BBVA Research

Creating Opportunities

United States Economic Outlook

Second quarter 2020

Index

Closing date: May 15, 2020

1. Editorial

Although the U.S. economy is experiencing the worst recession since the Great Depression, it will eventually get through as the restrictions evolve from strict physical distancing toward a phased reopening. Almost all states that implemented stay-at-home orders are ending them before the end of May. In addition, unconventional intervention from the Federal Reserve –approaching $3tn- and massive fiscal support -around $4tn- have restored the functioning of financial markets and will help individuals and firms to ramp up spending, hiring and investment thereby boosting aggregate demand and supply. However, the pace of the recovery remains highly uncertain. Full normalization of economic activity requires a reproduction rate of the virus lower than 1, which can only be accomplished with high levels of herd immunity and eventually with a vaccine and effective medical treatment.

Analysis from the Center for Infectious Disease Research and Policy suggests different scenarios in the next 18 to 24 months, ranging from small repetitive waves to a combination of large and small waves or waves without a clear pattern, depending on the seasonality of the virus, how quickly herd immunity is developed and how effective are the mitigation strategies. As the country strives to find a balance between bringing the economy back to normal while keeping its residents safe, we should expect social distancing, workforce-protection controls, and case-based interventions (testing, contact tracing, self-isolation, etc.) that can become more or less strict depending on the rate of infection and the operating capacity of the healthcare system.

Non-essential businesses with moderate risk like restaurants, retail stores, gyms, movie theaters and museums will be able to begin normalization by lowering the number of patrons, spacing clients or reshaping physical spaces. For nonessential activities with high risk, involving large crowds or prolonged close contact like sporting events, concerts, commercial flights, cruises and conventions, normalization will take more time. This implies that economic activity could remain below full capacity for a prolonged period. Moreover, elevated uncertainty will incentivize individuals to increase their savings and reduce discretionary spending. Many businesses will shut down while others will reexamine their priorities and strategic plans. For individuals, fear and anxiety could alter major life decisions such as buying a home, moving the place of residence or changing careers.

This could trigger a significant reallocation of resources with long-lasting effects on labor markets and investment. As in previous cycles, there will be winners and losers. Recessions amplify routine job losses, which are associated with jobless recoveries. The more damaging effects are for low-skilled individuals, minorities and the young, which have a higher participation in hardest hit sectors such as accommodation and food services or where working remotely is impossible like meat plants. According to the Pew Research Center, 26% of low income families ($40K or less) say they, or someone in their household, have been laid off or lost a job because of the coronavirus, compared with 12% for upper income families ($120K or more). This share is 29% for Hispanics, 22% for Blacks and 17% for Whites. In this sense, the recession will widen income inequality, which could exacerbate frustration and polarization, forcing a reexamination of labor regulations, the social safety net and the healthcare system, while creating fertile ground for populism.

Companies providing digital services have thrived during the lockdowns, while those exposed to prolonged supply and demand shocks or that rely on physical spaces like department stores and hotels, will struggle to remain afloat. The survival of a few major players will increase market concentration. Meanwhile, a reassessment of national security may favor hospitals, research laboratories, pharmaceuticals and medical devices manufacturing.

The health crisis will have long lasting effects on the way economic agents interact with each other. The dramatic shift toward a contactless society favors digital and mobile technologies like e-payments, e-commerce, e-learning, virtual and augmented reality, self-driving alternatives, and tele-medicine, as well as data security and artificial intelligence. This could imply new working frameworks, demand for new jobs, goods and services, accelerated automation and digitization, and adjustments in urban mobility and smart retrofitting. Higher efficiency of essential workers, improvement of routine tasks, reduction of commuting time, lower pollution and carbon emissions, and enhancement of the work-life balance could boost productivity significantly. In contrast, limiting physical human interaction could diminish the exchange of ideas and innovation and exacerbate other problems like loneliness, violence and addiction.

The pandemic will alter the relationship between the government and its constituents. Individuals may be willing to accept lower privacy protection and greater government intervention and surveillance mechanisms in exchange for lower health risks. Mandatory testing, vaccinations, immunity passports and other control mechanisms will be common. The health crisis could be used by the government to intervene in private sector activities with a high impact on national security and healthcare. This would be detrimental for economic and individual freedoms. In March, the Justice Department requested from Congress the ability to ask chief judges to detain people indefinitely without trial during the pandemic. Outside the five states that conduct elections entirely by mail, a myriad of restrictions and poor infrastructure could generate chaos in the upcoming November election as seen recently in Wisconsin.

Likewise, there could be greater appetite for stricter travel restrictions, border controls and more restrictive immigration policies. In April, the President issued a proclamation suspending immigration during the pandemic. In addition, there is a higher risk of increased trade tariffs, protectionism and regulation. The government could decide that certain industries are more valuable and impose mandates on location or production. All of these policies would limit potential economic growth. Moreover, granting more powers to the government could be difficult to roll back after the crisis.

Massive increases in the Fed's balance sheet, fiscal deficits and public debt will reduce the policy space for the next downturn. Having a government acting as borrower, lender, payer and insurer could be costly and inefficient. Industry bailouts could give rise to moral hazard problems and pervasive incentives like perpetuating zombie firms, encouraging unsustainable debt levels and rewarding rent seeking. Unwinding of the Fed's balance sheet could take decades while restoring fiscal sustainability will require rising taxes, cut spending or a combination of both. Politicians do not necessarily opt for the most efficient options.

Although the pandemic promotes a sense of solidarity, social cohesion and global cooperation particularly in the medical field, it may encourage deglobalization, nationalism and isolation. According to the World Bank, during the first four months of 2020, 82 countries have implemented 132 export controls of medical supplies and medicines, and 22 have done the same on agricultural and food products. This curtails the fight against the global pandemic and causes grave harm to poorer countries. For global value chains, the trend toward diversification, reshoring and regionalization will accelerate, implying more reliance on North America.

Covid-19 will mark a turning point in our history and could have detrimental long-term economic consequences. Depending on the success of the policy responses and exit strategy, we could experience a V, U, W or L-shaped recovery. Therefore, the pandemic should not be an excuse to implement inefficient policies, increase protectionism or limit democracy. Instead, policymakers should prepare for the next pandemic, modernize work support programs (sick leave, universal basic income, unemployment insurance coverage), invest in R&D and infrastructure with high social returns, lower the regulatory burden, and provide enough flexibility to the private sector to allow the development of new technologies that protect people's health and their overall wellbeing.

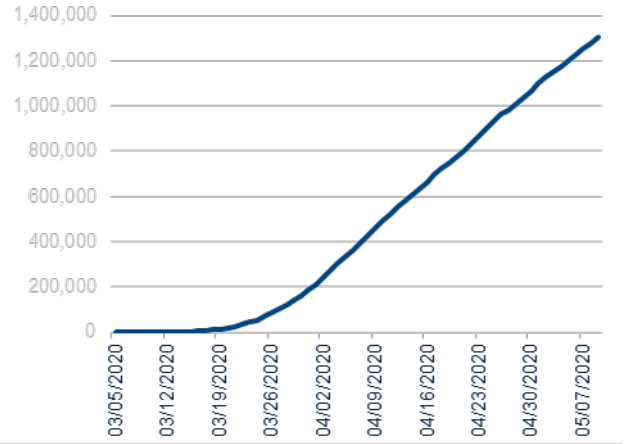
2. A new normal: how the U.S. economy recovers in a post-Covid world

With the world engaged in one of its most dramatic economic and health crises in modern history, we now expect growth in the U.S. to decline by 4.4% in 2020. This assumes a precipitous drop in GDP of 32.3% QoQa in 2Q20, on par with growth rates not seen since the Great Depression. However, given extraordinary levels of uncertainty, annual growth could decline by a smaller or larger magnitude (-3% to -7%). Unfathomable job losses will be the norm in the short-run. Similarly, we continue to expect that, even after providing historic fiscal and monetary accommodation, policy makers will need to provide additional support in order to mitigate the economic fallout. With the hope of therapeutics and widespread vaccinations, there remains the possibility that the ongoing recession will not evolve into a prolonged depression that leaves deep and lasting generational scars.

Optimal social distancing in a Covid-19 world

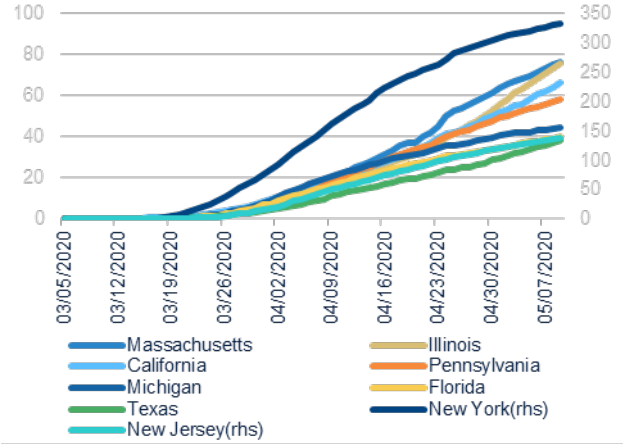
An important element of the recovery in the U.S. economy will be the degree to which social distancing (voluntary and involuntary) prevails in 2H20 and in 2021. Some estimates suggest that late homogeneous relaxation in social distancing could lower output by 40%, whereas a staggered relaxation based on population susceptibility would only result in a 10% reduction in output.

Figure 2.1 **Cumulative Covid-19 cases in U.S.** (number)



Source: BBVA Research, CDC & JHU

Figure 2.2 **State cumulative Covid-19 cases** (number)



Source: BBVA Research, CDC & JHU

With the understanding around the epidemiology of Covid-19 improving, it seems the parallels with the Flu Pandemic of 1918-1919 are minimal. First, studies of exposed populations have shown that in states such as New York and California, case rates may be significantly higher and thus case fatality rates could be much lower and consistent with

less deadly strains of influenza. Second, new research is showing that infectiousness rates (R_0) may be orders of magnitude higher, and could be close to estimates of chickenpox and measles. Third, the vulnerable populations are very different; the Spanish Flu disproportionately impacted younger individuals with no preexisting health conditions while Covid-19 has impacted those 65 years and older with pre-existing conditions.

Evidence from distancing measures, or non-pharmaceutical interventions (NPI) such as school closings, prohibitions on public gatherings and quarantine/isolation, implemented during the Spanish Flu Pandemic in the U.S. showed that NPIs did help flatten the curve, but were not in place long enough to impact overall mortality. This suggests that prolonged distancing will be beneficial for society, but the question is what is the socially and economically optimal level of distancing?

Ultimately, distancing policy should be swift, but discontinuous, and should be kept until there is an effective treatment (vaccine, therapeutics, etc.). It should be implemented in various degrees and never be too restrictive. Social distancing needs to be compulsory. Recent studies show that, if individuals are left to determine the socially optimal level of distancing, they will not adequately discount external health benefits of distancing and thus voluntary social distancing will fall short of what is needed to combat a pandemic effectively. In addition, as was the case with Covid-19, the initial level of infection was beyond a level that could be lowered with voluntary distancing, as individuals could not assess the scope of the crisis.

Given the fact that many Covid-19 carriers remain asymptomatic, the level of infections already present in the U.S. far exceed the threshold needed for a noninterventionist strategy to work effectively. However, according to experts, achieving herd immunity would require the share of the population with antibodies to be approximately 70-90% to lower the effective reproduction rate (R_E) to something consistent with herd immunity. This suggests that social distancing will have to ebb and flow over the coming quarters until a vaccine is widely available. However, the economic tradeoffs associated with prolonged shutdowns and the spectrum of preferences from an institutional and demographic perspective suggests there will not be a uniform solution across the country.

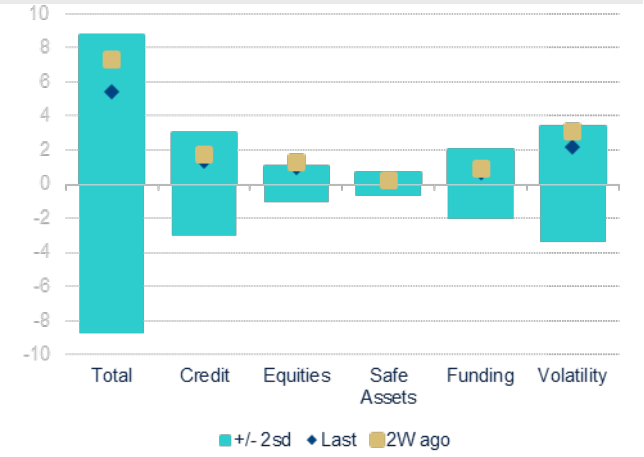
Financial tensions ease after rapid build up

At the onset of the Covid-19 crisis, financial conditions experienced a nontrivial tightening. Equity prices plummeted while market volatility, measured by the VIX, surged. Similarly, corporate bond spreads trended towards peaks not seen since the global financial crisis. Meanwhile, the historic drop in commodity prices and safe-haven flows pushed up the dollar relative to both advanced and emerging market currencies. This prompted a fire sale as investors built up cash reserves, resulting in even lower asset prices. In some markets, trading activity and price-discovery collapsed.

However, on net, after the Fed lowered rates to the zero lower bound, shifted to a boundless asset purchase program, increased liquidity and funding measures, provided loan assistance and direct lending to households and business, and adjusted regulatory requirements for banks, market functioning was restored and overall financial conditions have steadily improved. The dollar has stabilized, equity prices have bounced back, volatility edged down, investment-grade corporate bond spreads have narrowed from the March highs while interbank funding pressures have been alleviated. Astonishingly, this has all occurred with the backdrop of a rising number of Covid-19 cases, tepid incoming economic data, a rising number of businesses shutting down or moving into delinquency and bankruptcy, a highly contested presidential election, elevated levels of policy uncertainty, and nontrivial risks of additional waves of infection.

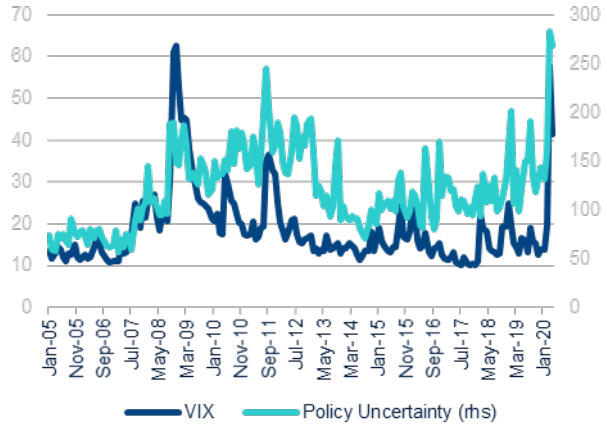
To some extent, the recovery in asset prices reflects a bounce back from the low levels reached at the onset of the crisis rather than a clear signal that the risks have evaporated. That is, investors are no longer discounting a worst-case scenario that would have been more likely in the absence of monetary and fiscal intervention. In addition, markets could be anticipating that policymakers stand ready to do whatever it takes in case some of the downside risks begin to emerge and thus, the recovery will take place one way or another.

Figure 2.3 **Financial stress index** (> 0 stress)



Source: BBVA Research & Haver Analytics

Figure 2.4 **Market volatility & policy uncertainty** (% & 1985=100)

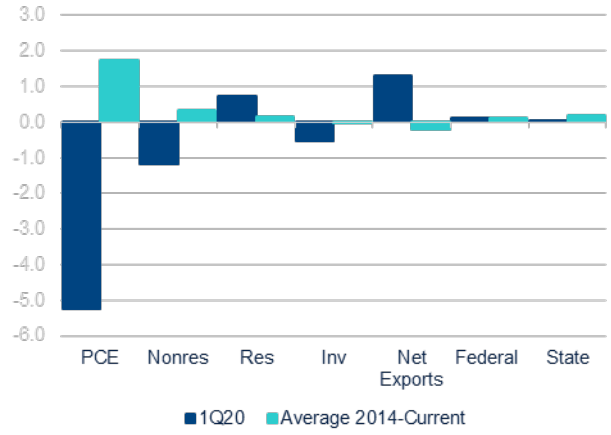


Source: BBVA Research, policyuncertainty.com & Haver Analytics

U.S. economy facing historic fallout from Covid-19 crisis

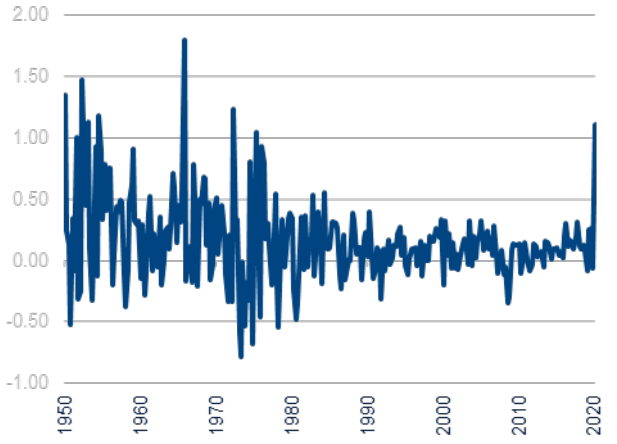
For the first time since 2014, GDP declined from the previous quarter, dropping 4.8%QoQa, in line with our expectation (-4.7%). While one quarter of negative growth falls short of the benchmark used to date economic recessions, we expect the U.S. to experience the largest contraction in economic activity in 2Q20 since the Great Depression. In fact, a -32.3%QoQa decline in quarterly GDP during the second quarter will be the third largest since the 1920s. However, with a nontrivial share of the economy beginning to reopen midway through the second quarter, we continue to assume positive growth in 2H20. In fact, on an annualized-basis our baseline assumes a rebound of 17.2% in the second half of the year. Nonetheless, GDP will not return to pre-crisis levels (4Q19) until 2Q22.

Figure 2.5 **Contributions to growth in 1Q20** (pp)



Source: BBVA Research, BEA & Haver Analytics

Figure 2.6 **Contribution to growth from food away from home** (pp)



Source: BBVA Research, BEA & Haver Analytics

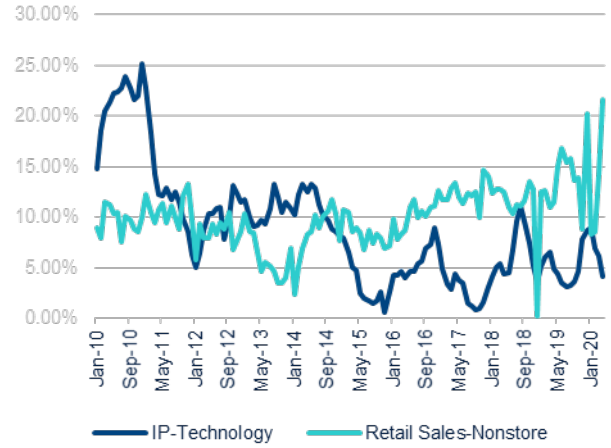
In the earliest phases of the crisis, the consensus was that containment efforts would disproportionately impact supply chains given that the majority of Covid-19 cases were thought to be contained in China. However, with the breakdown in containment efforts and the rapid spread of Covid-19 around the world and in the U.S. the balance has shifted. Social distancing measures have all but grounded airline travel, depressed hotel occupancy rates while large social gatherings, movie theaters, concerts, live sporting events and other recreational activities were canceled or discouraged through stay-at-home orders or voluntary isolation. In fact, the contraction in the consumption of healthcare services, transportation, accommodation and recreational services was the largest on record.

Notwithstanding a few service segments such as grocery stores, wholesale and retail delivery services, remote-technology oriented segments such as cloud-computing, social networking, streaming, work-from-home (WFH) and video-conferencing, consumption of services plummeted -70% MoMa in March. In fact, the slowdown in the consumption of healthcare services, transportation, accommodation and recreational services was the largest on record. Meanwhile, consumption of motor vehicle parts and clothing and footwear declined -98% and -97%, respectively. Conversely, off-premises consumption of food and beverages was up more than 700%. Overall, private consumption expenditures declined -7.6% QoQa during 1Q20, the worst performance since 2Q80.

Going forward, we expect these volatile and extreme trends to continue but in the opposite direction with the service sector rebounding quickly on account of the relaxation of stay-at-home orders. The nuances of a pandemic are likely to produce a spectrum of outcomes for different sectors and segments, with investment plummeting in some, recovering rapidly in others and remaining subdued for a prolonged period.

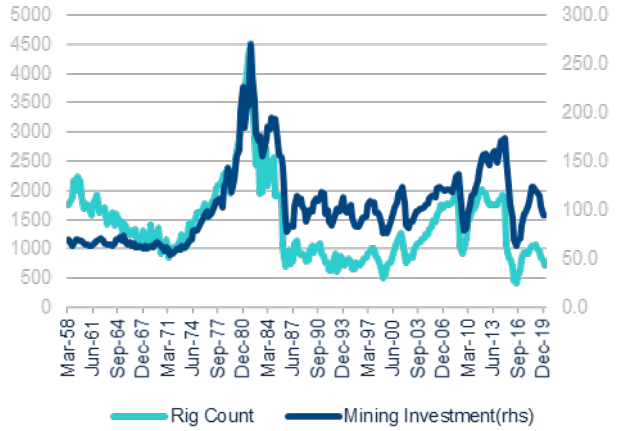
That being said, a number of service sectors that are bearing the brunt of the crisis will continue to face headwinds throughout the year and possibly into 2021. Assuming the fiscal and monetary responses are successful in supporting the demand-side in the short-run, durables consumption should improve albeit at a more moderate pace than the service sector.

Figure 2.7 **High tech industrial production and nonstore retail sales** (YoY %)



Source: BBVA Research, Fed, Census & Haver Analytics

Figure 2.8 **Rig count and real private investment in mining equipment** (number & Bn 2012$)



Source: BBVA Research, BEA & Baker Hughes

A small number of segments have the potential to remain largely unscathed. For example, if the demand for communication and power infrastructure is accelerated by the rapid shift to WFH then there is potential for an uptick in communications infrastructure and a rebalancing of power-related investments. Similarly, intellectual property investment related to entertainment could see a rapid recovery from 1Q20. The dearth of content generated as a result of social distancing measures and high demand for at home entertainment suggests firms are going to be eager to supply new content to a captive audience. The ongoing shift towards intangibles also suggests a rebound in research and development and intellectual property associated with software, digital technologies and healthcare.

For the residential sector, the impact from stay-at-home orders and voluntary isolation measures derailed the momentum built-up in the 1Q20. Residential investment will recover once the crisis subsides, supported by low interest rates and pent-up demand (see The housing market in the era of Covid-19 section for more details), offsetting over time the headwinds generated by massive, potentially short-term, unemployment and high levels of economic uncertainty. However, the adjustment in regional housing markets will be heterogeneous. Dense urban areas with more prolonged lockdowns and thus weaker labor market outlooks, elevated home prices, and riskier long-term prospects for resurgence of cases of Covid-19 could remain weaker, while other less densely populated housing markets that experienced milder stay-at-home measures and a quicker restart of their economies could regain the lost momentum faster.

While the historic plunge in industrial production (the worst in the 101-year history of the index) suggests the short-term pain in the manufacturing sector could be severe, from a social distancing perspective, manufacturing could recover more quickly and benefit from the tight supply conditions in the post-Covid-19 world. Pent up demand and ebbing uncertainty should encourage greater consumption of large ticket items, potentially boosted by the stimulus package for individuals and small businesses. For many firms, reshaping the workplace and adapting to reopening guidelines will not be problematic. In addition, a shift to at-home consumption has the potential to benefit large nondurable manufacturers. That said, the turbulence in transportation manufacturing could be prolonged, as Boeing shifts from one

crisis to another, and possibly adjusts its supply chains to accommodate air travel in a world without viable immunization options.

The commodity-industrial recession in 2015-2016 also highlighted the growing ties between domestic manufacturing and mining sector activity. As a result of the unfathomable drop in oil prices, there is a high probability that the slowdown in mining could spill over to manufacturing.

With respect to mining, on April 20, the price of a barrel of West Texas Intermediate reached -$36.9/bbl breaching the theoretical long-run limit of zero dollars per barrel, sending shockwaves throughout markets. Prices have recovered from those short-term lows associated with frictions generated by challenges with physical deliveries, storage constraints and financial arbitrage. However, as of May 8, U.S. active rig count reached 374, their lowest level on record and have the potential to decline further, while production is down 1.1Mbd (-8.5%) from the historic peak reached in mid-February.

Based on the historical relationship between oil prices and rig activity there is a chance that the latter could decline further, although a weakening in expectations and plans for decreasing Capex before the Covid-19 outbreak suggest that the decline in rig activity may reach a bottom in the second or third quarter of this year. That being said, the fallout on the investment side will likely build throughout the year, implying that real investment in mining structures such as mining exploration, shafts and wells will be the lowest since the 1950s at around $50bn. In terms of 2012 dollars, this is more than $200bn below the peak in the 1980s and nearly $125Bn lower than the shale boom peak in 2014.

Taken together, we expect the Covid-19 crisis will cause real private investment to fall 9.8% in 2020 and 1.1% in 2021, with positive annual growth returning in 2022.

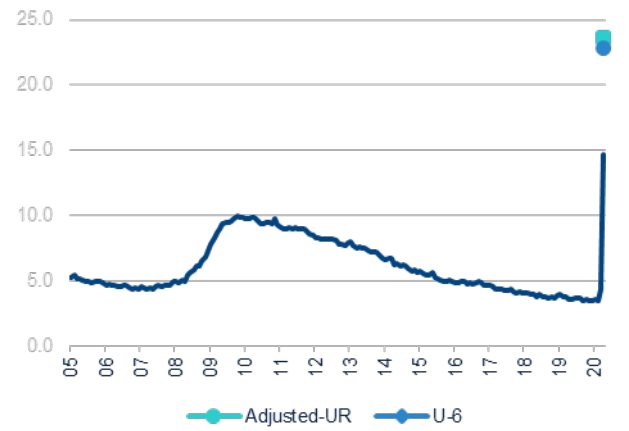
In terms of trade, the global economic recession is going to have a major impact on overall trade flows. In fact, we expect total trade flows in the U.S. will drop more than 10%, but should recover as the lockdowns ease across the globe. The slowdown in trade flows will nonetheless lead to a reduction in the trade deficit as imports shrink more strongly than exports given the persistent trade imbalances, the strength of the dollar, and the nature of the current crisis impacting consumer goods and services in a larger magnitude. This implies that net exports will have a positive contribution to GDP growth in 2020. In tandem with a lower trade deficit, we expect the balance of payments deficit to edge down in both absolute and relative terms (1.9% of GDP).

On the fiscal side, the scale and timing at which the federal government provided support to combat the Covid-19 crisis was unprecedented. Policy actions such as tax rebates for individuals, expansion of unemployment benefits, forgivable loans to small business, payroll tax payment delays, and loosening caps on interest deductibility and operating losses provide around $4.0tn in fiscal support and risk capital. This will have a significant impact on public consumption at the federal, state and local levels. Taken together, our baseline assumes government consumption and investment will grow 3.4% and 4.1% in 2020 and 2021, respectively. In addition, these measures will have a historic impact on the federal deficit (16.2% of GDP in 2020) and public debt.

Labor market erases decades of progress

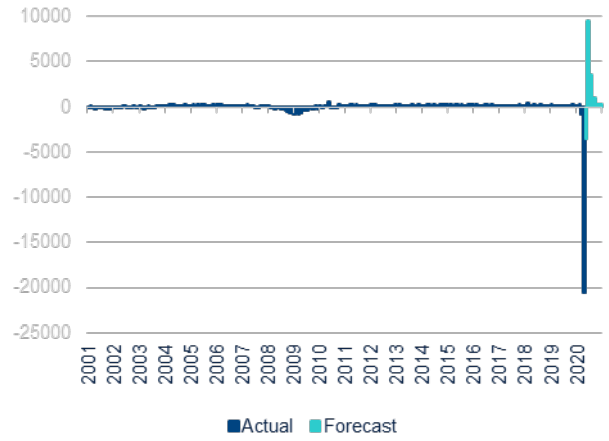
Since the start of the pandemic over 30M people have filed for unemployment insurance, 21M nonfarm employees lost their job, 16M people have become unemployed while over 8.3M have left the labor force. As a result, the unemployment rate increased at historic pace to 14.7%. However, there were also an additional 8.9M workers that were misclassified as employed with a job but not at work that were most likely on temporary layoff. With these adjustments, total unemployment would have been 38.9M and the unemployment rate 23.6% in April (10.3M and 6.3% in March).

Figure 2.9 **Unemployment rate** (%)



Source: BBVA Research & Haver Analytics

Figure 2.10 **Nonfarm payrolls** (change K)

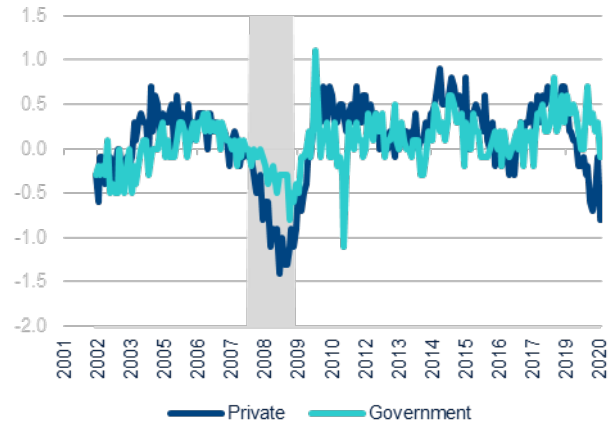


Source: BBVA Research & Haver Analytics

Not surprisingly, the labor force participation rate decreased to 60.2% while the employment-to-population fell to 51.3%, the lowest on record; this is striking considering that in the 1940s only one-third of women participated in the labor force. The unemployment rate for teenagers rose to 31.9%, reflecting their high participation in sectors such as accommodation and food service, and hospitality that have been the most acutely affected by the crisis. The unemployment rate for adult men rose 9.0pp while the unemployment rate for women rose 11.5pp, possibly reflecting demands the Covid-19 crisis is placing on working families with small children or elderly relatives and higher female participation in service industries.

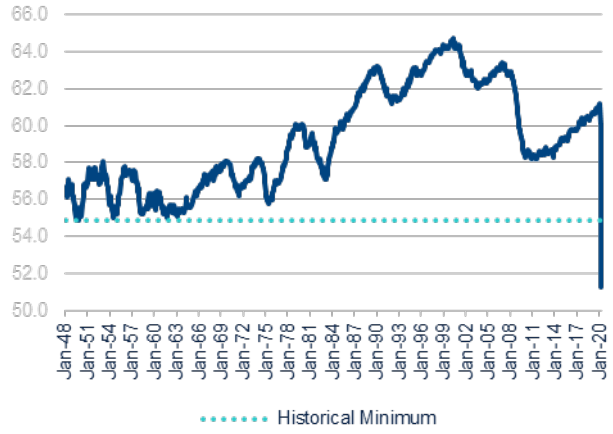
In terms of the industry impact, retail trade (-2.1M), healthcare and social assistance (-2.1M) and leisure and hospitality (-7.7M) lost a combined 11.8M jobs, or around 58% of the total job losses. However, the biggest impact was on leisure and hospitality, which lost 8.2M jobs since February, a drop of 47.2%, reaching the lowest level since 1988; other services were down 21.2%, retail trade was down 13.5% while durable goods manufacturing and mining employment dropped 11.5% and 11.3%, respectively. In contrast, a few sub-industries were spared such as couriers and messengers, and internet publishing and broadcasting, although their share of total employment barely makes a dent.

Figure 2.11 **Job openings** (YoY pp)



Source: BBVA Research & BLS

Figure 2.12 **Employment-to-population** (%)



Source: BBVA Research & BLS

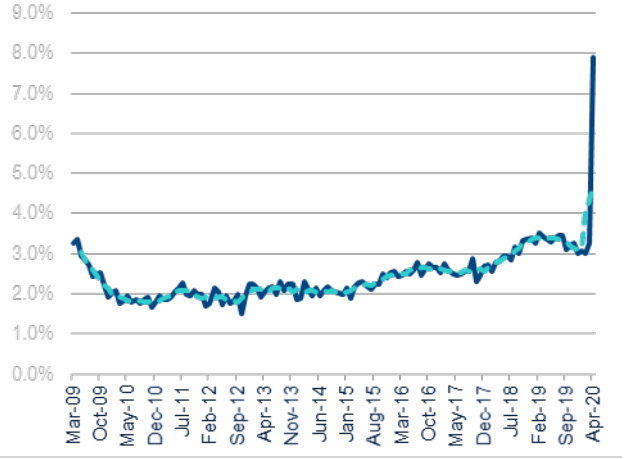
Ultimately, the pace of the labor market recovery will depend on how quickly states can reopen their economies and how effective the different policy responses such as the Paycheck Protection Program (PPP), industry bailouts, payroll tax credits and delays, and the Federal Reserve's loan facilities are at keeping workers attached to the labor force and their employers. Historically, there is evidence that after deep recessions labor force matching has produced structurally higher job openings relative to the number of unemployed, particularly for routine occupations. Moreover, labor market dislocations of this magnitude produce persistent frictions that take years to undo. Given the unprecedented circumstances, it is hard to pinpoint how strong the labor market hysteresis or headwinds will be. However, given the depth of crisis, it is clear that timely and proportionate responses from policy makers will be needed to avoid turning a recession into a depression.

Disinflation now, stagflation later?

For wages, due to the steeper drop in low-wage jobs within industries, average hourly earnings increased 4.7% during the month and 7.9% YoY. For the highest three paying industries, hourly earnings increased 1.5% over the month and 4.4% YoY. Although there is a risk that the reduction in the labor supply could put upward pressure on wages, after the short-term idiosyncrasies shake out of the data, we expect wages will decline

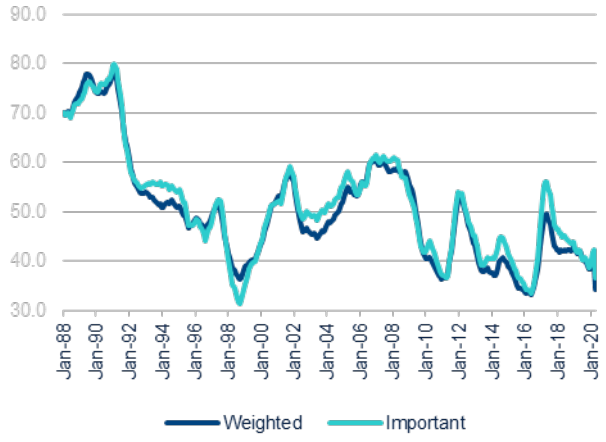
In fact, in April, consumer prices declined 0.8% over-the-month, in the first signs of a major downdraft in inflation. The numbers were significantly below expectations and marked the largest monthly decline since December 2008. The change in headline CPI over the last twelve months was 0.3% vs. 1.5% in March. Moreover, core inflation fell more than any time in history, down 0.4% in April, but was up 1.4% from a year ago (2.1% in March). In addition, producer prices for final demand declined 1.3% in April, the largest drop in the history of the series dating back to 1947, while import and export prices dropped -2.6% and -3.3%, respectively. The latter represented the steepest drop in history.

Figure 2.13 **Average hourly earnings** (YoY% & 5mcma)



Source: BBVA Research & BLS

Figure 2.14 **High inflation regime diffusion index** (+/- 50 risk of high or low inflation regime)



Source: BBVA Research

Disentangling the effects of the sector specific supply and demand shocks and the directional impact they will have on prices can be challenging, particularly when there are very few transactions and minimal price discovery. Thus far, the demand shock seems to be overpowering the supply shock. While this could exacerbate disinflationary pressures, the probability of outright deflation remains low. Nonetheless, if inflation remains low for long, it could lower inflation expectations and impact consumer and business spending, which in turn could affect pricing behavior, thereby creating a feedback loop resulting in persistent anemic inflation. Our baseline assumes headline prices will decline in 2020, before rebounding in 2021, and for core inflation to remain low in both 2020 and 2021

Testing the limits of policy makers

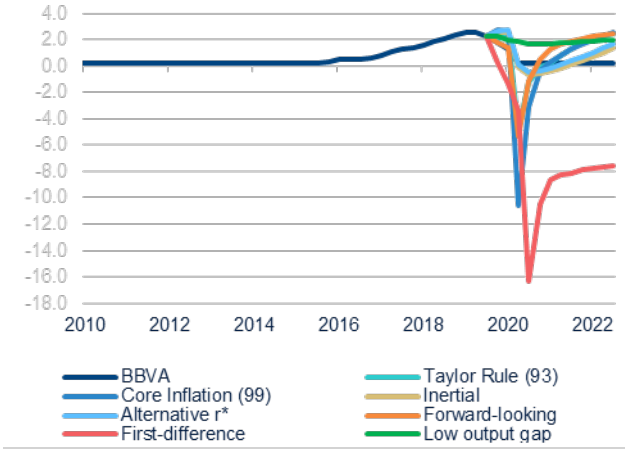
While GDP growth in the 1Q20 fell in line with our expectations, the risks to the downside remain high. The number of new Covid-19 cases remains high and with relaxation efforts already underway in some parts of the country, there is a significant risk of new localized outbreaks, threats of a seasonal resurgence of cases in 2H20, new lockdowns, and the potential for rising caseloads in underserved communities. This suggests that the degree of social distancing that will prevail in the 2H20, both voluntary and compulsory, will be higher than previously anticipated. Nonetheless, this will allow firms to begin rehiring and households to start normalizing activities and spending, to get the economy moving forward. How firms and individuals adapt to the new Covid-19 normal will be a key aspect of the recovery and outlook in 2020 and 2021, determining whether the economy makes a quick recovery or will need additional therapeutics to survive the pandemic.

3. Which Rubicon will the Fed forge next?

In the Chairman's words, the Fed has increased monetary accommodation with "unprecedented speed and force" lowering rates, increasing the size (unlimited) and scope (CMBS) of large-scale asset purchases (LSAP), extending trillions of dollars in credit to households and business while also easing capital requirements and regulatory guidance. These programs have even led some observers to question the Fed's independence and its role as a lender of last resort given concerns about encouraging risky behavior and adverse selection. Nonetheless, the Chairman's recent speech struck a somber tone, implying that the Fed's role in mitigating the crisis may not be finished as this crisis "has caused a level of pain that is hard to capture in words, as lives are upended amid great uncertainty about the future."

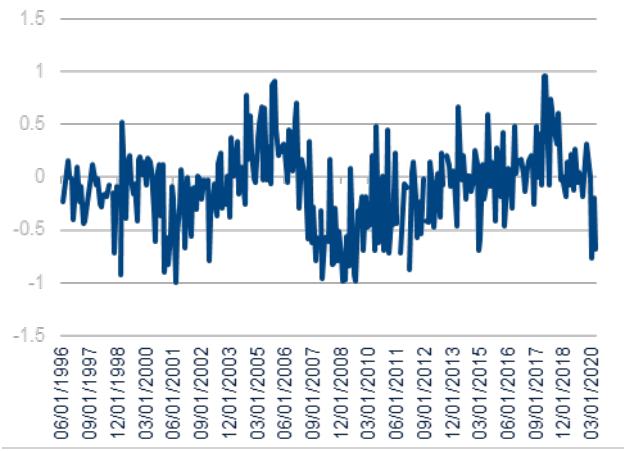
In the earliest stages of the Covid-19 outbreak in the U.S., at an unscheduled meeting on March 3, the Fed lowered its benchmark rate by 50bp to 1.0%-1.25% in light of the fact that "the coronavirus poses evolving risks to economic activity." This action was viewed by some at the time as a premature response to a financial market correction under the assumption that the shock to the economy from the health crisis was transitory. In fact, twelve days later at a second unscheduled meeting, the Fed cut rates 100bp to 0%-0.25%. Some members still believed that a more measured reduction in the federal funds rate of around 50bp was more appropriate, with Loretta Mester (President of the Federal Reserve Bank of Cleveland) dissenting on the action taken to lower the federal funds rate to the zero lower bound (ZLB). Looking back, given what we now know about the severity of the economic crisis and the unthinkable rise in unemployment, the move to the ZLB may have been too cautious. Although one could argue that rate reductions are ill-equipped to deal with large and persistent supply-side disruptions, the dislocation in financial markets was as severe as the Great Recession.

Figure 3.1 **Implied Fed funds rate based on policy rules** (%)



Source: BBVA Research & Cleveland Fed

Figure 3.2 **BBVA Fed sentiment index** (<0 = dovish)

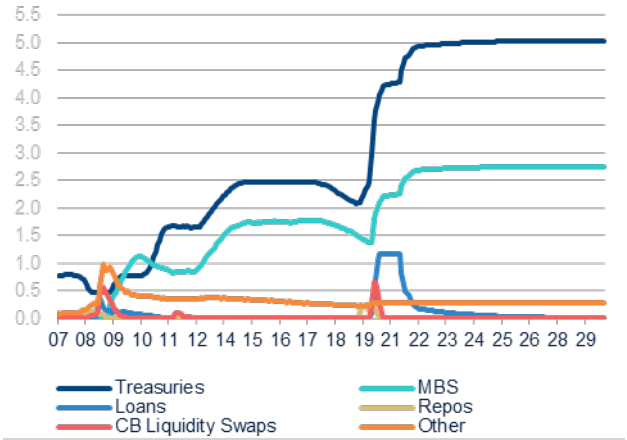


Source: BBVA Research

In addition to pushing rates to the ZLB, the Fed expanded its asset purchase program. First, in a measured attempt to assuage market liquidity concerns, the Fed increased its LSAP from a management strategy of rolling reinvesting

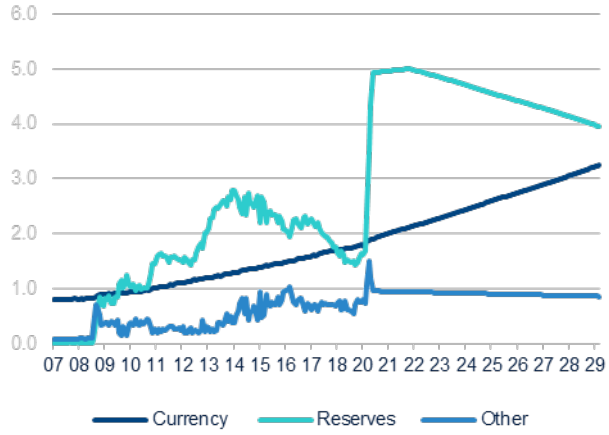
principal payments and growing assets in line with organic growth in liabilities to purchasing at least $500bn in Treasuries and $200bn in mortgage-backed securities (MBS). After falling short of the level of commitment needed to stem the fallout in expectations from the growing crisis, the Fed committed to unlimited assets purchases, and later to purchasing commercial mortgage-backed securities (CMBS). This open-ended commitment and high appetite for liquidity led to around $1.5Tn increase in Treasury purchases and nearly $230bn increase in mortgage-backed securities over two months.

Figure 3.3 **Factors supplying reserves** ($Tn)



Source: BBVA Research & FRB

Figure 3.4 **Factors absorbing reserves** ($Tn)



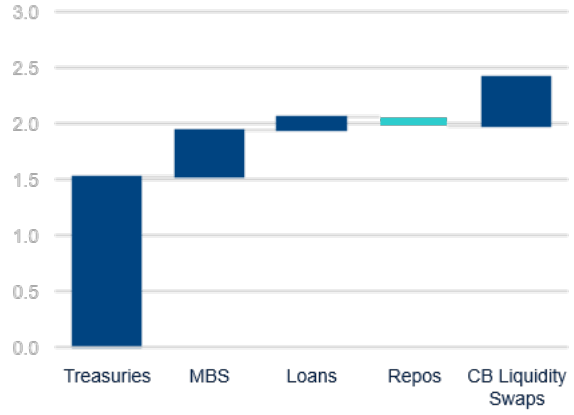
Source: BBVA Research & FRB

To support the smooth functioning of credit the Fed also dusted off its crisis playbook encouraging uptake of the discount window, altering guidance on usage of capital and liquidity buffers as well as lowering reserve requirements, opening of the temporary dollar liquidity facility and announcing the Foreign and International Monetary Authorities (FIMA) repo facility. In addition, with the support of the Treasury Exchange Stabilization Fund (ESF), the Fed unleashed over $2Tn in loan capacity for securities ranging from corporate bonds to Paycheck Protection Program loans to municipal securities (Fed Infinity War or Endgame?). As of May 6, there has been around $113bn in uptake in the loan facilities and almost $450bn increase in central bank liquidity swaps. With respect to loans, around 40% of the usage has been from money market mutual funds, 26% from the PPP, 23% from the primary credit to depository institutions and 13% from the primary dealers.

Even though the actions taken to this point have been unprecedented on numerous fronts, Powell's downtrodden speech, the fact that Covid-19 cases are still high and the growing likelihood that social distancing, both voluntary and involuntary, will remain in place for some time suggests that the Fed may not be done. The Chairman, known for his candid comments said, "it may not be the final chapter, given that the path ahead is both highly uncertain and subject to significant downside risks." Comments of this nature suggest that all options are on the table.

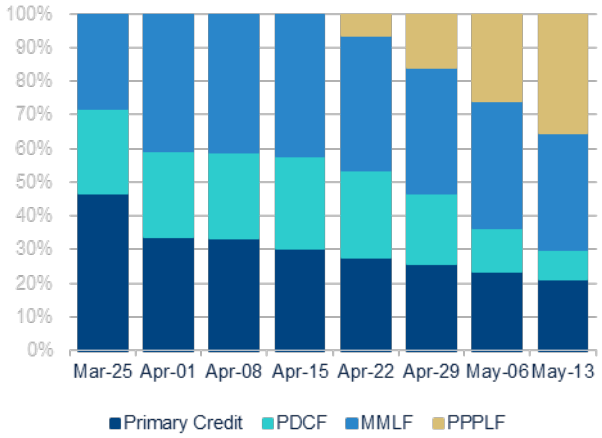
In terms of the ease of implementation and confidence in the strategy, based on the remaining amount of risk capital available in the ESF, the Fed has at least $2Tn in additional lending capacity through its various loan facilities. While increasing the size of loan offerings remains within the scope of the Fed's current strategy, the loan facilities are undersubscribed and thus tapping the ESF for additional capital is not currently needed.

Figure 3.5 **Federal Reserve balance sheet assets** (change since March 11th, $Tn)



Source: BBVA Research & FRB

Figure 3.6 **Federal Reserve loan facilities** (% of total)



Source: BBVA Research & FRB

To encourage higher uptake, the Fed could broaden access, reduce the restrictions and conditions associated with using the loan facilities, lower the punitive component in the credit costs while also continuing to lower the stigma associated with usage. While all seem within the powers of the Fed, there are already concerns about the long-term effects of these programs, which can encourage moral hazard, lead to adverse selection and crowding out private capital that could in the end lead to illiquid money markets. Furthermore, a growing balance sheet and wider scope of intervention in financial markets could intensify political frictions and threaten Fed's independence.

On the monetary policy front, the Fed could set rates below zero, as other major central banks have done in the last decade. This implies penalizing banks for their deposits at the Fed in order to incentive bank lending. Many economists believe that this is where the Fed is heading. In fact, Fed futures for early 2021 have turned slightly negative, reflecting a nontrivial probability of negative policy rates.

However, it is not clear that negative rates are efficient given their potential distributional and distortionary effects. In reference to negative rates in Japan and Europe, St. Louis Fed President J. Bullard recently said, "it is not at all clear that they've been successful there." Moreover, in his most recent speech, Chair Powell indicated: "The committee's view on negative rates has not changed. This is not something we're looking at." Therefore, while negative rates cannot be completely ruled out, there is a high bar for the Fed moving in this direction, as it would require exhaustion of all other tools.

In addition, the Fed could be more aggressive with its forward guidance. So far, the Fed has indicated that rates will remain at current levels "until it is confident that the economy has weathered recent events and is on track to achieve its maximum employment and price stability goals." This clearly implies that the pandemic has to be behind us. However, it is not clear under what conditions the economy will need to be in for the Fed to be "on track" to meet the dual mandate.

The wording of the Fed statement is intentional as there is elevated uncertainty on how quickly unemployment will begin to trend down and at what pace. In addition, while the demand-side shock adds downward pressures on prices, supply-side disruptions move in the opposite direction. In this way, the Fed is giving itself flexibility in case inflation spikes amid high levels of unemployment, or if the economy recovers strongly with inflation running significantly below target. If the Fed perceives that market expectations are not aligned with theirs, they could add conditionality, either by setting a date or thresholds for key variables. For example, signaling no rate increases until 2023 or until inflation runs at or above target for six consecutive months.

Targeting the level and slope of the Treasury yield curve (Yield Curve Control, YCC) is also an option for the Fed, similar to a policy enacted in the 1940s to help the Treasury finance WWII. While the policy supported an upward sloping yield curve, it produced significant market distortions such as effectively endogenizing the size and maturity distribution of Fed's balance sheet, forcing the Fed to buy whatever private investors refused to buy. Thus, if YCC is credible, the Fed may achieve the goal by buying only a limited amount of Treasuries or even none at all. However, if the economy recovers robustly or inflation spikes, credibility could be in jeopardy forcing the Fed to buy large sums of Treasuries or even the entire supply. In this environment, the Fed would be monetizing the debt. Allan Sproul, the Chairman at the time, even went so far as to say, "in a supported market in which all obligations might be regarded as demand obligations, a horizontal rate structure would theoretically be required."

Adding the complexities of unwinding a fixed maturity distribution to a massive balance sheet could be a daunting task considering that YCC control endured for almost nearly nine years. Moreover, the Fed, as recently as last year, had to respond to significant money market pressures when its policy of actively draining reserves, led to a surge in money market rates and volatility.

Revisiting policy in a post-pandemic world

Before the pandemic, after almost two years of analysis, the Fed was expected to announce the results of its Monetary Policy Strategy Review this year. The review was essentially triggered by the complexity to fight recessions in a low interest rate environment derived from a drop in the natural interest rate and inflation running persistently below the 2% target. Although several options are on the table, such as price level targeting or raising the inflation target, the Fed seemed more inclined toward average inflation targeting. Under this strategy, with inflation falling below the target, the Fed would keep interest rates low to allow the economy to run hot, thereby allowing inflation to edge up and overshoot the target so that, on average, inflation would be roughly equal to 2%.

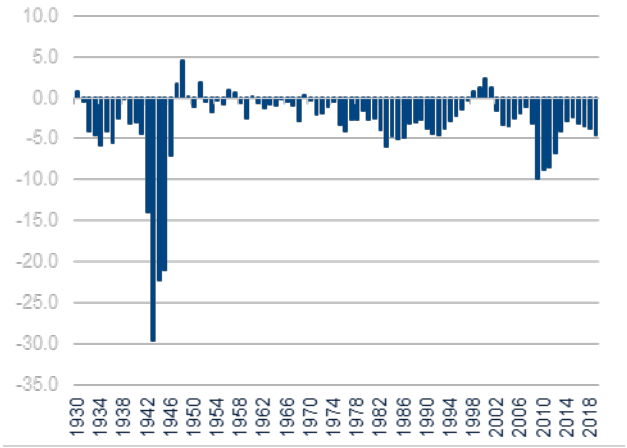
Nonetheless, the current crisis reflects partially what would have been the essence of the strategy review during downturns: lower rates to zero, implement LSAP and provide forward guidance. However, what remains unknown is how the Fed plans to bring inflation back after a recession hits and keep it close to target. If the decision is to opt for average inflation targeting the Fed will also have to announce how the average will be calculated. For example, the starting point and the speed at which the Fed expects to achieve such average. However, the current environment increases the likelihood that the Fed will delay any policy changes indefinitely.

With all of this in mind, we expect the Fed to keep interest rates at the ZLB for a prolonged period and to continue supporting the recovery through LSAP and emergency lending programs. The latter is likely to evolve over time, as the Fed will have to continue exploring better, but safe ways to reach all sectors of the economy. Some programs may not work as expected, while others will have to be tweaked and new programs may be rolled out.

4. Policymakers respond with massive fiscal support

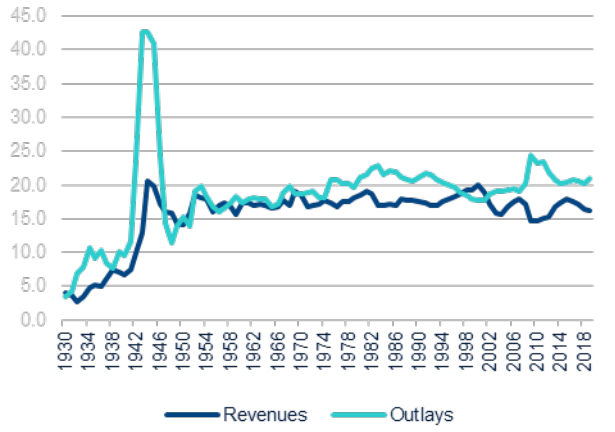
Policymakers have reacted aggressively to mitigate the healthcare, social and economic costs of the novel coronavirus or Covid-19. Thus far, fiscal support through both legislative and administrative actions add up to more than $4tn, equivalent to 19% of GDP. The last time the government acted in such a forceful way was in 1942-45 during WWII.

Figure 4.1 **Fiscal balance** (as % of GDP)



Source: BBVA Research, OMB and Haver Analytics

Figure 4.2 **Revenues and outlays** (as % of GDP)



Source: BBVA Research, OMB and Haver Analytics

Through administrative actions, the government has provided about $380bn in economic support covering disaster relief funds, a 60-day moratorium on student loan interest payments and Federal Housing Administration (FHA) borrower evictions and foreclosures, delaying tax filing deadlines, direct payments to farmers and ranchers with losses and consenting high-deductible plans to cover coronavirus costs. Around $300bn will be recovered, mainly through tax revenues once individuals and businesses begin paying taxes again. Thus, only $80bn will count as a deficit increase.

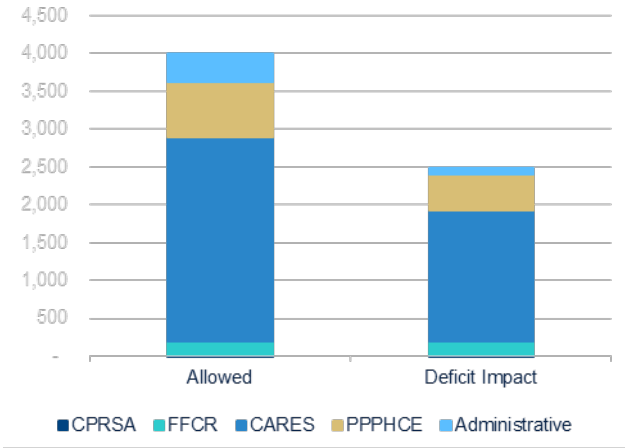
On the legislative front, Congress has passed four different relief measures, three in March and one more in April. The first bill, the Coronavirus Preparedness and Response Supplemental Appropriations Act, signed into law on March 6, authorizes $8.3bn in emergency funding to fight the Covid-19 pandemic, for the development of vaccines, health prevention, preparedness and response efforts, Community Health Centers, medical surge capacity and to fight Covid-19 internationally. The impact on the deficit will be around $8.1bn, with 14% in fiscal year (FY) 2020 and more than half in FY2021.

The second bill enacted on March 18, the Families First Coronavirus Response Act, provides around $192bn through tax credits for paid sick leave and paid family and medical leave, a higher federal share of Medicaid payments and waives private insurance, Medicare and Medicaid/CHIP cost sharing for Covid-19-related diagnostic testing and medical care. In addition, the bill provides higher funding for agencies to spend on Covid-related needs and federal funding of a second 26-week period of unemployment insurance, among others. According to the CBO, the federal deficit will increase by $192bn over ten years, although 70% of the impact happens in FY2020 and 29% in FY2021.

The third bill, the Coronavirus Aid, Relief, and Economic Security (CARES) Act, signed into law on March 27, authorizes around $2.7tn in spending. It provides one-time direct payments to households through refundable tax credits, a significant expansion of unemployment benefits, forgivable loans to small businesses to cover payroll and other eligible costs through the Paycheck Protection Program (PPP), loans and grants to large and small businesses, aid to states, funding for health providers. In addition, the bill defers employer's share of social security taxes, loans to passenger and cargo airlines and firms deemed vital for national security, and suspends payments on outstanding federal student loans, among others. During the first two years, the impact on the deficit is $2.1tn. However, assuming that the support to the Fed lending facilities ($454bn) will have a negligible net cost, the total impact on the deficit over ten years is $1.7tn.

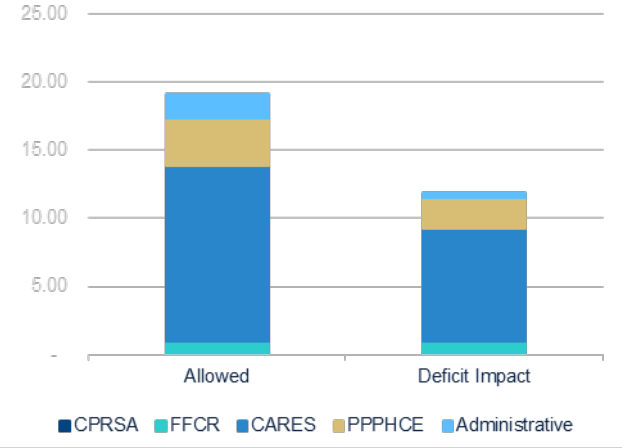
The fourth bill, the Paycheck Protection Program and Health Care Enhancement Act, enacted on April 24, provides $733bn in support mostly to small businesses through the PPP. In addition, it increases funding for Emergency Injury Disaster Loans and Grants (EIDL), and boosts the Public Health and Social Services Emergency Fund. Since most of the EIDL is expected to generate future revenues, the net effect on the deficit is around $483bn over ten years.

Figure 4.3 **Covid-19 fiscal support** (US$Tn)



Source: BBVA Research, CBO, CRFB and Haver Analytics

Figure 4.4 **Covid-19 fiscal support** (% of GDP)

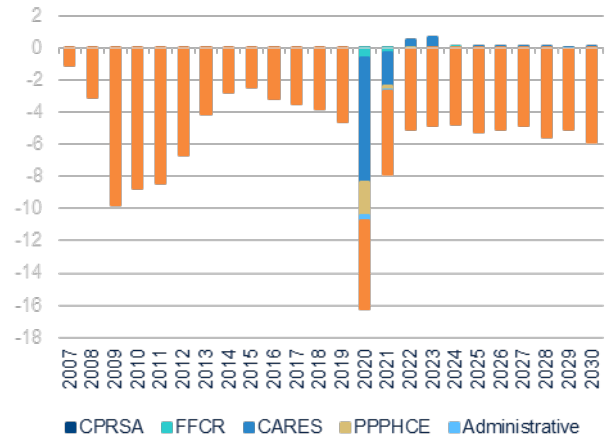


Source: BBVA Research, CBO, CRFB and Haver Analytics

The combined impact of all the measures is subject to elevated uncertainty since actual spending depends on the duration of the lockdowns, the time and cost to have a vaccine, how the agencies implement the programs, and how consumers and businesses' behavior will respond to the different incentives provided in the legislation.

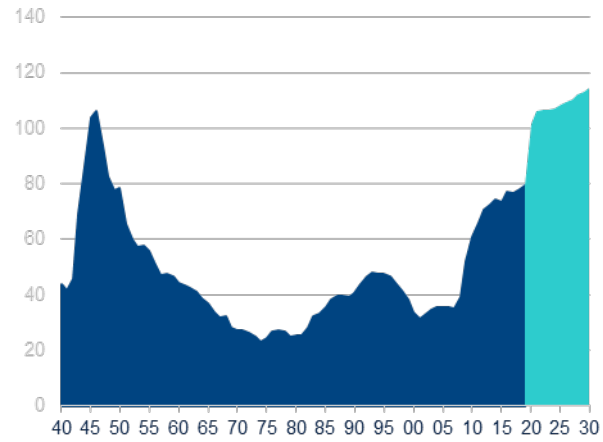
Nonetheless, based on our macroeconomic estimates (GDP, interest rates, employment, unemployment, etc.) and assumptions regarding the duration of the pandemic, we expect the federal deficit to reach $3.4tn in FY2020 and $1.7tn in FY 2021. This is equivalent to 16.2% of GDP this year and 7.9% next year. In addition, we expect the federal debt held by the public to reach 102% of GDP in 2020 and 106% in 2021.

Figure 4.5 **Fiscal balance**
(% of GDP)



Source: BBVA Research, CBO, JCT, CRFB and Haver Analytics

Figure 4.6 **Public debt held by the public**
(as % of GDP)



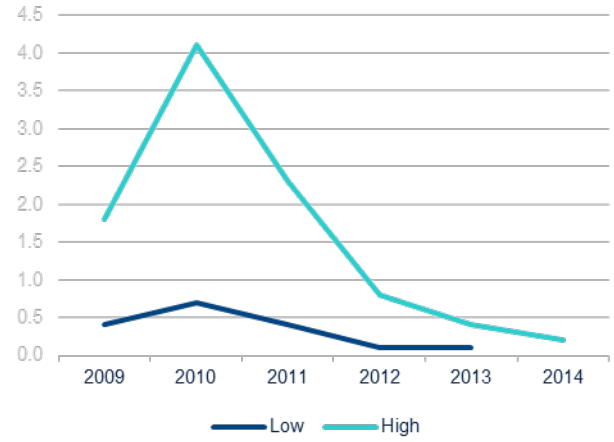
Source: BBVA Research, CBO and Haver Analytics

These large deficits and debt levels not only reflect the sizable packages to contain the risks from the pandemic, but also the pre-crisis conditions that were already assuming annual average deficits of $1.3tn over the next 10 years; this is equivalent to 4.8% of GDP. These deficits are about twice as large as the average deficits during expansion periods. In addition, the debt to GDP ratio was close to 80% in 2019, twice as much as in 2008 and the highest since 1948.

These trends raise two fundamental questions. How effective will the fiscal support be? What are the risks to fiscal sustainability? One option to answer the first question is to look back at the effects of the American Recovery and Reconstruction (ARRA) Act of 2009. According to the CBO, between 2009 and 2014, the lower and upper estimates of the impact on real GDP growth range between 1.7pp and 9.6pp. Considering a total stimulus of around 5.3% of GDP during the first six years, the resulting fiscal multiplier is between 0.3 and 1.8.

Applying these multipliers to the current fiscal support yields an impact of between 4pp and 22pp of GDP between 2020 and 2023, though mostly in the first year. Although there are significant differences between ARRA and the measures approved since March, and the drivers triggering the recessions, these estimates provide a rough benchmark for how low or high the potential impact may be. In other words, if we take the high impact estimates and apply it to our baseline scenario, in the absence of any fiscal measures, GDP would decline more than -26% in 2020. Using the lower estimate, the drop in GDP would be less than -9%. It is important to note that the estimates do not take into account the actions taken by the Fed (Infinity War or Endgame?)

Figure 4.7 **ARRA impact on GDP**
(pp)



Source: BBVA Research, CBO and Haver Analytics

Figure 4.8 **ARRA impact on the unemployment rate**
(pp)

Source: BBVA Research, CBO and Haver Analytics

Regarding the second question, the Great Recession also serves as a good benchmark. Back then, there was an intense debate on how the massive fiscal stimulus was going to impact growth, labor markets, interest rates, inflation and private investment. Many argued against the stimulus based on fears of macroeconomic instability. Others defended the stimulus under the notion that the reduction in aggregate demand was so severe that the fiscal expansion was not going to have adverse effects, and even criticized the stimulus for being too small.

Ultimately, although the debate on the net impact of the stimulus on economic growth is not resolved, it is obvious that neither interest rates nor inflation spiked. In addition, it is hard to argue that there was crowding out of private investment. For example, corporate tax payments averaged 1.6% of GDP between 2010 and 2014, lower than the 2.1% between 2003 and 2007. Moreover, the share of corporate profits after tax to GDP averaged 10% and 8% during the same periods.

This does not guarantee that the outcome will be the same this time around. However, it does suggest that the space for fiscal expansion may be bigger than expected. When economic conditions deteriorate and private savings increase, the demand for Treasuries tends to go up. Foreign demand is also likely to remain elevated as this is the most valued safe-haven financial asset on the planet. This reflects the unique position of the US dollar as the global reserve currency. In addition, the Fed is engaged in large-scale asset purchases, increasing their Treasury holdings at a significant pace. Thus, as long as demand for U.S. dollars remains strong, it is hard to imagine that the fiscal expansion will translate into a currency or a capital account crisis that happens in emerging countries that engage in haphazard fiscal expansions.

In addition, fiscal instability tends to occur when the nominal interest rate (the rate at which outstanding public debt increases) is higher than the growth rate of nominal GDP (the rate at which the economy generates income to pay down the debt). If potential real GDP growth is around 2% and inflation remains close to 2%, interest rates would have to increase to 4% or above to have a significant impact on debt sustainability. Since 2010, average GDP has increased 4% per year while the 10-year Treasury rate has averaged 2.4%.

Going forward, we expect nominal GDP growth to remain above the average interest rates on public debt. That is, unless, inflation gets out of control or demand for U.S. dollars plunges so abruptly that interest rates increase significantly, the probability of fiscal instability remains low.

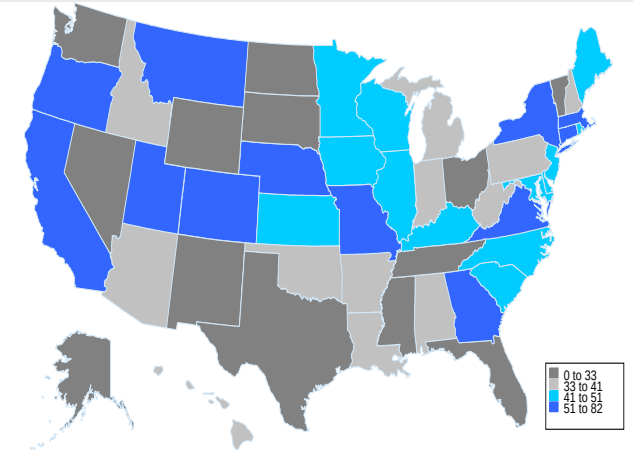
However, it is important to note that the space and benefits of fiscal expansion are reduced as the share of debt to GDP increases. With higher debt levels, regardless of the interest rate, interest payments on public debt will edge up, thereby reducing the space for other types of public spending without an increase in tax revenues. For example, as a share of GDP, discretionary spending is at an all-time low; gross investment is less than half of what it was in the 1960s while research and development stands at its lowest rate since the 1950s. Meanwhile, mandatory spending (Medicaid, Medicare and Social Security) is at an all-time high. In addition, higher debt levels increase the burden on future generations and reduce the capacity to respond to future economic recessions.

Ultimately, this reduces the social benefit of taxes and spending and results in lower economic growth thereby creating a negative feedback loop: higher inflation and interest rates, lower growth, revenues and spending, more crowding out of private investment and higher deficits and debt levels. Therefore, in the long-term, in order to reduce potential stability risks and restore public finances to a sustainable path, there needs to be a high degree of fiscal consolidation.

Finally, although most of the attention focuses on the federal fiscal accounts, state and local government finances are also likely to deteriorate. State and local government expenditures and investment total $2.3tn or 11% of GDP. At the end of 2019, their total debt in municipal securities reached $3.1tn. In contrast with the federal government, all but one (VT) of the 50 states have some form of a balanced budget amendment in their state constitutions or statutes, and thus, their finances tend to be pro-cyclical. That is, during expansions, they tend to increase expenditures but during economic downturns, they lower spending.

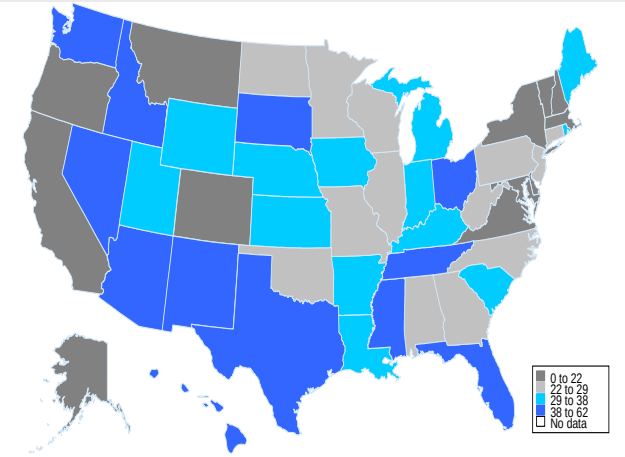
Leading into the Covid-19 pandemic, state and local finances were relatively healthy and prospects remained solid. However, states depend on more than 50% of their tax revenues on sales and income taxes, which are expected to plunge in both FY2020 (ends in June) and FY2021 as a result of the Covid-19 crisis.

Map 4.1 **Income tax to total tax revenue** (%)



Source: BBVA Research and Haver Analytics

Map 4.2 **Sales tax to total tax revenue** (%)



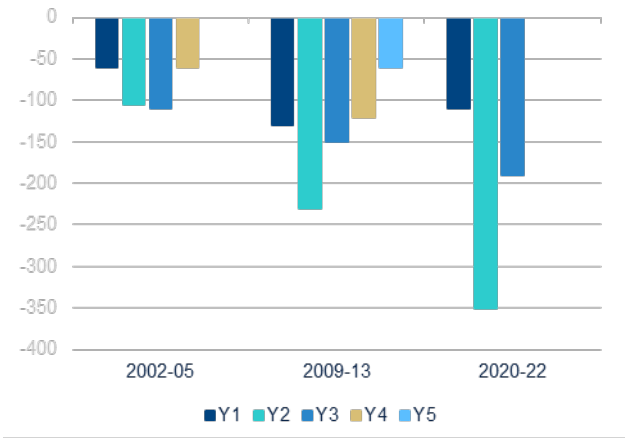
Source: BBVA Research

Reduced economic activity, particularly in the services sector, lower asset prices and delayed tax filings imply significant reductions in tax revenues. For some states like Nevada, Tennessee, New York, Colorado and Florida, the contraction in the arts, entertainment and recreation industry will also generate significant cash flow shortfalls. Nevada and Florida will also be hit by lower activity in accommodation and food services, along with other states like Hawaii, Vermont and Maine. In other cases, like Alaska, Louisiana, New Mexico, North Dakota, Oklahoma, Texas, West Virginia, and Wyoming that depend heavily on the oil and gas industry, the fiscal challenges due to the collapse in oil prices could be significant. Meanwhile, higher health care and unemployment costs, and the need for an expanded social safety net imply increased spending needs.

According to the CBPP, state budget shortfalls could reach $650bn in the next three years. Most of the impact comes from increased unemployment as a 1pp increase in the unemployment rate translates into $45bn in fiscal shortfalls. At the beginning of May, the insured unemployment rate peaked at 15.7% around 14.5pp above the rate in February, more than five times larger than the historical average and 8.7pp above its previous peak in 1975. The fiscal gap will be addressed with federal aid and in some states, with cash balances but only in the short-term.

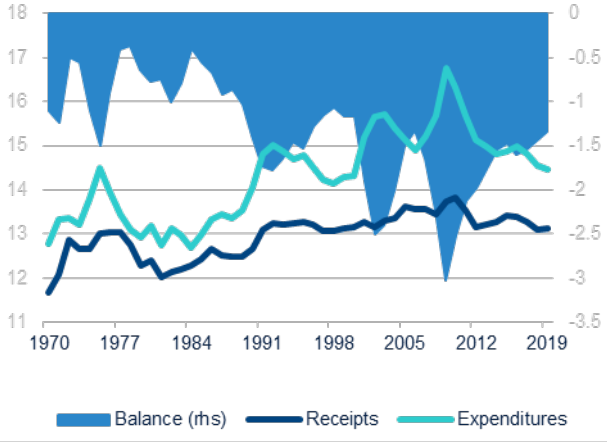
States have around $75bn in rainy day funds. However, using these funds is not a smooth process as there are several restrictions tied to the usage of rainy-day funds. In addition, states could use $65bn of federal aid relief of which $35bn comes from a temporary increase in the share of Medicaid payments paid by the federal government included in the FFCR Act and $30bn from the Education Stabilization Fund in the CARES Act.

Figure 4.9 **State budget shortfalls** (US$Bn)



Source: BBVA Research, CBPP and Haver Analytics

Figure 4.10 **State & local government receipts, expenditures and net balance** (% of GDP)



Source: BBVA Research, BEA and Haver Analytics

The CARES Act also includes another $110bn in aid to states and $30bn for populous cities and counties. However, these funds cannot be used to directly account for revenue shortfalls related to the Covid-19 outbreak. Depending on whether or not states will be able to use all the support, this would leave a shortfall of $400 to $510bn. Thus, given the magnitude of the economic fallout, states will have to consider either higher tax rates, spending cuts or a combination of both. However, increasing tax rates is complicated, particularly if it has to be done quickly and during an economic

recession. Meanwhile, spending cuts resulting in layoffs or reduced provision of services could worsen economic conditions, thereby exacerbating the contraction in tax revenues.

The widening gap between revenues and spending increased concerns among investors on the ability of state and local governments to be able to collect enough revenues and thus meet their financial obligations. This resulted in a large outflow of the municipal bond market and increases in bond spreads. To ease some of the pressures, the Fed established the Municipal Liquidity Facility (MLF) that will be able to purchase up to $500bn of short-term notes directly from states (including DC), counties with a population of at least 500,000 residents, and cities with a population of at least 250,000 residents. Eligible state-level issuers may use the proceeds to support additional counties and cities.

In addition, the Fed stands ready to intervene in the primary and secondary markets for municipal securities to support the flow of credit and liquidity. By buying municipal debt directly rather than through the secondary market, as it is done for Treasuries, MBS and CMBS, the Fed is essentially monetizing public debt. Given the negative perceptions associated with debt monetization and the risk of creating conditions for moral hazard the pricing of eligible debt will be punitive. As such, the Fed may end up buying a lower amount as the facility sends a strong message to local governments to discourage over usage. However, for private investors the Fed backstop may be enough to encourage continued funding of state and local governments.

Another alternative that is being debated in Congress is providing a substantial aid package to states and local governments. Ideally, this would include some rules and constraints to guarantee that their usage has a bigger bang for the buck and to generate the right incentives to avoid moral hazard problems.

That being said, getting through this crisis is priority number one and thus policymakers should continue to focus their attention on getting the aid to those that are most in need and in a timely and efficient manner.

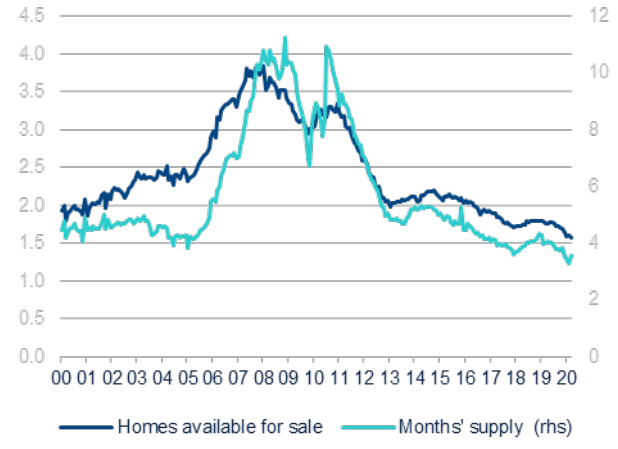
5. The housing market in the era of Covid-19

The housing market was on a solid footing going into 2020. Interest rates were attractive and demand was solid, supported by the lowest household leverage ratio in almost two decades and the smallest unemployment rate in 50 years. Since the existing homes market was tight, robust sales resulted in prices re-accelerating – in February and March, the CoreLogic home price index reached 4% and 4.5% YoY, respectively after increasing at around 3.5% YoY over the previous twelve months. All that changed when the Covid-19 recession became imminent in mid-March.

Existing homes market

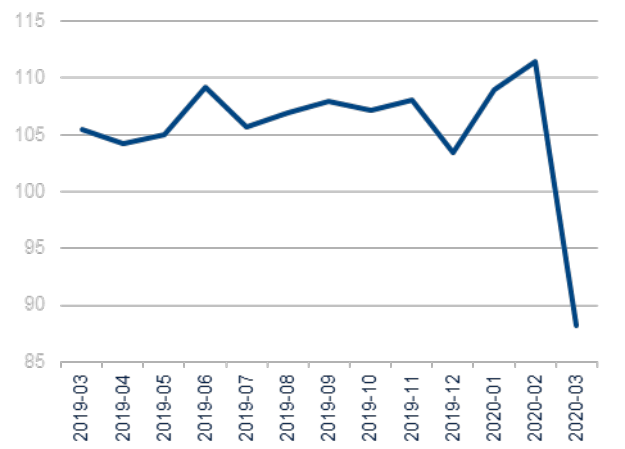
Going into the current downturn, the supply of existing homes for sale stood at 3.6 months, seasonally adjusted, an indicator of a very tight market[1]. Markets such as Seattle, Oakland, Salt Lake City, San Jose, Denver and Washington, DC were experiencing particularly strong shortages, while other such as Miami and New York were experiencing balanced conditions. Sales in March stood at 5.27 million SAAR, not much lower than the average of 5.33 million during 2019, primarily reflecting contracts signed in February. The National Association of Realtors' Pending Home Sales Index for March, a measure of signed real estate contracts that close a month or two before a home is finally sold, declined by 20.8%. This implies that existing home sales in April could reach 4 million, likely followed by an even lower figure in May due to the widespread shutdowns that are slowly being rolled back. While we expect an increase in sales over the summer due to some pent-up demand and people trying to close before the start of the new school year, the increase in unemployment and uncertainty about the crisis will keep a large segment of potential buyers on the sidelines.

Figure 5.1 **Existing homes inventory**
(Million and months, seasonally adjusted)



Source: BBVA Research and NAR

Figure 5.2 **Pending home sales index**
(2001=100)



Source: BBVA Research and NAR

1: Traditionally, six months' supply at current sales rate is considered to represent a balanced market.

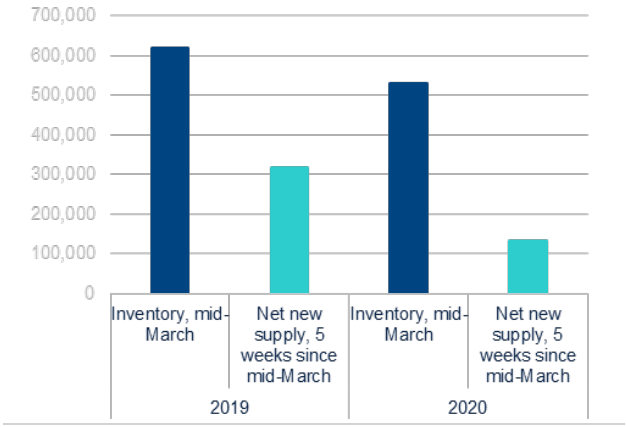
The retreat in demand during the second half of March and April was coupled with a relative decline in supply. While March and April are traditionally the start of the home-buying season and there was a positive net inflow of new home listings, it was significantly lower compared to the same period last year. According to Redfin data, listings in the largest 50 MSAs increased on net (accounting for delisting) by 132 thousand in the five weeks following mid-March, which was less than half of the net increase of 319 thousand during the same period last year. Moreover, the modest net increase in 2020 came on top of an already lower starting point compared to 2019 (Figure 5.3). Delisting helped keep the market somewhat balanced during the 5 weeks since mid-March, while high-priced properties experienced the most delistings on a relative basis[2].

New construction

Housing starts have been strong since late 2019 (Figure 5.4) and reached in January 1.6 million SAAR, the highest level since 2006. Attractive interest rates, solid income growth and housing shortages in most large markets were expected to sustain a solid level of construction activity, particularly in the single-family segment. However, the landscape changed in March when housing starts declined by 22% MoM, the biggest decline since the mid-1980s. This is going to be overshadowed by the anticipated drop in April. The initial indication of the severity and the speed of the downturn came from the homebuilders housing market index reading in April, showing a decline of 42 points from March's level (Figure 5.5). This was the steepest single-month decline in the history of the series, implying that single-family construction activity will decline by 30%.

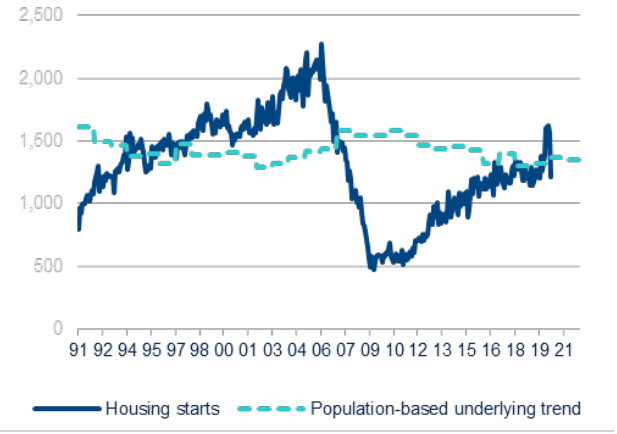
The retrenchment will be more pronounced in the multifamily segment. Over the last cycle, as a share of total housing starts, multifamily reached a peak in 2015 and was also on an uptrend recently (Figure 5.6). This increase over the last two years will contribute to an elevated level of vacancies and rent declines induced by higher unemployment, which will discourage new multifamily developments in the short-term. Beyond the short-term, multifamily construction will recover once the level of vacancies subsides, supported by population growth and downsizing baby-boomers.

Figure 5.3 **Existing homes for sale inventory**
(Units, not seasonally adjusted)



Source: BBVA Research and Redfin

Figure 5.4 **Housing starts**
(Thousands, SAAR)



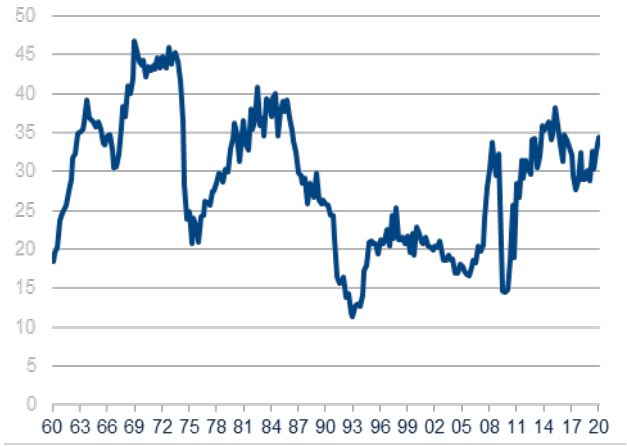
Source: BBVA Research and Census Bureau

2: Ellis, T. (2020). Shortfall in New Supply of Homes for Sale Felt Most Acutely at the High End. Redfin. https://bit.ly/3bfAuzA

Figure 5.5 **Home builders' housing market index** (100 = all good)

Source: BBVA Research and NAHB

Figure 5.6 **Multifamily starts as a share of total housing starts** (%)



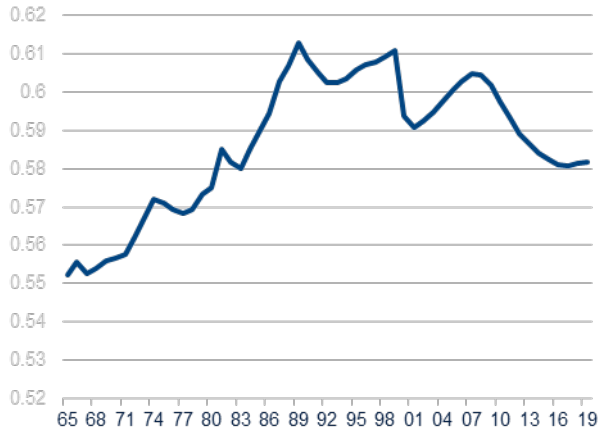
Source: BBVA Research and Census Bureau

Home prices

While the current economic recession is a severe and unpredictable development, as long as the economy reverts to growth soon and the majority of the newly unemployed individuals are reemployed relatively quickly, home prices will not decline precipitously as in the post-Great Recession period. The housing inventory in the U.S. relative to the country's adult population is close to its lowest level over the last 37 years (Figure 5.7). This undersupply will be further exacerbated by the decline in construction this year, allowing for some regional variation. Housing shortages are higher in states with low homeowner vacancy rates such as New Hampshire, South Dakota, Minnesota, Maine, Nebraska and Wisconsin and lower in states with higher homeowner vacancy rates such as Alaska, New Mexico, North Dakota, Louisiana, Oklahoma, Arkansas and Alabama (Figure 5.8).

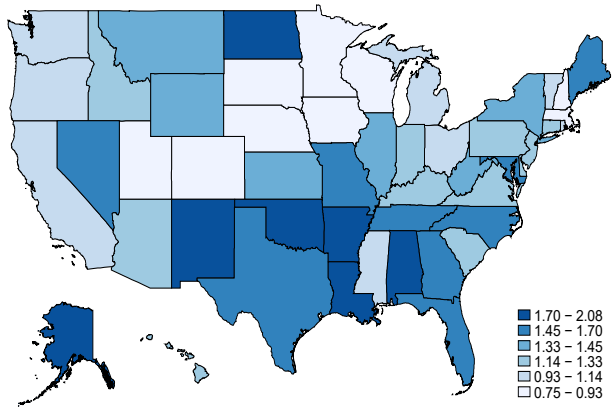
In addition to the relative lack of physical housing inventory in many markets, the existing homes market will also remain tight with potential sellers that do not have to sell immediately postponing the listing of their properties. Homeowners will benefit from different forms of support such as forbearance and enhanced unemployment benefits, which will help prevent a dramatic increase in new listings resulting from forced selling.

Figure 5.7 **Housing stock to population 20-84** (Ratio)



Source: BBVA Research and Census Bureau

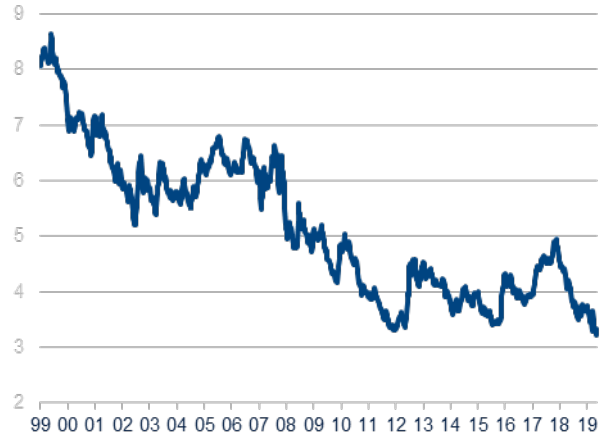
Figure 5.8 **Homeowner vacancy by state** (1Q20, 4QMA, %)



Source: BBVA Research and Census Bureau

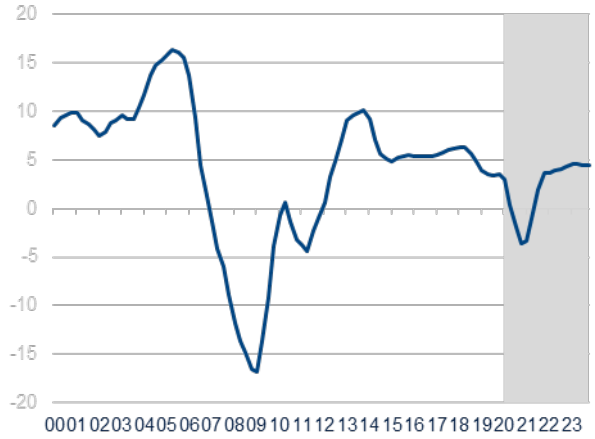
On the demand side, while many potential buyers will retrench from the market due to increased unemployment, uncertainty and tighter lending standards, the effects will be mitigated by attractive mortgage rates and higher affordability, which could attract buyers with resources to make a large purchase, either as a primary home or as an investment property. According to FreddieMac, the 30-year fixed-rate mortgage reached its lowest level on record at the end of April (Figure 5.9) and we expect it to remain around this level over the coming year. Any increase in the reference Treasury yields due to an improved growth outlook of the economy will be roughly offset by a decline in the risk premium. As a result, with supply remaining limited and demand softening moderately, we expect home prices to decline modestly this year, before reverting back to growth in 2021 (Figure 5.10).

Figure 5.9 **30-year fixed-rate mortgages: U.S.** (%)



Source: BBVA Research and Federal Home Loan Mortgage Corporation

Figure 5.10 **CoreLogic home price index** (% YoY)



Source: BBVA Research and CoreLogic

Structural forces

The pandemic is amplifying the impact of structural forces that were already evident in the housing market prior to the crisis. First, the pandemic will intensify the structural housing shortage due to a drop in new construction over the next one to two years. Second, it will intensify the rebalancing of the relative attractiveness of different types of housing – this time away from dense urban cores and multifamily developments towards suburban areas with single-family homes. Single-family homes provide more opportunity for social distancing in addition to important quality of life amenities. With the pandemic quickly bringing telework into the businesses mainstream and companies likely providing greater flexibility to their employees going forward, effective time spent commuting, one of the biggest obstacles preventing young professionals from moving to the suburbs or exurbs in greater numbers, will diminish to a certain degree.

Single-family housing will also benefit from demographic trends that will play out over the coming decade. Most Millennials will have aged into their prime home-buying years over the next ten years and started families if they have not already done so. Moreover, Generation Z members will also enter age when they become independent and form separate households. The housing demand from Millennials, the largest generational cohort in the U.S. today, will be partially met by inventory put on the market by downsizing Baby Boomers. The reason for this lies in the difference in numbers of the relevant age groups. While there were 23.5 million U.S. residents aged 25-29 in 2019, individuals that could be expected to become first-time homebuyers in the next five years, there were only 9.6 million residents aged 75-79, an age group that could be expected to become sellers over the next five-year period. This mismatch between demand and supply will have to be offset by new construction.

At the same time, while we expect the single-family market segment to outperform multifamily over the next decade, apartments will nevertheless remain a critical housing solution and a solid market and asset class, particularly in knowledge-intensive metropolitan areas with high real estate and living costs. Although apartment vacancies will increase sharply over the next year due to an increase in unemployment and new completions entering the market – units started over the last several years and close to being finished, vacancies will subside gradually starting next year with the help of a recovering economy and attractive rents.

Bottom line

Both housing supply and demand will contract this year as a result of the pandemic-induced shock to the economy (Table 5.1). Price-wise, the housing market is expected to soften, with home prices this year posting modest declines before reverting to positive growth next year. Over the mid- and long-term, we are optimistic about the future of housing, especially single-family, because of the relative undersupply of housing units, low interest rates, a recovering economy, and possibly stimulus measures that support homeownership. That said, due to the high level of uncertainty around the final outcome of the Covid-19 recession, the dispersion of outcomes around our baseline is significantly wider than in previous episodes.

Structurally, the current crisis and its aftermath are likely to have a positive impact on regional rebalancing. Some areas that have suffered from deindustrialization could turn more attractive if the increased availability of telework improves their cost-benefit profile. Large cities will remain attractive locations for highly productive individuals in cutting-edge industries and stay critical to enabling economic growth through knowledge sharing, spillovers, and network effects, but would have to undergo some adaptation to the change in preferences and the public health necessities. While the crisis will not lead to de-urbanization, the spread of the virus exposed risks inherent to high-density environments that have to be considered and managed in the future.

Table 5.1 **Housing forecasts**

	2017	2018	2019	2020	2021
Housing starts	1.21	1.25	1.30	**1.07**	**1.07**
Existing home sales	5.5	5.3	5.3	**5.0**	**4.9**
Home prices	5.9	5.8	3.5	**-0.4**	**0.4**
30-yr fixed-rate mortgages	4.0	4.5	3.9	**3.4**	**3.3**

Source: BBVA Research

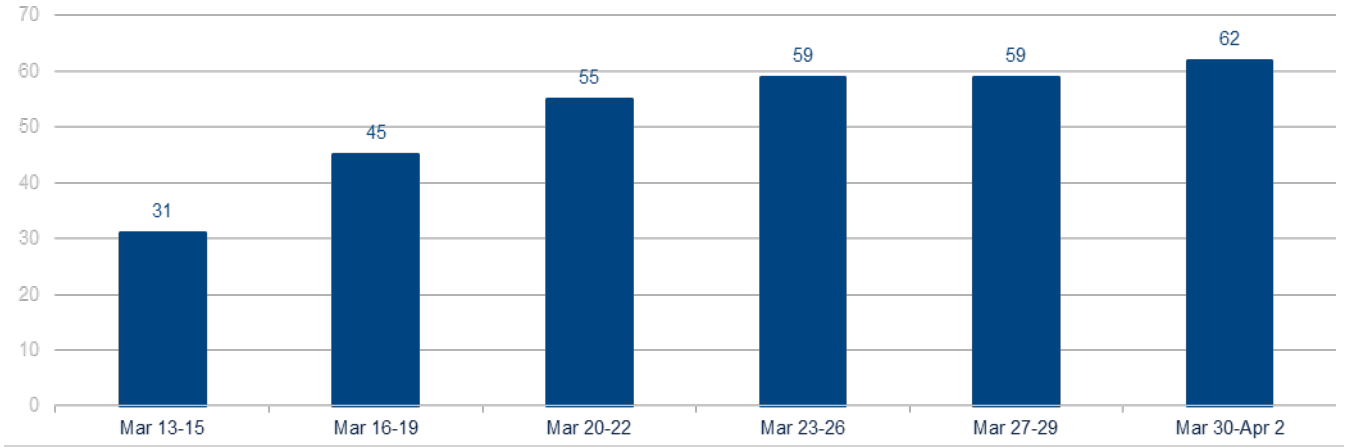
6. Work after the pandemic

The Covid-19 pandemic will have a profound effect on the way humans interact in society. One of the things that will experience a significant transformation is work. In this article, we cover three aspects of work that will gain relevance in a post-pandemic world: remote work, automation, and office design.

Remote work: farewell to traffic and commuting times

Across the world, the rapid spread of Covid-19 led governments to mandate lockdowns, forcing millions of people to work from home. Remote work -also known as telecommuting or telework- is not new. Before the pandemic, about 5 million people in the U.S worked from home at least half the time, accounting for 3.2% of the labor force. This share increased substantially since Covid-19 spread across the country. In March, a survey of 464 executives conducted by MIT Technology Review Insights revealed that 80% of their workforce was working remotely. Based on a survey conducted between April 1 and 5, Brynjolfsson, Horton, et al. (2020) estimated that about 50% of the U.S. workforce was working from home.[3]

Figure 6.1 **Gallup Survey: share of U.S. workers who have worked remotely** (%)



Source: Gallup

The pandemic has created a natural experiment to evaluate the impact of remote work. Nonetheless, early assessments should be taken with caution since the conditions of this experiment are far from ordinary. For instance, many workers have to take care of kids or older relatives during the quarantine, while many others do not have the necessary equipment to perform their tasks remotely.

3: Erik Brynjolfsson, John Holton, Adam Ozimek, Daniel Rock, Garima Sharma, and Hong Yi Tu Ye (2020). "Covid-19 and Remote Work: An Early Look at US Data." MIT Initiative on the Digital Economy. April. Available at: http://ide.mit.edu/publications/Covid-19-and-remote-work-early-look-us-data

However, these reservations should not prevent us from highlighting the positives of having more people working from home after the pandemic. For one thing, telecommuting was already a trend that the pandemic has only accelerated. Once the economy comes back to life, we expect remote work to become a widespread practice as the coronavirus will not go away immediately and people will be advised to work from home as much as possible. In this sense, telecommuting is an efficient way to maintain social distance and prevent future outbreaks.

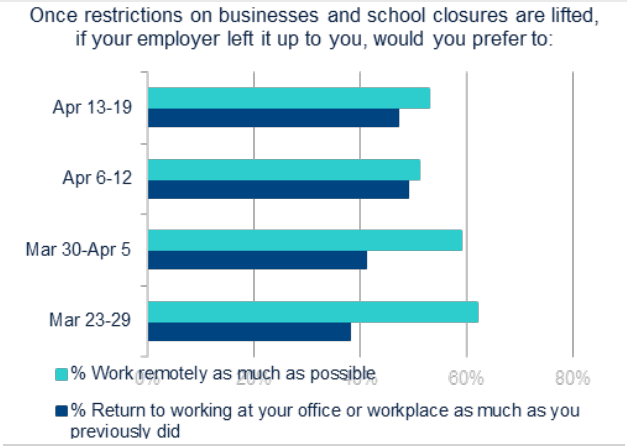
Other benefits of telecommuting will become evident as the economy returns to normal. For workers, it could save time on commuting between home and work. The average American spends 225 hours per year commuting. Remote work would allow workers to spend more time on other, potentially more fulfilling, activities and improve their wellbeing. Fewer vehicles on the road will bring down carbon emissions and pollution, with positive effects on health and the environment. Governments could save money on maintaining highways, which can be used to invest in ICT or other types of infrastructure. Under normal circumstances and access to the right equipment, remote work could make people more productive. In a famous study, Bloom et al. (2015) conducted an experiment with call center employees of the NASDAQ-listed Chinese company Citrip, in which a group of randomly selected volunteers were assigned to work from home (WFH) for nine months. The authors found a 13% increase in performance associated with fewer breaks and sick days, as well as more calls per minute.[4] WFM employees reported higher levels of satisfaction and lower attrition rates. The company later adopted remote work as a permanent policy. According to Global Workplace Analytics (GWA), telecommuting could save workers between $2,500 and $4,000 per year. Most of these savings come from lower costs of traveling, parking, and food, and are net of additional energy and food at home costs. For companies, GWA estimated that the average employer could save $11,000 per year for an employee that telecommutes half-time. Savings would come primarily from productivity gains, lower real estate costs, lower absenteeism and turnover, and better response to disasters.[5]

Higher rates of telecommuting will allow companies to compete more effectively for talent and save money on relocation costs. Remote work could level the playing field among different kinds of workers, as it would force companies to rely more on quantifiable objectives to assess performance. Bad practices such as office politics or gender discrimination could decline in remote work environments.

However, despite its multiple benefits telework is not a panacea. Without adequate implementation, telecommuters could feel alienated, depressed, and burnout as the limits between work and life become blurred. Introverted workers may succeed in a remote environment, but extroverted workers would find it challenging to thrive in virtual setups with limited physical interaction. In their experiment with Chinese call center workers, Bloom et al. (2015) also found that 50% of workers who were assigned to work from home decided to return to the office when they were given the option, resulting in even higher productivity gains from telework. The study suggests that flexible schemes, where people have the option to work from home or in the office could yield the best results.

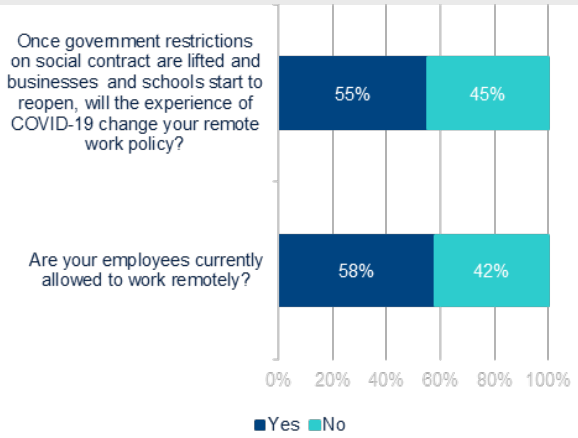
4: Nicholas Bloom, James Liang, John Roberts and Zhichun Jenny Ying (2015). "Does Working From Home Work? Evidence from a Chinese Experiment." The Quarterly Journal of Economics, Volume 130, Issue 1, February, Pages 165–218, https://doi.org/10.1093/qje/qju032
5: Global Workplace Analytics (2020). "Latest Work-At-Home/Telecommuting/Mobile Work/Remote Work Statistics." March. Available at: https://globalworkplaceanalytics.com/telecommuting-statistics

Figure 6.2 **Employee's views on telework** (2020)



Source: Gallup

Figure 6.3 **Manager's views on telework policies** (2020)



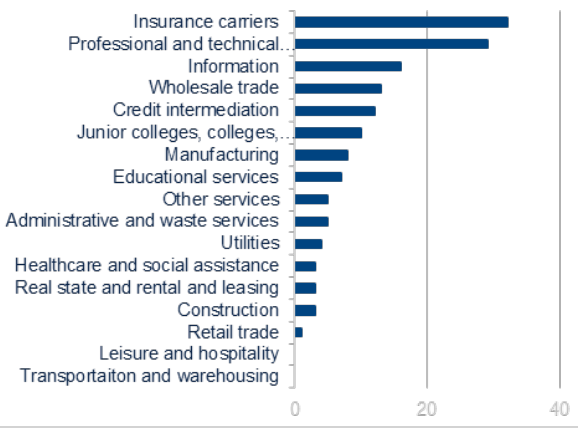
Source: Gallup

Currently, telecommuting is more of a privilege than a well-established practice as it is more frequent among high-paid and knowledge workers.[6] However, to maximize the benefits that telework could bring to society, it needs to become available to every worker who can perform their regular tasks outside the office. However, this entails a big challenge. A study conducted by Microsoft in 2019, found that 162.8 million Americans are not using the internet at broadband speeds. If the connectivity gap is not closed, the benefits of remote work will be enjoyed for the most part by high-income earners in a limited number of occupations. [7]

Figure 6.4 **Access to telework in U.S. private sector by occupation** (2019)

Source: Pew Research

Figure 6.5 **Access to telework in U.S. private sector by industry** (2019)



Source: Pew Research

6: Katherine Guyot and Isabel V. Sawhill (2020). "Telecommuting Will Likely Continue Long After the Pandemic." Brookings. April 6. Available at: https://www.brookings.edu/blog/up-front/2020/04/06/telecommuting-will-likely-continue-long-after-the-pandemic/
7: John Kahan (2019). "It's time for a new approach for mapping broadband data to better serve Americans." Microsoft on the Issues. April. Available at: https://blogs.microsoft.com/on-the-issues/2019/04/08/its-time-for-a-new-approach-for-mapping-broadband-data-to-better-serve-americans/

Rethinking the office

Office spaces will never be the same after Covid-19. As businesses prepare to reopen, they will have to take into consideration the safety of workers; this will demand changes to physical spaces and how workers interact.

Few examples illustrate the disruptive effect of Covid-19 on office setups better than the open space. Once considered conducive to creativity and collaboration, open spaces and collaboration areas are now the perfect environment for the spread of coronavirus. In a post-pandemic world, smaller desks and shared areas will turn risky. Firms will have to spend significant amounts of money redesigning offices and updating infrastructure such as HVAC systems, restrooms, parking lots, cafeterias, on-site childcare centers and elevators to comply with social distancing and other guidelines.

At the same time, firms will find that they need less space if a significant portion of their employees is allowed to work from home regularly. The value of office real estate may go down. Companies will be able to save money on rents, utilities, insurance, and maintenance costs. Some of these savings may be passed to employees to help them cover higher home expenses or pay higher wages to attract more talented workers without the need to move the headquarters to more attractive -but usually more expensive- regions.

Nonetheless, the challenge goes beyond infrastructure and preventive measures against contagion. The best office designs will be such that protect workers' health without damaging productivity and collaboration. This will not be easy. At first, infection testing, temperature checking, facemasks, road markings, tracking technologies, and social distancing rules will be uncomfortable. Many employees will return to the office with post-traumatic stress only to find new rules and their floors half empty. Rethinking the office may require a new social contract between employers and employees, managers and subordinates, one that facilitates the transition to the new normal and helps regain confidence in the future.

At the policy level, labor regulations and work support programs will need to be modernized, acknowledging new working frameworks and occupational health hazards. The magnitude of the crisis and the massive fiscal response needed to tackle the disruption in the labor market highlight the fragility, inefficiency and inequality of the social safety net built around patchwork employment-based provisions since the 1930s.

The importance of automation

Despite the gravity of the pandemic, not all workers could perform their tasks from home. In fact, according to Diengel and Neiman (2020), only 37% of occupations in the U.S. can conceivably be done at home. By industry, most of these jobs are in finance, corporate management, and professional and scientific services; in contrast, retail, agriculture, hotels, and restaurants have very few tasks that can be done remotely. This implies significant differences across regions. For example, in San Francisco, 45% of jobs could be done at home, while in Las Vegas, the proportion goes down to 30%.[8]

The health crisis exposed the vulnerability of people who cannot work from home. The most obvious cases were doctors, dentists and nurses as well as other workers considered "essential" such as public safety officers, food

8: Jonathan I. Dingel and Brent Neiman (2020). “How Many Jobs Can Be Done at Home?” Becker Friedman Institute for Economics. University of Chicago. April. Available at: https://bfi.uchicago.edu/wp-content/uploads/BFI_White-Paper_Dingel_Neiman_3.2020.pdf

manufacturer employees, and farmworkers among many others. This situation has raised a discussion on the importance of automation and artificial intelligence in supporting the job and protecting the lives of essential workers who cannot work remotely.

The prospects of another pandemic could accelerate advancements in artificial intelligence that reduce human interaction and protect workers at high risk of being infected. The AI company Faethm calculated that there were 32 million workers in the U.S. highly exposed to the pandemic because their tasks required a significant degree of face-to-face interaction and could not be easily done from home. From these, 22 million fell into the category of "essential workers." By industry, healthcare has the highest number of essential high-risk workers with 11.8 million, followed by retail and wholesale trade with 2.9 million, and public administration with 1.8 million.[9]

Artificial intelligence could help essential workers perform their tasks better and more safely during a pandemic. For example, deep learning applied to image recognition, testing, or computer vision could help hospitals cope with a shortage of staff, preventing burnout among doctors and nurses. These technologies could also help take better care of the elderly without exposing them to human caregivers who may be asymptomatic. Machine learning could assist businesses to monitor employees that need to keep social distance in the workplace. Nevertheless, the changes brought by AI will not be positive for all workers as some jobs could be permanently left to the machines. In retail trade, for example, robots are now capable of displacing cashiers. Just like telecommuting, AI applications are not new; however, the experience from the pandemic may accelerate disruption in some occupations. In certain cases, AI will improve the productivity of workers; in others, it will substitute them entirely. Over the long run, this should boost efficiency, productivity and economic growth. However, the transition could be costly for some workers and industries.

Bottom line

The Covid-19 pandemic has permanently changed the way millions of people work. In just a few months, telecommuting has gone from being a privilege to being a necessity. The health crisis also brought out the vulnerability of millions of workers whose jobs could not be performed at home. Many of these workers were considered essential during the pandemic, a situation that put their lives at risk. For them, advancements in Artificial Intelligence will help mitigate the chances of being exposed to this and future disasters. However, AI could end up taking over some essential occupations. Under normal circumstances, telecommuting and AI are productivity enhancers. Thus, companies are likely to accelerate their adoption after the pandemic is over. In other words, both trends are here to stay. Finally, the health crisis has led companies to rethink the way employees interact with their working spaces. This would result in original office concepts that will seek a balance between safety and collaboration while saving employers money in the long run.

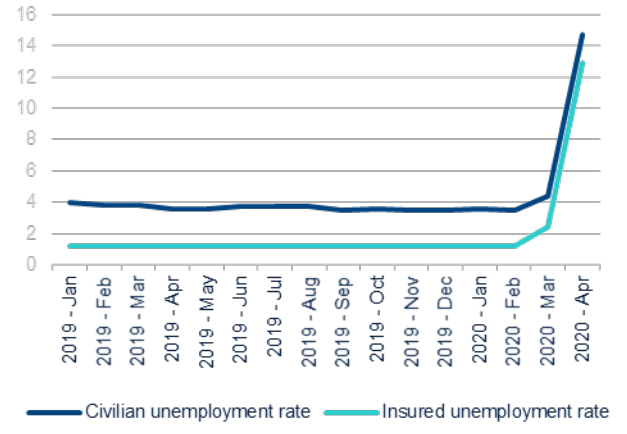
9 MIT Technology Review Insights and Faethm (2020). “Covid-19 and the Workforce. Critical Workers, Productivity and the Future of AI.” The Global Agenda Series. MIT Technology Review. April. Available at: https://www.technologyreview.com/2020/04/30/1000888/covid-19-and-the-workforce-critical-workers-productivity-and-the-future-of-ai/

7. Labor markets across states amid Covid-19

The April Employment Report[10] showed a record-breaking high unemployment rate - 14.7%. (Figure 7.1) That is, one out of seven individuals in the labor force is looking for a job. On the one hand, the job losses in April convincingly illustrate the devastating effect of the pandemic. On the other hand, the astonishing unemployment data suggest that many people in the labor force, especially the working class, may not be able to endure the Great Lockdown for much longer.

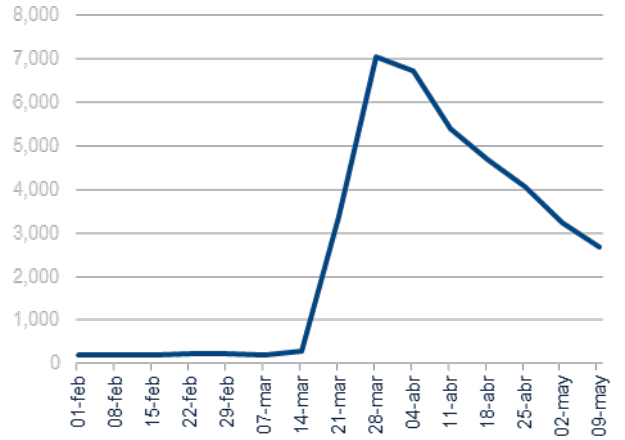
However, with more and more states starting to reopen their economy and the pace of job losses slowing down (Figure 7.2), the local economies will gradually enter the recovery phase. In this section, we try to examine the diversity within the labor market across the country and find out the states facing the strongest headwinds.

Figure 7.1 **Insured and civilian unemployment rates** (%)



Source: Department of Labor, Haver, and BBVA Research

Figure 7.2 **Initial claims by week in 2020** (Thousand)



Source: Department of Labor, BLS, Haver, and BBVA Research

Covid-19 economic vulnerabilities

During the pandemic, the most damaged industries are those who provide socializing services. The social distancing measures, while effectively flattening the curve, are devastating to travel, retail, food services, and entertainment industries. Amid the coronavirus crisis, many activities for leisure, such as traveling, dining out, watching movies, and attending sports events, have become health risks and undesirable to the public.

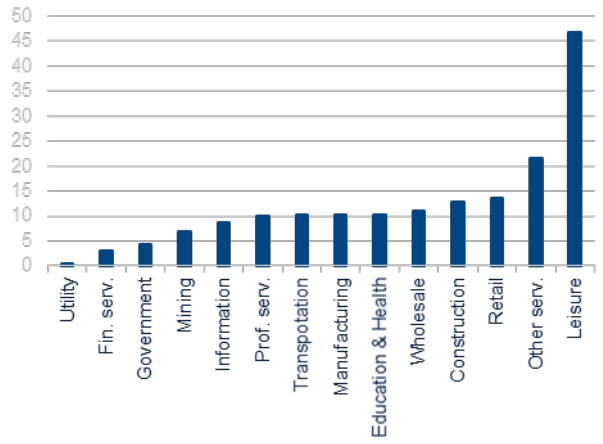
In order to quantitatively gauge the impact of the pandemic to different industries, we calculate the percentage of job losses by industry for April. As we can see from Figure 7.3, the leisure and hospitality sector became the ultimate

[10] https://www.bls.gov/news.release/pdf/empsit.pdf

victim of the pandemic: Almost half of the employees in this industry lost their jobs in a single month, erasing all the job gains since 1988.

Moreover, the mining sector is another source of economic risk. The price war among major oil producers amplified the loss from the supply glut and weak demand. Although the employment data for April did not show a dramatic decrease in employment in the mining sector, we expect the low oil prices and the cut in capital expenditures to have a longer-lasting negative effect on this industry. Therefore, states with a high concentration of the oil and gas industry may have a harder time to recover, even after the pandemic is over.

Figure 7.3 **Job losses by industry** (%)



Source: BLS, Haver, and BBVA Research

Table 7.1 **Covid-19 vulnerability index** (Index)

Rank	Covid-19 vulnerability index (1 - most vulnerable; 51 - least vulnerable)	
1	NV	0.79
2	HI	0.51
3	AK	0.47
4	WY	0.46
5	OK	0.37
47	VA	0.18
48	WI	0.18
49	CT	0.17
50	IA	0.16
51	DE	0.15

Source: BBVA Research

Economic structures will play a significant role in the dynamics of the pains suffered by local economies. States with substantial footprints of the vulnerable sectors are likely to have a harder time during the pandemic and take longer to recover. Based on the latest employment data, we generate a Covid-19 Vulnerability Index for states that take into account each industry's share and their vulnerability.

Table 7.1 lists the most and least vulnerable states based on our Covid-19 Vulnerability Index. As we can see, the pandemic hit Nevada and Hawaii economies the most, as their income heavily relies on the leisure and hospitality industry. In addition, Arkansas, Wyoming, and Oklahoma –three states that have a high percentage of their output dependent on the mining industry- will also have a hard time during the pandemic: Demand for oil is low, and newest investments are halted.

The local government may also face financial problems due to the loss of tax revenues. To balance the budget, state and local governments will be forced to increase taxes and cut public services unless they receive substantial aid from the federal government. During the last few decades, the deterioration of public infrastructure and insufficient education funding, which are financed by state and local tax revenues, have been chronic problems for most parts of the country. Without massive policy intervention from the federal government, state and local governments will have to keep kicking the can down the road, reducing long-term economic productivity and output.

To prevent such a downward spiral scenario from happening, the federal government must target the most vulnerable states and provide abundant funding, so they can circumvent significant expenditure cuts during this hard time and thus avoid productivity declines in the long run.

Bottom line

While the March and April data illustrate the onset of an economic crisis, more incoming data for May and June will reveal a bigger picture of the effect on regional economies. States will diverge significantly during the recovery phase. On the one hand, the states with more jobs that allow people to work from home will show stronger resilience. For example, we expect California to recover quickly once the pandemic ends. On the other hand, for those states with a significant portion of income from the mining or hospitality sectors, it will take much longer for them to get out of the recession. That is, the oil supply glut needs to resolve, and people need to feel entirely confident to travel through airplanes again.

From historical experience, job losses will not recover until the recession is over. The most recent example is the Great Recession. The economy reached the trough in June 2009, but the unemployment rate only started to decline after October. That is, four months later. The same scenario could happen during this recession, as it may take two to six months for the least affected states to have positive job growth. However, for states with significant footprints in the energy and leisure sectors, it will take substantially longer.

8. Visualizing the Covid-19 pandemic in the Sunbelt

Introduction

The U.S. seems to have passed the peak of the first wave of the Covid-19 pandemic. As states are in the process of creating and implementing their strategies for reopening their economies, special consideration is being paid to where each state or geography stands in its recovery and what the past few months have revealed about its ability to combat Covid-19.

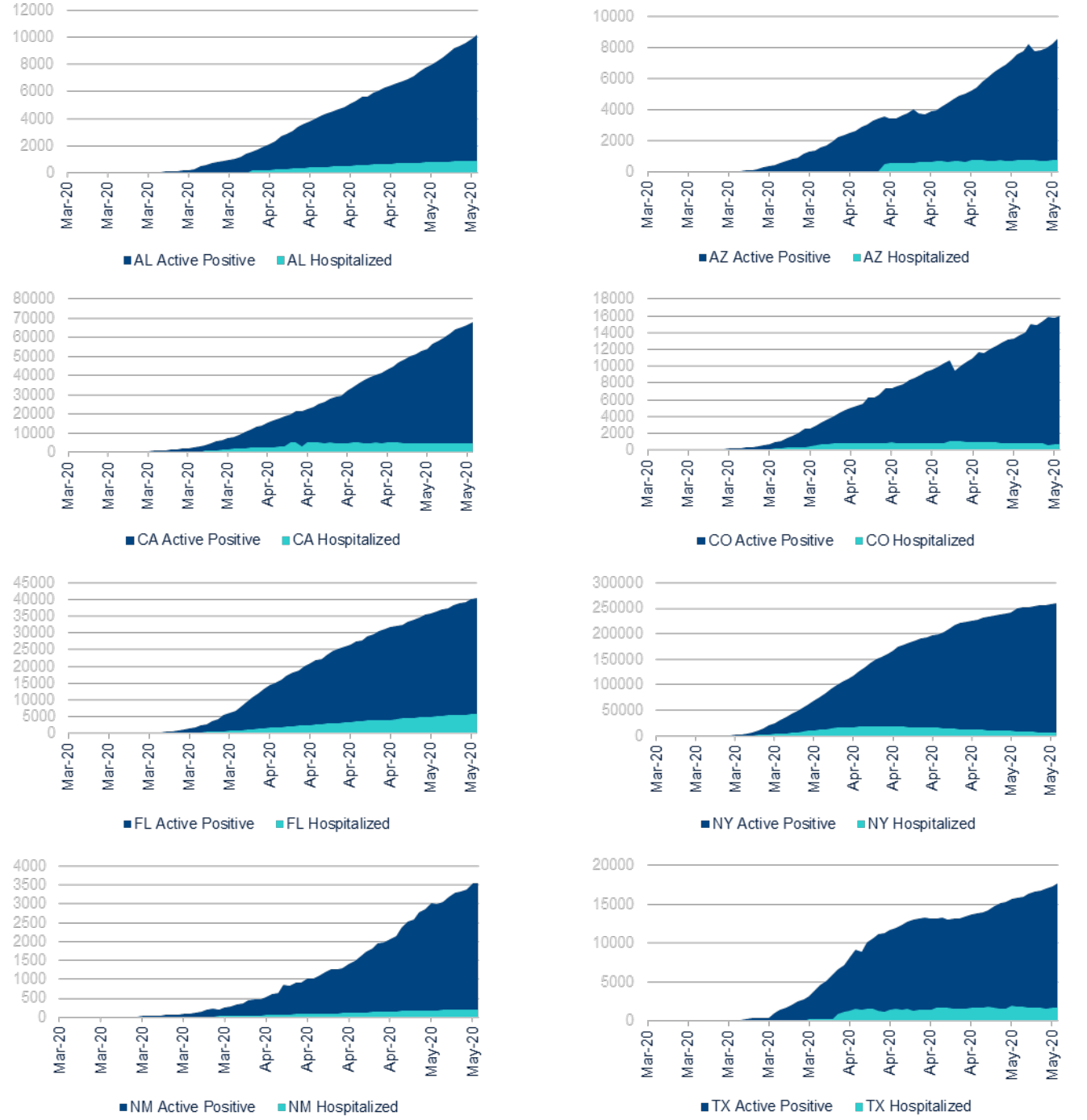
Early on, attention paid to the pandemic centered around the West Coast as the first cases and then waves originated from Washington state and Northern California. Within a few weeks, the nation's attention panned over to the East Coast as failures in early preventative measures left New York City as the global epicenter of the Covid-19 pandemic. The catastrophe in New York pushed the rest of the U.S. into the background of the public's conscious. Yet, in a system so integrated across borders as the spread of infection, the public cannot afford to ignore any geography that could become a new epicenter within the span of the virus' incubation.

We shift our focus to the Southern states; specifically, the Sunbelt states which situate themselves beneath the 36th parallel. We consider the data coming in from this region in order to create a retrospective account around the Sunbelt's response to the pandemic given its infrastructure and governance. Moreover, we want to evaluate how these features fared in fighting off the disease and consider what risks lie ahead.

States

According to the CDC, between March 1 and May 2, the cumulative hospitalization rate caused by Covid-19 in the U.S. was 50.3 per 100,000 in the population. Among those confirmed positive with coronavirus, the rate of hospitalizations varies widely from 0.1% of children ages five to seventeen and 17.2% of adults over the age of eighty-five. Hospitalizations per case of Covid-19 was worst in the early days of the outbreak. California reached a peak hospitalization rate of 22.8% as opposed to 8.2% over the past two weeks. Florida's hospitalization rate has kept around 14% throughout the pandemic and Colorado has managed to drop its current hospitalization rate to 5.9% of all its active cases. Figure 8.1 shows the evolution of active cases as compared to active hospitalizations from Covid-19.

Figure 8.1 **Active cases of Covid-19 and active hospitalizations caused by Covid-19 by state**



Source: BBVA Research

The probability of an individual requiring hospitalization depends mostly on the individual's condition. Variation in the hospitalization rate between counties and states at a fixed point in time might be described by differences in material conditions, namely occupations, income and their intersection with a community's health and wellbeing; however, a decrease in the hospitalization rate over time seems to be more rooted in behavior or non-demographic factors. This decrease may represent growing caution among individuals who are most at-risk of being hospitalized by Covid-19 like the elderly and people with an underlying health condition. It is also possible that the initial mass of hospitalizations reflected greater fear and lack of understanding of the virus. Another factor may be political or bureaucratic. Before testing became more widely available in the U.S., some Sunbelt states like California and Texas subjected suspecting patients to tall barriers in order to qualify for testing which included hospitalization with influenza-like symptoms and/or provable contact with a confirmed-positive individual.

The acquisition and distribution of Covid-19 tests is a preventative and active measure against the spread of the virus, which varies greatly between the states and their governments. Figure 8.2 presents the release of coronavirus test results by the Sunbelt states and New York, for reference, segmented between positive and negative results.

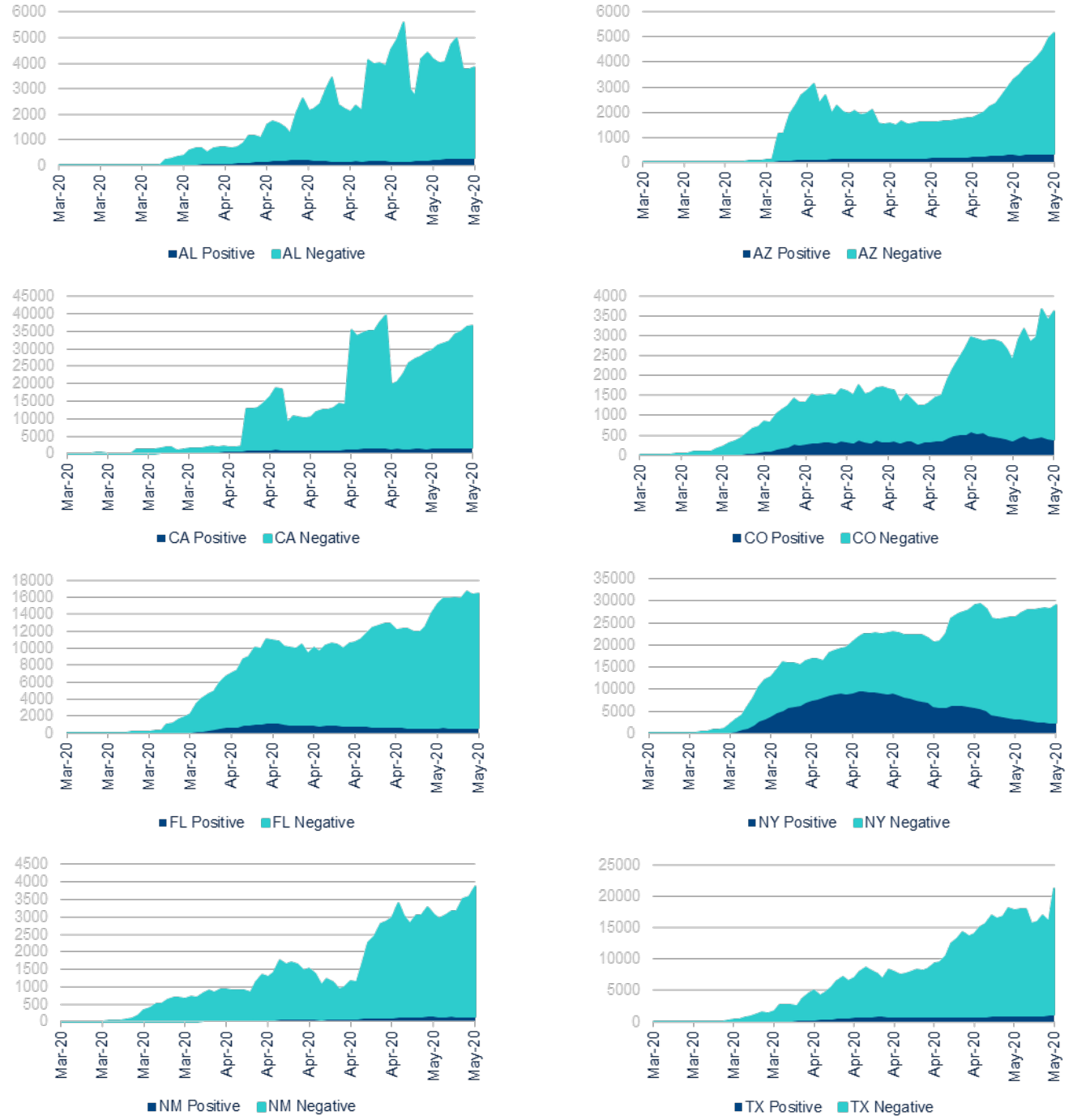
All states had difficulty getting access to tests early on. California, though relatively unscathed possibly due to its early shelter-in-place orders, has been very inconsistent in terms of testing. The state encountered severe testing backlogs twice during the pandemic, once at the end of March and again at the middle of April. No state besides New York faced such a high demand for testing so suddenly as California, yet New York was able to process its tests without too much backlog.

Some states like Arizona whose new infections curve have not yet inflected are rushing to increase testing in anticipation of their planned easing of economic restrictions. By most measures, Arizona is still at the height of their pandemic, yet it began easing economic restrictions in the second week of May. Towards the end of April, state officials announced a severe increase in testing in order to close the gap between their current levels of testing and their goal for easing the reopening of their economy.

Estimates of testing volumes required by a region in order to ensure a safe reopening of the economy vary. Harvard's Global Health Institute estimates that a region is likely processing enough tests if they can achieve a total test to positive results ratio of ten-to-one. The only Sunbelt state that currently falls below this threshold is Colorado with a ratio of seven-to-one. Arizona sits just above it at eleven-to-one. The optimal outcome is to increase testing without increasing additional positive cases by too much, as this implies a rate of infection in the population that is lower than tests would imply. As seen in Figure 8.2, Arizona and Colorado were the only states who saw a significant increase in positive test results along with an increase in total tests.

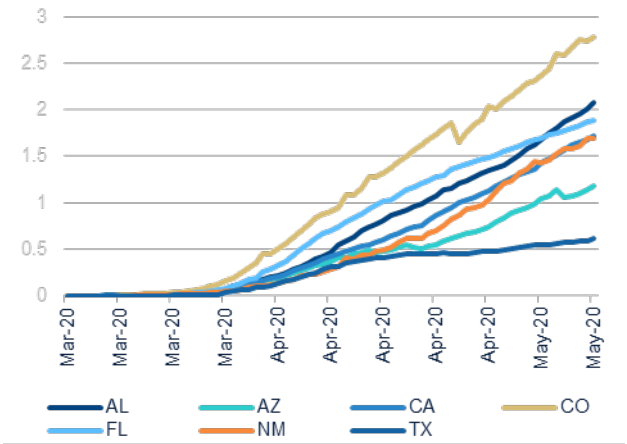
This same study also mentions that a state's testing goal is dependent on the severity of its outbreak. In April, advisor to the Whitehouse Deborah Birx cited that cities should administer above thirty tests per one thousand residents daily in order to keep safe. By this measure, as seen in Figure 8.4, all Sunbelt states but New Mexico fail to keep up with safety standards. The ten-to-one rule calls the severity of the state's outbreak into consideration. For example, the estimated threshold for New Orleans, one of the hardest-hit cities in the Sunbelt, is closer to forty-five per one thousand residents. While standards must be coordinated at the municipal level, data at the state-level suggests that Arizona, Colorado and perhaps Texas are running a serious risk at their current rate of testing.

Figure 8.2 **Count of negative coronavirus test results atop positive test results by state**



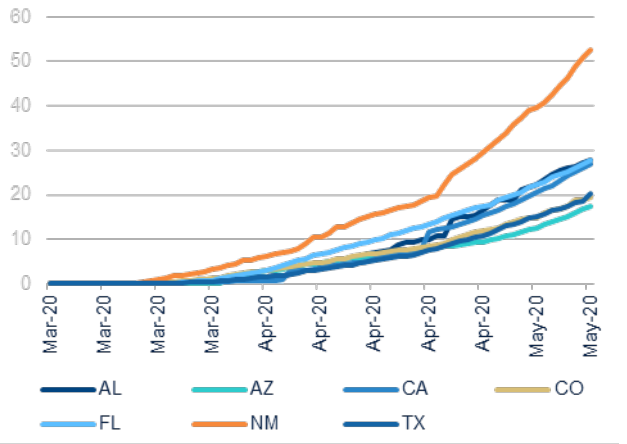
Source: BBVA Research

Figure 8.3 **Active Covid-19 cases per one thousand residents**



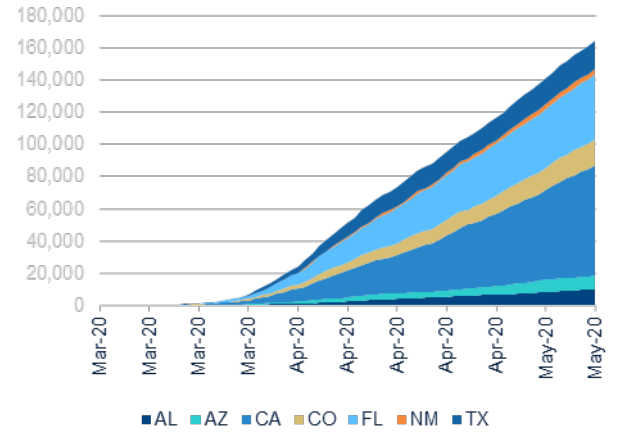
Source: BBVA Research

Figure 8.4 **Coronavirus test per one thousand residents**



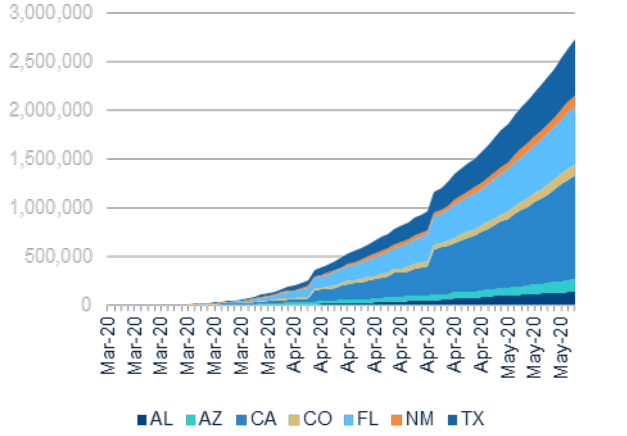
Source: BBVA Research

Figure 8.5 **Current active cases of Covid-19 by state**



Source: BBVA Research

Figure 8.6 **Cumulative coronavirus tests by state**



Source: BBVA Research

Metropolitan areas and counties

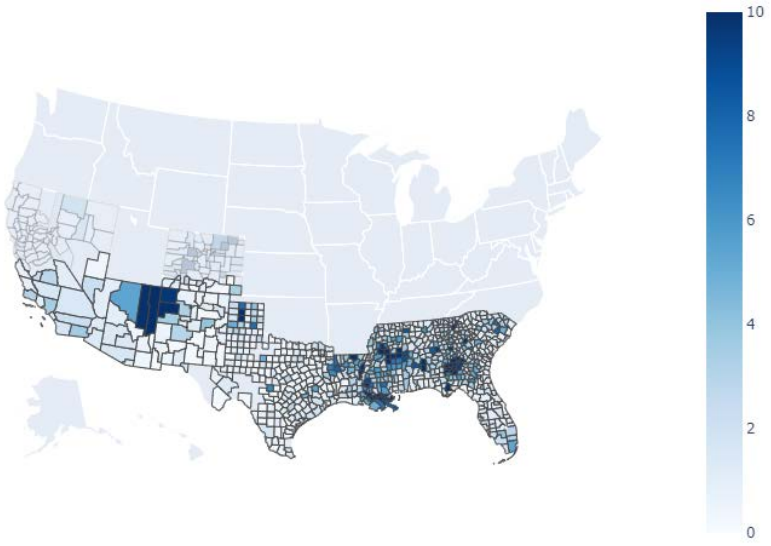
Few counties and cities in the Sunbelt experienced the kind of contagion seen in New England and the Pacific Coast. Perhaps it is a function of the South's geography, its infrastructure, its demographics, its political response or some combination thereof. Flares of the virus that ignited in cities like Atlanta or New Orleans following Mardi Gras weekend kept near its origin and continued to burn. Though not as severe as other regions, many of the Sunbelt states and its cities have been stumped by unique complications.

Large cities in Alabama, California and Texas saw sudden spikes in new cases after having inflected downward. Most Sunbelt states have begun to lift economic restrictions. Georgia was the first state to do so towards the end of April before reaching CDC recommended milestones such as a sustained decrease in daily cases for two weeks. It is still too soon to tell how much of an impact easing restrictions before achieving recommended conditions will have on a city's recovery.

As seen in Figure 8.7, the majority of rural counties barely register a single case per one thousand residents. The largest metropolitan areas surrounding Los Angeles, Phoenix, Houston, Dallas, San Antonio and Austin seem relatively unaffected as compared to New Orleans or towns near the Alabama-Georgia border even when adjusting for regions with a larger implied contagion, and they seem unlikely to turn into epicenters and seed the range surrounding them.

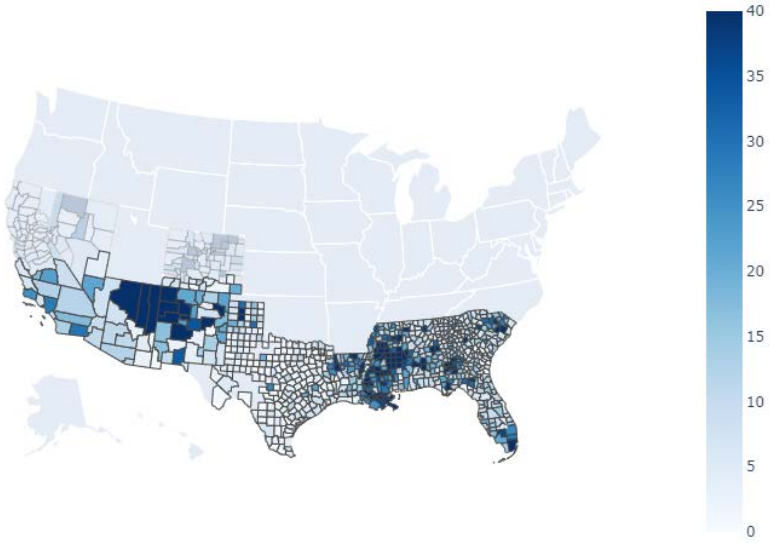
Rural pockets of the outbreak seem to be a feature unique to the Sunbelt. Northern Mississippi, select counties in Alabama and the Alabama-Georgia border were hit especially hard as compared to their metropolitan neighbors. The hardest hit region in the Sunbelt sits between the Arizona-New Mexico border. These are the Navajo and Hopi nations. Given a lack of infrastructure in the region, it is unclear if their recovery will lag behind the cities outside their border and, if so, by how long. Being positioned near Flagstaff and Albuquerque and integrated into their economies, the public's failure to control the outbreak here, or in any rural area, puts metropolitan residents within arm's reach.

Figure 8.7 **Confirmed cases per one thousand residents**



Source: BBVA Research

Figure 8.8 **Confirmed cases per one thousand people adjusted for test to positive test result ratio**



Source: BBVA Research

Conclusion

Most of the U.S. Sunbelt has been relatively untouched by the Covid-19 pandemic. Though new daily cases have inflected after New York City's containment, a sustained economic recovery requires the rest of the country to follow suit. The first wave of the Covid-19 pandemic has revealed that the combination of the Sunbelt's political and economic response in combination with existing systems was able to prevent a crisis on the scale of those seen elsewhere.

Social distancing measures as preventative action served to contain the virus on the Pacific Coast and throughout the Sunbelt. As these states begin to reopen their economies, we stand to watch what difference a large testing infrastructure will have on policy implementation and municipal recoveries. These testing programs will allow for specialists to better design reopening strategies and tailor their recommendations in order to suppress the virus' resurgence. Perhaps, this data can also serve to describe a region's risk factors or target pockets of the pandemic. Moreover, testing and further analysis of the past few months will likely inform a response to future waves of Covid-19; so when the virus is slated to return around September 2020, a more optimize diversion of labor and resources might be planned as opposed to a blanketed application of lockdowns and shelter-in-place orders.

9. Forecasts

Table 9.1 **U.S. MACRO FORECASTS**

	2013	2014	2015	2016	2017	2018	2019	2020 (f)	2021 (f)	2022 (f)	2023 (f)
Real GDP (% SAAR)	1.8	2.5	2.9	1.6	2.4	2.9	2.3	**-4.4**	**3.4**	**2.4**	**2.1**
Real GDP (Contribution, pp)											
PCE	1.0	2.0	2.5	1.9	1.8	2.1	1.8	**-4.3**	**3.1**	**1.7**	**1.6**
Gross Private Investment	1.1	1.0	0.9	-0.2	0.8	0.9	0.3	**-1.8**	**-0.2**	**0.7**	**0.7**
Non Residential	0.5	1.0	0.3	0.1	0.6	0.9	0.3	**-1.2**	**-0.4**	**0.7**	**0.6**
Residential	0.3	0.1	0.3	0.2	0.1	0.0	0.0	**0.0**	**-0.1**	**0.0**	**0.1**
Exports	0.5	0.6	0.1	0.0	0.5	0.4	0.0	**-1.0**	**-0.2**	**0.5**	**0.5**
Imports	-0.3	-0.8	-0.9	-0.4	-0.8	-0.8	-0.2	**2.2**	**-0.1**	**-1.0**	**-0.9**
Government	-0.5	-0.2	0.3	0.3	0.1	0.3	0.4	**0.6**	**0.8**	**0.4**	**0.2**
Unemployment Rate (%, average)	7.4	6.2	5.3	4.9	4.3	3.9	3.7	**8.1**	**5.9**	**5.0**	**4.3**
Avg. Monthly Nonfarm Payroll (K)	192	250	227	195	176	193	178	**-706**	**154**	**138**	**107**
CPI (YoY %)	1.5	1.6	0.1	1.3	2.1	2.4	1.8	**-0.1**	**0.8**	**2.1**	**1.9**
Core CPI (YoY %)	1.8	1.8	1.8	2.2	1.8	2.1	2.2	**1.4**	**0.3**	**1.3**	**1.6**
Fiscal Balance (% GDP, FY)	-4.1	-2.8	-2.4	-3.2	-3.4	-3.8	-4.6	**-16.2**	**-7.9**	**-4.5**	**-4.1**
Current Account (bop, % GDP)	-2.1	-2.1	-2.2	-2.3	-2.3	-2.4	-2.3	**-1.9**	**-2.0**	**-2.2**	**-2.4**
Fed Target Rate (%, eop)	0.25	0.25	0.50	0.75	1.50	2.50	1.75	**0.25**	**0.25**	**0.25**	**0.75**
Core Logic National HPI (YoY %)	9.7	6.7	5.2	5.4	5.8	5.7	3.6	**-0.4**	**0.4**	**4.0**	**4.5**
10-Yr Treasury Yield (%, eop)	2.90	2.21	2.24	2.49	2.40	2.83	1.86	**0.59**	**1.18**	**1.41**	**1.89**
WTI Oil Prices (dpb, average)	97.9	93.3	48.7	43.2	50.9	65.0	57.0	**35.2**	**47.0**	**54.2**	**57.4**

(f): Forecast.
Source: BBVA Research

Table 9.2 **U.S. STATE REAL GDP GROWTH, %**

	2015	2016	2017	2018	2019	2020 (f)	2021 (f)	2022 (f)	2023 (f)
Alaska	1.0	-2.0	0.0	0.7	2.5	**-6.1**	**-0.7**	**1.1**	**1.2**
Alabama	1.3	0.7	1.2	2.8	2.3	**-4.2**	**2.6**	**1.8**	**1.5**
Arkansas	0.8	0.6	0.7	1.7	1.8	**-5.1**	**2.0**	**1.9**	**1.3**
Arizona	2.4	3.2	3.5	4.1	3.1	**-4.3**	**3.0**	**2.6**	**3.3**
California	5.0	3.0	4.4	4.3	2.6	**-4.4**	**3.7**	**3.7**	**3.3**
Colorado	4.6	2.4	4.0	3.5	3.5	**-3.4**	**3.3**	**3.0**	**3.0**
Connecticut	2.2	0.0	0.4	0.5	1.6	**-2.5**	**1.5**	**1.2**	**1.2**
Delaware	3.7	-4.2	-0.6	0.0	0.8	**-0.7**	**-0.5**	**1.3**	**1.7**
Florida	4.2	3.3	3.4	3.2	2.8	**-4.9**	**2.9**	**2.7**	**2.5**
Georgia	3.4	3.5	3.7	2.4	2.0	**-3.2**	**2.8**	**3.2**	**2.9**
Hawaii	3.6	2.2	2.3	2.4	1.0	**-1.5**	**2.1**	**1.9**	**1.8**
Iowa	2.6	-0.3	-0.3	2.2	0.9	**-4.8**	**3.2**	**2.4**	**2.0**
Idaho	2.8	3.9	3.5	4.0	2.8	**-5.3**	**2.1**	**3.5**	**3.2**
Illinois	1.3	0.4	0.9	2.1	1.6	**-4.8**	**2.3**	**1.5**	**1.3**
Indiana	-0.7	1.6	1.9	2.0	0.8	**-7.5**	**2.7**	**1.9**	**1.2**
Kansas	1.9	2.6	1.0	2.1	0.9	**-6.1**	**1.5**	**1.7**	**1.3**
Kentucky	0.7	0.7	1.1	1.4	1.1	**-5.5**	**2.1**	**1.3**	**1.1**
Louisiana	-0.5	-1.8	1.4	2.6	1.3	**-3.3**	**1.7**	**0.9**	**0.4**
Massachusetts	3.8	1.7	2.5	3.1	2.5	**-3.2**	**2.0**	**2.3**	**2.3**
Maryland	1.9	3.4	0.9	2.5	1.5	**-1.3**	**2.5**	**2.1**	**2.1**
Maine	0.7	2.2	2.2	2.2	1.9	**-2.5**	**1.3**	**1.3**	**1.2**
Michigan	2.5	2.2	1.5	2.5	0.7	**-6.7**	**3.1**	**1.8**	**1.1**
Minnesota	1.2	1.9	1.9	2.6	1.4	**-6.0**	**2.1**	**2.2**	**1.9**
Missouri	1.3	-0.4	1.0	2.4	2.1	**-3.1**	**0.9**	**1.5**	**1.3**
Mississippi	0.1	0.4	0.9	1.3	1.3	**-3.8**	**-0.1**	**1.6**	**1.4**
Montana	3.9	-1.4	1.7	2.6	2.1	**-0.7**	**1.8**	**2.7**	**2.3**
North Carolina	3.2	1.2	2.1	2.4	2.3	**-4.0**	**2.9**	**2.8**	**2.4**
North Dakota	-2.9	-7.0	0.0	3.6	2.3	**-4.9**	**-2.1**	**1.7**	**1.6**
Nebraska	2.9	0.4	2.1	0.9	0.6	**-0.7**	**3.0**	**2.0**	**2.0**
New Hampshire	2.8	1.8	1.8	2.3	2.7	**-2.9**	**3.0**	**2.2**	**2.1**
New Jersey	1.8	0.9	0.7	2.2	1.5	**-3.8**	**1.7**	**1.6**	**1.2**
New Mexico	2.2	0.1	0.1	2.5	3.7	**-7.2**	**2.5**	**1.7**	**1.8**
Nevada	4.2	2.9	3.2	4.2	2.9	**-4.9**	**1.3**	**3.4**	**3.4**
New York	1.7	1.3	2.1	1.2	1.8	**-2.4**	**5.2**	**1.4**	**1.7**
Ohio	1.5	0.8	1.6	1.9	1.7	**-3.7**	**1.7**	**2.0**	**1.5**
Oklahoma	4.3	-3.0	0.8	2.6	2.4	**-1.3**	**0.4**	**3.4**	**2.7**
Oregon	5.6	4.7	3.8	3.8	2.7	**-5.0**	**0.7**	**2.6**	**2.7**
Pennsylvania	2.2	1.3	0.6	2.6	2.3	**-3.2**	**1.8**	**1.7**	**1.4**
Rhode Island	1.8	0.0	-0.2	1.2	2.7	**0.0**	**2.7**	**1.8**	**1.6**
South Carolina	3.5	2.9	3.3	2.6	3.0	**-3.8**	**2.7**	**2.5**	**2.1**
South Dakota	2.9	0.5	-0.1	1.9	0.7	**-3.9**	**1.6**	**1.6**	**2.5**
Tennessee	3.4	2.1	1.9	3.1	2.2	**-4.0**	**1.7**	**2.3**	**2.1**
Texas	4.8	0.2	2.9	4.0	4.4	**-5.6**	**3.8**	**4.1**	**3.7**
Utah	4.1	4.0	3.9	3.7	3.8	**0.5**	**3.6**	**4.1**	**4.1**
Virginia	2.0	0.4	1.8	2.6	1.9	**-1.8**	**2.0**	**2.1**	**2.2**
Vermont	1.3	1.6	0.1	1.2	2.5	**-3.9**	**2.1**	**1.5**	**1.5**
Washington	4.4	3.5	5.2	5.8	3.8	**-3.9**	**2.7**	**2.9**	**2.7**
Wisconsin	1.8	1.2	1.3	2.4	1.4	**-4.4**	**2.7**	**2.1**	**1.5**
West Virginia	-0.2	-1.2	1.5	2.3	1.0	**-4.3**	**0.9**	**0.8**	**0.7**
Wyoming	2.6	-4.2	-0.1	0.1	3.3	**0.0**	**-7.0**	**1.9**	**1.8**

(e): estimated; (f): forecast
Source: BBVA Research

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BBVA Research

Creating Opportunities

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