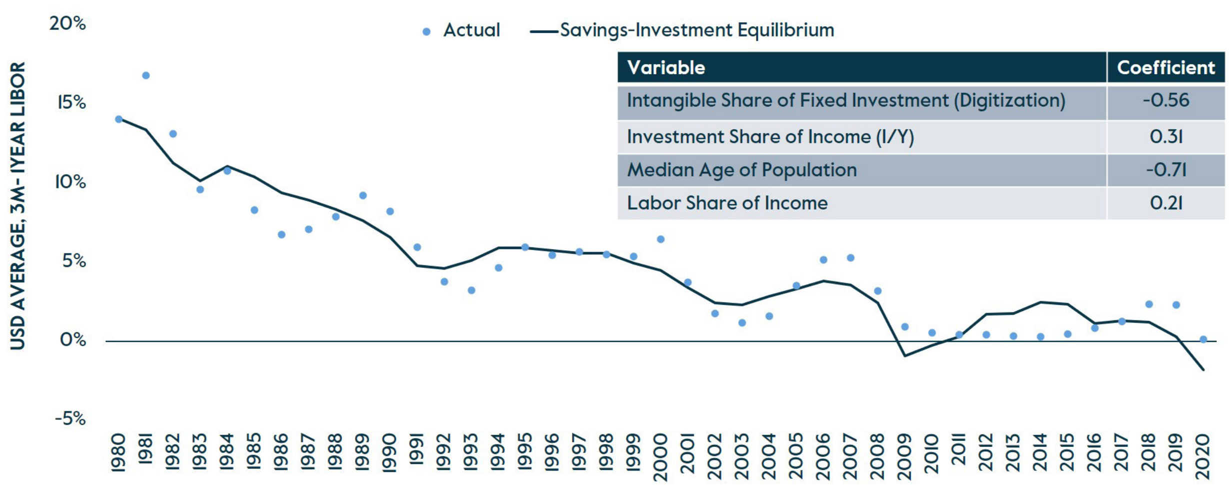
The Fed seems to have learned that lesson. Formal changes to its policy framework announced in August 2020 should ensure that policy does not become unduly reactive to the first signs of wage gains or price pressures in the coming years. The Fed seems to be telling investors that while it may lack the room to cut rates today, it can still meet its objectives, over time, by refraining from raising rates tomorrow.

While ostensibly aimed at hastening the pace of job creation and wage gains, the net effect could be to strengthen convictions among investors that Pollyanna has this one right.

Figure 6. Source: Carlyle Analysis; IMF WEO Database, October 2020. There is no guarantee any trends will continue.

Figure 7.

Structural Factors Explain 88% of the Decline in Interest Rates



Variable	Coefficient
Intangible Share of Fixed Investment (Digitization)	-0.56
Investment Share of Income (I/Y)	0.31
Median Age of Population	-0.71
Labor Share of Income	0.21

Figure 8.

Increase in Corporate Savings (Retained Earnings) Reflects in Exponential Rise in Cash Holdings

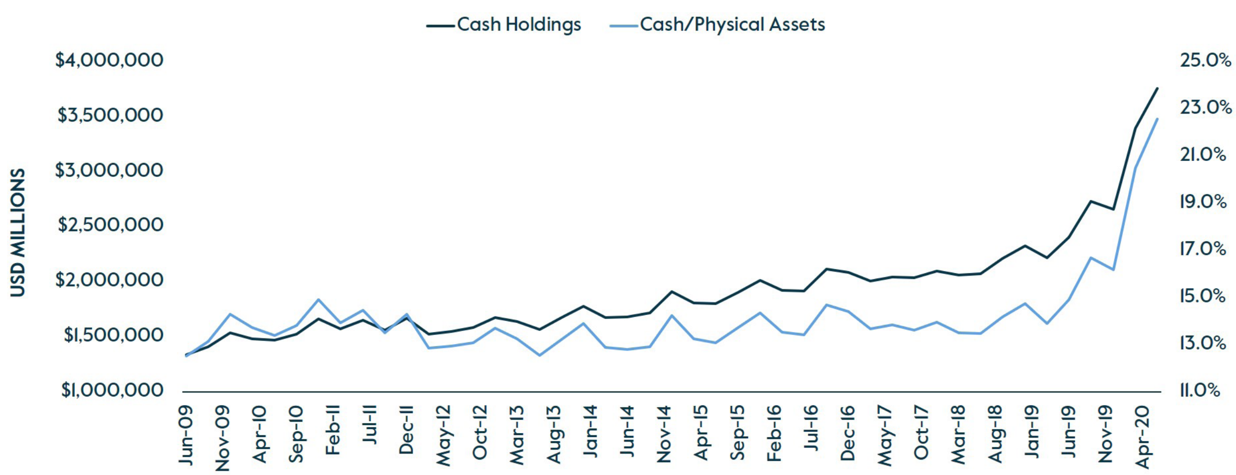


Figure 7. Source: Carlyle Analysis; OECD; Federal Reserve Data; IMF WEO 2020. There is no guarantee any trends will continue.
Figure 8. Source: Carlyle Analysis; OECD; Federal Reserve Data. There is no guarantee any trends will continue.

3

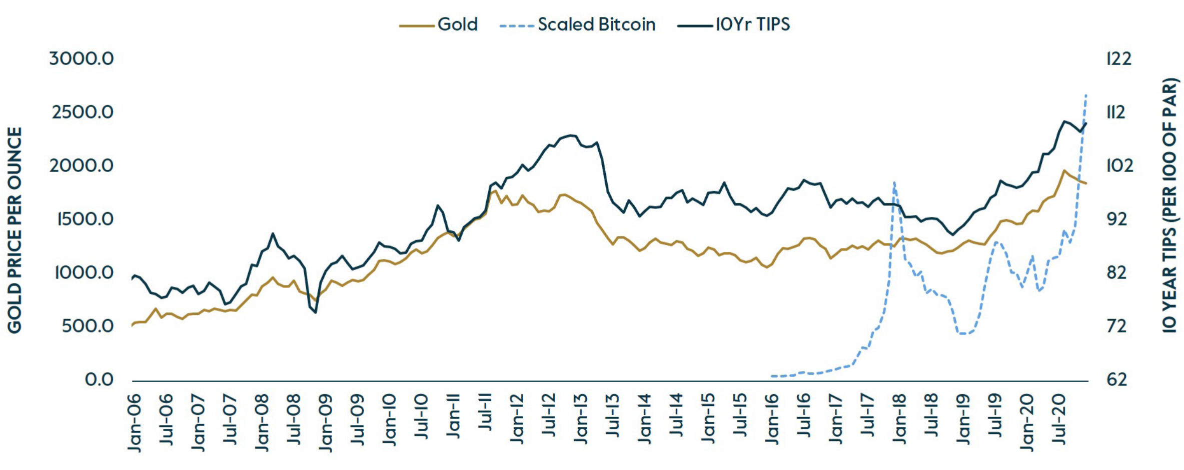
How Much Further Does the Dollar Have to Fall?

Should the Fed deliver on its promise to keep rates pinned near zero, the most obvious loser would be the U.S. dollar. Contemporary discussions of currency risk quickly turn to Bitcoin and other cryptocurrencies, whose demand skyrockets on the same fears that have historically motivated gold purchases (Figure 9). While it may seem quaint to think of the dollar's value in relation to other currencies, the core problem in international finance today is not that the dollar is worthless, but that it remains too rich. Though the greenback closed 2020 at its lowest level since mid-2018, it still looks significantly overvalued relative to most currencies whether measured on the basis of interest differentials, relative production costs, or balance of payments trends.

At the end of 2020, the total stock of dollar-denominated debt owed by corporate borrowers outside of the U.S. stood at nearly $13 trillion, of which over $4 trillion was owed by businesses in Emerging Market economies.[4] As the Fed tightened last cycle, the differential between U.S. interest rates and those available in the rest of the world widened by nearly 350bps (Figure 10). Between the May 2013 "taper tantrum" and its cyclical peak, the dollar appreciated by 35% against a broad basket of currencies, devastating EM businesses that depend on domestic currency revenues and assets to repay their USD liabilities.[5]

As U.S. rates plunged over the past year, this differential has fallen back to late-2014 levels, consistent with an additional -11% decline in the broad dollar over the next year. When adding the effects of larger fiscal deficits and Treasury issuance – which have already pushed U.S. net national savings rates into negative territory – the implied decline would be closer to -20% (Figure 11).

Figure 9.
Gold Prices Tightly Correlated with Inflation Risk Premium



4 Bank for International Settlements, Total credit to non-bank borrowers by currency of denomination, December 2020.
5 Every 1% increase in the dollar has been associated with a -0.3% decline in EM GDP growth Hofman, B. and T. Park. BIS Quarterly Review, December 7, 2020.
Figure 9. Source: Carlyle Analysis; Federal Reserve Bank of St. Louis.

Figure 10.
Broad Dollar Index & Interest Rate Differentials

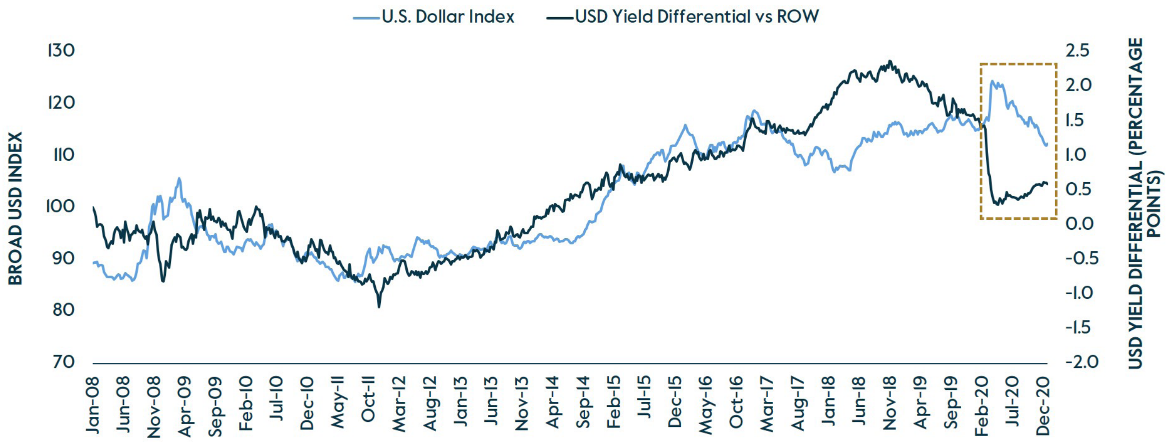
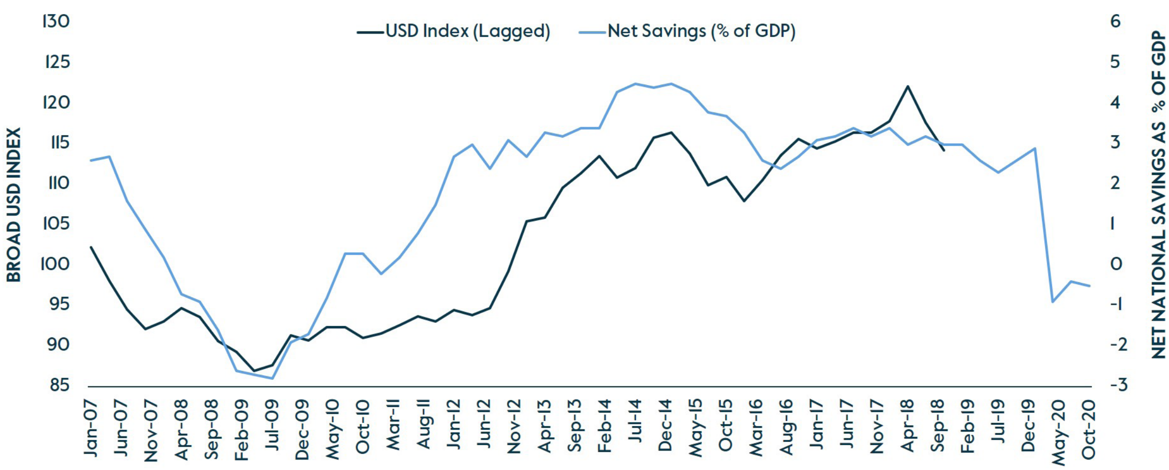


Figure 11.
Broad Dollar & Net National Savings Rate



Such declines would not only be helpful to EM borrowers, but also consistent with the stated goals of the Fed and Treasury Secretary-designate Janet Yellen, who intend to "run the economy hot" to achieve broad-based and inclusive wage gains. While U.S. wage growth last cycle did not feel particularly robust, dollar appreciation caused domestic wage rates and production costs to rise by an average of 23% relative to those in EM economies (excluding China).[6] U.S. workers cost more on a relative basis even if that didn't show up in their paycheck. Engineering a -15% to -20% decline in the dollar through greater fiscal-monetary coordination would be the perfect way to create space for more rapid domestic wage gains, especially in a world where inflation pass-through is limited by the dollar's dominant international role.[7]

6 Source: Carlyle Analysis; IMF, WEO Database, October 2020. There is no guarantee any trends will continue.
7 Dominant Currencies and External Adjustment, IMF, July 20, 2020.
Figure 10. Source: Carlyle Analysis; ICE Indices, January 5, 2021.
Figure 11. Source: Carlyle Analysis; BEA and Federal Reserve Board Data, January 5, 2021.

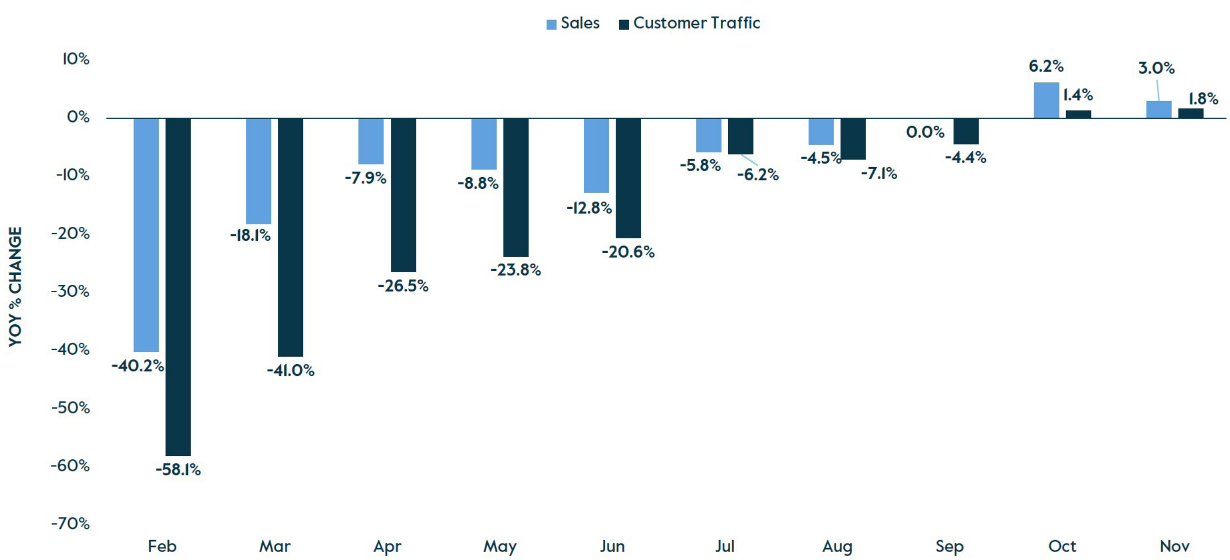
4

Has China's Relative Economic Position Strengthened?

At the onset of the pandemic, it seemed that no economy would suffer more than China's. The sharp drop in its Q1-2020 GDP exposed how dependent global value chains had become on Chinese manufacturing and logistics. Multinational corporations were expected to onshore production, identify alternative suppliers, and otherwise create redundancies that would make the Chinese "node" less central to global production networks. Questions about the government's handling of the initial outbreak also seemed likely to raise diplomatic tensions with key trading partners, further depressing trade and investment flows.

Less than a year later, China seems poised to emerge from the pandemic in a much stronger relative position. While global GDP likely contracted by -4% last year, China's expanded by 3%.[8] China's economy is now 20% larger than that of the U.S. and nearly 5x larger than Japan's when measured at purchasing power parity. The country's response to the coronavirus was so effective at suppressing new infections that

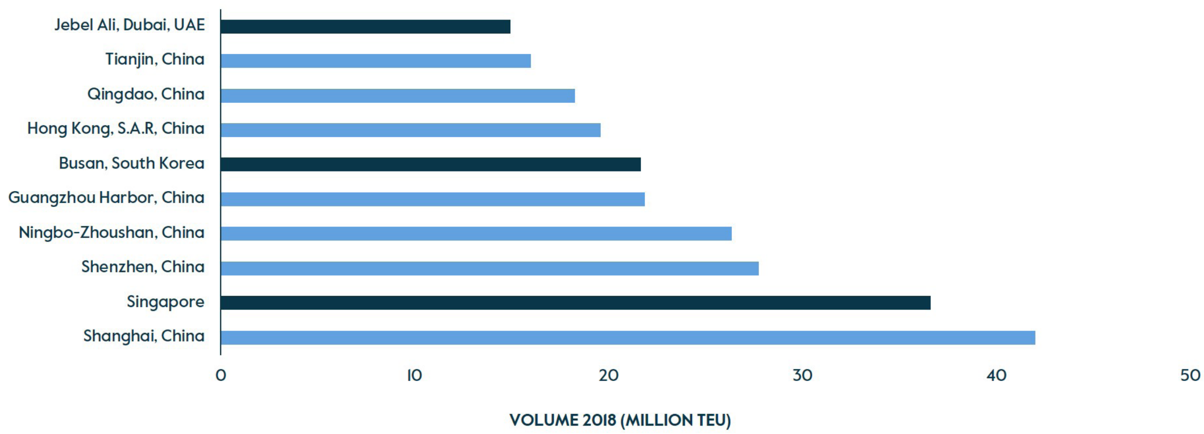
Figure 12.
Rebound in Chinese Retail Sales & Foot Traffic



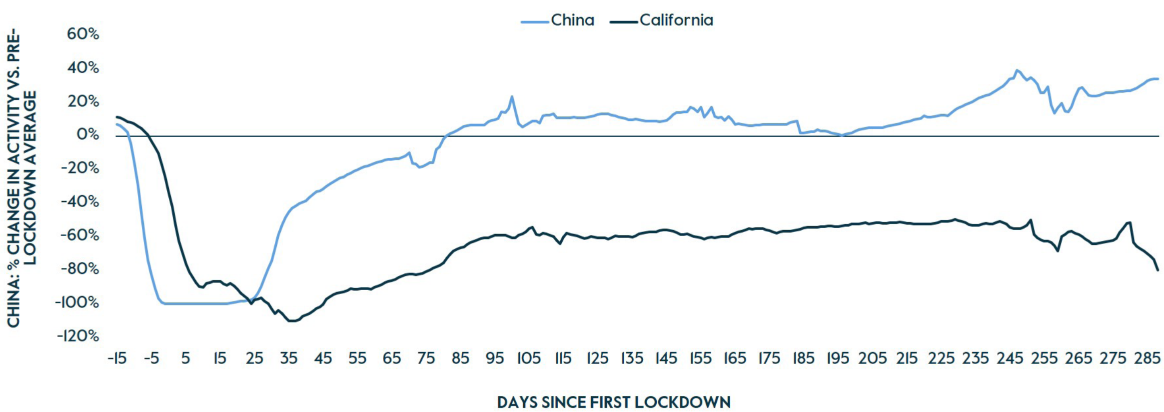
8 Carlyle Analysis. IMF, WEO Database, October 2020.
Figure 12. Source: Carlyle Analysis of Portfolio Company Data; CPCA, November 2020. There is no guarantee any trends will continue.

Figure 13.
Chinese Infrastructure & Logistics Outperform

7 of World's 10 Busiest Container Ports Located in China



Chinese Logistics Volumes Rebound Swiftly



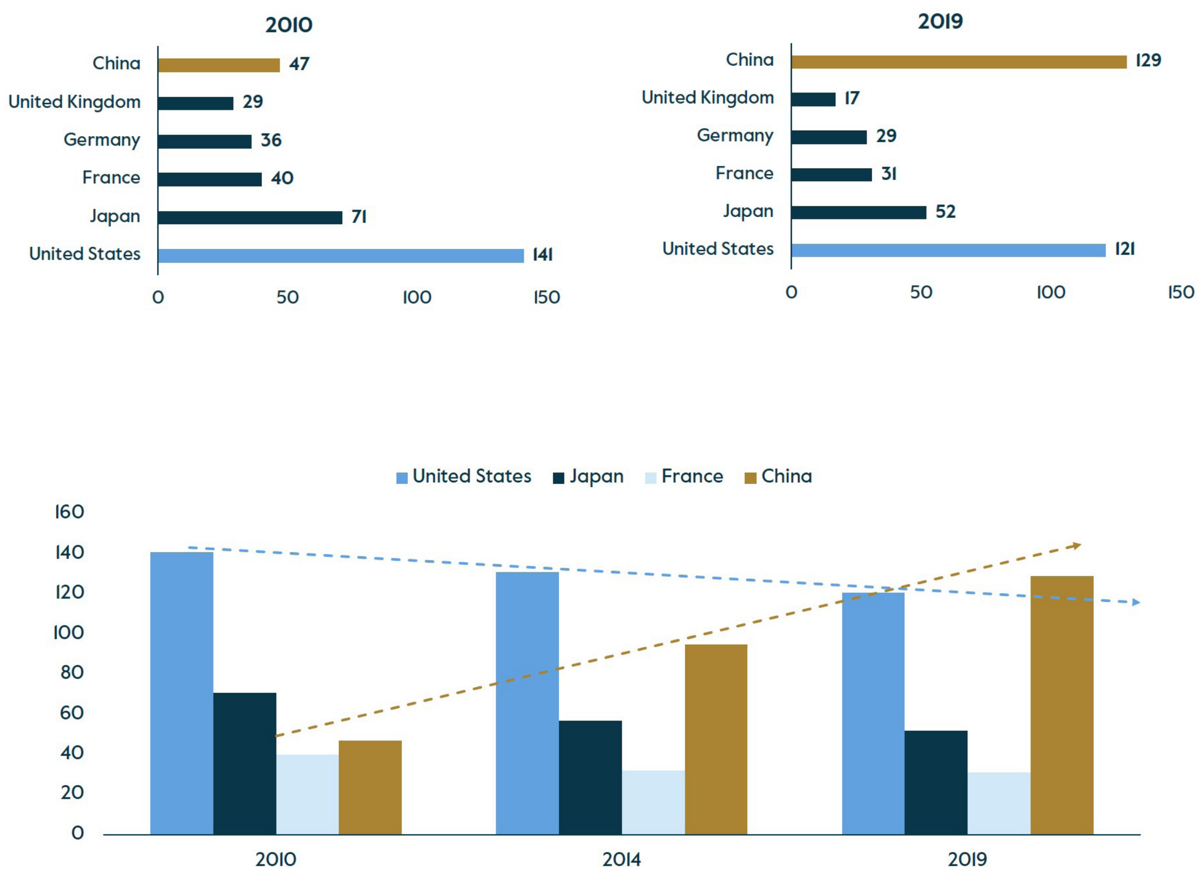
Western government officials and news agencies initially questioned the accuracy of their reported figures.[9] Mass testing, centralized quarantine, and digital contract tracing eventually became the hallmark of East Asia's successful efforts to combat the virus. Domestic air travel, retail foot traffic and work life largely returned to normal (Figure 12) while languishing in Europe and North America.

Multinationals found it was a lot easier to leave China in theory than it was in practice. The debt-financed infrastructure projects that led so many hedge funds to bet on China's implosion in 2015-16 now accommodate over half of all global merchandise trade.[10] Boasting seven of the 10 busiest ports in the world and a logistics sector that sprung back to full capacity within 80 days of the initial lockdown orders (Figure 13), China was the

9 C.f. "How accurate are China's virus numbers?" PBS, April 1, 2020.
10 Carlyle Analysis. World Bank, WDI Database, 2020. Gross Inflows + Outflows.
Figure 13. World Shipping Council, October 2020; Carlyle Analysis of Portfolio Company Data and Google Mobility, December 2020. There is no guarantee these trends will continue.

Figure 14.

For First Time Ever, Another Nation (China) Home to More Fortune 500 Businesses than the U.S.



last place any business would want to leave in the midst of a pandemic. The bilateral trade surplus with the U.S. looks to have returned to its prior peak.

The future will be more complicated. Growth will come to depend on domestic rather than external demand. The U.S. seems likely to restrict access to key technologies, like semiconductors, and prevent Chinese software and phone-based apps from accessing U.S. user data. But these obstacles are hardly insurmountable. Exports only account for 19% of China's GDP, down from 38% in 2007, and a figure likely to fall further as household consumption accounts for a larger share of growth. Access to critical technology remains a challenge, but China is already home to more large, internationally active businesses than the U.S. (Figure 14). This set of obstacles looks much easier to maneuver than those of 12-months ago.

Figure 14. Source: Carlyle; Fortune Global 500, 2020. There is no guarantee any trends will continue.

CARLYLE

5

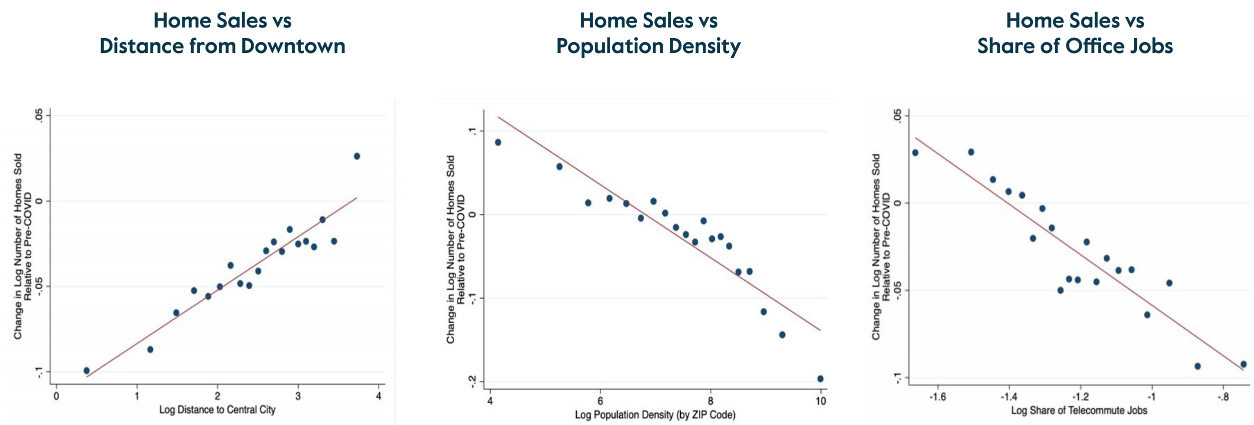
What Do Migratory Patterns Suggest About the Future of Work and State Finances?

At the onset of the pandemic, “recovery” was often equated with a return to normal life and business operations. This was generally the pattern observed in China and other Asian economies. But in the U.S. and Europe, many firms returned to pre-pandemic levels of output, productivity and sales on a predominately remote basis, weakening the “back-to-the-office” imperative and allowing workers to relocate to homes and communities better suited to new realities.

In the U.S., people not only fled the city for the suburbs but also left many major metro areas entirely, with significant out-migration from New York, Chicago, and California.[11] Relative to the pre-COVID baseline, housing demand has been nearly perfectly correlated with distance from central business districts. The biggest losers have been the densest zip codes and areas with the largest share of jobs that can be performed remotely (Figure 15). Overall U.S. home purchases finished the year 20% above pre-COVID levels (Figure 16), with sales and house price appreciation concentrated in suburbs and smaller metro areas.

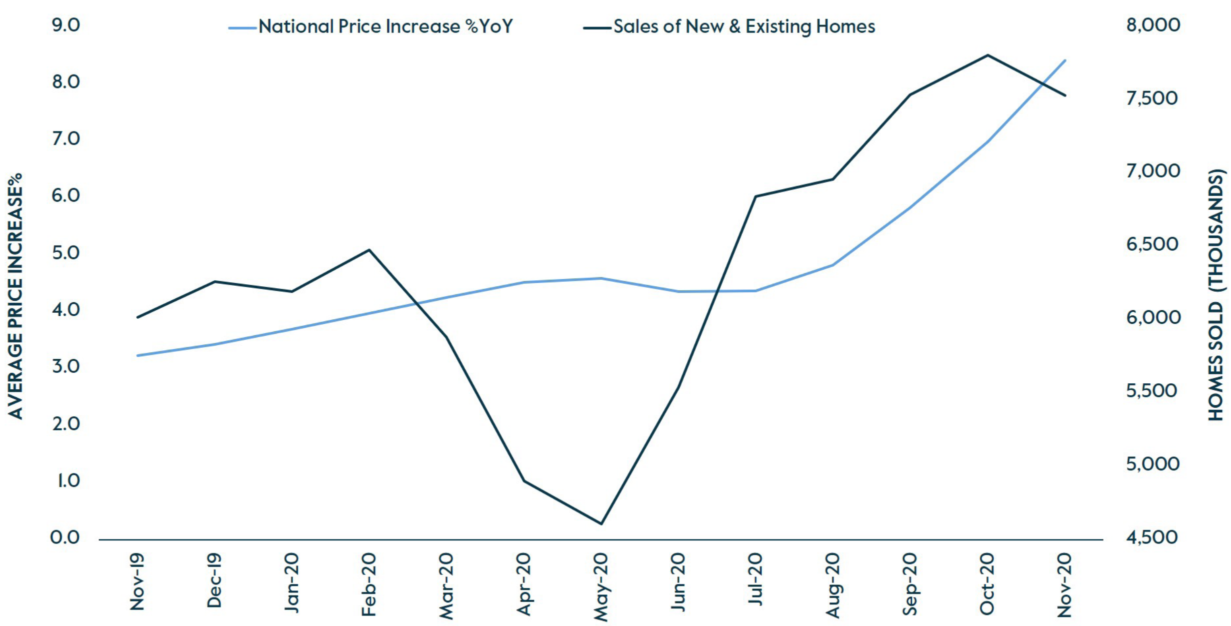
Initially, out-migration was attributed to short-term

Figure 15.
Pandemic-Induced Shifts in Housing Demand



11 United Van Lines, National Migration Data, 2020.
Figure 15. Source: Federal Reserve Bank of Dallas, “The Impact of the COVID-19 Pandemic on the Demand for Density: Evidence from the U.S. Housing Market,” October 2020.

Figure 16.
Rise in House Sales & Price Appreciation



inconveniences, like closed bars, restaurants and gyms – amenities that tend to be concentrated in the densest zip codes. Many of the renters who left may return after the pandemic, but home purchases are rarely short-term decisions. The typical U.S. homeowner has been in their current residence for 13 years[12] and 61% of first-time buyers are still in that home eight years after the purchase.[13] Moreover, the exodus from crowded and high-cost metro areas in favor of smaller and more reasonably priced communities has been apparent in the data for the past several years.[14] The pandemic may have simply accelerated out-migration by changing attitudes about working from home, allowing households to relocate without switching jobs.

These migratory patterns could create "facts on the ground" that force employers to embrace remote work to compete for talent. Rather than demand that workers return, some employers could even follow them out-of-state, as seems to have occurred with some tech businesses departing the San Francisco Bay Area for Texas.[15] If so, we could see more distress in the office market, as demand for existing floor space turns out to be softer and markets clear at lower rents than analysts currently anticipate. In addition, post-COVID fiscal gaps in states with the highest office density could prove to be even larger than currently expected, as remote work removes barriers that had previously barred the exit of a large share of the tax base.

12 Census Bureau, January 2021.
13 National Association of Home Builders, 2013.
14 Carlyle Analysis, Census Bureau, America Communities Survey, 2020.
15 "Oracle moving headquarters to Austin, Texas, joining other tech companies in California exodus," December 11, 2020.
Figure 16. Source: Carlyle Analysis; Federal Reserve Bank of St. Louis. Census Bureau. There is no guarantee these trends will continue.

Jason Thomas

HEAD OF GLOBAL RESEARCH
jason.thomas@carlyle.com / (202) 729-5420

Jason Thomas is the Head of Global Research at The Carlyle Group, focusing on economic and statistical analysis of Carlyle portfolio data, asset prices and broader trends in the global economy. He is based in Washington, DC.

Mr. Thomas serves as Economic Adviser to the firm's Global Private Equity and Global Credit Investment Committees. His research helps to identify new investment opportunities, advance strategic initiatives and corporate development, and support Carlyle investors.

Prior to joining Carlyle, Mr. Thomas was Vice President, Research at the Private Equity Council. Prior to that, he served on the White House staff as Special Assistant to the President and Director for Policy Development at the National Economic Council. In this capacity, Mr. Thomas served as primary adviser to the President for public finance.

Mr. Thomas received a BA from Claremont McKenna College and an MS and PhD in finance from George Washington University, where he studied as a Bank of America Foundation, Leo and Lillian Goodwin Foundation, and School of Business Fellow. Mr. Thomas has earned the chartered financial analyst designation and is a Financial Risk Manager certified by the Global Association of Risk Professionals.