

United States Economic Outlook

First quarter 2020



Index

1. Editorial	3
2. U.S. Outlook: Is the Coronavirus and Boeings woes enough to ground the longest expansion in U.S. History?	4
3. Fed attempts to keep U.S. economy flying high while fine-tuning its main engines	12
4. Housing outlook	16
5. Assessing industry performance.....	22
6. The President’s tweets and the economy	30
7. Forecasts	37

Closing date: February 7, 2020

1. Editorial

New technologies and the digitization of the global economy create astounding opportunities. Recent data indicates that 4.1 billion people, more than 50% of the world population, is now online and more than two-thirds own a mobile device. In addition, with the expansion of the Internet of Things (IoT), which helps connect the physical and digital environments, 500 billion devices from smart refrigerators to fitness wearables, are expected to be connected to the Internet by 2030.

Expanding connectivity also implies higher vulnerability to cyberattacks. From data breaches of credit bureaus and healthcare providers to phishing attacks of mobile devices or ransomware to overtake control of entire systems, cyber risks promise to be as ubiquitous as connectivity itself. Millions of people could be at risk from attacks to the electricity grid, payment systems, nuclear plants, pipeline infrastructure, air transportation systems or military installations. Not surprisingly, cybersecurity ranks as one of the biggest global threats alongside climate change, pandemics, weapons of mass destruction, social instability and geopolitical conflicts. Recently, Fed Chair Powell indicated that one of the main risks to the financial system is cyberattacks. According to Cybersecurity Ventures,¹ damages from cybercrime could reach \$6 trillion by 2021, equivalent to 6% of world GDP. This is significantly higher than other major crimes like drug trafficking, pilferage and maritime piracy.

For individuals and businesses, the risks associated with cyberattacks are perceived as one of the most immediate and costly dangers. These include intrusion of privacy, damage and destruction of data, stolen financial assets, fraud, embezzlement and, theft of intellectual property, personal records and financial data. Victims are confronted with lost productivity, post-attack disruption to business activity, forensic investigation, restoration and deletion of hacked data and systems, and reputational consequences. The industries with higher attacks include health, energy, financial, industrial, government and pharma, while those with the lowest number include research, retail, media and hospitality.

For many companies, particularly small and medium enterprises, which account for over 50% of total attacks, the dangers of loss revenue, business disruption, system downtime and, customer turnover and acquisition could imply bankruptcy. In 2018, the average global number of security breaches for all businesses reached 145 while the average cost of cybercrime was \$13 million. In the U.S., the average cost was \$27.4 million, an annual increase of almost 30%. Still, many companies perceive that losses from hacking is part of doing business or that integrating cybersecurity features is secondary to get the product out into the market. In addition, new measures on data protection such as Europe's General Data Protection Regulation and California's Consumer Privacy Act imply higher regulatory costs.

Going forward, we expect the cybersecurity subsector to show strong dynamism and a sizable increase in the demand of resources to mitigate and manage risks. In particular, greater reliance on automation, advanced analytics and security intelligence. This will require a significant increase in the supply of high-skilled professionals. In fact, in 2019, the U.S. faced a shortage of more than 300K cybersecurity jobs and employment growth for information security analysts will increase 32% in ten years, the top 6 out of 325 occupation profiles. By 2021, the global shortage of jobs in this field could reach 3.5M. In addition, we expect private investment to continue strong. In the last three years, venture capital in cybersecurity startups averaged almost \$9bn annually and global spending could total \$1tn in 2020-2025. These trends will boost existing and new business possibilities such as cyberinsurance, consulting, and software development, increase financing opportunities, and amplify the benefits of innovation, IoT, new technologies and supply chains. This in turn, will support job creation, trust and productivity growth, thereby rising economic well-being and living standards.

1: <https://cybersecurityventures.com/cybercrime-damages-6-trillion-by-2021/>

2. U.S. Outlook: Is the Coronavirus and Boeing's woes enough to ground the longest expansion in U.S. History?

We are maintaining our baseline scenario of 1.8% growth in 2020 and 2% in 2021. The threat that the Coronavirus presents for global growth in 2020 is counteracting the positive momentum heading into the year, which saw U.S. model-based projections of U.S. recession fall to 18-month lows. In fact, after a strong rebound in financial markets in 4Q19, the threat of a global pandemic is weighing on market sentiment. The mid-cycle adjustment in interest rates and a turnaround in business sentiment should be supportive of growth in the residential sector and buoy nonresidential private fixed investment. In addition, declining labor market slack and slower growth suggests nonfarm payroll gains will slow throughout the year while the dearth of supply-side pressures suggests inflation will remain subdued.

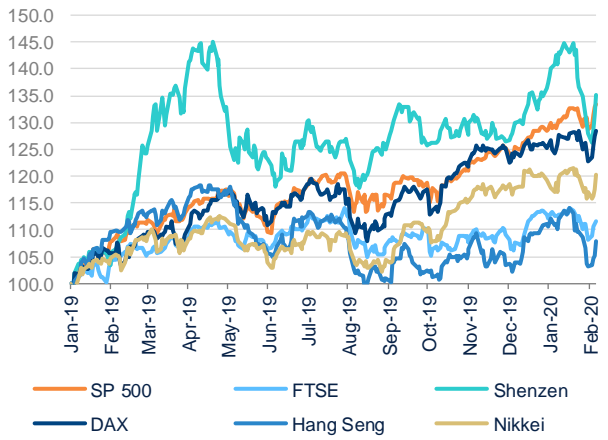
Financial market sentiment improved in 4Q19 with the refocused efforts of the Fed to replenish bank's reserves, less fiscal uncertainty, lower trade tensions, increased clarity around Brexit and a slightly more upbeat global growth outlook. Since September, broad stock price indexes such as the S&P 500 rose around 10.1% as of the end of January with lower capitalization indexes such as the Russell 3000 also growing strongly. Market implied volatility reflected the reduction in idiosyncratic risks with the VIX declining throughout most of the period. Nominal Treasury yields also rose throughout the 4Q19 while rising inflation expectations held down inflation-indexed Treasuries, implying a reduction in term premium-adjusted real rates.

Lower risk aversion and favorable borrowing conditions led to increased nonfinancial corporate bond insurance and a compression in spreads. From the start of the 4Q19 spreads for investment and non-investment grade bonds were down 9.2% and 11.3%, respectively. Higher relative increases in 2019, lower tail risks and improved outlook for corporate investment and profits likely explains larger relative drop in non-investment grade bonds. That being said, fears of spillovers from the Coronavirus have pushed up spreads for high yield bonds (BB, B CCC) 800bp on average.

That being said, supply-side conditions in the banking sector remained favorable for consumers with bank's willingness to lend signaling potential improvement in 1Q20. On the commercial side, bank's appetite for commercial real estate loans and commercial and industrial lending declined, but remains positive for large commercial and industrial projects and commercial real estate.

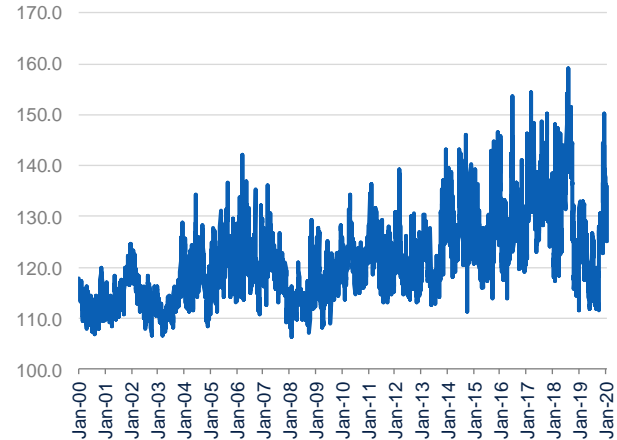
Volatility in short-term funding markets appeared to recede after whipsawing in September. The Fed has continued purchasing Treasury bills at a rate of around \$60bn per month and has maintained its Repo operations with outstanding balances at around \$200bn. Thus far, the commitment to stabilizing money market rates has been successful, at satisfying market's appetite for reserves, but the ample reserve regime has warranted additional adjustments in the interest paid on excess reserves, which was increased by 5bp.

Figure 2.1 EQUITY PRICES (JAN-2019=100)



Source: BBVA Research and Haver Analytics

Figure 2.2 CBOE SKEW TAIL-RISK (INDEX)



Source: BBVA Research and Haver Analytics

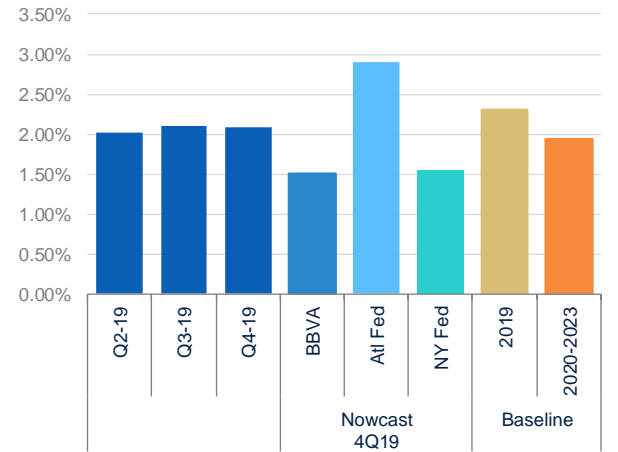
The positive momentum built up in the 4Q19 has been eroded by the ongoing issues with the containment of the Wuhan Coronavirus (COVID-2019). In fact, nominal yields have fallen to 3-month lows and equity price momentum has stalled. Tail risk as measured by the CBOE skew index has also risen. While we expect the impact from the Coronavirus to be largely confined to 1Q20, markets are likely to remain volatile until there is convincing evidence that the outbreak is under control.

Auspicious signs contaminated by devolving epidemic and Boeing Max groundings

The advanced 4Q19 GDP report continued to reflect a tepid growth environment with lower contributions from consumption, weak private investment and specious signals on foreign trade. In fact, private sector growth excluding the persistent trade and inventory volatility related to ongoing trade negotiations and Boeing's 737 MAX groundings was 1.2% QoQa. On the public side, reduced fiscal constraints at the federal level, and increased outlays at the state and local level lifted both government consumption and expenditures by 3.6% and 2.2% QoQa, respectively. As a result, in line with our baseline scenario, average growth in 2019 was 2.3%.

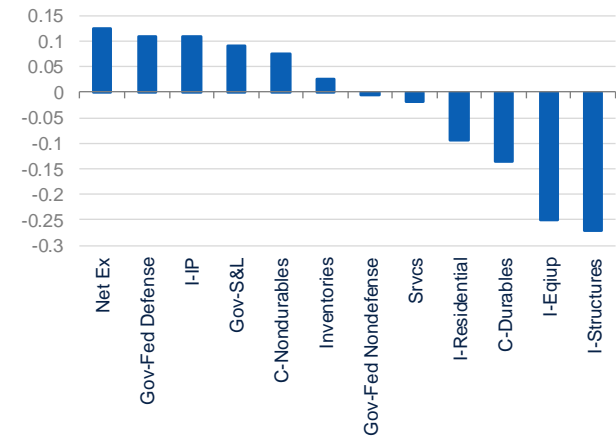
A number of crosscurrents in 2019—weak global growth, Brexit uncertainty, U.S.-China trade tensions and disruptions to the automobile and aircraft industries — produced atypical results. For example, net exports, subtracted only 16bp from growth in 2019, about half that of 2017 (28bp) and 2018 (29bp). Furthermore, on account of plummeting Boeing sales, aircraft inventories grew rapidly in the latter half of 2019, offsetting some of the impact that weak global demand had on inventory growth earlier in the year.

Figure 2.3 **REAL GDP (QoQ %)**



Source: BBVA Research and Haver Analytics

Figure 2.4 **2019 GDP GROWTH DIFFERENTIAL, 2017-2018 AVERAGE (PP)**



Source: BBVA Research and Haver Analytics

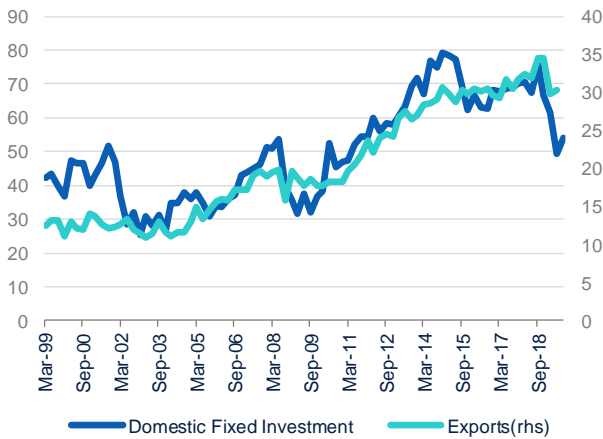
The Fed's mid-cycle adjustment, which has positively impacted housing affordability and builder's confidence, led to a dramatic rebound in residential investment in 2H19. In fact, investment in single-family structures grew 12.8% QoQa in 4Q19. To the downside, sectors that tend to be the most adversely affected by trade tensions such as equipment investment and durables consumption slowed down considerably. Meanwhile, investment in nonresidential structures contracted in part due to lower commodity prices.

While there have been signs that more accommodative monetary policy and lower trade tensions have positively influenced business and consumer sentiment, the realities associated with being in a late-cycle expansion with limited resource slack and space for greater policy accommodation suggests growth will continue converging with potential.

For consumption, tighter household finance, modest wage pressures and trade policy uncertainty will reduce consumer's demand for large irreversible purchases dampening the outlook for durables goods consumption. For the service sector, however, we expect conditions to remain at par 2017 and 2019, which were not heavily impacted fiscal expansion in 2018.

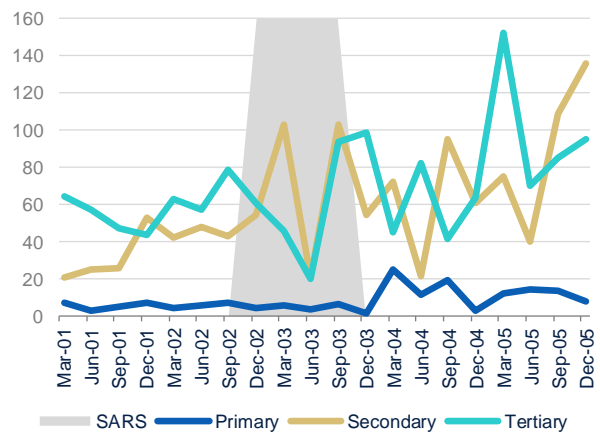
While strong demand-side conditions could begin to push up home prices and erode a fraction of the gains in affordability related to the mid-cycle adjustment, we continue to expect activity in residential sector to remain strong whereas for nonresidential investment our expectations are less upbeat. We continue to believe headwinds generated from the Coronavirus and elevated levels of trade uncertainty will offset any positive momentum generated from the reduction in interest rates in 2019. In addition, the halt of the 737 MAX production and the resulting drawdown on inventories will weigh on investment in transportation equipment and inventories while low commodity prices, slowing business activity and modest plans for capital expenditures in 2020 suggests investment in the Oil & Gas sector will remain selective.

Figure 2.5 **AIRCRAFT EXPORTS & PRIVATE INVESTMENT IN TRANSPORTATION EQUIPMENT EX AUTOS (\$BN & SAAR \$BN)**



Source: BBVA Research and Haver Analytics

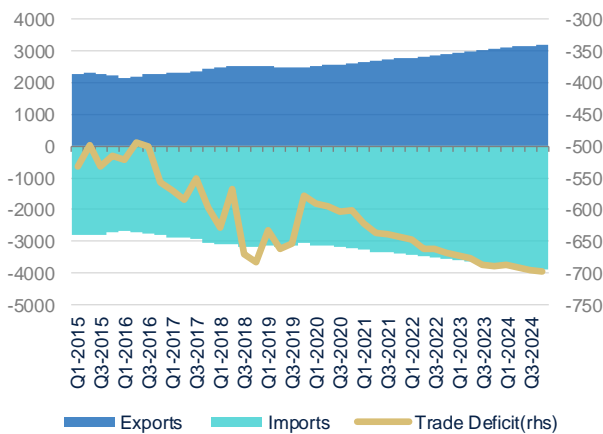
Figure 2.6 **CHINESE GDP (SA BN 2015 YUAN)**



Source: BBVA Research and Haver Analytics

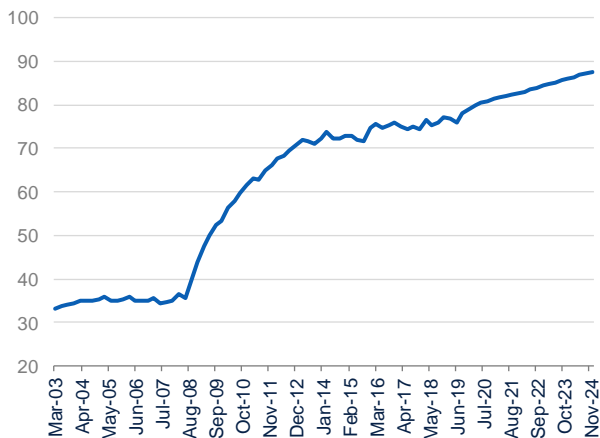
In terms of trade, the “Phase One” deal should serve to reduce concerns that tensions, tariffs and trade between the two countries could devolve to untenable position. However, the structure of the deal and the nature of the commitments suggests that there will not be any major shift in trade flows at the aggregate level relative to 2019, particularly considering the impact of COVID-2019. Moreover, while trade flows are poised to slow in the short term, large structural current account deficits imply ongoing trade imbalances.

Figure 2.7 **U.S. TRADE IN GOODS AND SERVICES (SAAR \$BN)**



Source: BBVA Research and Haver Analytics

Figure 2.8 **DEBT HELD BY THE PUBLIC (SHARE OF GDP %)**



Source: BBVA Research and Haver Analytics

While the USMCA, which is awaiting final ratification by Canada, has the potential to improve the domestic competitiveness of a handful of industries, our baseline assumes the impact will be modest in the short-run. In addition, new tariffs announced on steel and aluminum will act to offset the benefits of lower trade uncertainty and barriers. In light of the short-term frictions associated with the current trade rebalancing our baseline assumes the trade balance to narrow slightly to -\$601bn or 2.7% of GDP by the end of 2020.

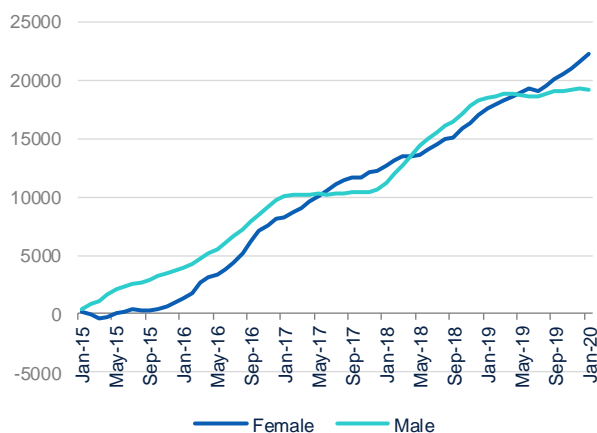
Similar to 2018 and 2019, fiscal policy will remain accommodative, as federal spending increases once again, pushing debt held by the public as a share of GDP to 82.3% with annual deficits surpassing \$1Tr. Longer-term fiscal stability concerns aside, this should help offset slower private consumption and investment. In addition, there are signs that state and local governments are following suit with nontrivial increases in spending.

Our GDP baseline of 1.8% for 2020 remains consistent with a scenario of convergence with potential GDP and balanced risk environment—while many of the risks present in 2019 have declined, the possibility for nontrivial headwinds from Boeing’s groundings and the outbreak of COVID-2019.

Historically strong labor markets to carry momentum into 2020

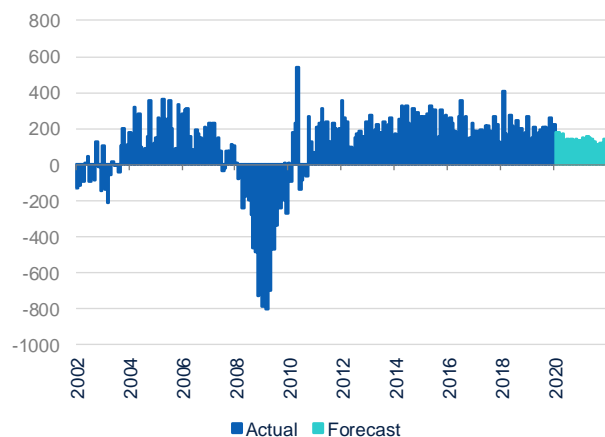
Labor market conditions in 2019 were mixed. On the one hand, the unemployment rate ended the year at 3.5%, only 10bp above the previous low of 3.4% in 1968. In addition, strong payroll growth in 2H19 pushed monthly job creation rates (176K) well above levels needed to absorb entrants into the labor force. Broader labor market utilization indicators such as the U-6 measure of unemployment also surpassed the previous record lows observed in 2000. As such, prime-age participation is now just below pre-crisis peaks, as women of prime working age continue to enter the labor force at historic rates while prime-age employment-to-population surpasses levels not seen since 2001 (80.4%).

Figure 2.9 **CIVILIAN LABOR FORCE**
(CUMULATIVE GROWTH K)



Source: BBVA Research and Haver Analytics

Figure 2.10 **NONFARM PAYROLLS**
(K)



Source: BBVA Research and Haver Analytics

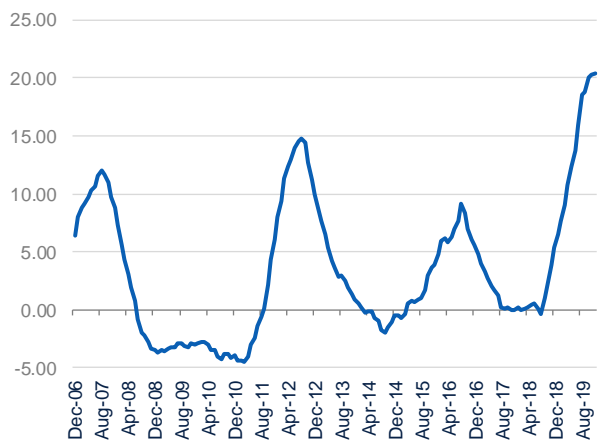
On the other hand, late-cycle fears, trade policy uncertainty and weak global demand produced a downdraft in private sector job openings. The 70bp drop in openings rates is consistent with firms maximizing the option-value of waiting for greater clarity. In terms of sector specific weakness, only arts and entertainment, and accommodation and food service had job openings rates above where they were in August, while construction and manufacturing saw job openings rates drop by 42% and 17%, respectively, as of November. Recessionary fears appear to be weighing on optimism on the supply-side of the labor market with quits rates falling in a heterogeneous mix of sectors.

The lack of labor market churn and elevated business uncertainty could help to explain the disconnect between extremely low levels of unemployment and muted wage pressures in 4Q19. In fact, in December, nominal wages slowed to 2.9% year-over-year after accelerating to 3.4% in February. This trend is also inconsistent with the rise in incoming inflation data and market-based inflation expectations, which have both been edging up. In real terms, average hourly earnings plunged to 0.7% year-over-year, which is the lowest since 3Q18.

Inflationary risks balanced

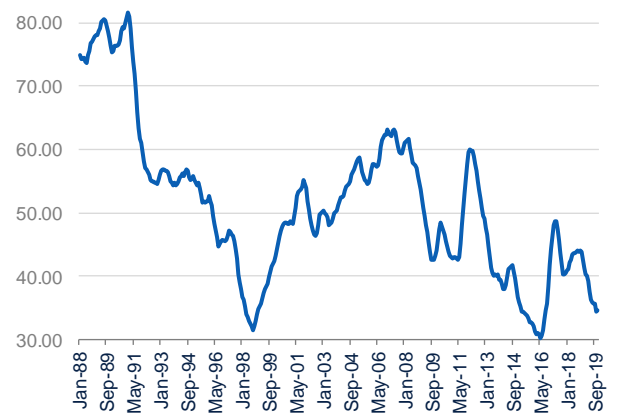
After facing persistent headwinds in the 1H19 from tepid global demand-side conditions, low commodity prices, declining inflation expectations and structural headwinds consumer prices built momentum heading into 2020. In fact, both headline and core CPI rose at an annual rate of 2.5% and 2.4%, respectively, while headline and core PCE rose to 1.7% on an annualized basis. As a result of lower interest rates and improved affordability, weakness in the residential housing sector that contributed to the slowdown in home price appreciation has faded. Physician services and prescription drug prices have also rebounded after falling substantially in the rollout of the Affordable Care Act.

Figure 2.11 **CPI-HEALTH INSURANCE PREMIUMS (YEAR-OVER-YEAR %)**



Source: BBVA Research and Haver Analytics

Figure 2.12 **TRADE-SENSITIVE HIGH INFLATION REGIME CHANGE INDEX (+/- 50=HIGH/LOW INFLATION REGIME)**



Source: BBVA Research

On a yearly-basis, health insurance prices are increasing at 20%; administrative changes, judicial decisions and regulation appear to have unwound some of the Obama-era provisions that were aimed at increasing the pool of lower risk individuals and encouraging providers to enter the market. In addition, decreases in coverage via “skinny plans” will also have an impact on the implicit price of health insurance.

In terms of the spillovers to prices from the trade war, the rise in U.S. import tariffs has not had a significant impact on consumer prices. In fact, our high inflation regime change diffusion index for tariff-sensitive prices suggests that the majority of categories remain consistent with the disinflationary tradables regime that has prevailed for the last 30 years.

Going forward, modest increases in commodity prices, strong housing demand, tight supply-side conditions, improving inflation expectations and a favorable regulatory environment for healthcare and education should provide the impetus for further price appreciation. Moreover, readings from our December import sensitive diffusion index could underlie a possible turning point to the upside. As a result, our baseline assumes Core PCE will be 1.8% in 2020 and 2.0 in 2021.

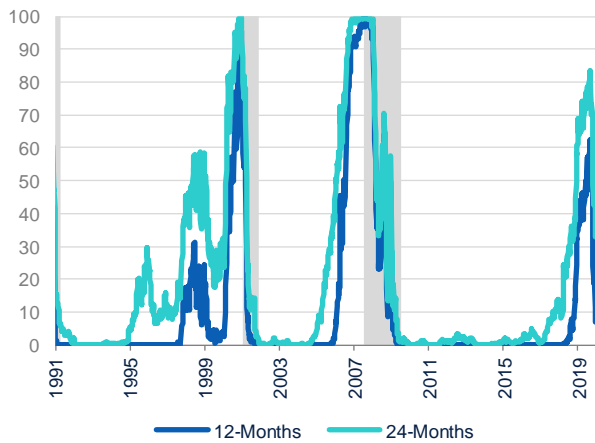
U.S. business cycle risks give way to Coronavirus and 2020 Election

After a substantial drop in our model based recession projections at the end of 2019, risks of spillovers from the Boeing grounding and growing concerns about the scope and duration of the Coronavirus pandemic have pushed up the risk of recession slightly. As of January 31, our estimates suggest that the risk of recession over the next 12 months is 13% and 44% over the next 24-months. While still elevated, these estimates represent an 80% reduction in recession risk over the next 12 months and 50% reduction over the next 24 months. Compression in the yield curve slope, rising cyclically adjusted price-to-earnings ratio and growing consumer interest burdens explain the modest increase since December whereas slower wage growth has eased the risk of recession risks.

With respect to the Coronavirus, the noise-to-signal ratio remains high. The monetary and fiscal response from the Chinese government does, however, suggest the impacts could be significant in 1H20, but dissipate thereafter. From a financial perspective, a nontrivial portion of U.S. revenues comes from China despite the increased trade frictions and tensions between the two countries. That said, the U.S. has fewer trade and investment links to the Chinese economy than countries in Southeast Asia and Latin America. Moreover, trade tensions and tit-for-tat tariffs have lowered overall trade between the two countries by \$26bn since its peak in 2018, suggesting even weaker links than in recent years.

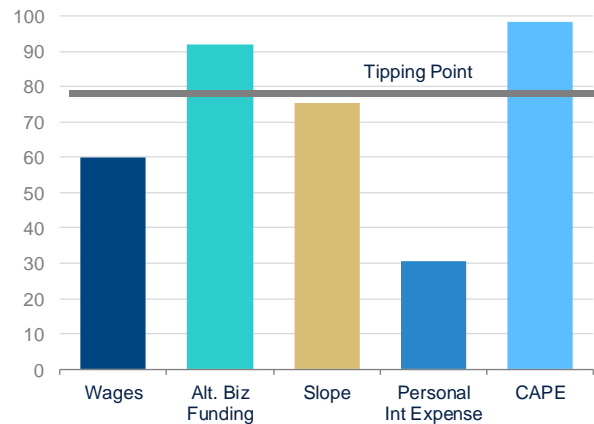
At the aggregate level this implies modest impacts for growth and inflation in 2020, but at the sector level the impact could be significant depending on how closely tied the firms are to technology supply chains and the Chinese consumer. In terms of monetary policy, we do not anticipate the Fed will overreact to the Pandemic and try to get ahead of the headwinds. That being said, if the Coronavirus impact on global markets and growth alters member’s perceptions about U.S. financial stability, there remains a small possibility for an additional interest cut, consistent with the “risk management” approach.

Figure 2.13 **PROBABILITY OF RECESSION (%)**



Source: BBVA Research

Figure 2.14 **RECESSION RISK FACTORS (PERCENTILE RANK)**



Source: BBVA Research

The Boeing grounding is also likely to add volatility to the national accounts in the 1H20, but with planes expected to be cleared for flight sometime this summer, the impact should fade out of the data by 3Q20. In fact, we expect the drawdown in inventories in the 1Q20 could lower GDP by -30bp, on an annualized basis while also potentially weighing on the trade balance, but should not create any persistent domestic headwinds for growth. If, however, the issues with the 737 MAX are systemic in nature, the impact on growth in 2020 could be significant.

While the Brexit saga is far from over for the UK and EU, from a risk perspective, the overhang from the political histrionics seems to be fading. As a result, we do not anticipate the ongoing negotiations between the two parties will substantially alter the risk balance for the U.S.

However, in 2020, it seems the U.S is set to become the epicenter of political histrionics on account of the upcoming presidential election, which is poised to have two polar candidates, representing disparate paths on the future of the U.S. While we do not believe that any of the current U.S. presidential candidates will have a major impact on growth, some industry groups believe that the progressive candidates (Warren and Sanders) could cause significant domestic headwinds if elected.

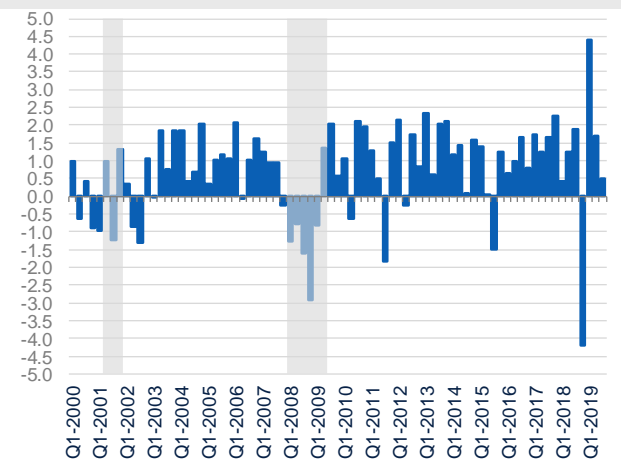
In light of this, financial volatility could remain elevated during the democratic primaries and U.S. election cycle, and ebb and flow with election polling data. However, passing major legislation in what is set up to be a divided White House and Congress in a polarized political environment will be extremely difficult. This outcome implies that the best either candidate will be able to accomplish is incremental change. As such, past evidence showing that economic and financial outcomes do not vary significantly between Democrats and Republicans will most likely ring true once again.

3. Fed attempts to keep U.S. economy flying high while fine-tuning its main engines

While the Coronavirus has been a turbulent event for the global economy at the start of 2020, and could devolve into a situation that could present a crosscurrent to growth, we continue to expect the Fed will leave interest unchanged in 2020. On balance, risks to the downside have declined and a number of tail-risks present in 2019 have subsided, allowing the committee the opportunity to navigate through the murky task of communicating the findings of their strategic review by mid-year.

This is in stark contrast to the start of 2019 that saw a number of inauspicious signs bubbling up. In fact, from September 20, 2018 to the end of 2018, equity prices dropped 15%, wiping out \$4.2tn in household assets amidst the longest government shutdown in U.S. history. In addition, growth slowed to its lowest rate in three years (1.1% QoQa) while core PCE after surpassing 2% plunged to 1.5% by February 2019. Uncertainty surrounding U.S. trade policy was also beginning to spill over into consumer and business sentiment and global growth expectations, which presented a nontrivial risk to the U.S. expansion. In response, at the first press conference of the year, the Chairman began the process of prepping markets for a shift in guidance, laying out the “crosscurrents” that threatened the U.S. economy and the potential shift in accommodation that was to follow.

Figure 3.1 **HOUSEHOLDS FINANCIAL ASSETS (\$BN)**



Source: BBVA Research and Haver Analytics

Figure 3.2 **CONCERNS-POTENTIAL SHOCKS, SHARE OF CONTACTS CITING SHOCK (% OF TOTAL)**

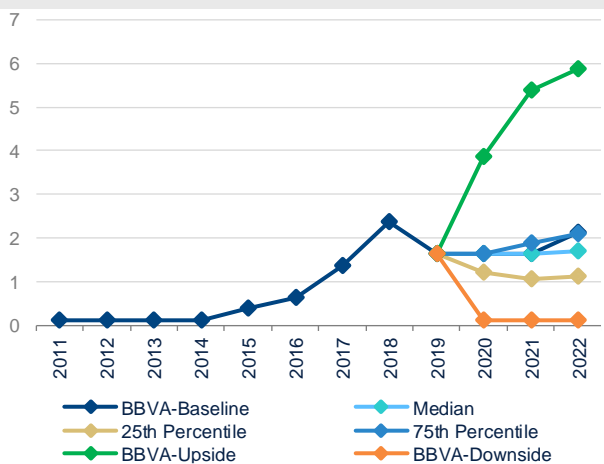


Source: BBVA Research and FRB

Unlike the start of 2019, despite the risks that the Coronavirus poses to growth in 2020, the Fed seems satisfied with the impact that the “mid-cycle” adjustment (three rate cuts) has had on domestic financial conditions and growth. In addition, the signing of the USMCA and the “Phase One” agreement between the U.S. and China have greatly reduced trade policy uncertainty and contributed to a nontrivial turnaround in business optimism and confidence. Moreover, significant progress on Brexit and the U.K.’s eventual exit from the EU has removed another potential “crosscurrent” for the U.S. Economy.

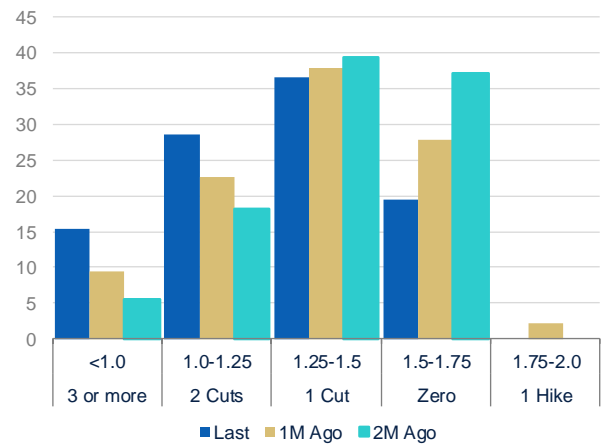
As a result, the first FOMC meeting of 2020 struck a more upbeat tone with the Chairman even saying there were “grounds for cautious optimism.” At the time of the meeting, information regarding the Coronavirus was not complete, as the severity and the scope of the disease were not well understood. As such, when asked about the committee’s approach to the risk, he did not provide evidence that the committee had a strong position on the impact it could have on the U.S. economy, saying only that it is in its early stages and that they are “closely monitoring” the situation. Recent communication seems to strike a slightly more cautious tone, with the semi-annual monetary policy report suggesting that the spillovers from the virus could present an unforeseen risk to the outlook. Some analysts have interpreted this change in tone as a sign that the Chair may be considering additional rate cuts.

Figure 3.3 **FEDERAL FUNDS RATE (%)**



Source: BBVA Research, FRBNY and Haver Analytics

Figure 3.4 **FEDERAL FUNDS RATE, IMPLIED PROBABILITY (%)**



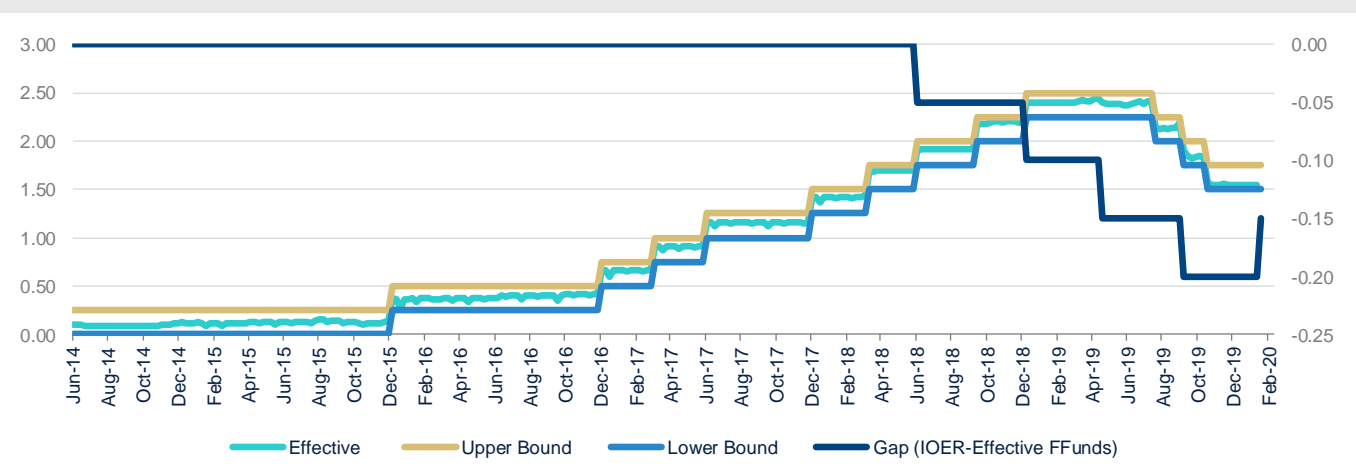
Source: BBVA Research and Bloomberg

That said, our baseline scenario continues to assume no change in the Federal Funds rate in 2020. With inflation likely to remain at, or slightly below, 2%, modest and transitory effects from the Coronavirus and with growth converging with potential GDP, the Fed will have the luxury of being patient. While financial stability will remain a concern given the stretched valuation, rising corporate debt levels, leverage loan activity and rising household leverage, the Chairman seems to view these risks as manageable and something that macroprudential tools can address.

In terms of the balance sheet, our baseline continues to assume indefinite growth in the reserve balances, which implies large ongoing purchases of Treasury securities. Early communication from the Fed suggested that returning reserves at or above the level that prevailed in September 2019 of around \$1.4tn would be “ample” and thus sufficient to effectively operate the floor system through administered rates. As of February, reserves have grown by \$250bn in

what the Fed describes as “purely technical”, and at the recent press conference the September level was signaled to be the lower bound for maintaining an “ample” level of reserves rather than the mid-point. It is worth noting that the spread between the IOER and the repo rate disappeared when reserves diminished to \$2.1tn, and remained stable up until reserves edged down to \$1.7tn. After surpassing that level, the spread turned negative until the Fed intervened and aggressively lifted reserve levels since September 2019.

Figure 3.5 **FEDERAL FUNDS RATE AND IOER (%)**

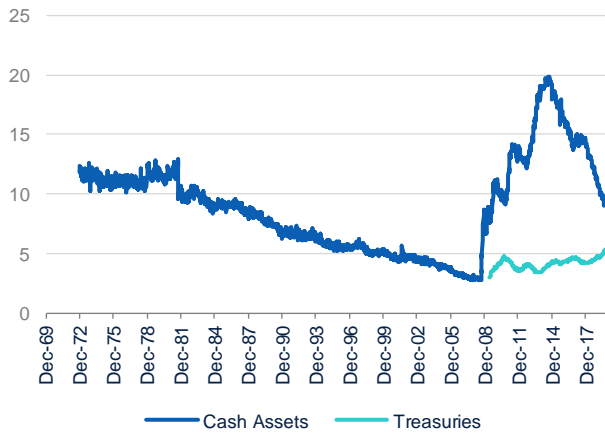


Source: BBVA Research and Haver Analytics

Notwithstanding a change in regulatory policy, we anticipate reserves, like other nonreserve liabilities, will continue to expand with the pace of commercial bank’s balance sheets, as reserve remain the preferred highly liquid asset relative to U.S. treasuries. In fact, cash assets now are primarily composed of reserve balances (~90%). Given the ratio of cash assets to total assets should stabilize once they reach a sustainable equilibrium level, in order to satisfy the banking sectors demand for cash reserves will require increasing reserve balances by some fraction of growth in bank’s balance sheets.

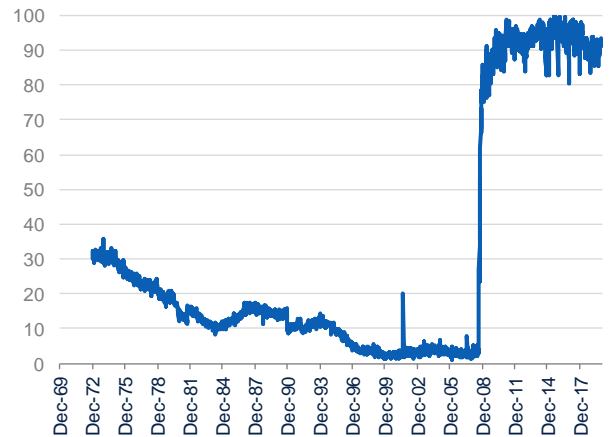
Based on these assumptions, we expect reserves will grow by around \$200bn in 2020, which combined with the growth in nonreserve liabilities, would imply a net increase of around \$300bn in total assets. Assuming that the Fed continues to wind down its MBS portfolio, non-MBS securities held by the Fed should grow by \$500bn in total in 2020, or around \$40bn per month.

Figure 3.6 **COMMERCIAL BANK'S CASH ASSETS & NON-MBS AGENCY DEBT (SHARE OF TOTAL ASSETS %)**



Source: BBVA Research and Haver Analytics

Figure 3.7 **FED RESERVE BALANCES (SHARE OF COMMERCIAL BANK CASH ASSETS %)**



Source: BBVA Research and Haver Analytics

In conjunction with tinkering with the level of reserves, the Fed has also begun to fine-tune the interest paid on excess reserves and the offered rate for overnight reverse repurchases. The 5bp point increase in IOER and the ON RPP bring the administered rates closer to the mid-point of the target range for the effective Federal Funds rate. Since these rates remain closer to the lower end of the target there is a chance that at the upcoming meeting the Fed raise these rates 5-10 additional basis points.

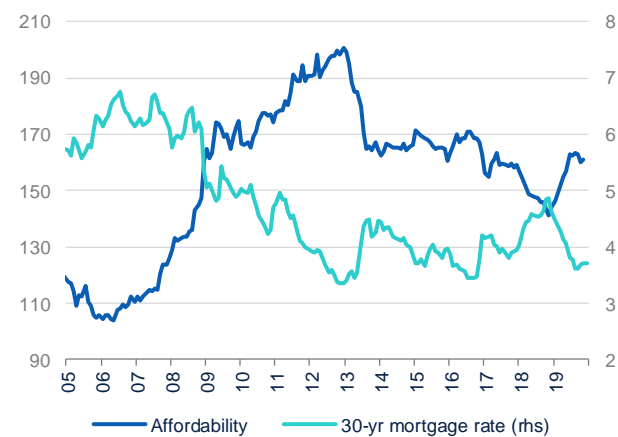
Given the more muted riskier environment and solid macroeconomic fundamentals we continue to believe the Fed will leave interest rates unchanged for the foreseeable future. This consistency will allow the Fed to embark on a “mid-cycle” balance sheet adjustment, which in the past has been associated with bouts of volatility (e.g. 2013’s taper tantrum and 2019’s money market volatility). In addition, complicating the communication of its findings from its strategic review, which could adjust the Fed’s reaction function, with interest rate adjustments and balance sheet fine-tuning would be unwise, and thus unlikely. However, the Chairman has been shown to be unafraid of steep turns in the face of crosswinds, suggesting unforeseen rate cuts will never be off the table if Chairman Powell is master of the ship, particularly if capacity issues associated with the Coronavirus creates global disinflationary pressures.

4. Housing outlook

The housing market has been on a path of recovery over the last decade. Home prices increased by over 5.5% in 2017 and 2018 and then started to decelerate in the second half of 2018 when the average rate for a 30-year fixed mortgage passed 4.5%. However, when interest rates began to decline in December 2018 and affordability to increase (Figure 4.1), home price growth stabilized and eventually started to re-accelerate towards the end of last year. The higher level of affordability in 2019 led to higher demand and increased sales of new homes. In turn, this supported new construction. In fact, single-family housing starts in November 2019 surpassed 1 million SAAR for the first time since 2007.

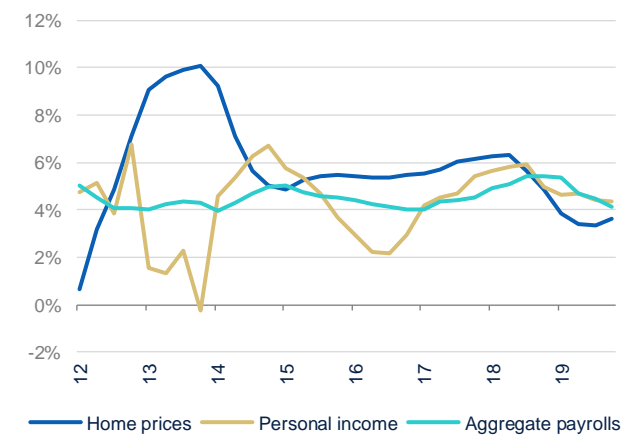
The reset in the housing market that took place in 2018-2019 is positive because it contributes to more sustainable housing market conditions. It followed an extended period of home prices outpacing incomes, a trend which has now reverted (Figure 4.2). As long as the current conditions hold, increasing swaths of potential homebuyers will be able to enter the housing market after a period when they were shut off from the prospect of homeownership. This is particularly important for Millennials, which have already entered their prime home-buying years. This outlook takes stock of the current state of the housing market and presents our outlook for 2020 and beyond in both the single-family and multifamily segments.

Figure 4.1 **HOUSING AFFORDABILITY INDEX AND 30YR FIXED MORTGAGE RATES (INDEX SA, MEDIAN INCOME = QUALIFYING INCOME AND %)**



Source: BBVA Research, FHLMC and NAR

Figure 4.2 **HOME PRICES, PAYROLL AND PERSONAL INCOME (% YoY)**



Source: CoreLogic, BEA, BLS

Interest rates and affordability

The 30-year fixed mortgage rate reached 4.9% in November of 2018 but then declined to 3.7% one year later. A decrease of this magnitude translates to a 13% decline in monthly mortgage payments for a median-priced home of

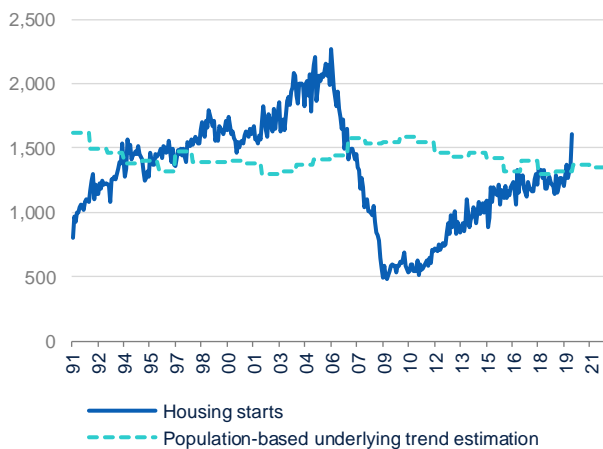
\$275,000, assuming loan-to-value ratio of 80% – from \$1,159 to \$1,010. At an annual level, this represents a decrease of close to \$1,800, or 2.7% of the median household income. This calculation assumes median home prices remain unchanged since the increase in home prices is to some degree offset by the increase in disposable income. In this way, the calculation allows us to focus only on the impact of higher interest rates. Conversely, the decline in interest rates puts a median-priced home within reach of a wider group of households. Lower interest rates have particularly helped lower-income earners in higher-cost locations. Coupled with a solid labor market and strong consumer expectations, lower mortgage rates also support new home sales and construction even if some of the positive effects from lower interest rates are offset by strengthening home price appreciation. We expect the 30-year fixed mortgage rate, which accounts for more than 70% of total outstanding residential mortgages, to gradually trend upward but not surpass 4% on a sustained basis during 2020.

Housing conditions

Over the mid- and long-term, demographics will provide substantial support to housing. Household formation has been significantly suppressed over the last ten years due to household deleveraging. At the same time, new housing construction remained below trend, with the market working to absorb the over-construction that occurred before the downturn (Figure 4.3). While housing starts have now reached their population-based trend level of 1.35-1.40 million, housing shortages that exist in many attractive locations will remain in place for the foreseeable future due to building restrictions and a lack of buildable lots. Any new substantial construction in these areas will increasingly occur outside favorable commute radii in the case of single-family homes or will take the form of multifamily housing units.

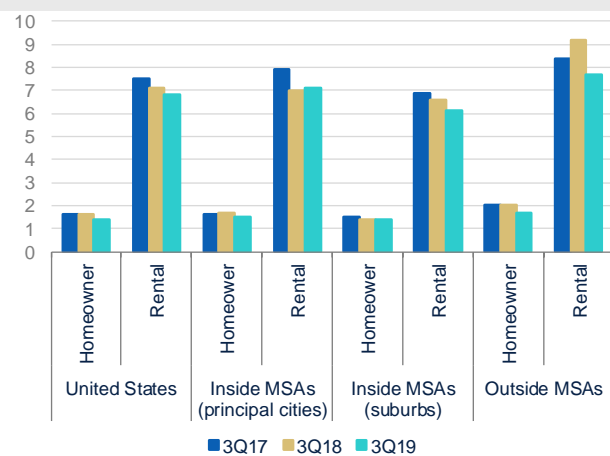
The average national homeowner and rental vacancy rates are stabilizing at or below their long-term averages, suggesting that the housing market is finding a balance in terms of supply and demand. By type of location, vacancy rates have declined over the last year for rental properties outside metropolitan statistical areas (MSAs) (Figure 4.4),

Figure 4.3 **HOUSING STARTS AND POPULATION-BASED TREND (MILLION)**



Source: BBVA Research estimates and Census Bureau

Figure 4.4 **HOUSING VACANCY RATES (%)**

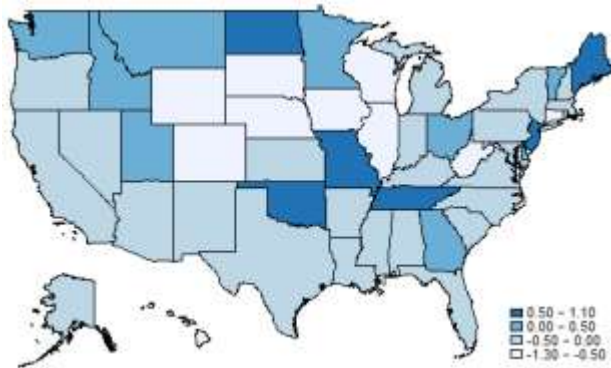


Source: BBVA Research and Census Bureau

which have been particularly slow to recover in the wake of the Great Recession. Inside MSA central areas, rental vacancies have bottomed out and are expected to slowly trend upwards, due to the large level of new inventory that has entered the market over the last year. MSA suburbs have shown solid resilience recently, reflecting the robust demand for housing by aging Millennials that are forming or growing their families.

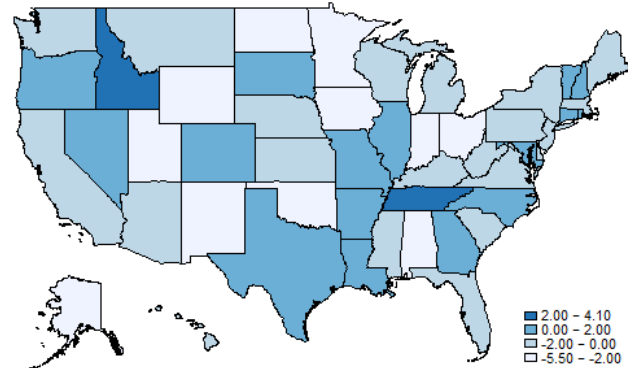
By state, vacancy rates have widely dropped, with the greatest declines in parts of the Midwest (Figures 4.5 and 4.6). Alaska and West Virginia, which had the highest homeowner vacancy rates in 3Q18, improved significantly. The only state that posted a significant increase in both homeowner and rental vacancies was Tennessee. While the level of both homeowner and rental vacancies in this state is above average, it should not represent a problem as long as Tennessee can grow its population at a solid rate as it did over the last several years.

Figure 4.5 **HOMEOWNER VACANCY RATES, 3Q19**
(PERCENTAGE POINTS CHANGE YoY)



Source: BBVA Research and Census Bureau

Figure 4.6 **RENTAL VACANCY RATES, 3Q19**
(PERCENTAGE POINTS CHANGE YoY)



Source: BBVA Research and Census Bureau

Over the longer-term, the housing market will be supported by a mild recovery in household formation. Young adults that have postponed marriage and that are living with their parents in greater numbers and for longer periods compared to previous generations have suppressed household formation. While we expect household formation to increase over the next several years (Figure 4.7), some of the negative effects of prolonged cohabitation of young adults with their parents will remain. An Urban Institute study, for example, found that even though young adults “may save some money by extending their stay with their parents... such behavior could have a negative long-term impact on their wealth”² as they are less likely to become fully independent in the long-run or benefit from wealth accumulation through homeownership.

New construction

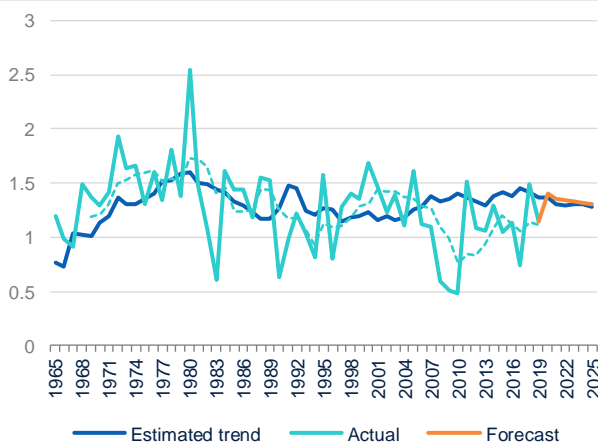
Vacancies at or below their historical average, pent up demand due to suppressed household formation, aging Millennials and housing shortages in multiple locations across the country will underpin new residential construction

2: Choi J. et al. (2019). Young Adults Living in Parents' Basements. Urban Institute. <https://urban.is/2OA4QEf>

over the mid-term. Construction activity in the short-run will also be supported by low borrowing costs and an ongoing economic expansion.

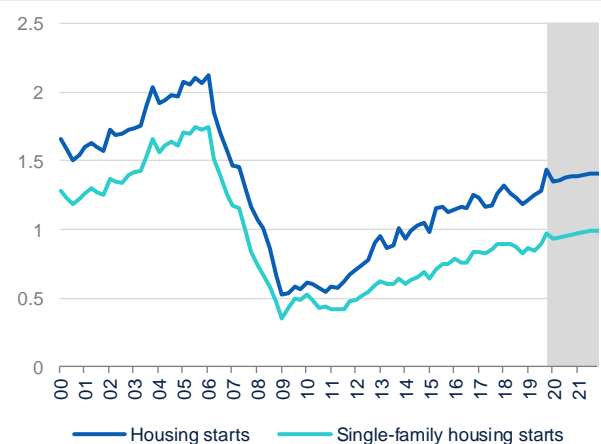
We expect housing starts to increase to around 1.4 million in 2020 from 1.3 million in 2019, and remain around that level through the end of 2021 (Figure 4.8). This forecast assumes that the economy remains in expansion mode. While single-family construction is expected to continue increasing, multifamily construction is expected to stabilize around the current level (Figure 4.9). Aging Millennials that are forming families and are willing to relocate away from markets that have become unaffordable, due to price increases, will support single-family housing demand. Multifamily housing starts will stabilize at around 425 thousand, as a further increase in supply will be limited due to a solid pipeline of completions and a modestly upward trend in apartment vacancy rates in many large MSAs. Over the long-run, multifamily housing will be supported by demand in urban centers and a lack of affordable single-family options in some locations, as well as the attractiveness of this type of housing for residents in their late 70s or older, whose share in the overall population will continue to increase.

Figure 4.7 **HOUSEHOLD FORMATION (THOUSANDS)**



Source: BBVA Research estimates and Census Bureau

Figure 4.8 **HOUSING STARTS (MILLION)**

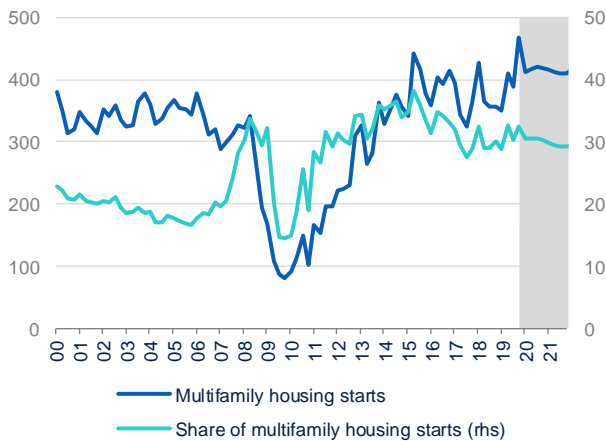


Source: BBVA Research estimates and Census Bureau

Existing home sales

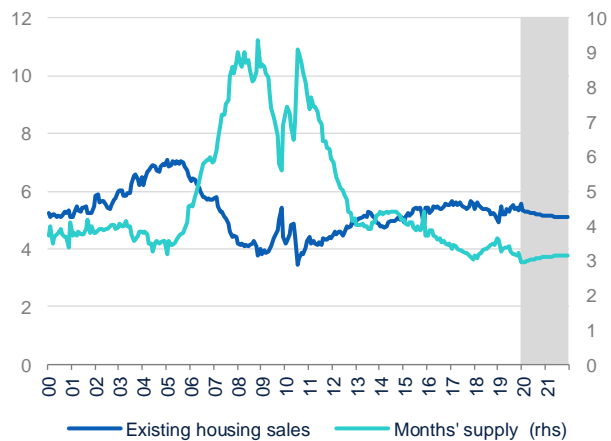
Existing home sales were on a downward trend for most of 2018, but picked up in 2019 as a result of the moderation in price growth and lower mortgage interest rates. The increase in demand was not coupled with a commensurate increase in supply, which eventually resulted in further market tightening. In December 2019, the months' supply of total existing homes reached a historical minimum of 3.5 after seasonal adjustment. The supply of existing homes for sale will remain suppressed as long as Baby Boomer homeowners do not start downsizing in large numbers. Baby Boomers, the second-largest generational cohort, are yet to reach their mid- to late-70s, an age when householders start to downsize in a meaningful way. As a result, the constricted supply will limit the upside in terms of existing home sales over the short- to mid-term. In our baseline scenario, existing home sales are expected to trend downwards but to remain at a relatively healthy level over 2020-2021 (Figure 4.10).

Figure 4.9 **MULTIFAMILY HOUSING STARTS**
(THOUSANDS AND %)



Source: BBVA Research estimates and Census Bureau

Figure 4.10 **EXISTING HOMES, SALES AND INVENTORY**
(MILLION AND MONTHS)



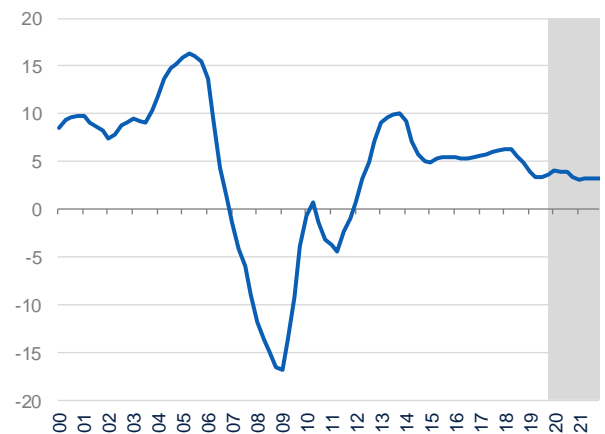
Source: BBVA Research and NAR

Home prices

The home price deceleration that started in mid-2018 stabilized by mid-2019 and home prices started to grow at a higher rate in October 2019 due to increased demand amid a limited supply of existing homes for sale. With mortgage rates at favorable levels, existing homes market remaining tight due to structural factors, and incomes rising at a consistent pace due to solid labor market conditions, we expect a continued moderate increase in price appreciation in 2020, with subsequent stabilization around 3-3.5% in 2021.

At a more disaggregated level, price appreciation across the largest 80 MSAs is not as dispersed as it was until 2018 and does not show significant outliers. For example, while home prices in Las Vegas in 3Q18 were 18% higher YoY, in 3Q19, the highest rate of home price growth was 7.1% in McAllen. Out of the eighty largest MSAs, price appreciation was negative in only two locations: San Francisco and San Jose. The Bay Area has experienced flattening out of home prices as a result of previous strong appreciation that has made housing unaffordable for many residents. In addition, there are effects from the cap on state and local tax exemptions that went into effect in 2018 and possibly lower number of foreign buyers due to the trade tensions that were flaring in 2019. That said, we do not expect sustained declines in home prices in any of the largest MSAs throughout 2020.

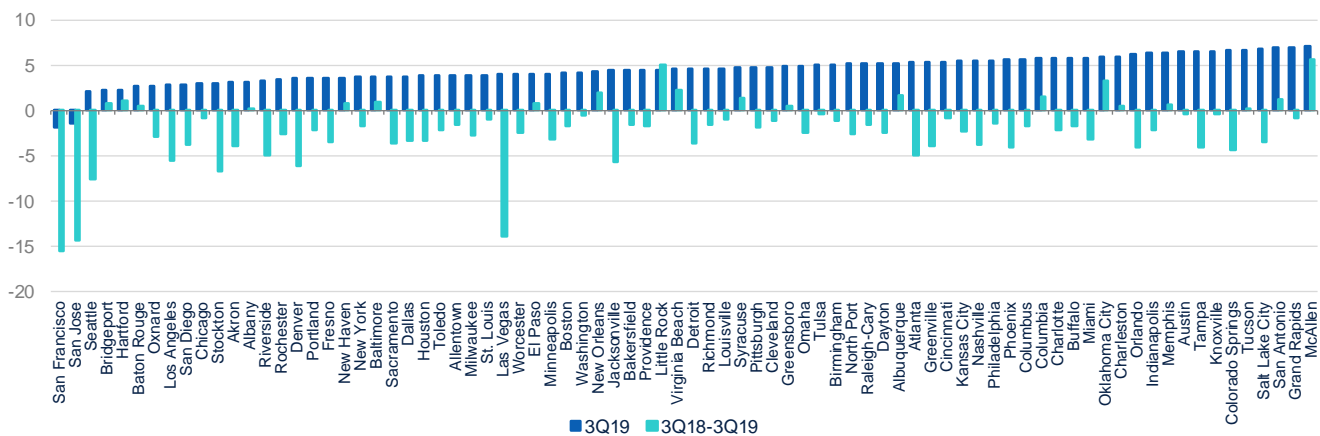
Figure 4.11 **HOME PRICES (% YoY)**



Source: BBVA Research and CoreLogic

Unlike in the Bay Area, price growth strengthened in many smaller MSAs that have a combination of attractive economic fundamentals and affordable home prices. Examples include McAllen, Little Rock, Oklahoma City, Virginia Beach, New Orleans, Albuquerque, Columbia, Syracuse, San Antonio, and Hartford. This affirms our view that while lower affordability is likely to contain price appreciation going forward in locations that have become expensive, home price growth will remain solid in many places, particularly in MSAs that benefited from the current expansion relatively late.

Figure 4.12 **HOME PRICES, 80 LARGEST MSAS**
(% YoY AND PERCENTAGE POINTS CHANGE IN GROWTH YoY)



Source: BBVA Research and FHFA

Bottom line

Housing market activity picked up in the second half of 2019 in response to lower mortgage rates. The supply of new housing will continue to increase and will reach and possibly exceed its underlying long-term trend. Demographics will continue to support the housing market, with Millennials aging and forming families, and thus searching for single-family homes in suburban areas, while Baby Boomers not having started to downsize to a significant degree. Home price appreciation will be higher than last year due to the suboptimal supply of existing homes for sale, but also in line with income growth, contributing to the sustainability of market conditions. The attractiveness of large coastal knowledge-intensive metro areas will remain, but the lack of affordable housing will drive some residents to smaller metro areas away from the coasts. Demand for apartments in attractive areas will remain strong, driven by the strength of the local economies and lack of affordable ownership options. Mid-size metro areas that can attract young families will benefit from the rebalancing of some of the regional disparities built up over the last decade.

5. Assessing industry performance

Introduction

The purpose of this article is to share some insights on industry best and worst performers between 2017 and 2019. Industry analysis allows us to assess the aggregated behavior of businesses with comparable products and services. The period between 2017 and 2019, was marked by solid economic growth (2.5% on average), expansionary fiscal policy, deregulation, protectionism, and monetary policy normalization. Industries reacted differently to this environment. Several became bigger, others more efficient, and some shrunk. In the following paragraphs, we delve into how cyclical and structural factors influenced these outcomes.

We analyzed data from the Quarterly Census of Employment and Wages (QCEW) conducted by the Bureau of Labor Statistics. The QCEW covers more than 95% of jobs in the country and compiles information on wages, employment, and establishments by area and industry. Industry definitions correspond to the North American Industry Classification System (NAICS). We analyzed wages and employment by industry using NAICS-6-digit level codes, which offer the highest degree of granularity. The sample size consists of 1,075 codes or “industries.”³

The following paragraphs include a discussion on industries with the highest wages and the biggest number of employees, as well as the results of an in-house clustering and ranking system based on wage and employment growth.

Finance and Tech have the best-paid jobs

To obtain comparable figures, we divided wages by the number of employees. Then, we sorted them from highest to lowest. In 2019, our measure of average annual wages per capita was the highest in financial and information services; computer and electronic products manufacturing; and, oil and gas extraction. A common characteristic of industries in these sectors is the employment of large pools of high-skilled individuals that produce sophisticated goods and services. Therefore, annual wages are not only a reflection of labor market conditions but also an approximation of how much value is added by an employee, which is also a proxy for labor productivity.

Annual wages per capita in the top ten industries significantly surpass the total industry average of \$66,356 and the median of \$59,232. For instance, at the top of the list, investment Banking and Securities Dealing (NAICS: 523110) exhibited the highest annual wage per employee (\$336,217), about five times the industry average. Internet Publishing and Web Search Portals (NAICS: 519130) showed the sixth-highest annual wage (\$249,433), about four times the industry average.

3: Since annual figures for 2019 are still unavailable, our analysis covered the period between 1H17 and 1H19. We refer to these periods by their corresponding years (1H17:2017 and 1H19: 2019)

Table 5.1 **TOP 10 INDUSTRIES BY ANNUAL WAGES PER EMPLOYEE**

Ranking	NAICS code	Description	Annual wages per employee
1	523110	Investment banking and securities dealing	\$336,217
2	523920	Portfolio management	\$305,048
3	523130	Commodity contracts dealing	\$265,649
4	523120	Securities brokerage	\$263,342
5	523210	Securities and commodity exchanges	\$255,746
6	519130	Internet publishing and web search portals	\$249,433
7	334111	Electronic computer manufacturing	\$229,611
8	523910	Miscellaneous intermediation	\$220,765
9	211120	Crude petroleum extraction	\$214,289
10	525990	Other financial vehicles	\$205,837

Source: BBVA Research and BLS data

Factors other than talent could also explain why wages are so high in these industries. For example, investment banking has benefited from a boom in M&A activity that accumulated \$10tn in domestic transactions since 2013. Meanwhile, the stock market remains at record levels. Similarly, crude oil and natural gas production are on the rise, while information, computer and electronics manufacturing leverage on innovation and intellectual property to provide business and individuals with sophisticated technologies.

Healthcare and education are the largest employers

In 2019, roughly 8.5 million people worked in Elementary and Secondary Schools (NAICS: 611110), and another 3.0 million worked in Colleges and Universities (NAICS: 611310). Education employment is a function of population growth and other socio-economic factors such as immigration and school enrollment. Last year, around 50.8 million students were enrolled in public elementary and secondary schools.

 Table 5.2 **TOP 10 INDUSTRIES BY NUMBER OF EMPLOYEES**

Ranking	NAICS code	Description	Employees
1	611110	Elementary and secondary schools	8,506,442
2	622110	General medical and surgical hospitals	5,994,196
3	722511	Full-service restaurants	5,465,007
4	722513	Limited-service restaurants	4,465,682
5	611310	Colleges and universities	3,022,003
6	561320	Temporary help services	2,861,814
7	621111	Offices of physicians, except mental health specialists	2,634,695
8	445110	Supermarkets and other grocery stores	2,528,930
9	551114	Managing offices	2,315,130
10	624120	Services for the elderly and persons with disabilities	1,939,948

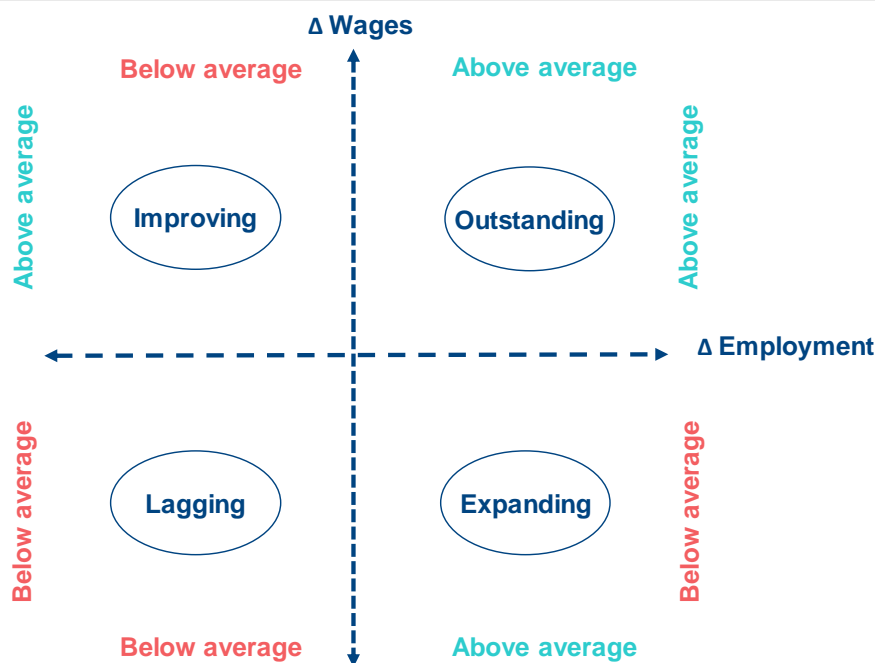
Source: BBVA Research and BLS

Three out of the top ten employers fell into healthcare and social assistance: Together, General Medical and Surgical Hospital (NAICS: 622110), Services for the Elderly and Persons with Disabilities (NAICS: 624120), and Offices of Physicians (NAICS: 621111) employed 10.2 million people. Employment in healthcare industries is driven by population growth and other demographic trends such as the aging of the population.

Assessing industry performance

To have a more integrated view of industry performance, we separated them into four groups or clusters. The first cluster (Outstanding) comprises industries that showed above-average employment and wage growth in the analyzed period. The second cluster (Expanding) includes industries that have above-average employment growth but below-average wage growth. The third cluster (Improving) incorporates industries that have above average wage growth but below-average employment growth. Lastly, the fourth cluster (Lagging) includes industries that show below-average employment and wage growth.

Figure 5.1 **INDUSTRY CLUSTERING SYSTEM**



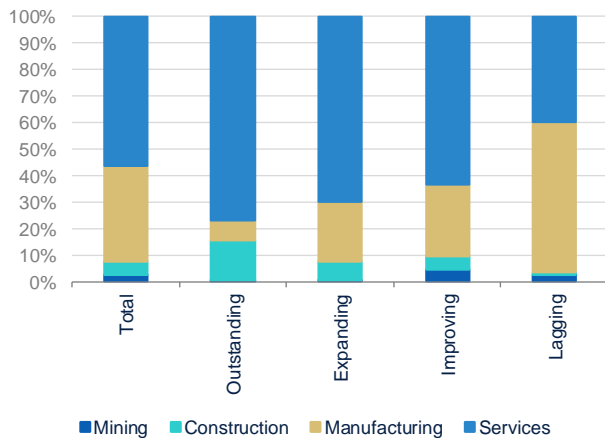
Source: BBVA Research

To account for the influence of size effects, employment growth was weighted by the relative size of the industry. Variables were normalized so that they can be interpreted as deviations from the national average, implying better (worse) performance than the national average for values above (below) zero. Nearly 60% of the industries covered in this analysis fell into the Outstanding, Improving, or Expanding clusters, while 40% of industries fell into the Lagging cluster.

A ranking of industries was generated for each cluster. For the Outstanding and Lagging clusters, variables were aggregated to produce a score, from which the industries were ranked. For the Expanding and Improving clusters, industries were sorted only on their respective target variables.

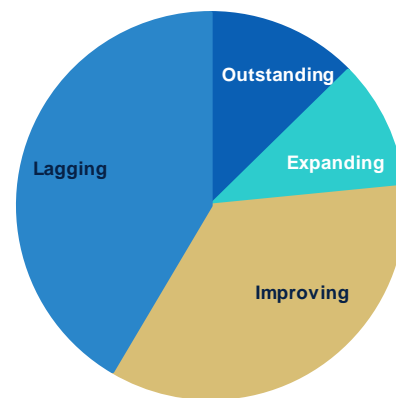
Our classification system is flexible as it allows the addition of variables other than employment and wages. It is also dynamic as industries can move along the list depending on multiple factors. For instance, industries that were boosted mainly by consumer spending may go down in the rankings once the next recession hits. On the contrary, industries that benefited from demographic or technological changes are more likely to maintain their relative positions in the event of an economic downturn.

Figure 5.2 **DISTRIBUTION OF 6-DIGIT NAICS-CODES (INDUSTRIES) BY SECTOR AND CLUSTER**



Source: BBVA Research with BLS data

Figure 5.3 **DISTRIBUTION OF 6-DIGIT NAICS-CODES (INDUSTRIES) BY CLUSTER**



Source: BBVA Research with BLS data

Outstanding

The Outstanding cluster includes industries that have experienced above-average employment and wage growth. It can be interpreted as “the best of the best” group.

From the 136 industries represented in this sample, Services for the Elderly and Persons with Disabilities (NAICS: 624120) achieved the highest score. Home Health Care Services (NAICS: 621610) ranked the highest among healthcare industries represented in the cluster, while the tech sector achieved the highest scores in custom computer programming and software publishing. Support Activities for Oil and Gas (NAICS: 213112) was the only energy-related industry in the top ten.

Industries at the top of the Outstanding cluster have benefited not only from a long period of economic expansion but also from structural changes such as the aging of the population, the expansion of middle classes overseas, advancements in IT, AI and machine learning, or the displacement of coal by natural gas. Other industries high in the

ranking, such as restaurants or commercial banking, seemed to be more influenced by the positive overall macroeconomic environment.

Although no industry within construction made the top of the list, the abundance of construction-related NAICS codes in this cluster (14.7% vs. 4.7% for the total list) suggests that industries like Commercial and Institutional Building Construction (NAICS: 236220) and New Single-Family Housing Construction (NAICS: 236115) have enjoyed momentum in sound residential and non-residential markets.

Table 5.3 **TOP 10 INDUSTRIES IN THE OUTSTANDING CLUSTER**

Ranking	NAICS code	Description	Score
1	624120	Services for the elderly and persons with disabilities	10.9
2	722513	Limited-service restaurants	7.2
3	621610	Home health care services	5.8
4	541511	Custom computer programming services	5.1
5	722511	Full-service restaurants	4.9
6	511210	Software publishers	4.8
7	722515	Snack and nonalcoholic beverage bars	4.6
8	522110	Commercial banking	4.5
9	423450	Medical equipment merchant wholesalers	3.8
10	213112	Support activities for oil and gas operations	3.7

Source: BBVA Research with BLS data

Improving

Industries in the Improving cluster only experienced above-average wage growth. Since changes in nominal wages reflect inflation plus changes in labor productivity, higher wages could be the result of efficiency gains, price effects (e.g., resulting from a tight labor market), or both.

From the 377 industries that populated this cluster, 91 (24.1%) are related to manufacturing, suggesting that these industries could have harnessed the economic momentum by becoming more efficient. This is compatible with the increasing use of automation in manufacturing processes, which tends to replace workers, but it could also increase the productivity of those who retain their jobs.

Nevertheless, at the top of the Improving cluster are Taxi Services (NAICS: 485310), and All Other Traveler Accommodation Services (NAICS: 721199). These industries have been transformed by the expansion of the “shared economy” through companies like Uber and Airbnb, whose in-house workers enjoy wages comparable to other industries in the tech sector. The shared economy model implies that Uber drivers or Airbnb lessors are not counted as company employees. Between 2017 and 2019, Uber's cost of revenue went from \$0.8 bn to \$1.8bn, which could explain the significant growth shown in Taxi Service wages captured by the QCEW, the highest among the entire set of industries.

Robust demand for domestic and foreign goods has favored top improving industries like Line-haul Railroads (NAICS: 482111). Railroads have benefited from companies seeking to transport crude oil from regions with limited pipeline infrastructure to refineries and export terminals. Coal and Other Mineral Merchant Wholesalers (NAICS: 423520) also ranked at the top of the list as the industry recovered from a prolonged commodity price downturn. Although the demand for coal is declining in the U.S., companies in this industry have survived by re-orienting their sales to developing countries.

Table 5.4 **TOP 10 INDUSTRIES IN THE IMPROVING CLUSTER**

Ranking	NAICS code	Description	Score
1	485310	Taxi service	21.7
2	721199	All other traveler accommodation	11.0
3	525920	Trusts, estates, and agency accounts	5.6
4	485999	All other transit and group passenger transportation	4.0
5	482112	Short line railroads	4.0
6	532282	Video tape and disc rental	3.6
7	522320	Financial transactions processing, reserve, and clearinghouse activities	3.1
8	423520	Coal and other mineral and ore merchant wholesalers	2.7
9	482111	Line-haul railroads	2.6
10	334310	Audio and video equipment manufacturing	2.2

Source: BBVA Research with BLS data

Expanding

Adding more workers to the payroll is an indication of business expansion (e.g., a bank opens new branches and hire executives to operate them). In this sense, the Expanding cluster can be interpreted as a group of industries that increase in size at a faster rate than the industry average. In this cluster, services are overrepresented (69.8% vs. 56.5% in the Improving cluster and 52.1% of the total list). This suggests that it is more difficult for services to increase productivity than it is for manufacturing. In other words, it is easier for industries in this cluster to produce more by hiring more workers than by boosting the productivity of their workforce.

Not surprisingly, the top ten list of expanding industries is dominated by services. At the top is General Warehousing and Storage (NAICS: 493110), which has been positively impacted by the expansion of e-commerce. Even when controlling for relative size, demographics-driven industries such as Elementary and Secondary Schools (NAICS: 61110) and General Medical Surgical Hospitals (NAICS: 622110) are also among the fastest job creators. In the recreation space, Hotels and Motels except for Casinos (NAICS: 721110) displayed robust employment figures in tandem with trends in consumer spending. Couriers and Express Delivery Services (NAICS: 492110) have been driven by corporate profits, business expansion, and consumer spending. Meanwhile, Fitness and Recreational Sports Centers (NAICS: 713940) have flourished as people get increasingly conscious about their health.

Table 5.5 **TOP 10 INDUSTRIES IN THE EXPANDING CLUSTER**

Ranking	NAICS code	Description	Score
1	493110	General warehousing and storage	11.4
2	622110	General medical and surgical hospitals	6.9
3	551114	Managing offices	6.8
4	492110	Couriers and express delivery services	5.5
5	611110	Elementary and secondary schools	5.4
6	621111	Offices of physicians (except mental health specialists)	3.9
7	541611	Administrative management and general management consulting services	3.7
8	721110	Hotels (except casino hotels) and motels	2.9
9	541330	Engineering services	2.8
10	713940	Fitness and recreational sports centers	2.7

Source: BBVA Research with BLS data

Lagging

Lagging industries are those that experienced below-average employment and wage growth. From the 477 industries represented in this cluster, 28 (5.8%) showed a contraction in both variables.

Manufacturing is over-represented in the Lagging cluster (52% vs. 33.5% in the total list). The relatively poor performance of manufacturing in this cluster could be explained by factors such as global competition, outsourcing, automation, and trade protectionism.

Table 5.5 **TOP 10 INDUSTRIES IN THE LAGGING CLUSTER**

Ranking	NAICS code	Description	Score
1	512120	Motion picture and video distribution	-2.3
2	316992	Women's handbag and purse manufacturing	-2.3
3	512290	Other sound recording industries	-2.4
4	334613	Blank magnetic and optical media manufacturing	-2.7
5	517410	Satellite telecommunications	-2.9
6	424950	Paint, varnish, and supplies merchant wholesalers	-3.6
7	522210	Credit card issuing	-4.7
8	452210	Department stores	-4.9
9	311930	Flavoring syrup and concentrate manufacturing	-8.6
10	425120	Wholesale trade agents and brokers	-13.8

Source: BBVA Research with BLS data

For the Lagging cluster, it makes more sense to list the ten industries at the bottom. The lowest place is occupied by Wholesale Trade Agents and Brokers (NAICS: 425120). The proliferation of e-commerce may be behind this industry's poor performance. Another victim of online trade is Department Stores (NAICS: 452210), which experienced the third-worst performance in the cluster. Motion Picture and Video Distribution (NAICS: 512120) is also part of the list, possibly

reflecting the disruptive effect of digital technologies that allow producers to bypass distribution, and home streaming that has impacted movie theaters and demand for physical videos at the retail level.

A rising tide lifts all boats

Industry performance is consistent with favorable economic trends experienced by the U.S. between 2017 and 2019. However, the business cycle is not the only determinant of industry outcomes. Our analysis revealed that, in most cases, the best industries are the ones that benefit the most from underlying trends related to demographic and technological changes. During economic expansions, the top performers are those that can become more productive, expand capacity, or do both. However, the opposite can also happen. As some of our lagging industries suggest, a favorable macroeconomic environment is not always enough to reverse the damage caused by structural changes. More importantly, our industry clusters analysis helps spot the greatest opportunities and risks in the business sector, depending on how well each industry accommodates and maximizes the opportunities brought about by structural changes.

6. The President's tweets and the economy

Introduction

Given the political incentive to lower interest rate expectations, it is important to understand whether the president's activity on social media can have effects on the economy. We might view President Trump's popular appeal to monetary policy as a tool for generating short-term momentum in an economy. Conversely, Trump's appeal may be agnostic of an economic agenda and instead in response to economic sentiment. In the end, we might ask whether his tweets are part of the underlying economic zeitgeist, if they are unpredictable, or if they swim against the economic current as to function as a social monetary policy tool in order to rally markets in the short and long term.

A recent working paper, *Threats to Central Bank Independence: High-Frequency Identification with Twitter* (Bianchi et al, 2019) analyzes Trump's criticisms of monetary policy, namely the FOMC's decision of whether or not to adjust the fed funds rate, via Twitter. The authors find evidence that Trump's aggregate criticism has revised down short-term and long-term expectations of the fed funds rate by around 10 and 18.5bps, respectively. Moreover, they conclude that, "market participants do not perceive the Fed as fully independent."

Considering that President Trump's tweets can have a non-trivial impact on expectations, we might benefit from understanding how his activity fits into the economic setting. This analysis seeks to take the first steps towards understanding the impact that Trump's tweets have on economic expectations by identifying patterns in his tweeting behavior for the reader's consideration. Given recent and ongoing studies on political sentiment and its effect on market expectations, we hope to provoke interest in understanding and anticipating these effects and on how Twitter and other social media platforms may serve as modes for affecting expectations and monetary policy.

Methodology

We pooled all tweets created and retweeted by President Trump's official account, *@realdonaldtrump*, from the start of January 2017 through January 2020. From this pool, we filtered out tweets pertaining to the economy and partitioned this set based on a list of economic keywords. These classifications were validated manually. We defined seven classes of tweets based on their content: general economic conditions; monetary policy; equity markets; wages and prices; employment and production; foreign trade; and non-economic tweets. In total, we extracted and classified 13,144 tweets.

Our two features of interest are frequency and phrase sentiment, which help us analyze when Trump is inclined to tweet about a subject and what his sentiment towards that subject is. Our goal is to visualize patterns that may exist between relevant economic events and the frequency and sentiment of Trump's economic tweets.

We chose to represent frequency as points on a timeline where each point is an instance of a tweet belonging to a certain class. We laid each class of points against a timeline, which is color-coded based on the results of select economic variables. For each class, we chose a variable to serve as a proxy for the direction or economic condition of that class. The following table defines each class and the variable(s) used to gauge its condition.

Table 6.1 **CLASS AND VARIABLE DEFINITION**

Class	Description	Variables
1	General Economic Conditions	GDP Advance, Second and Third Reports
2	Monetary Policy	FOMC Meeting and Fed Funds Rate Decision
3	Equity Markets	DJIA Record Setting Day
4	Wages and Prices	CPI and Real Earnings Releases
5	Employment and Production	Employment Situation Report
6	Foreign Trade	Key Event in Foreign Policy

Source: BBVA Research

These variables are assigned a positive, negative, or neutral direction depending on whether they indicate expansion or contraction, how they compare to prior expectations or how they play to Trump's stated preference. A cut to the fed funds rate by the FOMC has a positive direction.

The sentiment of Trump's tweets is less visually coerced. Rather than fitting it to economic variables and events that we assume to be relevant, we plot the average sentiment of Trump's tweets alongside the sentiment of his non-economic tweets. We also provide a correlation matrix of each class' sentiment against various economic variables and indices.

The sentiment of each tweet is determined by mixed model sentiment analysis between original, multinomial, and Bernoulli naive Bayes classifiers, a logistic regression classifier, and a stochastic gradient descent classifier which returns an index of either -1 or 1 representing a negative or positive sentiment respectively and a confidence for that classification. The final sentiment is the product of the confidence level with the index where a sentiment of zero represents a lack of confidence in that classification.

Results

Frequency

In hypothesizing uniformity in the distribution of tweets or exponential decay in the time between two observations of President Trump's tweets, we find significant evidence against these assumptions up to confidence of one tenth of a percentage point. This suggests clustering in which tweet instances of one class carry an influence on future observations. Thus, we should be confident in linking observations to exogenous events, and we assume that economic events inform Trump's tweets.

Using the variables defined in *table 1*, we produce the timelines presented in *figure 1*. The color red represents the release of variables or events averse to President Trump's stated preference, green represents events aligning with his preferences, and gray is neutral.

Figure 6.1 **TIMELINE OF INSTANCES OF @REALDONALDTRUMP ECONOMIC TWEETS BY TOPIC AGAINST RELEVANT ECONOMIC CONDITIONS**



Source: BBVA Research and Twitter

There seems to be a moderate relationship between positive GDP reports and the observation of tweets related to general economic conditions. His activity was more likely to increase following positive GDP reports than during negative or neutral reports. For example, activity slowed down and stopped throughout 2018 as equity markets roiled, and the economy experienced a series of weaker GDP reports and revisions.

Activity about monetary policy was uniform before and immediately after the appointment of Jerome Powell as Chairman of the Federal Reserve in early 2018. President Trump first tweeted criticism at the Fed on July 20, 2018 following a sequence of decisions to raise the fed funds rate. Afterward, his activity centered around FOMC meetings. The last rate increase took place after the December 2018 FOMC meeting. His activity once again revved in summer 2019 just before the fed cut rates for the first time since 2008, and activity stayed elevated throughout the next two rate cuts.

Tweets concerning equity markets have the most obvious relationship with its prescribed variable. President Trump is most likely to tweet when the DJIA has a record setting day or has been trending upwards for an extended period. Conversely, he all but recognized equity markets through 2018 after markets dropped in February and did not recover until the summer; after which, the index continued to lag once again dropping in December. Tweeting resumed in late 2019 once markets returned to pre-2018 levels.

It is unclear whether President Trump is motivated to tweet about wages and prices based on CPI and real wage growth results. His tweets about real wage growth usually coincides with its report; however, tweets about prices usually concern foreign import prices rather than the price of domestic goods.

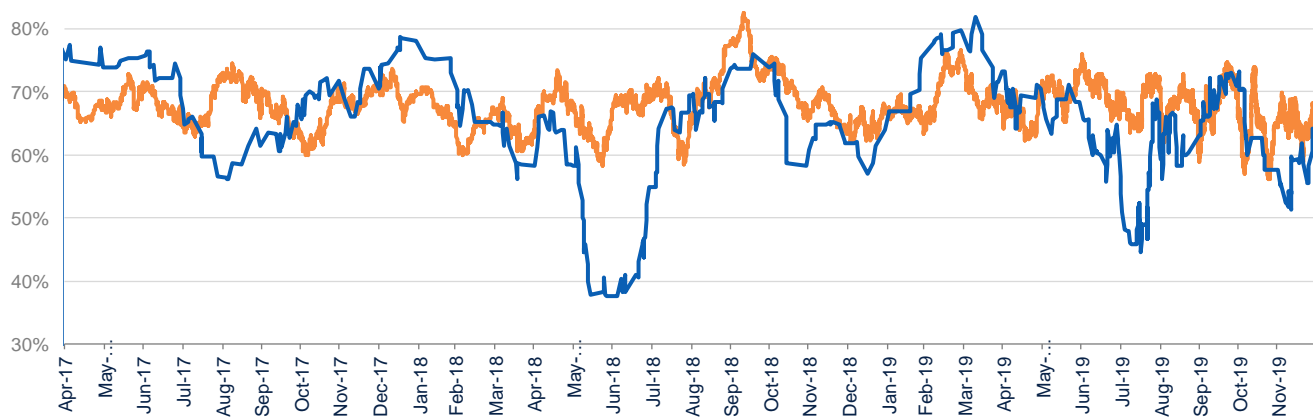
The relationship between employment tweets and the results of the employment situation are similarly weak. One thing to note is the frequency with which President Trump talks about the employment situation. His highlighting of employment figures is constant and does not always reference the overall employment situation, but rather, he highlights the employment figures of select demographics. He is often still able to praise some feature of the employment situation even if changes in overall employment fall below expectations.

Before 2018, tweets on foreign issues were less concerned with trade policy and more connected to international summits and military concerns. Foreign trade tweets became more frequent and consistent after March 1, 2018, which corresponds with the U.S.'s imposition of steel and aluminum tariffs. Although, this pattern may have recently reverted given the de-escalation of the U.S.-China trade war following a phase-one trade deal and the signing of the USMCA.

Sentiment

We present the average sentiment of President Trump's tweets in *figure 2*. We invite consideration of this feature, as there is little available research linking the sentiment of President Trump's public statements and its influence on markets.

Figure 6.2 **AVERAGE SENTIMENT OF @REALDONALDTRUMP TWEETS (ORANGE) AND ECONOMIC TWEETS (BLUE) AS PERCENTAGE OF POSITIVE TWEETS**



Source: BBVA Research and Twitter

There are a few points of interest in the sentiment of all of President Trump's tweets. His overall sentiment peaked in September 2018 just before equity markets began falling through the end of the year. This drop is also evident in the sentiment of economic tweets. President Trump's economic sentiment troughed during the summer of 2018. This period coincides with the height of the U.S.-China trade war. Interestingly enough, the second largest dip took place a year later during August 2019 which coincides with President Trump's ultimate threats against China and recovered immediately after these threats were deferred.

Three notable peaks in Trump's economic sentiment occurred in January 2018, October 2018, and through spring 2019. These peaks correspond with the enacting of the Tax Cuts and Jobs Act of 2017, the period before the bear

market of late 2018, and the period following the end of the 2019 government shutdown, which corresponded with the lowest point in Trump’s approval rating.

Figure 3 shows a section from the correlation matrix between the sentiment of President Trump’s tweets by class and a selected set of influential economic variables. The bounded cells correspond to the variables assumed to have a significant relationship with that class (row) of tweets.

Figure 6.3 **CORRELATION MATRIX BETWEEN THE SENTIMENT OF @REALDONALDTRUMP TWEETS BY SUBJECT AND SELECT ECONOMIC VARIABLES**

	Real GDP	Consumer Sentiment	Two Year Yield	Five Year Yield	Ten Year Yield	Two-Ten Spread	DJIA	DJIA Returns	CPI	PPI	Consumer Spending	ISM Composite	ISM NMI	ISM PMI	Labor Situation	Unemployment	Fed Dollar Index	Net Exports
All Tweets	0.383	-0.073	0.215	0.150	0.123	-0.182	0.113	-0.012	0.116	0.143	0.181	0.155	0.176	0.048	0.331	-0.149	0.141	-0.170
Economic Tweets	-0.420	-0.120	-0.147	-0.111	-0.074	0.136	-0.193	0.025	-0.211	-0.204	-0.199	0.090	0.100	0.035	0.269	0.160	-0.030	-0.141
General Economic Conditions	-0.466	0.178	-0.040	-0.009	0.004	0.082	0.026	0.225	0.012	0.006	0.022	0.068	0.083	0.019	0.141	0.023	0.243	0.139
Monetary Policy	0.054	-0.139	0.017	0.041	0.045	0.028	-0.064	0.055	-0.081	-0.086	-0.076	-0.060	-0.080	0.018	0.244	0.079	0.094	-0.355
Equity Markets	-0.008	-0.078	-0.093	-0.139	-0.142	-0.050	0.126	0.278	0.080	0.053	0.060	-0.092	-0.103	-0.045	-0.043	-0.148	-0.356	0.544
Wages and Prices	-0.199	-0.044	-0.195	-0.133	-0.063	0.266	-0.424	0.057	-0.331	-0.367	-0.294	0.000	-0.031	0.103	0.058	0.357	-0.038	-0.261
Employment and Production	-0.297	-0.022	0.049	0.024	-0.017	-0.094	0.122	-0.172	0.081	0.080	0.052	0.022	0.034	-0.028	0.436	-0.143	-0.222	-0.159
Foreign Trade	-0.275	-0.070	-0.256	-0.227	-0.176	0.183	-0.142	-0.039	-0.186	-0.171	-0.155	-0.023	-0.011	-0.058	0.194	0.239	0.030	-0.194

Source: BBVA Research and Twitter

According to our analysis, there is a moderate negative correlation between the sentiment of tweets related to general economic conditions and real GDP growth. Given that President Trump tends to complement strong GDP figures, this result implies that his positive statements are more likely during periods with below-average GDP growth. Although he is less likely to tweet about GDP following weak results, this inverse relationship might demonstrate that he does so in order to cushion the report.

The sentiment of tweets related to monetary policy has almost no relationship with interest rates. This makes sense if we consider that President Trump almost exclusively reserves statements about monetary policy to coincide with events rather than realized economic conditions (e.g., FOMC meetings).

Sentiment towards equity markets is positively correlated with average market returns rather than levels. Moreover, there is a significant relationship between President Trump’s sentiment towards equity markets and net exports. As shown in the previous section, President Trump only seems to tweet about equity markets after a prolonged period of positive returns rather than during single cases of exceptional performance.

There is a moderate negative relationship between measures of inflation or consumer spending and the sentiment of tweets related to prices. President Trump is on record as preferring low inflation environments.

One of the strongest relationships exists between the sentiment of tweets related to employment and production and the results of the employment situation. Generally, President Trump seems to wield employment results regardless of whether the employment situation is exceptional. These results seem to suggest that he is especially active and

positive when the employment situation is up and likewise when unemployment is down. Although he is known to regularly concern himself with the performance of manufacturers and industry growth, there is almost no relationship between the ISM indices and sentiment towards employment. Rather, he seems to be more motivated by employment figures outright.

Finally, there seems to be no moderate or strong relationship between foreign trade sentiment and either the trade deficit or strength of the dollar. This result seems similar to that of monetary policy in that President Trump's tweets concerning foreign policy line-up with events rather than economic conditions.

There do seem to be significant relationships that exist outside of the assumed groupings. For example, the sentiment of all tweets (both economic and non-economic) has an unexpected, yet strong, positive correlation with real GDP growth.

Discussion and Takeaways

If we care to understand the effects of President Trump's tweets, we must learn how to anticipate them and what influence, if any, they have on the economy. We have presented patterns that move us towards understanding Trump's tweeting behavior. Additional research like Bianchi (et al, 2019) moves us towards identifying the intended or unintended target of the tweet and quantifying its effect.

Tweet sentiment seems to track events in Trump's presidency accurately. This is not to say it tracks his approval or disapproval rating; rather, we see periods of negativity during political frustrations (e.g., U.S.-China trade war, the government shutdown) and the opposite when things seem to go his way. Moreover, the severity of economic sentiment seems to reflect the severity of an event's impact on the economy.

Considering frequency alone, a few patterns seem to stand out. The first is that the president has topics that he addresses more generally like employment and those that are contingent on events like equity markets. He usually speaks positively of the labor situation or cites positive employment figures. In this sense, he seems to care more about employment than any other variable, and uses it as a general-purpose tool. Contrast this to him speaking about equity markets. Trump only speaks positively of stock indices; however, he is only inclined to do so when markets experience prolonged positive returns or when an index has a record-setting day.

In considering frequency with sentiment, we might begin to give these patterns some meaning. For example, President Trump is unlikely to tweet about GDP following an adverse report; however, when he chooses to do so, his phrasing is more positive. This might point to him trying to cushion the results. He tends to do the opposite with employment results in that he emphasizes the employment situation whenever it exceeds expectations.

Missing relationships can be just as meaningful. Trump often tweets about wages and prices, and he prefers low-inflation. However, his tweets about wages and prices pay no attention to measures of inflation. Likewise, his tweets that criticize the Fed for not lowering the fed funds rate are agnostic to interest rates. This result is not surprising if we believe that President Trump is trying to apply downward pressure to interest rate expectations, which we know to be the case by Bianchi (et al, 2019) rather than reacting to realized rates.

Keep in mind that none of these patterns alone can demonstrate whether and where President Trump's tweets have an effect on the economy. Further research into these questions should keep these patterns in mind while asking whether certain variables are subject to be influenced by Trump's tweets alone. Although these questions can and should be asked about the president's rhetoric both online and offline, we find ourselves in a rich new field of research given the scope of the president's messages and his administration's precedent of using Twitter for popular communication.

Our analysis suggests that President Trump's economic tweets certainly coincide with economic conditions. If one wants to incorporate these tweets into their expectations or valuations, we suggest looking into more granular features such as the predictive power of tweets not only on current conditions but also on variables in the short and long-term. Demonstrating changes in expectations caused by tweets not lobbed at the Federal Reserve would make a case that social-media may amplify social capital and serve as economic stimulus whether that is President Trump's intent or not.

7. Forecasts

 Table 7.1 **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	1.8	2.0	2.0	1.8
Real GDP (Contribution, pp)											
PCE	1.0	2.0	2.5	1.9	1.8	2.1	1.8	1.5	1.4	1.4	1.4
Gross Private Investment	1.1	1.0	0.9	-0.2	0.8	0.9	0.3	-0.1	0.6	0.7	0.5
Non Residential	0.5	1.0	0.3	0.1	0.6	0.9	0.3	0.2	0.6	0.6	0.5
Residential	0.3	0.1	0.3	0.2	0.1	0.0	-0.1	0.1	0.0	0.0	0.0
Exports	0.5	0.6	0.1	0.0	0.5	0.4	0.0	0.2	0.5	0.5	0.6
Imports	-0.3	-0.8	-0.9	-0.4	-0.8	-0.8	-0.2	0.0	-0.7	-0.7	-0.7
Government	-0.5	-0.2	0.3	0.3	0.1	0.3	0.4	0.3	0.1	0.1	0.0
Unemployment Rate (% average)	7.4	6.2	5.3	4.9	4.3	3.9	3.7	3.7	3.9	4.0	4.2
Avg. Monthly Nonfarm Payroll (K)	192	251	227	193	179	223	176	151	135	113	110
CPI (YoY %)	1.5	1.6	0.1	1.3	2.1	2.4	1.8	2.0	2.2	2.1	2.1
Core CPI (YoY %)	1.8	1.8	1.8	2.2	1.8	2.1	2.2	2.0	2.2	2.1	2.0
Fiscal Balance (% GDP, FY)	-4.1	-2.8	-2.4	-3.2	-3.4	-3.8	-4.6	-4.6	-4.4	-4.7	-4.5
Current Account (bop, % GDP)	-2.1	-2.1	-2.2	-2.3	-2.3	-2.4	-2.4	-2.5	-2.5	-2.5	-2.5
Fed Target Rate (% eop)	0.25	0.25	0.50	0.75	1.50	2.50	1.75	1.75	1.75	2.25	2.25
Core Logic National HPI (YoY %)	9.7	6.7	5.2	5.4	5.9	5.8	3.6	3.8	3.1	3.4	3.5
10-Yr Treasury Yield (% eop)	2.90	2.21	2.24	2.49	2.40	2.83	1.86	2.00	2.13	2.41	2.59
WTI Oil Prices (dps, average)	97.9	93.3	48.7	43.2	50.9	65.0	56.7	56.7	58.0	57.7	57.4

(f): Forecast.

Source: BBVA Research

Table 7.2 **U.S. STATE REAL GDP GROWTH, %**

	2014	2015	2016	2017	2018	2019 (e)	2020 (f)	2021 (f)	2022 (f)
Alaska	-2.7	1.0	-2.0	0.0	0.7	2.3	0.2	0.4	0.7
Alabama	-0.7	1.3	0.7	1.2	2.8	2.6	1.9	1.5	1.5
Arkansas	1.0	0.8	0.6	0.7	1.7	1.5	0.8	1.0	1.2
Arizona	1.3	2.4	3.2	3.5	4.1	3.3	3.4	3.6	3.6
California	4.1	5.0	3.0	4.4	4.3	2.5	2.3	2.9	2.9
Colorado	4.7	4.6	2.4	4.0	3.5	3.8	3.6	3.3	3.2
Connecticut	-1.4	2.2	0.0	0.4	0.5	1.5	1.0	1.2	1.2
Delaware	7.3	3.7	-4.2	-0.6	0.0	0.9	1.3	1.3	1.4
Florida	2.7	4.2	3.3	3.4	3.2	2.9	2.8	2.9	2.9
Georgia	3.3	3.4	3.5	3.7	2.4	1.9	2.3	2.5	2.5
Hawaii	0.3	3.6	2.2	2.3	2.4	0.8	0.9	1.6	1.6
Iowa	5.4	2.6	-0.3	-0.3	2.2	0.9	1.3	1.8	1.9
Idaho	2.6	2.8	3.9	3.5	4.0	3.1	3.4	3.3	3.2
Illinois	1.4	1.3	0.4	0.9	2.1	1.6	1.2	1.2	1.2
Indiana	3.2	-0.7	1.6	1.9	2.0	0.5	0.7	1.0	1.1
Kansas	2.1	1.9	2.6	1.0	2.1	0.8	1.1	1.1	1.2
Kentucky	0.3	0.7	0.7	1.1	1.4	0.9	0.8	1.0	1.1
Louisiana	3.1	-0.5	-1.8	1.4	2.6	0.9	0.2	0.3	0.5
Massachusetts	2.0	3.8	1.7	2.5	3.1	2.4	1.9	2.0	2.0
Maryland	1.1	1.9	3.4	0.9	2.5	1.7	2.2	2.0	2.0
Maine	1.7	0.7	2.2	2.2	2.2	1.7	1.1	1.2	1.2
Michigan	1.7	2.5	2.2	1.5	2.5	0.5	0.9	1.0	1.0
Minnesota	2.9	1.2	1.9	1.9	2.6	1.4	1.7	1.7	1.8
Missouri	0.5	1.3	-0.4	1.0	2.4	2.0	1.4	1.1	1.2
Mississippi	0.5	0.1	0.4	0.9	1.3	1.3	1.4	1.1	1.1
Montana	1.7	3.9	-1.4	1.7	2.6	2.1	2.4	2.3	2.3
North Carolina	2.2	3.2	1.2	2.1	2.4	2.4	2.3	2.3	2.3
North Dakota	7.6	-2.9	-7.0	0.0	3.6	2.3	0.3	-0.1	0.4
Nebraska	2.0	2.9	0.4	2.1	0.9	0.7	2.5	2.4	2.3
New Hampshire	1.1	2.8	1.8	1.8	2.3	2.7	2.1	2.3	2.3
New Jersey	0.5	1.8	0.9	0.7	2.2	1.5	1.0	1.0	1.1
New Mexico	3.2	2.2	0.1	0.1	2.5	3.9	2.2	1.9	2.0
Nevada	1.3	4.2	2.9	3.2	4.2	2.9	2.6	2.7	2.8
New York	2.3	1.7	1.3	2.1	1.2	1.9	1.3	1.6	1.8
Ohio	3.8	1.5	0.8	1.6	1.9	1.8	1.7	1.4	1.4
Oklahoma	5.7	4.3	-3.0	0.8	2.6	2.7	2.4	2.1	2.2
Oregon	3.4	5.6	4.7	3.8	3.8	2.8	2.2	2.2	2.4
Pennsylvania	2.3	2.2	1.3	0.6	2.6	2.1	1.3	1.3	1.4
Rhode Island	0.1	1.8	0.0	-0.2	1.2	2.6	1.7	1.7	1.7
South Carolina	2.6	3.5	2.9	3.3	2.6	3.0	2.0	1.9	1.9
South Dakota	1.3	2.9	0.5	-0.1	1.9	0.9	3.1	3.0	2.9
Tennessee	1.7	3.4	2.1	1.9	3.1	2.2	2.0	1.9	2.0
Texas	3.5	4.8	0.2	2.9	4.0	4.4	3.3	3.2	3.2
Utah	3.2	4.1	4.0	3.9	3.7	3.9	4.2	4.3	4.1
Virginia	-0.2	2.0	0.4	1.8	2.6	1.9	1.9	1.8	1.9
Vermont	0.1	1.3	1.6	0.1	1.2	2.4	1.3	1.3	1.5
Washington	3.6	4.4	3.5	5.2	5.8	3.8	2.7	2.5	2.5
Wisconsin	2.1	1.8	1.2	1.3	2.4	1.2	1.2	1.5	1.6
West Virginia	-0.4	-0.2	-1.2	1.5	2.3	1.1	1.0	1.0	0.9
Wyoming	0.6	2.6	-4.2	-0.1	0.1	3.1	0.5	0.8	1.0

(e): estimated; (f): forecast

Source: BBVA Research

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