

U.S. SECURITIES AND EXCHANGE COMMISSION  
Division of Economic and Risk Analysis



# DERA Economic and Risk Outlook

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## Key Highlights as of June 30, 2020

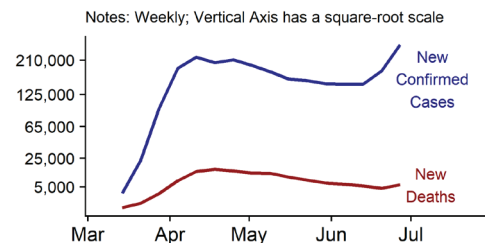
### U.S. Economic Activity Is Resuming Following the COVID-19 Induced Economic Slowdown:

As the rate of new confirmed U.S. COVID-19 cases fell in April and May 2020, policymakers began a phased-in reopening of certain local economies. This reopening has allowed economic activity to resume in the hardest hit industries, with employment recovering slightly in these sectors. Moreover, since peak financial market distress in March 2020, the S&P 500 increased 35% from March 23 to June 26, equity market volatility as proxied by the VIX index fell from March highs, and credit conditions eased. Yet material uncertainties remain: New confirmed COVID-19 cases are rising again after previously trending downwards, unemployment remains high, and financial risk proxies, such as the VIX index and the corporate default spread, remain elevated.

## The Path of New COVID-19 Cases Is Uncertain

**After Falling for Several Weeks, the Rate of New U.S. COVID-19 Cases is Again Trending Upwards:** The number of new confirmed COVID-19 cases peaked at over 210,000 per week in April 2020 and then dropped to a weekly rate of less than 150,000 by mid-June (Figure 1.1). Similarly, newly reported deaths dropped to a rate below 5,000 per week after reaching more than 15,000 per week in mid-April. The declining rate of new COVID-19 cases and deaths allowed policymakers to begin a phased-in reopening of certain local economies. Yet data as of June 26 show that the number of new confirmed COVID-19 cases has risen to a weekly rate of more than 250,000, highlighting uncertainty over the impact of COVID-19 going forward and prompting some local and state authorities to revert or delay reopening protocols as a response.

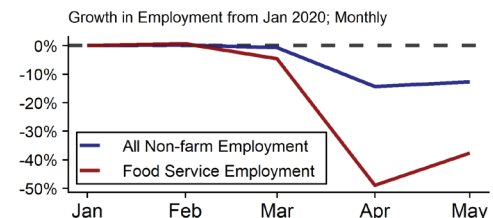
**Figure 1.1: After Falling from April Highs, New U.S. COVID-19 Confirmed Cases Have Recently Risen**



## The Impact of COVID-19 Across Sectors Remains Uneven

**The Industries that Suffered the Largest Employment Losses Through April 2020 Gained Back More Jobs as Local Economies Began to Reopen in May:** Employment in food services, one of the hardest hit sectors in the wake of COVID-19 public health restrictions, fell nearly 50% during March and April 2020, compared to a 14% decline for U.S. employment overall (Figure 1.2). In historical context, these job losses are staggering: During the Great Recession, food service and total employment fell by just 8.4% and 6.3%, respectively. Other industries suffering from outsized COVID-19 impacts and severe employment losses include the leisure and hospitality and retail trade sectors. As local economies have lifted COVID-19 related restrictions and partially resumed activity in displaced

**Figure 1.2: Food Service Employment Fell Nearly 50% by April Before Partially Recovering in May**



sectors, the most affected industries experienced the largest job gains. Food services employment grew 21.9% during May, compared to 1.9% for U.S. employment overall. Yet employment across all industries remains substantially below its pre-COVID-19 levels, with overall employment down 12.5% and food services employment having fallen over 35% from January to May 2020.

**The COVID-19 Economic Fallout Has Had An Outsized Negative Effect on the Equity Returns for the Energy, Financial, Industrial, Transportation, and Metals and Mining Sectors, But It Has Had a Positive Effect on Sectors that Facilitate Physical Distancing such as Online Retail**

**Figure 1.3 proxies COVID-19 equity market impacts by sector, using exchange-traded fund (ETF) returns from February 10 to June 26, 2020. The hardest hit sectors (red lines) include the energy, financial, industrial, metals and mining, and transportation sectors. The energy, industrial, and metals and mining sectors have faced large demand declines, while oil firms have been further impacted by increased price and supply competition.**

Financial companies are facing uncertainty related to borrower debt service, the ability to generate new business due to COVID-19 induced economic turmoil, and [Federal Reserve mandated dividend and share buyback restrictions intended to boost bank capital](#). Likewise, physical distancing is directly reducing travel and transportation across the country. In contrast, physical distancing and remote work have benefited companies in several sectors such as online retail, technology, and telecom. Indeed, ETF prices for these sectors have recovered to at least their pre-pandemic levels, with an online retail ETF gaining more than 20% from aggregate market highs in February 2020.

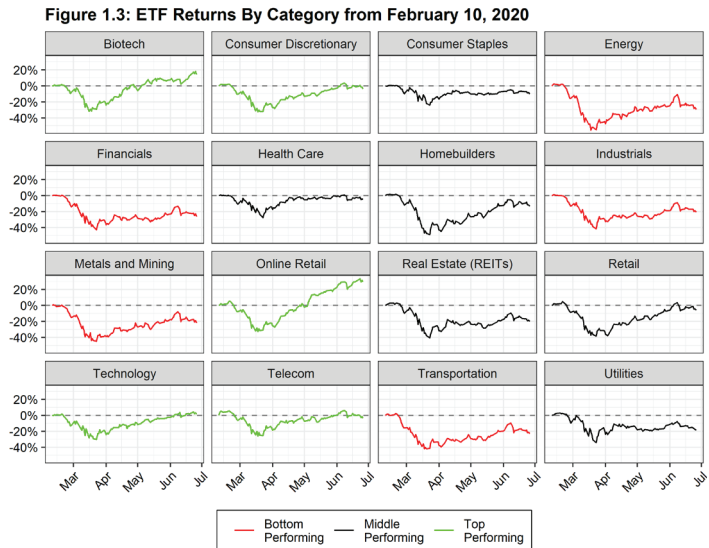


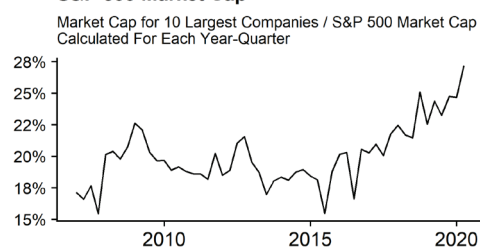
Figure Notes: Red lines are the five industries with the lowest (most negative) returns from February 10 to June 26, 2020. Green lines are the top performing industries in terms of returns from February 10 to June 26, 2020. Data source: Datastream.

## The Recent Paths of the Economy and the Stock Market Have Diverged

**S&P 500 Performance Increasingly Depends on the Largest Firms:** The S&P 500 is a value-weighted index that is rebalanced quarterly, meaning each company's share in the overall index depends on its market cap during the previous quarter. As a result, larger firms receive higher initial weights, and better-performing firms are rewarded with increased importance in the index. Thus, when large firms outperform smaller ones, large firms' weight in the overall S&P 500 index soars. Indeed, Figure 1.4 documents that the relative market cap share for the 10 largest companies calculated by each year-quarter rose from 18.1% in 2015Q1 to 27.1% in 2020Q1. Hence, larger firms have recently outperformed smaller ones, and so the 10 largest firms' performance is currently responsible for about one-quarter of the overall S&P 500 returns. Moreover, the sectoral makeup of large firms may

contribute at least in part to their recent outperformance in 2020Q1 and 2020Q2. The largest firms in the S&P 500 by market cap are technology companies with business models that may be well suited, at least in the near term, to cope with the economic effects of the COVID-19 pandemic. The health policies implemented to battle COVID-19 have altered broader production and consumption patterns towards remote work, internet shopping, and physical distancing—all trends that could favor large technology companies, at least in the short run. Moreover, the largest companies maintained strong balance sheets in the lead-up to the pandemic, which may have allowed them to avoid seeking short-term funding during the March 2020 tightening in corporate credit markets and to position themselves for strong financial performance.

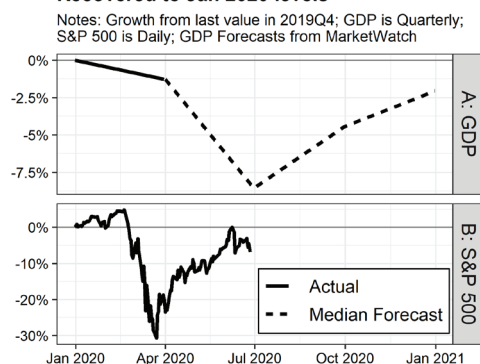
**Figure 1.4: The 10 Largest Companies Constitute an Increasingly Large Share of S&P 500 Market Cap**



**The Paths of Recent Economic Indicators and Equity Prices Have Diverged:**

Although recent economic data have been weak, with employment down 12.5% from February to May 2020 (Figure 1.2), equity market performance coming off recent lows in March 2020 has been notable. Figure 1.5 highlights the divergence between the real economy and the equity market by plotting the growth in actual values and forecasts of GDP tabulated by MarketWatch (panel A) and the S&P 500 (panel B) from 2019Q4. GDP forecasts from MarketWatch suggest that economic output is expected to fall about 7.5% by 2020Q2. A rapid GDP decline of this magnitude is unprecedented; in comparison, during the Great

**Figure 1.5: GDP is Expected to Fall Markedly During 2020, while the S&P 500 has nearly Recovered to Jan 2020 levels**

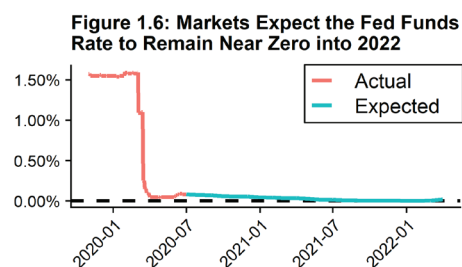


Recession, GDP fell only 4% from peak to trough over a 2-year period. In contrast, the S&P 500 has nearly recovered from its March lows, increasing 35% from March 23 to June 26. Several factors in isolation or in combination may have contributed to the recent run-up in equity prices, including (1) expectations of a rapid economic recovery in the latter half of 2020, as evinced by the sharp increase in forecasted economic output (Figure 1.5, panel A); (2) COVID-19 induced increases in the frequency of internet shopping and remote work—trends that favor large technology firms (Figure 1.3), which constitute a substantial portion of value-weighted equity indices (Figure 1.4); (3) low expected interest rates (Figure 1.6) that increase the present value of future profit streams; and (4) perhaps elevated equity market purchases by retail investors.

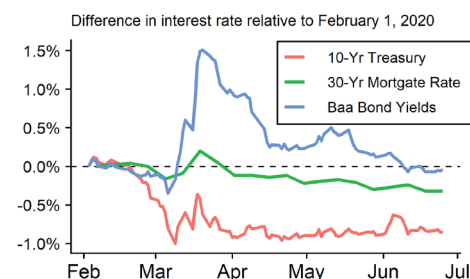
## Market Signals Suggest Sustained Low Interest Rates Going Forward

**Low Expected Short-Term Interest Rates and Unprecedented Monetary Stimulus Have Coincided with Historically Low Interest Rates for Governments, Firms, and Households:** Since the Federal Reserve (Fed) lowered the target fed funds rate by 1.5 percentage points to a range of 0–0.25%, futures market traders now expect the fed funds rate to stay at its zero lower bound into 2022 (Figure 1.6). These low expected interest rates reflect market participants’ expectations that the Fed will hold

interest rates low in both the short- and medium-term to counter the COVID-19 induced economic slowdown. Along with low short-term interest rates, the Fed has announced unprecedented monetary stimulus via unlimited purchases of U.S. Treasury and agency mortgage-backed securities (MBS), as well as numerous facilities to provide liquidity and further monetary stimulus in corporate credit and other markets. Following these actions, a broader easing of credit market conditions and perhaps concerns over the path of the economic recovery, borrowing rates for governments, households, and firms are now historically low (Figure 1.7). Indeed, after spiking at the height of COVID-19 induced economic distress, both mortgage rates and corporate bond yields have returned to their pre-pandemic levels, with mortgage rates reaching all-time lows. In Treasury markets, the yield on the 10-year Treasury declined over 50 basis points relative to early February, perhaps reflecting an investor flight to safety as well as Fed monetary actions.



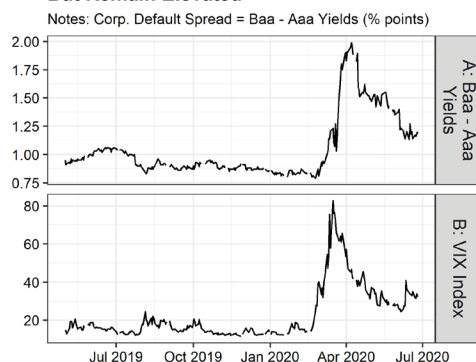
**Figure 1.7: Interest Rates are Near or Below Pre-Pandemic Levels Across Asset Classes**



## Financial Market Risk Proxies Remain Elevated

**The Corporate Default Spread and the VIX Index Have Declined from their COVID-19 Induced Highs but Have Not Returned to their Pre-COVID-19 Levels:** After spiking during the peak of COVID-19 related financial distress in late March, two broad proxies of financial market risk, the corporate default spread (Baa - Aaa bond yields) and the VIX index (equity market uncertainty) have recently fallen (Figure 1.8). The reduction in these risk proxies indicates that previous financial market tightness and uncertainty have eased. Yet both indices remain well above their pre-COVID-19 levels, suggesting that material uncertainties remain.

**Figure 1.8: The Corporate Default Spread and The VIX Have Fallen From Recent Highs But Remain Elevated**



Data Sources: **Figure 1.1:** The New York Times, based on reports from state and local health agencies (available at <https://github.com/nytimes/covid-19-data>); and Johns Hopkins University CSSE (available at <https://github.com/CSSEGISandData/COVID-19>). **Figure 1.2:** Bureau of Labor Statistics (BLS), retrieved from The Federal Reserve Economic Database (FRED) (IDs: PAYEMS, CES7072200001). **Figure 1.3:** Datastream. **Figure 1.4:** Compustat and Wharton Research Data Services (WRDS). **Figure 1.5:** Bureau of Economic Analysis (BEA), retrieved from FRED (ID: GPCPI), and “Marketwatch Economic Calendar” available at <https://www.marketwatch.com/economy-politics/calendar>. **Figure 1.6:** Fed Board, retrieved from FRED (ID: DFF), and Datastream. **Figure 1.7:** Moody’s, retrieved from WRDS; Freddie Mac and Fed Board, retrieved from FRED (IDs: MORTGAGE30US, DGS10). **Figure 1.8:** Moody’s, retrieved from WRDS; Chicago Board Options Exchange (CBOE), retrieved from FRED (ID: VIXCLS).

# Macro-Financial Overview

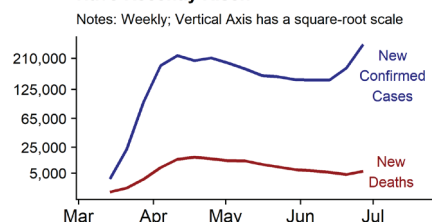
The macro-financial environment is encapsulated in three key aggregate drivers of financial decisions: (1) economic fundamentals and growth; (2) monetary policy and the interest rate trajectory; and (3) financial market signals and credit conditions.

## Economic Fundamentals and Growth

**Key Takeaway:** In the wake of peak of COVID-19 related financial distress in late March, the U.S. unemployment rate increased to 14.7% in April 2020, and economic output declined substantially. The U.S. reached peak business cycle activity in February 2020 before entering a COVID-19 induced recession that has had outsized adverse employment effects on the leisure and hospitality and retail trade sectors. Likewise, consumer confidence has tumbled, and proxies for durable consumption purchases remain weak. Economic growth is forecasted to turn positive again by 2020Q3.

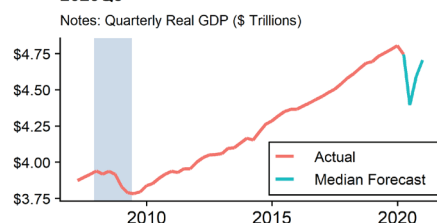
The number of new confirmed COVID-19 cases peaked at over 210,000 per week in April 2020 and then dropped to a weekly rate of less than 150,000 by mid-June (Figure 2.1). Similarly, newly reported deaths dropped to a rate below 5,000 per week after reaching more than 15,000 per week in mid-April. The declining rate of new COVID-19 cases and deaths allowed policymakers to partially reopen certain local economies. Yet data as of June 26 show that the number of new confirmed COVID-19 cases has risen to a weekly rate of more than 250,000, highlighting uncertainty over the impact of COVID-19 going forward.

**Figure 2.1: After Falling from April Highs, New U.S. COVID-19 Confirmed Cases Have Recently Risen**



To fight the COVID-19 pandemic, local and federal U.S. policymakers issued stay-at-home guidelines for nonessential workers and encouraged physical distancing. Although health experts deemed such actions as necessary for public health, they severely limit everyday economic activities. Figure 2.2 plots real quarterly gross domestic product (GDP) dating back to the Great Recession, as well as forecasted GDP for 2020Q2–Q4 (median forecasts tabulated by [MarketWatch](#)). While the U.S. economy was consistently expanding at a 2–3% annual rate prior to COVID-19, during the first half of 2020 forecasters expect GDP to fall over 7.5% from its peak in 2019Q4. Indeed, the National Bureau of Economic Research (NBER) Business Cycle Dating Committee [announced](#) that the peak in U.S. economic activity occurred in February 2020 and that a recession began thereafter. Assuming that the economy would have otherwise grown at 2%, the lost economic output due to the COVID-19 outbreak just through 2020Q2 will be nearly \$460 billion. In historical terms, a two-quarter GDP drop of this magnitude is unprecedented. During the Great Recession of 2008–09, GDP from peak to trough fell only 4%.

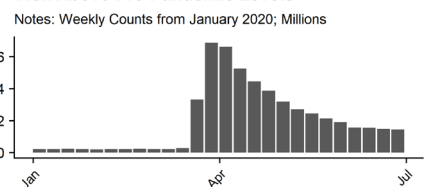
**Figure 2.2: A Large Predicted Drop in 2020Q2 GDP Followed by a Return to Growth in 2020Q3**



As local economies reopen, the severity of the COVID-19 economic damage will hinge on how quickly the United States and its principal trading partners can resume normal economic activity in whole or in part. Many factors will determine the time for recovery, including frictions in labor market search and matching, firm failures, housing and mortgage market activity, consumer confidence and spending, as well as behavioral changes that are a direct result of the pandemic. Indeed, the resumption of economic activity will require a recommencement of both supply and demand. As firms restart production, households might be hesitant to venture out to consume available output, while physical distancing practices may alter both production and consumption patterns with cascading effects across various industries. For example, when restaurants reopen, unless customers walk in to dine in those establishments in the same numbers or with the same frequency as before the slowdown, economic activity will not match pre-COVID-19 levels. Likewise, an acceleration of remote work, for example, may move production from urban clusters to suburban areas, with geographic implications for real estate prices, local retail and restaurant spending, as well as travel and transportation. Households may also not quickly return to their normal pre-COVID-19 consumption patterns because of the economic fallout of the pandemic. If severely affected consumers only slowly regain employment or if their savings dwindled as the economy contracted, they may forego some durable purchases immediately after the crisis. Nonetheless, forecasts as of mid-June collected by MarketWatch (see Figure 2.2) expect the United States to register robust economic growth at an annual rate of 18% in 2020Q3 and 10% in 2020Q4, but with output remaining below pre-COVID-19 levels at year-end.

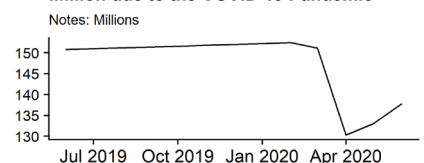
The sudden and unprecedented impact of the COVID-19 shock immediately surfaced via the sharp rise in initial unemployment claims, which reached over 6 million per week in late March and early April (Figure 2.3). As local economies have reopened and financial market stress has ameliorated, initial unemployment claims have fallen to about 1.5 million per week but remain above their pre-COVID-19 levels.

**Figure 2.3: Initial Unemployment Claims Remain Well Above Pre-Pandemic Levels**

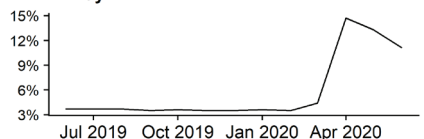


The substantial number of initial jobless claims corresponded with a large reduction in total employment and a higher unemployment rate. Figure 2.4 shows that after non-farm U.S. payrolls peaked at about 152 million in February 2020, the U.S. subsequently lost over 22 million jobs during March and April. U.S. employment bounced back somewhat during May, but non-farm payrolls remain 20 million off their February peak. The adverse impact of the recent economic downturn is also seen in the sharp rise in the U.S. unemployment rate (Figure 2.5). Following its historically low levels in 2019 and early 2020, the unemployment rate jumped to 14.7% during April as COVID-19 induced job losses mounted. As local economies partially reopened in May, the unemployment rate fell slightly to 13.3% but remains at its highest rate since the Great Depression.

**Figure 2.4: Non-Farm Payrolls Fell by 20 Million due to the COVID-19 Pandemic**



**Figure 2.5: The Unemployment Rate Jumped To 14.7% in April, Before Falling Slightly in May**





COVID-19 has also impacted industries unevenly, as seen in Figure 2.6, which plots the growth in employment by industry from February 2020. The hardest hit industries (red lines) include the traditional information (e.g., non-internet publishing, motion picture, and non-internet broadcasting), leisure and hospitality, mining and logging, and retail trade sectors. Employment growth in the leisure and hospitality industry is especially depressed, falling 50% with little recovery to date. Because the number employed and the number rendered unemployed differ greatly across industries, each industry has a different weight in the computation of U.S. total employment growth. Thus, the classification of U.S. total employment growth as a bottom performing category in Figure 2.6 (top-left panel) means that job losses were highly concentrated in certain COVID-19 affected industries that employ a substantial number of people, leading to larger employment declines for the United States overall than for the median industry. The key implication is that in order for the United States to return to full employment, employment will have to grow markedly from its current low base in severely affected industries, the share of employment in less affected industries will have to increase relative to the overall labor force, or a combination of the two. Policies that limit labor market frictions along these two dimensions will speed economic recovery.

**Figure 2.6: Employment Growth by Industry from February 2020**  
Vertical axis has a signed square-root scale

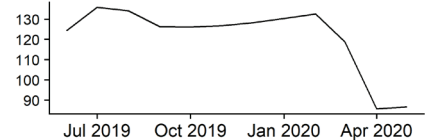


**Key Figure Takeaway:** The COVID-19 induced recession had the largest adverse employment impacts on the information, leisure and hospitality, and retail trade industries.

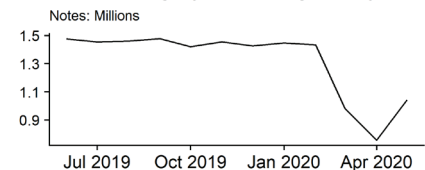
Figure Notes: Red lines are the 5 industries with the lowest (most negative) total employment growth from February to May 2020. Green lines are the top performing industries in terms of total employment growth from February to May, 2020. Data source: BLS, retrieved from FRED (IDs: PAYEMS, USMINE, USCONS, MANEMP, USWTRADE, USTRAD, CES4300000001, USINFO, USFIRE, USPBS, USEHS, USLAH).

The large employment declines may have also tempered consumer confidence and stymied durable consumption. Figure 2.7 shows that the consumer confidence index dropped from 130 to 90, a 35% decline in the wake of the onset of the COVID-19 recession, with no rebound to date. Similarly, motor vehicle sales, a proxy for durable goods consumption, sank nearly 50% during February and April, as jobs losses accumulated and as physical distancing limited onsite shopping (Figure 2.8). Vehicle sales have recovered partially in May, but remain substantially below their pre-COVID-19 levels. Moreover, a greater reliance on remote work, which might continue for quite some time, might permanently dent the demand for automobiles.

**Figure 2.7: Consumer Confidence Has Fallen Markedly with the COVID-19 Pandemic**



**Figure 2.8: In May, Total Vehicle Sales Increased Slightly after Falling Sharply**



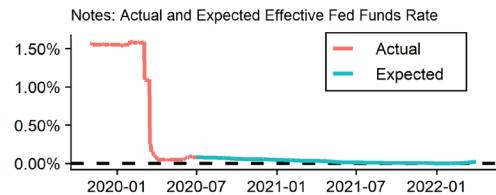
## Monetary Policy and Interest Rates

**Key Takeaway:** Due to COVID-19 induced financial market distress, the Fed lowered the target range for the fed funds rate to 0–0.25% and announced unlimited purchases of Treasury securities and agency MBS. In addition, the Fed, in conjunction with the U.S. Treasury, initiated various liquidity and purchasing facilities targeting corporate bonds, small-and medium-sized businesses, municipal securities, asset-backed securities (ABS), dollar swaps, commercial paper, and repo markets, among others, to provide further monetary stimulus and battle market illiquidity. As of June 24, 2020, the size of the Fed’s balance sheet has already surpassed \$7 trillion, with U.S. Treasuries constituting the bulk of the purchases. In line with accommodative monetary policy and a flight to safety, the Treasury yield curve suggests a low risk-free rate for the foreseeable future. At the height of COVID-19 induced financial market stress, yields on a variety of lower rated debt instruments rose as default probabilities increased and market liquidity fell. Yet as credit conditions eased, yields across debt securities fell and credit spreads have narrowed but remain higher than pre-pandemic levels.

As the COVID-19 pandemic unfolded, the Fed lowered the fed funds rate initially by 50 basis points to a target range of 1–1.25% on March 3, 2020 and then to a target range of 0–0.25% on March 15, 2020. Figure 2.9 plots the recent path of the fed funds rate, along with the expected fed funds rate as implied in futures market prices. Futures traders expect the fed funds rate to stay at its zero lower bound into 2022; hence, the Fed’s monetary stance is expected to remain accommodative as the economy recovers from the COVID-19 crisis.

To support market liquidity and provide monetary stimulus, the Fed also announced unlimited purchases of Treasuries and agency MBS (both commercial and residential). These large-scale asset purchases coincided with the formation of numerous facilities. The Fed programs include facilities to support liquidity in various markets and target corporate bonds and ETFs in the primary and secondary markets (rated BBB-/Baa3 or higher as of March 22, 2020, and BB-/Ba3 at the time of purchase). The programs also target AAA-rated ABS backed by certain loans, including student loans, auto loans, credit card loans, loans guaranteed by the Small Business Administration (SBA), commercial mortgages, (leveraged) corporate loans through collateralized loan obligations (CLOs), or related securities; money market funds; municipalities; and loans to small- and medium-sized businesses. Fed measures also have consisted of [dollar liquidity swap lines with foreign central banks](#) and [lowering](#) the primary credit rate to 0.25% to encourage banks to borrow from the discount window.

**Figure 2.9: After the Fed Lowered the Fed Funds Rate to Zero, Futures Markets Signal Sustained Low Interest Rates**

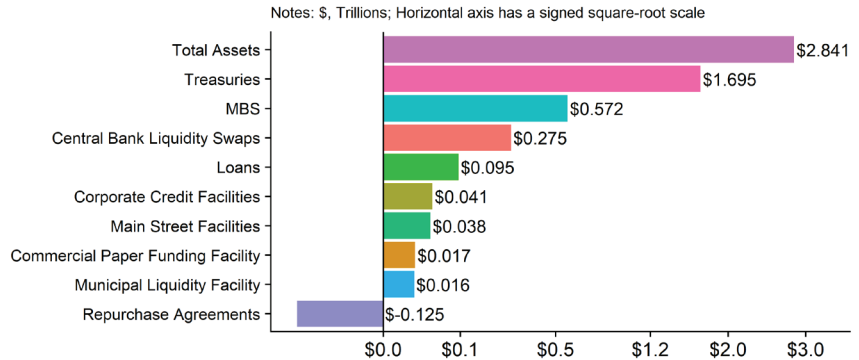


Note: More information and term sheets associated with the Fed’s extraordinary monetary policy actions can be found at <https://www.federalreserve.gov/newsevents/pressreleases/monetary20200323b.htm>.

For the most recent Fed press releases, see <https://www.federalreserve.gov/newsevents/pressreleases.htm>.

With the onset of the pandemic, the size of the Fed's balance sheet rose substantially. Figure 2.10 plots the change in Fed assets by category from February 3 to June 24, 2020. While total assets increased by \$2.8 trillion, the bulk of the increase has consisted of Treasury purchases (60%), agency MBS purchases (20%), and central bank liquidity swap lines (10%). Together, these three categories constitute 90% of the total increase in the Fed's balance sheet. New unconventional monetary policy tools, such as the purchase of corporate bonds ("Corporate Credit Facilities"), make up a relatively tiny portion of Fed assets to date. However, the mere announcement of such Fed programs can have a large impact on markets, even if purchases have yet to materialize.

**Figure 2.10: Change in Fed Assets by Category From February 3 to June 24, 2020**



**Key Figure Takeaway:** In response to the COVID-19 pandemic, the Fed has increased its balance sheet by about \$2.8 trillion. The increase in Fed assets has consisted mostly of Treasury and agency MBS purchases as well as liquidity swaps with foreign central banks.

Figure Data Source: Fed Board

While the recent asset purchases are sizable, Figure 2.11 places the data in historical perspective by showing data going back to the Great Recession. Following the Great Recession, Fed assets grew from just under \$1 trillion to approximately \$4.5 trillion, an addition of \$3.5 trillion, which is larger both in absolute and relative terms than the Fed's recent actions.

**Figure 2.11: The Fed has Increased the Size of its Balance Sheet In Response to the COVID-19 Crisis to over \$7 Trillion**

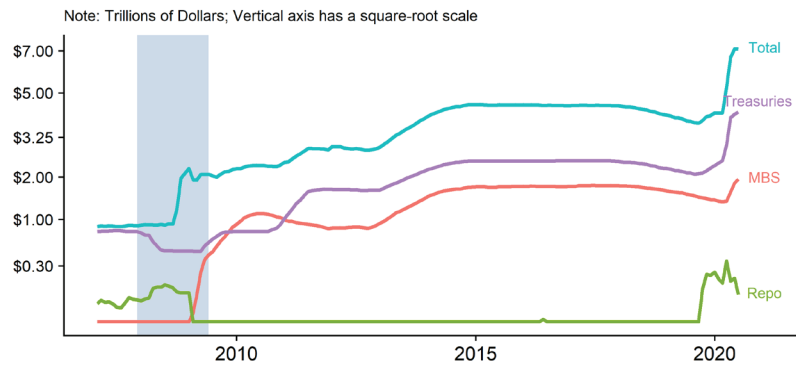
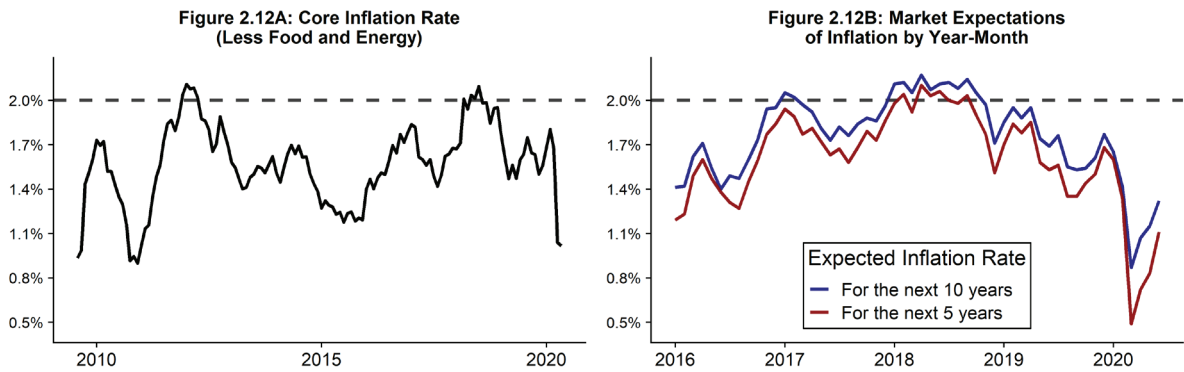


Figure Data Source: Fed Board, retrieved from FRED (IDs: WALCL, TREAST, WSHOMCB, WORAL).

Also, in response to the housing crash and Great Recession, the Fed purchased both MBS and Treasuries in large numbers, whereas during the response to the current COVID-19 pandemic the increase in Fed assets has been due mostly to Treasury purchases. As the economic effects of the COVID-19 crisis linger, the Fed may further increase asset purchases. Indeed, the former head of the New York Fed, Bill Dudley, speculated that the size of the Fed's balance sheet may reach \$10 trillion by the end of 2020.

Despite the recent Fed stimulus, inflation expectations have plummeted. To provide historical context, Figure 2.12A shows that the core inflation rate rarely reached the Fed’s symmetric 2% inflation target over the last decade, with the annual inflation rate falling to just 1% in April 2020. Figure 2.12B plots inflation expectations over the next 5 and 10 years from a given point in time computed from Treasury nominal and inflation protected securities. The graph documents that prior to the crisis the expected inflation rate typically fluctuated between 1.3% and 2.1%. However, with the onset of the pandemic, inflation expectations sank; as of April 2020 market participants expected an average annual inflation rate below 1% over the following 5 years. Since then, expected inflation has rebounded somewhat, but the anticipated annual inflation rate over the next 10 years still remains well below the Fed’s 2% target.



**Key Figure Takeaway:** Following the COVID-19 outbreak, inflation expectations have declined sharply.

Figure Data Source and Notes: U.S. Treasury, retrieved from FRED (IDs: PCEPILFE, T5YIE, T10YIE). Breakeven inflation rates are computed from Treasury Inflation-Protected Securities (TIPS) and Nominal Treasury Securities.

The dramatic decline in economic activity after the COVID-19 outbreak, the Fed’s large monetary stimulus, and diminished inflation expectations, coupled with perhaps an elevated demand for U.S. Treasury securities, collectively presage exceptionally low U.S. Treasury interest rates. Figure 2.13 plots the current yield curve for U.S. Treasury securities (blue line) versus its average over the past 10 years (red line) by maturity horizon. Not only are rates historically low at the short end of the yield curve (e.g., for short-term securities), but they are also low for longer maturities. Long-term yields

**Figure 2.13: The Current Yield Curve is Flat with Low Interest Rates Over Both the Short and Long Term**

Notes: Horizontal Axis is in sqrt(months)

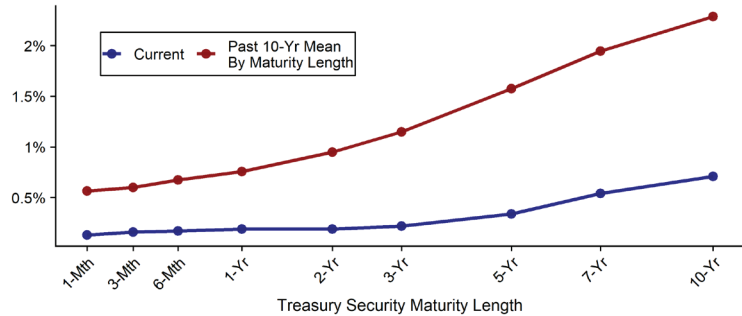


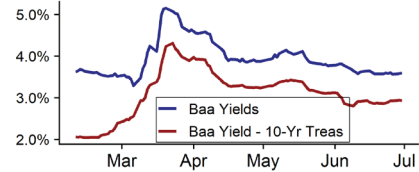
Figure Notes: The blue line is the current Treasury yield curve; the red line represents the past 10-year average, computed by taking the mean by each maturity date. For more on Term Premia, see [newyorkfed.org/research/data\\_indicators/term\\_premia.html](https://www.newyorkfed.org/research/data_indicators/term_premia.html).

Figure Data Source: U.S. Treasury, retrieved from FRED (IDs: DGS1MO, DGS3MO, DGS6MO, DGS1, DGS2, DGS3, DGS5, DGS7, DGS10).

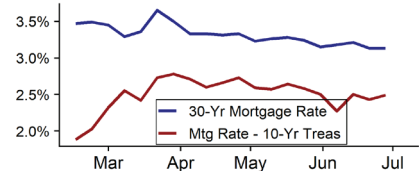
comprise the current short-term rate plus the sum of market participants' expectations of future interest rate changes, as well as a term premium (the additional interest that investors demand in exchange for being locked into a longer-term bond rather than just continuously investing in short-term bonds). The relatively flat current yield curve suggests that the term premium and investors' expectations of future interest rate increases are low.

Although Treasury yields have fallen to historic lows, interest rates on other assets have not all experienced comparable declines. The likely reason is that credit risk has risen because of diminished economic activity following the slowdown. Figure 2.14 documents that yields on Baa-rated corporate bonds increased beginning in late March, likely because of elevated default probabilities. From there, Baa yields fell as market credit conditions loosened and the Fed, along with Treasury, announced corporate credit liquidity facilities. Yet the spread between Baa yields and Treasuries remains well above pre-pandemic levels, congruent with lingering credit risks. Likewise, Figure 2.15 plots the average 30-year U.S. mortgage rate and its spread relative to the 10-year Treasury. The 30-year mortgage rate has declined from about 3.5% in mid-February to just over 3% in the most recent data.

**Figure 2.14: Baa Bond Yields are near Pre-Pandemic lows, but have Fallen Less Than Treasuries**



**Figure 2.15: 30-Yr Mortgage Rates have Fallen, but Spreads Relative to Treasuries Remain Elevated**



Mortgage rates represent a key link between financial markets and the real economy, as a decline in mortgage rates spurs mortgage refinance and purchase activity that often translates into durable consumption purchases and follow-on real economic activity. While mortgage rates have fallen, the spread between the average 30-year mortgage rate and the 10-year Treasury yield jumped more than one-half of a percentage point between February 15 and April 1. This increase in the spread between the mortgage rate and the Treasury yield is due in part to a glut of mortgage refinance demand immediately after rates declined and greater uncertainty about the employment prospects for many mortgagees. In addition, a lack of financial market liquidity also likely contributed to higher borrowing costs, at least initially following the pandemic outbreak, across a number of debt instruments, including MBS. Following Fed announcements of further large-scale purchases of agency MBS and a broader easing of credit conditions, the mortgage-rate Treasury spread has fallen modestly but is still about a half percentage point above its pre-COVID-19 levels.

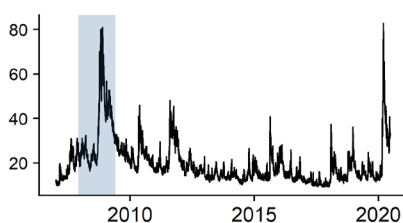
## Financial Market Signals

**Key Takeaway:** In mid-March 2020, at the peak of COVID-19 financial market distress, the VIX equity market volatility and uncertainty index reached levels last seen during the Great Recession of 2008-09. The VIX has retreated since then, but remains at elevated levels. Similarly, the corporate default spread (Baa – Aaa yields), a broad credit market risk proxy, rose sharply before trending downwards beginning in mid-April, as credit conditions eased. Yet the corporate default spread remains well above its pre-COVID-19 levels. The corresponding higher interest rates for lower rated bonds reflect higher expected default probabilities from the perspective of bond market investors, but also perhaps market illiquidity. Indeed, credit ratings downgrades increased substantially in March 2020, but the pace of downgrades slowed markedly during 2020Q2.

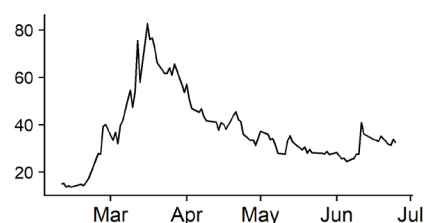
The impact of the COVID-19 pandemic on financial markets is apparent in the path of the VIX volatility index. During the height of COVID-19 induced financial market stress in mid-March, the VIX reached values around 80, corresponding to historical highs last seen during the Great Recession (Figure 2.16A). These peak VIX realizations signaled extreme investor uncertainty about firms' future profits and economic output related to the COVID-19 recession. Recently, uncertainty proxied by the VIX index has retreated (Figure 2.16B), owing to fiscal and monetary stimulus, as well as hopes that the total duration of the COVID-19 pandemic might not be too long. However, current VIX realizations are higher than pre-pandemic values, suggesting that material uncertainties remain.

Figure 2.17 plots the corporate default spread, Baa – Aaa corporate bond yields, an aggregate proxy of credit risk in the corporate bond market. After the onset of the COVID-19 crisis, corporate

**Figure 2.16A: The VIX Index Since The Great Recession**



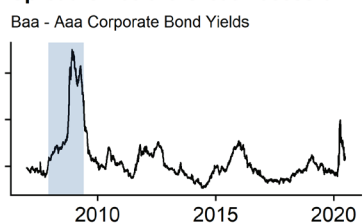
**Figure 2.16B: Recent Values of The VIX Index**



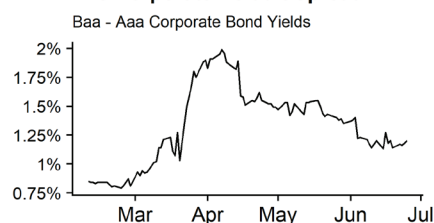
**Key Figure Takeaway:** The VIX Index reached levels last seen during the Great Recession, suggesting high levels of uncertainty over expected economic output and firm profits, but recently it has retreated.

Figure Data Source: Chicago Board Options Exchange, retrieved from FRED (ID: VIXCLS).

**Figure 2.17A: The Corporate Default Spread Since the Great Recession**



**Figure 2.17B: Recent Values of The Corporate Default Spread**



**Key Figure Takeaway:** The corporate default spread (Baa – Aaa corporate bond yields) increased in the wake of COVID-19 induced financial market stress but has not reached levels last seen during the Great Recession.

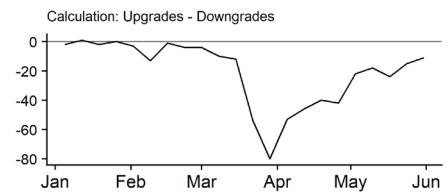
Figure Data Source: Moody's, retrieved from WRDS.

default spreads rose sharply in March, meaning that yields on lower rated corporate debt increased relative to those on higher rated bonds. This widening credit spread was due largely to increased default probabilities on lower rated corporate debt. Specifically, as economic activity faltered with the COVID-19 slowdown, investors feared that various income streams might dry up and firms might find it difficult to refinance their debt obligations. These factors make debt service difficult and costly, boosting the likelihood that a borrower may miss a payment and subsequently default.

Figure 2.17A also shows that while the recent rise in the corporate default spread is notable, current values remain well below those seen during the Great Recession and perhaps suggest credit markets are less strained than in 2008-09. Figure 2.17B plots the recent path of the corporate default spread. Like the VIX index (Figure 2.16B), the corporate default spread fell in mid-April. This trend reversal in the corporate default spread tracks various Fed announcements regarding liquidity facilities, suggesting that credit conditions ameliorated with Fed actions along with a broader reduction of financial market stress. Yet Figure 2.17 also shows that the corporate default spread remains above pre-COVID-19 levels and thus that material credit risks or material uncertainties persist. Indeed, investors may expect lower rated corporate borrowers to struggle to service and repay debt in the upcoming months, relative to higher rated borrowers, as the economic fallout from the COVID-19 recession unfolds.

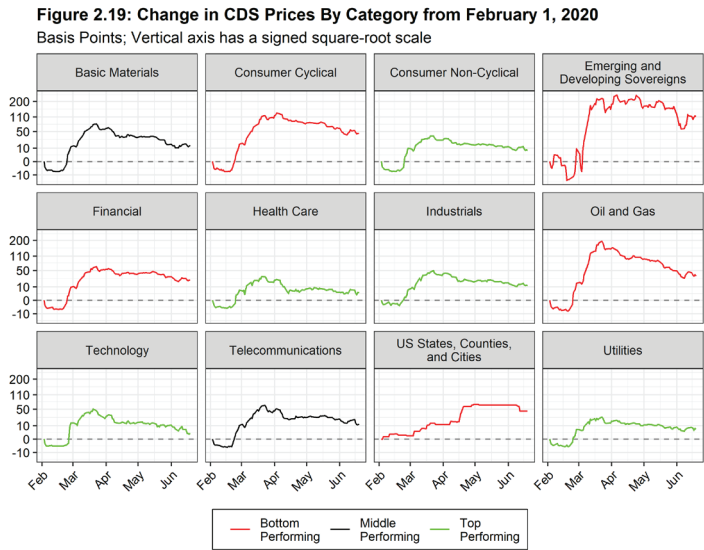
The economic downturn has affected credit ratings that reflect long-term views on the credit quality of fixed income instruments (rating through the cycle). Credit rating agencies, which are important intermediaries in providing information in securities markets, started to change their views in March 2020, in response to rapidly changing economic conditions. As recently as February 2020, rating agencies anticipated a modest slowdown with a low recession likelihood. However, the events of March 2020 have changed their views. As shown in Figure 2.18, rating agencies lowered U.S. corporate debt issuers' ratings at a rapid clip following COVID-19 induced financial market distress. As credit conditions improved, the pace of downgrades slowed. Yet downgrades still outnumbered upgrades as of June 1, perhaps indicating continued uncertainty as regards borrower debt service going forward.

**Figure 2.18: The Pace of Downgrades for Long Term Corporate Issuers has Slowed as Broader Financial Distress has Eased**



The probability of debt default also varies across sectors. Figure 2.19 plots the change in prices for credit default swaps (CDS) from February 1, 2020, by category. CDS prices, often referred to as spreads and quoted in basis points, track the cost to insure an entity's debt against future default. Thus, a CDS spread of 200 basis points indicates that the cost to insure \$100 million dollars of debt would cost \$2 million per year ( $100 * 0.02$ ). Broadly, rising CDS spreads signal increased expectations in the probability of default.

While CDS spreads have increased across a wide range of entities, the magnitude of these changes varies starkly across the categories listed in Figure 2.19. The categories with the largest increases in CDS spreads and hence expected default probabilities (red lines) are those of sectors whose future revenue streams may be most threatened by the economic fallout from the COVID-19 recession. The most affected debt instruments emanate from emerging markets and developing sovereigns, as well as the oil and gas industry. Other entities experiencing an increase in expected default probabilities span the consumer cyclical industry, financial firms, along with U.S. states, counties, and cities.



**Key Figure Takeaway:** The COVID-19 induced recession has greatly increased expected default probabilities for emerging market and sovereign debt, the oil and gas industry, and consumer cyclical sectors.

Figure Notes: Red lines are the five categories with the largest (most positive) CDS price changes from February 1 to June 24, 2020. Green lines are the top performing categories in terms of total price change (lowest price change) from February 1 to June 24, 2020. Data source: S&P Capital.

Data Sources Not Previously Mentioned: **Figure 2.3:** U.S. Employment and Training Administration, retrieved from FRED (ID: ICSA); **Figure 2.4:** BLS, retrieved from FRED (ID: PAYEMS); **Figure 2.5:** BLS, retrieved from FRED (ID: UNRATE); **Figure 2.7:** Datastream; **Figure 2.8:** Bureau of Economic Analysis (BEA), retrieved from FRED (ID: TOTALSA); **Figure 2.15:** Freddie Mac, and Fed Board retrieved from FRED (IDs: MORTGAGE30US, DGS10); **Figure 2.18:** Refinitiv DataScope.



# Market Segments

The U.S. Securities and Exchange Commission's mission is to protect investors, maintain fair, orderly, and efficient markets, and facilitate capital formation. Below we examine the underpinnings of economic growth through the lens of these three mission areas and study (1) markets; (2) investors; and (3) borrowers, securities issuers, and other entities that raise capital. The chart below illustrates the interlinkages between these three segments.



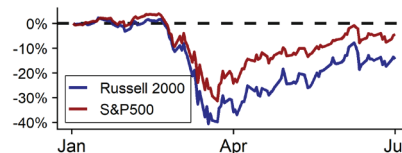
## Markets

**Key Takeaway:** Because of the COVID-19 pandemic, key equity indices plunged between 30-40% from January to March 2020. Investor expectations of weak corporate earnings following the COVID-19 induced economic slowdown likely led to this fall in equity prices. Then the S&P 500 nearly recovered from March lows, while indices of smaller companies have underperformed. In fixed income markets, AAA-rated corporate securities have outperformed other lower rated bonds, where the yields on AAA-rated securities are below their pre-pandemic levels. Yields on non-investment grade debt have climbed substantially during the period of COVID-19 induced financial market distress, likely reflecting investor concerns over increased default probabilities, but also perhaps market illiquidity. Recently, yields on lower rated debt have fallen but spreads relative to higher rated securities remain elevated, perhaps indicating that investors are identifying material risks among these borrowers.

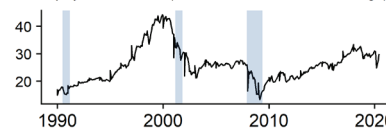
## Asset Values

After a historically long bull market, equity market prices fell sharply in the immediate wake of the COVID-19 induced economic recession. Figure 3.1 plots equity returns from January 2020 for the S&P 500 and the Russell 2000, an equity index of smaller companies. Both the S&P 500 and the Russell 2000 fell in late February as investors increasingly anticipated a decline in economic activity that would ultimately depress corporate profits. Thus, valuations as measured by the cyclically adjusted price-to-earnings ratio (CAPE) fell relative to historical earnings but remained higher than they were at the depths of the Great Recession (Figure 3.2). By mid-March, the S&P 500 had fallen over 30%. In comparison, the Russell 2000 declined nearly 40%, coinciding with COVID-19's likely outsized impact on the

**Figure 3.1: Key Equity Indices Fell 30-40% From Jan 1 to Late-March Before A Near Full Recovery by June**

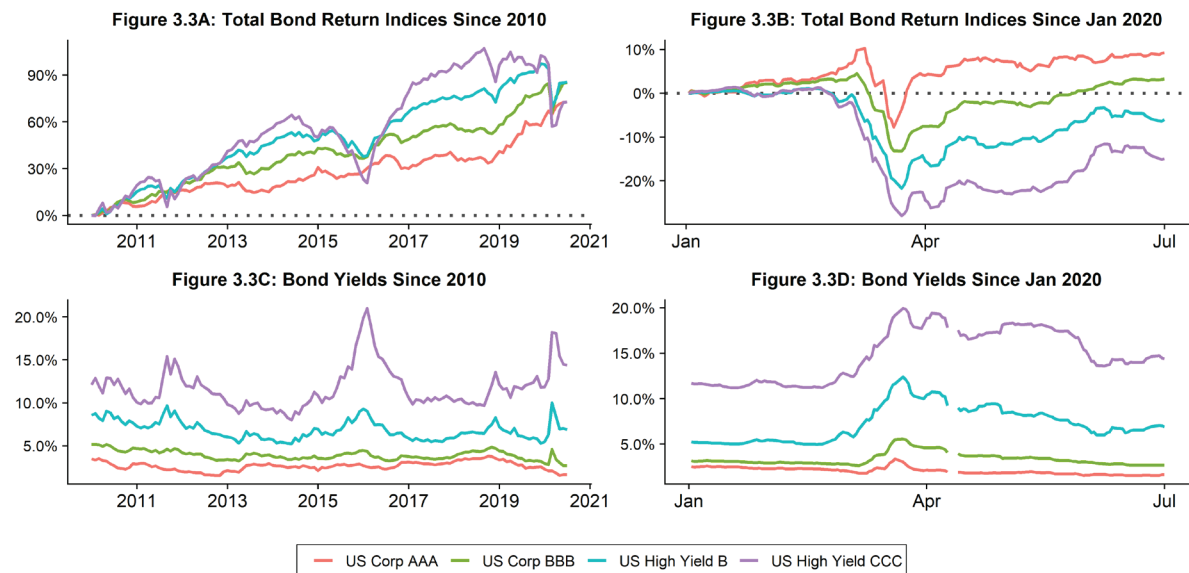


**Figure 3.2: Equity Valuations Measured by The CAPE (10-Year P/E) Fell with the Onset of the Pandemic, but have Recovered**  
Equity Prices / Mean(Past 10 Years of Annual Earnings)



often more volatile income and revenue streams of smaller companies. By June, the S&P 500 nearly fully recovered from its earlier lows, while as of July 1 the Russell 2000 index remains 14.3% below its January 1, 2020 level. As noted in our Key Highlights section, the relative outperformance of the S&P 500 may be related to the outperformance of large technology firms that constitute a notable share of the S&P 500 index and the strong financial position of large firms in the lead up to the pandemic.

For fixed income markets, Figure 3.3 displays total bond market returns and yields by credit rating. First, Figure 3.3A shows that bonds across asset classes have appreciated considerably since 2010, coinciding with a broad decline in interest rates. In particular, lower rated B and CCC (or lower) bonds nearly doubled in value before the COVID-19 outbreak. However, lower rated bond prices are more volatile, as seen by the large drops in late 2011, 2016, 2018, and, most recently, in 2020. Because of an expected decline in economic activity due to the COVID-19 slowdown and thus increasing credit risk concerns and default probabilities, total returns on the lower rated B and CCC bonds fell between 15% and 25% by mid-March (Figure 3.3B). These credit risk concerns likely outweighed a broader decline in the risk free interest rate (e.g., U.S. Treasuries). Indeed, the poor returns for lower rated securities through March coincide with a spike in yields (Figures 3.3C and 3.3D) that began to abate in April 2020. Yet yields on lower rated securities remain elevated, especially compared to the recent declines in higher rated bonds. The high yields on lower rated bonds signal that investors likely expect a greater incidence of defaults for lower rated debt, but diminished liquidity may have also impacted interest rates immediately following COVID-19 induced financial distress in late March and early April. Conversely, AAA-rated bonds have outperformed and, as of June 26, their yields were about one percentage point below their pre-COVID-19 levels in early January 2020. The combination of persistently high yields for lower rated bonds but declining interest rates on higher rated debt translates into wide credit spreads between lower and higher rated securities. These wide credit spreads may signal higher than usual default risks for lower rated debt. Last, while BBB-rated corporate bonds experienced a drop in total returns and an uptick in yields, the changes are relatively smaller than those for lower rated debt. Yields on BBB-rated bonds returned to their pre-COVID-19 levels as of June 26.



## Mutual Fund, ETF and Money Market Fund Investors

**Key Takeaway:** With COVID-19 induced financial market volatility, investors increasingly moved assets away from bond and equity market investments, including those held through mutual funds and ETFs, and into assets like cash and money market funds backed by U.S. government agency or Treasury securities beginning in March 2020. Then, as credit conditions eased and the Fed implemented unprecedented monetary stimulus, investments returned, particularly into taxable bond funds, though total net fund flows for 2020 remain negative for both equity and taxable bond funds as of June 16, 2020.

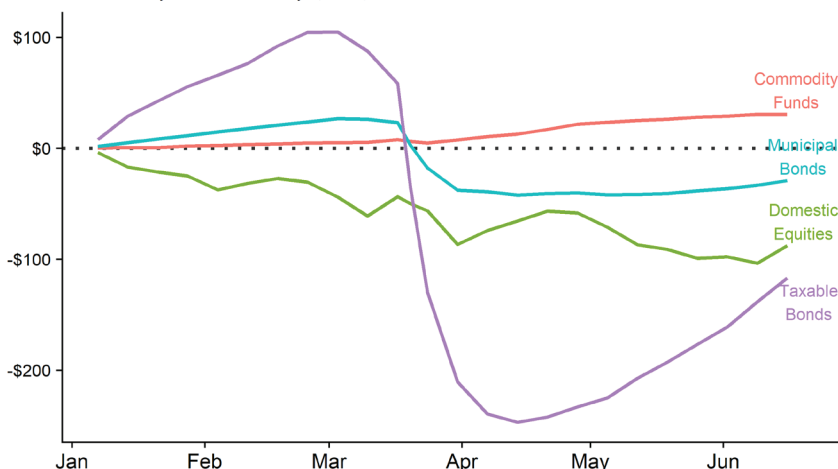
Figure 3.4 presents weekly net fund flows into select classes of mutual funds and ETFs from January 7 to June 16, 2020. Prior to the COVID-19 pandemic, there were substantial fund inflows into taxable and municipal bond funds, outflows from domestic equity funds, and slight inflows into commodity funds. Then as the COVID-19 pandemic unfolded and the corresponding economic slowdown became imminent, investors in net redeemed assets from both bond and domestic equity markets.

Net withdrawals from equity funds following COVID-19 induced financial market distress continue a longer-term trend.

In contrast, taxable bond funds experienced sizable inflows until late February 2020. Then, investors withdrew approximately \$300 billion from taxable bond funds, as default probabilities increased for lower rated bonds and as investors may have sought to increase their cash positions. Investors' preference to move assets away from this market may have resulted in their selling bonds held directly. Outflows may have also indirectly prompted funds to sell assets in response to redemption requests. This trend, however, reversed beginning in April as credit market stress attenuated and as the Fed, in conjunction with the Treasury,

**Figure 3.4: Cumulative U.S. ETF and Mutual Fund Flows**

Notes: Weekly Data from January 1, 2020; \$ Billions



**Key Figure Takeaway:** Both equity and bond funds experienced outflows following COVID-19 induced financial market stress. However, capital flowed back into funds, particularly taxable bond funds, which had seen the most significant decrease, as credit conditions eased and the Fed expanded its various monetary policy and liquidity programs.

Figure Data Source: Investment Company Institute (ICI), retrieved from Datastream.

Other Notes: Taxable bonds include, for example, corporate bonds. ETFs sell large blocks of shares to redeem them from authorized participants, who may transact on their own behalf or act as agent for others, while individual ETF shares trade on the secondary market.

announced corporate bond liquidity facilities. Indeed, net fund flows into taxable bond funds increased by about \$130 billion from mid-April to mid-June 2020. A similar, albeit muted trend occurred in municipal bond funds.

## Money Market Funds

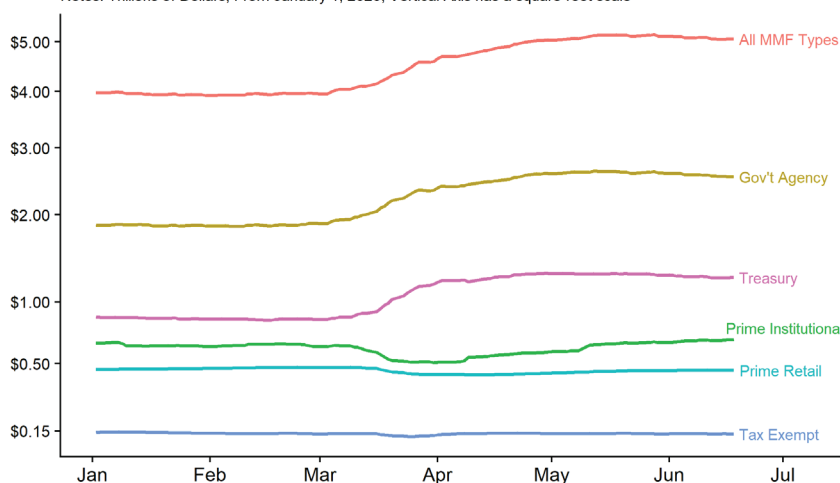
A money market fund (MMF) is a type of mutual fund that invests in short-term, high quality debt securities. Investors in the main categories of MMFs (prime, Treasury and government agency), which invest in different asset types, react differently to changing market conditions. For example, at the height of the Great Recession, dollars flowed out of institutional prime MMFs and into institutional Treasury MMFs, while retail prime MMFs saw comparatively little outflows. In March, COVID-19 induced financial market dislocation also, broadly speaking, saw an initial period during which institutional prime MMFs saw outflows while Treasury MMFs saw inflows, as described below.

Indeed, as the COVID-19 economic slowdown began and financial conditions worsened, prime MMFs, which invest in assets such as commercial paper as well as certificates of deposits, saw aggregated outflows of \$160 billion (\$120 billion from institutional prime MMFs) from March 9 to April 3. In contrast, net inflows into Treasury and government agency MMFs during this same period exceeded \$800 billion.

Furthermore, in response to deteriorating liquidity conditions in short-term funding markets, the Fed also created three liquidity facilities, including the [Money Market Mutual Fund Liquidity Facility \(MMLF\)](#) on March 18, which makes available funding to U.S. depository institutions and bank holding companies to finance their purchases of certain types of assets from money market mutual funds under certain conditions. [The MMLF helped support liquidity in the markets for the assets held by money market mutual funds.](#) As of June 30, only around \$20 billion in MMLF loans remained

**Figure 3.5: Money Market Funds -- Assets Under Management (AUM)**

Notes: Trillions of Dollars; From January 1, 2020; Vertical Axis has a square-root scale



**Key Figure Takeaway:** Since March 2020, net asset inflows to government agency and Treasury money market funds have stabilized, while net outflows from prime institutional money market funds reversed.

Figure Data Source: Crane Data

Other Notes: Government money market funds invest in securities such as government agency debt. Prime money market funds invest in a broad range of short-term, high quality debt securities, such as commercial paper issued by corporations.

outstanding, down from \$51 billion on April 14. Prime MMFs reduced their holdings of commercial paper and certificates of deposits from 56% of their portfolio in February to 44% in May and increased their holdings of Treasury securities. In mid-April, investors started to return to prime MMFs, and so aggregate AUM of prime MMFs as of May 21 exceeds the pre-pandemic levels seen in March.

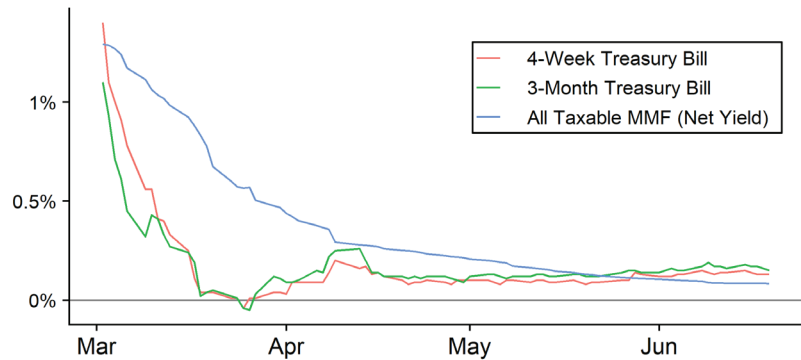
After 2 months of rapid inflows, the size of the MMF industry as a whole peaked at the end of May with \$5.2 trillion in AUM, but then new headwinds started to emerge for MMFs. After the Fed's March interest rate cuts, the net yields for MMFs and short-term Treasury yields are near zero in June, as seen in Figure 3.6, while the equity market indices such as the S&P 500, for example, have rallied, recovering most of their March losses as the broader credit conditions eased. Although media reports speculated that investors pulled approximately \$100 billion from Treasury and government MMFs in June for possibly higher yielding securities, most of the inflows since remain, which may signal continued market uncertainty surrounding the COVID-19 pandemic.

Operationally, the volatile flows and the low interest rate environment for MMFs have had several consequences. First, a few Treasury MMF advisers have temporarily closed their funds to new investors since cash received from new investors would be invested in lower yielding securities, reducing further a fund's yield. Second, some prime institutional MMF advisers have decided to liquidate their funds, citing shrinking assets and investors fleeing during times of stress. Third, advisers are beginning to waive fees to keep net yields at zero or positive.

The average expense ratio in 2019 was 0.25%, which is higher than the current yields on many eligible MMFs securities. According to the Investment Company Institute (ICI), aggregated fee waivers for MMFs peaked in 2014 at \$6.3 billion at the end of the low interest rate environment after the Great Recession, only to fall to \$1.2 billion in 2019 as interest rates increased. Lastly, some advisers to Treasury and government MMFs, which have stable NAVs, may be thinking about how their funds would operate in an environment where interest rates go negative, as they did briefly in March (Figure 3.6).

**Figure 3.6: Short-Term Treasury and MMF Yields**

Notes: From March 2, 2020



**Key Figure Takeaway:** Taxable MMF net yields have fallen to near zero. Short-term Treasury yields briefly went negative in March.

Figure Data Source: Fed Board, retrieved from FRED (IDs: DTB3, DTB4WK) and Crane Data.

Other Notes: MMF net yields are 7-day SEC yields.

## Borrowers, Securities Issuers, and Capital Formation

**Key Takeaway:** Money in bond markets flowed to the industries hardest hit by the COVID-19 downturn and also to the safest and financially strongest borrowers within each industry. These patterns are consistent with increases in corporate demands for precautionary savings, increases in borrowing among financially healthy firms to obtain cash to make future transactions, and increases in investors' demands for safe lending opportunities. In equity markets, established firms whose stock prices had been the least negatively affected by the downturn rushed to raise funds in seasoned equity offerings (SEOs). Markets for initial public offerings (IPOs) were relatively quiet.

### U.S. Corporate Bond Issuance

Corporate demand for cash increased substantially in the first quarter of 2020, especially among firms in the industries hit hardest by the pandemic-related disruption and among firms that were financially strong before the pandemic. In the first 5 months of 2020, public corporations issued bonds at nearly twice the pace of 2019, with more than 80% of that activity occurring from March to June. During the first quarter of 2020, the cash holdings of nonfinancial corporations also increased at the fastest year-over-year rate since 2010.

One important motivation for holding cash is *precaution*—having rainy day savings in case of unexpected increases in expenses or decreases in revenues. Accordingly, the data show that more bonds were issued by the industries most exposed to the pandemic. The following figures plot the total amount of bonds issued during 2020, by industry, against two stock market measures of each industry's exposure to the pandemic. The first measure is the industry's stock return from March to mid-June, which captures investors' beliefs after about 16 weeks of learning about the risks of COVID-19 in general and the possible risks specifically with respect to particular industries. The second measure is the industry's stock return during the initial market downturn from February 19 to March 23, 2020, when the S&P 500 lost more than one-third of its value. This measure captures investors' initial reaction to the COVID-19 outbreak.

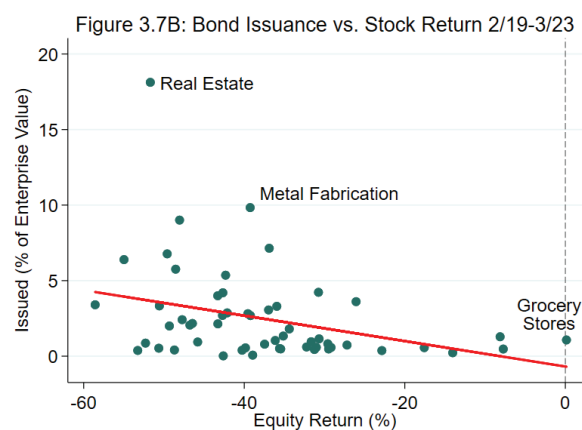
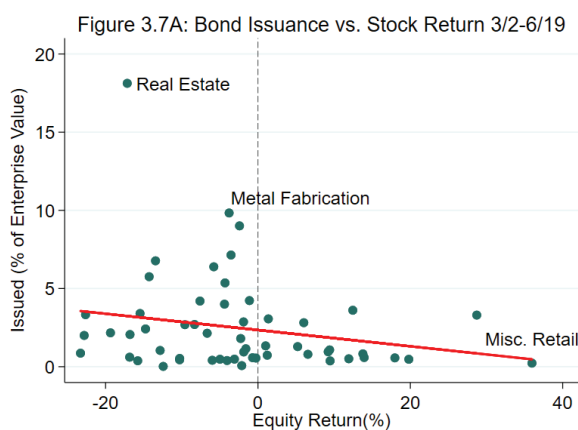


Figure Data Source and Notes: Data are from S&P Capital IQ. Data points are computed for two-digit SIC industry codes, and industry stock returns are value-weighted.

Figure 3.7A plots bond issuance during 2020 by stock price performance over the longer period. Stock prices in the real estate industry fell 17% between March and mid-June, and the industry issued bonds equal to 18% of enterprise value, or the value of debt plus equity. In contrast, miscellaneous retail—including drug stores, liquor stores, and stores selling books, jewelry, and sporting goods—enjoyed a 36% stock price appreciation and sold bonds equal to less than 0.25% of enterprise value.

Figure 3.7B plots issuance during 2020 by stock price performance during the initial downturn. Real estate stocks lost more than 50% of market value over this period and issued the most bonds relative to total enterprise value. In contrast, grocery store stock prices were flat, and this sector’s issuance amounted to only 1.1% of enterprise value.

During times of uncertainty, investors generally prefer to lend to safe borrowers in what is known as *flight to quality*. Figure 3.8A shows that within each of six major industry groups, firms with investment-grade ratings (BBB- or higher) raised much more money in bond markets than firms with speculative-grade ratings or no rating.

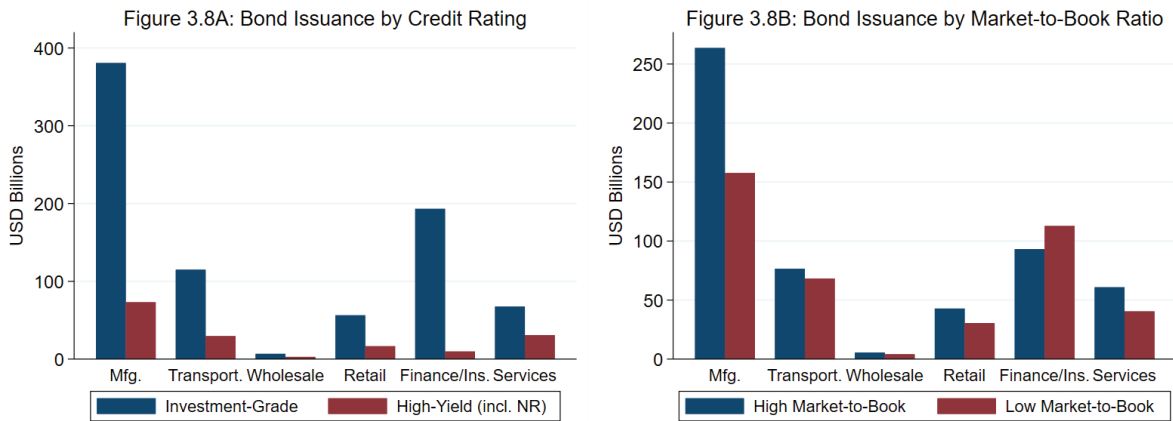


Figure Data Source and Notes: Data are from Capital IQ. Credit ratings are current as of bond issuance date, and market-to-book ratios are computed at the end of calendar year 2019.

Along with credit rating, another characteristic associated with firm quality is a firm’s market-to-book ratio, or the ratio of the market value of assets to the book value of assets. A high value means investors consider the firm to be worth much more than accounting statements reflect, possibly because important assets do not appear on accounting statements or because investors believe the firm will grow faster in the future than other firms. Figure 3.8B shows that firms with higher market-to-book values issued more bonds than lower market-to-book firms in all industries except finance/insurance, where low market-to-book firms issued slightly more.

A second important motivation for holding cash is having it available for transactions, such as acquisitions or share buybacks. Cash (internal capital) is often a faster and easier way of making transactions than borrowing (external capital) or using other forms of payment (like stock shares). A firm may believe that if a wave of bankruptcies is indeed coming, then many corporate assets will be available for purchase or acquisition. Building up cash is one way that a firm can prepare to acquire these assets. Figures 3.8A and 3.8B are also in line with this motivation, as they show the firms most likely to be buyers in the future (that is, financially strong firms) raising more debt in bond markets than the firms most likely to be sellers (that is, financially weak firms).

Between December 31, 2019 and March 31, 2020, U.S. corporations raised money in public bond markets at the fastest rate in a decade. Patterns in the data suggest that the surge in borrowing was related to both changes in firms' demand for cash and changes in investors' demand for safe lending opportunities.

### U.S. Equity Issuance

Equity markets also witnessed a surge in issues, perhaps as firms saw a need for cash to cope with the pandemic-induced slowdown. From May 1 to June 26, 2020, U.S. corporations raised more funds in SEOs than in the previous 10 months combined (Figure 3.9A). This increase in fundraising activity was confined to firms with which investors are already familiar (via SEOs), as IPO markets were relatively quiet (Figure 3.9B), with the possible exception of June 2020.

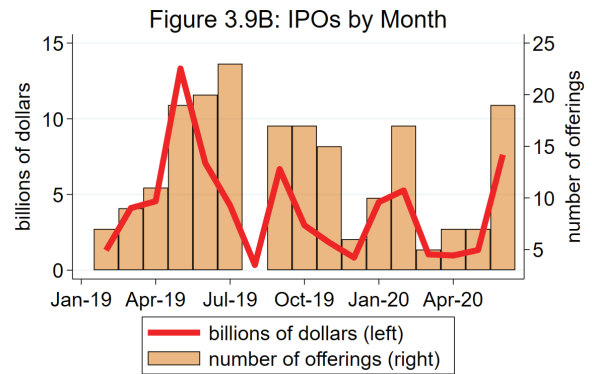
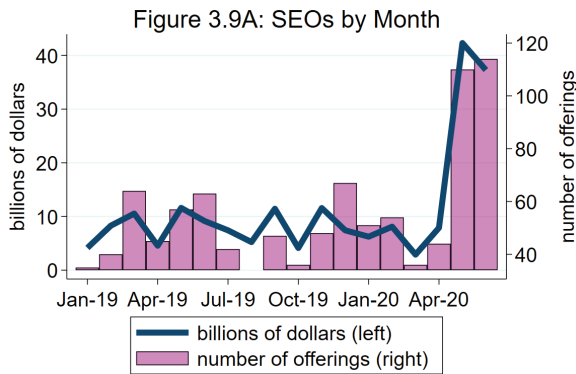


Figure Data Source: Capital IQ

While firms with negative stock returns during the pandemic were more likely to issue bonds, the opposite was true for SEOs. Firms were *less* likely to raise money by issuing stock after their share price fell, possibly because managers believed their stock was undervalued. These firms may have chosen to raise capital in bond markets instead of equity markets (Figures 3.7A and 3.7B). Figure 3.10A plots firm-level SEOs during May and June by stock-price performance from February 19 to April 30, 2020. Figure 3.10B plots SEOs by stock price performance during the initial market downturn from February 19 to March 23. In both figures, SEO amounts are scaled by the firm's market capitalization as of December 31, 2019, in order to make data points comparable.



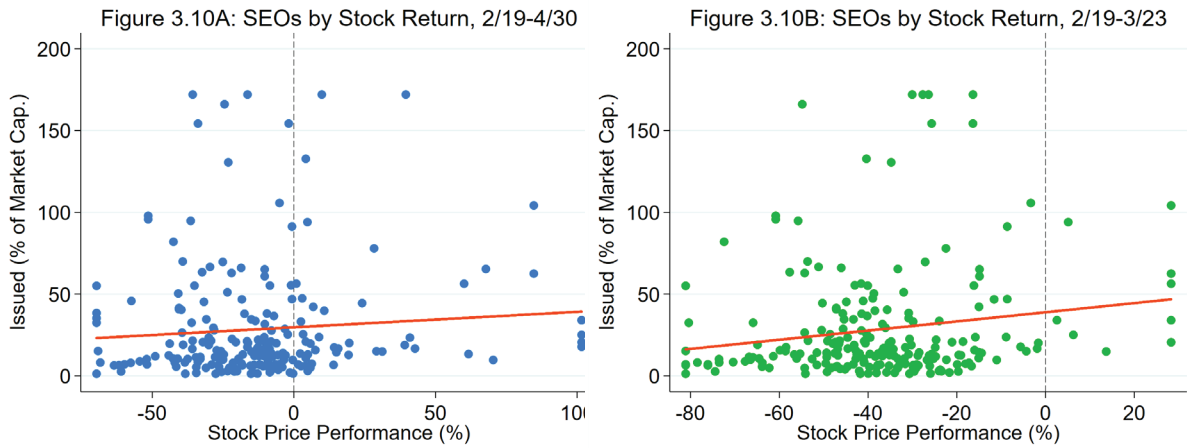


Figure Data Source: Capital IQ.

The regression line is positively sloped in both figures, especially in Figure 3.10B. This indicates that firms were less likely to raise cash by selling stock when their share prices had been depressed.

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Data Sources Not Previously Mentioned: **Figure 3.1:** Datastream. **Figure 3.2:** Datastream. **Figure 3.3:** Ice Data Indices, LLC, retrieved from FRED (IDs: BAMLCC0A1AAATRIV, BAMLCC0A3ATRIV, BAMLCC0A4BBBTRIV, BAMLHYH0A1BBTRIV, BAMLHYH0A2BTRIV, BAMLHYH0A3CMTRIV, BAMLCOA1CAAAY, BAMLCOA3CAEY, BAMLCOA4CBBBEY, BAMLH0A1HYBBEY, BAMLH0A2HYBEY, BAMLH0A3HYCEY).



# Spotlights

## Credit Ratings, Procyclicality and Related Financial Stability Issues: Select Observations

COVID-19 Market Monitoring Group\*  
July 15, 2020

On April 24, the SEC announced the formation of an internal, interdisciplinary COVID-19 Market Monitoring Group.<sup>1</sup> This temporary, senior-level group was formed to assist the Commission and its various divisions and offices in (1) developing Commission and staff analyses and actions related to the effects of COVID-19 on markets, issuers and investors—including in particular our long-term Main Street investors, and (2) responding to requests for information, analyses and assistance from fellow regulators and other public sector partners on market matters arising from the effects of COVID-19.

One of the COVID-19 Market Monitoring Group's initial initiatives<sup>2</sup> has been the exploration of whether credit assessments and credit rating agency downgrades—and market anticipation of, and responses to, those ratings actions—may (1) contribute to negative procyclicality in certain circumstances and (2) have implications for financial stability. The interrelationships between ratings actions, procyclicality and financial stability is a topic that other members of the global financial regulatory community are also examining,<sup>3</sup> and we have benefitted from our ongoing coordination and sharing of analysis and observations with them.

While our work on this topic—and more broadly, other issues relating to COVID-19's effects on markets, issuers and investors—is ongoing, we have several initial observations concerning ratings actions, procyclicality and financial stability issues that we believe would be helpful to share with the public. Specifically, and as discussed in more detail further below, our initial observations are:

1. Analysis of potential effects of ratings actions should focus on current circumstances. Given the idiosyncratic nature of the health and economic effects and consequences of COVID-19, we believe that analogies to the role of rating agencies in the 2008 global financial crisis should be approached with caution. We note that, in addition to substantially differing economic conditions and stresses, the relevant analytical assumptions and methodologies used by rating agencies in that period also were substantially different.
2. Cost of debt capital is driven by a wide range of financial and non-financial factors and forces; ratings downgrades are generally lagging indicators of cost of debt capital.
3. Observable bunching just above and below the investment grade level may be attributable to various macroeconomic trends, including policy, regulatory and investor choices.

4. When considering the effects of credit ratings on market structure, including potential procyclicality of ratings downgrades, it is important to take into account the wide and diverse spectrum of our credit markets and all major credit market participant types.
5. The procyclical effects of credit ratings used in bilateral specialty finance also are appropriate areas for continued monitoring.

We welcome information, data and comments from market participants and members of the general public—both on this specific topic and other matters and issues relating to COVID-19's effects on our capital markets. Submissions can be made by email to [COVID-19.Market.Monitoring.Group@sec.gov](mailto:COVID-19.Market.Monitoring.Group@sec.gov).



1. **Analysis of potential effects of ratings actions should focus on current circumstances. Given the idiosyncratic nature of the health and economic effects and consequences of COVID-19, we believe that analogies to the role of rating agencies in the 2008 global financial crisis should be approached with caution. We note that, in addition to substantially differing economic conditions and stresses, the relevant analytical assumptions and methodologies used by rating agencies in that period also were substantially different.**

In response to the broad and varied effects and unparalleled response to COVID-19, rating agencies have made, and continue to make, adjustments to the analytical assumptions and other inputs that they use when assigning and maintaining ratings. This includes, for example, adjusting the baseline macroeconomic scenarios and sector outlooks that their models and analysts apply, as well as modifying other key qualitative and quantitative assumptions used in their methodologies. Also, speaking more generally, rating agency models and methodologies—as well as the marketplace's use of ratings—have evolved significantly in the years following the 2008 global financial crisis.

In light of these differing factors and changes, as well as the significant post-financial crisis changes to the marketplace itself and the regulatory scheme governing ratings and financial services generally, we believe that analogies to the 2008 global financial crisis era—including the analytical assumptions and methodologies rating agencies used in that period—should be approached with caution and, in themselves, are not likely to provide useful decision-oriented analyses or insights. In our view, it is a more effective use of regulatory resources to focus, in the first instance, on (1) identifying and understanding the policies, procedures, methodologies and practices of rating agencies today (including the economic forecasts and assumptions applied) and (2) the ways in which all significant classes of investors and other market participants use ratings in their asset allocation, credit provision and other decisions.

When exploring the role of credit ratings in today's market structure, including potential regulatory actions, it is important to understand a key aspect of the U.S. legal and regulatory construct.

Congress explicitly prohibited the SEC and the states from regulating the substance of credit ratings or the procedures and methodologies by which they are determined.<sup>4</sup> The statute and rules applicable to SEC-registered rating agencies require rating agencies to establish, maintain, enforce, and document an effective internal control structure governing the implementation of and adherence to policies, procedures and methodologies for determining credit ratings, and provide the SEC staff with authority to examine rating agencies' compliance with such provisions. Operating within this framework, the SEC staff has focused its recent efforts in this area on, among other things: (1) understanding how rating agencies are responding to the economic effects of COVID-19, including monitoring ratings actions and related public disclosures to understand the overall market impact of the actions, and (2) examining rating agencies' adherence to their own policies, procedures and methodologies for determining credit ratings.

**2. Cost of debt capital is driven by a wide range of financial and non-financial factors and forces; ratings downgrades are generally lagging indicators of cost of debt capital.**

We have observed in discussions with other regulators, that there are perceptions that the procyclical effects of increases in the cost of debt capital *are the result* of ratings downgrades. This is unlikely to be a strong or dominant causal relationship in, for example, the bank lending or the new issue bond market. A firm or issuer's cost of debt capital—be it through bank/non-bank financing and/or debt capital markets—is driven by a wide array of geopolitical, economic and credit conditions and other industry- and firm-specific factors. Rating agency actions—including (1) changes in rating outlook, (2) placement on or changes in “watch” status and (3) changes in ratings—are generally lagging indicators of cost of debt capital.

Generally speaking, before a rating downgrade occurs, market participants observe—and take into account by commanding (generally) higher credit spreads—the relevant conditions and circumstances that eventually contribute to the ratings action—e.g., (1) broad conditions and factors, such as the state of the business climate and credit markets, the regulatory environment, and the competitive landscape affecting the firm or its industry, and (2) firm-specific information and circumstances, such as the demand for the firm's goods and services, as well as the entity's growth prospects, asset quality, funding and profitability, and management approach—some of which is commonly available in public financial statements and regulatory filings.

Indeed, most of the credit spread widening for downgraded issuers occurs *before* the downgrade.<sup>5</sup> As the Coronavirus spread globally in early 2020, the cost of debt capital for many companies shot up, as the marketplace observed the virus' effects on economic activity—before the rating agencies began to drop companies' ratings.

We do, however, recognize that in certain circumstances an adverse ratings action may have some negative effects on the cost of debt capital. For example, in the case of collateral-based financing such as a receivables facility, if the ratings of the borrower or the entities that owe the borrower the receivables is downgraded, additional collateral may be required which would increase the borrower's cost of capital. In addition, while we would expect the market to anticipate the ratings

action and adjust accordingly, a move from investment grade to below investment grade could have significant effect on cost of debt capital (see below for further discussion of issues related to the potential investment grade / below investment grade discontinuity in the market).

**3. Observable bunching just above and below the investment grade level may be attributable to various macroeconomic trends, including policy, regulatory and investor choices.**

There has been observable segmentation of the credit investment universe for certain types of investors, including between investment grade and non-investment grade credits. There also has been observable concentration of credit in the area around the line between investment grade credit and below investment grade credit. It is important to note that this segmentation and concentration (as well as, in some cases, a relatively significant credit spread differential between low investment grade and high non-investment grade credits) is attributable, in large part, to various fundamental business differences, investor demand, macroeconomic factors and monetary and regulatory policies.

The factors that have driven this segmentation and concentration of credit in the area around the line between investment grade credit and below investment grade credit include, among others: (1) a market-wide recognition (and incorporation into investment strategies) of the significant differences in historical default rates<sup>6</sup> between the highest non-investment grade and lowest investment grade ratings, (2) long-running accommodative monetary policy, which caused investors to seek increased yield within their mandates and, in turn, provided corporates with the opportunity to increase their debt financing at low absolute rates, (3) investor demand focused on the highest yielding investment grade credits, (4) regulatory capital requirements on banks, insurance companies and other entities that pushed lower investment grade and below investment grade credits off regulated balance sheets and (5) investment guidelines and index investing that themselves incorporate segregation. Over the period following the 2008 global financial crisis, these policy positions and regulatory actions, coupled with relatively stable investor preferences, facilitated easier and predictable credit conditions, which incentivized borrowers in various segments to optimize their balance sheets to achieve ratings in the low investment grade range.<sup>7</sup> This type of balance sheet optimization may have significantly contributed to the current concentration of credit in and immediately above (as well as immediately below) the BBB-/Baa3 categories. In other words, examining ratings and ratings actions in isolation from these other factors is unlikely to provide meaningful insight.

**4. When considering the effects of credit ratings on market structure, including potential procyclicality of ratings downgrades, it is important to take into account the wide and diverse spectrum of our credit markets and all major credit market participant types.**

Certain portions of our credit markets, including fixed income mutual funds and ETFs, leveraged loans and CLOs, have grown significantly in recent years and attracted increased regulatory attention.<sup>8</sup> We believe that these aspects of the credit markets are worthy of continued monitoring and examination, including in particular whether they will continue to grow in absolute and

relative terms. Other issues that warrant monitoring in these portions of the market include where leveraged loans and CLOs are held (i.e., who are the principal investors), the purposes for which they are being held (e.g., long term or short term investing) and their relative credit and liquidity risk tolerances (e.g., how willing or able are they to withstand periods of price dislocation and/or limited liquidity). At the SEC, we are monitoring these areas, and are engaging in related inter-agency discussions to gain a better understanding of these evolving issues.

However, when considering credit markets generally, and the extent and effects of reliance on ratings within areas of our credit and financial markets, including procyclicality of ratings downgrades, we believe that the *broad spectrum* of credit markets and institutional investor types active in these markets must be considered—including insurance companies and pensions, among others. For example, registered investment companies (a category that includes money market funds and other mutual funds, as well as ETFs) account for approximately: 21% of the U.S. and foreign corporate bonds market, 14% of the U.S. and government agency securities market, 29% of the U.S. municipal securities market and 25% of the commercial paper market.<sup>9</sup> Other types of institutional investors, therefore, both individually and collectively, play a significant role in these markets. It is only with a wide lens—that looks across *all* significant market participant types—that we can collectively identify, monitor and evaluate the key trends, developments and risks across these markets, including potential procyclical effects of credit ratings. We recognize that data availability for these other significant market participants may be more limited but data availability should not drive the focus of our analysis.

**5. The procyclical effects of credit ratings used in bilateral specialty finance also are appropriate areas for continued monitoring.**

Many members of the global financial regulatory community have focused on the procyclicality of investment guidelines, performance benchmarks and other rating-oriented portfolio construction rules.<sup>10</sup>

While these areas deserve ongoing attention, we also believe that the potential procyclical effects of credit ratings used in bilateral specialty finance also are worthy of continued monitoring. Fundamentally, these types of financing arrangements are asset-backed and secured.

While industry has made significant strides to reduce the use of credit ratings especially in broadly distributed asset-backed financing deals,<sup>11</sup> some types of bilateral financing, short term funding and supply chain financing arrangements continue to rely in various ways on credit ratings, at times directly, but in most cases indirectly. For example, in receivables financing arrangements, or other similar arrangements where the reference collateral pool or borrowing base itself has ratings, there are usually contractual provisions to post additional or substitute collateral if posted collateral no longer maintains a specified rating, so as to maintain the borrowing base and the advance rate. In other cases, there is an indirect, but tangible impact of a downgrade of the corporate entity related to the bilateral asset-backed financing agreement as result of (1) servicing obligations of the entity, (2) serving as a counterparty to the financing trust (such as a swap counterparty), or (3) general

confidence of the financing provider on the ability of the entity to access the non-secured financing markets. In addition, market participants, especially in bilateral settings, usually impose credit rating style financial criteria, which while not mechanistically linked to ratings, are likely to mimic ratings outcomes.

In all of these examples, ratings downgrade or other credit events could result in increased financing costs or reduced access or liquidity pressures on the corporate entity.<sup>12</sup> These and similar types of scenarios could contribute to negative procyclicality and market disruptions. We believe these matters are worthy of continued examination.

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\* This document expresses the views of the SEC's COVID-19 Market Monitoring Group and does not necessarily reflect the views of the Commission or the Commissioners.

- 1 SEC Press Release, "SEC Forms Cross-Divisional COVID-19 Market Monitoring Group" (April 24, 2020), available at <https://www.sec.gov/news/press-release/2020-95>.
- 2 SEC Press Release, "COVID-19 Market Monitoring Group – Update and Current Efforts" (May 13, 2020), available at <https://www.sec.gov/news/public-statement/statement-clayton-kothari-covid-19-2020-05-13>.
- 3 See Financial Stability Board, COVID-19 Pandemic: Financial Stability Implications and Policy Measures Taken – Report submitted to the G20 Finance Ministers and Governors (July 15, 2020), available at <https://www.fsb.org/wp-content/uploads/P150720-2.pdf> (noting the FSB's plans to continue its analysis of certain vulnerabilities, including those relating to procyclicality of credit rating downgrades).
- 4 Exchange Act Section 15E(c)(2).
- 5 See generally Morgan Stanley, Corporate Credit Research – North America, "The Nature of the BBBeast" (October 5, 2018), available at <https://www.sec.gov/spotlight/fixed-income-advisory-committee/morgan-stanley-nature-of-the-bbbeast.pdf>.
- 6 See generally Moody's Investors Service, Sector In-depth, "Annual default study: Defaults will edge higher in 2020" (January 30, 2020).
- 7 See generally BlackRock, Policy Spotlight – "US BBB-Rated Bonds: A Primer" (August 2019), available at <https://www.blackrock.com/corporate/literature/whitepaper/policy-spotlight-us-bbb-rated-bonds-a-primer.pdf> and Capital Advisors Group, Inc., Investment Research – "Corporate Leverage: Par for the Course or Harbinger of an Upcoming Crisis?" (February 22, 2019), available at <http://www.capitaladvisors.com/wp-content/uploads/2019/03/Corporate-Leverage-Par-for-the-Course-or-Harbinger-of-an-Upcoming-Crisis.pdf>.
- 8 See generally Financial Stability Oversight Council, 2019 Annual Report, available at <https://home.treasury.gov/system/files/261/FSOC2019AnnualReport.pdf>.
- 9 Investment Company Institute, 60th edition – 2020 Investment Company Fact Book, available at [https://www.ici.org/pdf/2020\\_factbook.pdf](https://www.ici.org/pdf/2020_factbook.pdf).
- 10 See, e.g., European Systemic Risk Board, "Issues note on liquidity in the corporate bond and commercial paper markets, the procyclical impact of downgrades and implications for asset managers and insurers" (undated), available at [https://www.esrb.europa.eu/pub/pdf/reports/esrb-report200514\\_issues\\_note-ff7df26b93.en.pdf](https://www.esrb.europa.eu/pub/pdf/reports/esrb-report200514_issues_note-ff7df26b93.en.pdf).
- 11 We recognize that financing agreements have evolved significantly in the wake of the 2008 global financial crisis—and their direct reference to, and/or use of, credit ratings has diminished.
- 12 Because credit ratings are generally lagging indicators of cost of capital, counterparties in financing agreements may in some cases amend the terms of their agreements in advance of a downgrade (although we do not know how often that occurs in practice).



# U.S. Investors' Exposure to Domestic Chinese Issuers<sup>1</sup>

## Introduction

More than 150 China-based companies with a combined market value of \$1.2 trillion<sup>2</sup> were listed on U.S. stock exchanges at the end of 2019. As more China-based companies have listed in the U.S., there has been growing concern about the lack of transparency into accounting and governance standards of Chinese firms, which policymakers and certain market participants have warned put U.S. investors at increased risk because of the inability of the Public Company Accounting Oversight Board (PCAOB) to inspect audit work and practices of PCAOB-registered auditing firms in China (including Hong Kong-based audit firms, to the extent their audit clients have operations in mainland China) with respect to their audit work of U.S.-listed companies with operations in China.<sup>3</sup>

Policymakers and market participants are discussing how to address these issues.<sup>4</sup> This note highlights an important area for those policy discussions: the increasing exposure of U.S. investors to the Chinese *domestic* issuer market. Compared with China-based companies listed in the U.S., Chinese domestic companies present potentially greater risks. The domestic Chinese financial markets have historically not been very accessible to non-Chinese investors, but that is changing, with accessibility increasing for, among others, U.S. investors. Over the past two years, providers of global financial market indexes have increased the weight on those indexes of Chinese domestic stocks and bonds. Accordingly, U.S. investors holding shares in investment products that track those global indexes are now increasingly holding Chinese domestic stocks and domestic bonds. Other than passive index investors, active fund managers, including pension funds and private funds, may also have access to Chinese domestic securities. U.S. investors, and especially U.S. retail investors, might not be fully aware of these increased weightings or how such changes may be substantively changing the risk profiles of their international investments. In addition to the risks regarding an inability to conduct due diligence to verify the soundness of accounting and governance standards noted above, the design and control of the Chinese financial market by Chinese authorities creates a series of potential concerns for U.S. investors related to disclosure, liquidity, volatility, fraud, and risk management. This risk spotlight sheds light and provides data on the exposure of U.S. investors to Chinese domestic markets.

## U.S. Investors' Exposure to A Shares and Domestic Bonds

Companies that are incorporated in China can issue three different classes of shares: *A Shares*, *B Shares*, and *H Shares*.<sup>5</sup> A Shares are listed on either the Shanghai or Shenzhen stock exchanges and are traded in renminbi (CNY). B Shares are listed on the Shanghai stock exchange and are traded in U.S. dollars (USD), or they are listed on the Shenzhen stock exchange and are traded in Hong Kong dollars (HKD). H Shares are listed on the Hong Kong exchange and are traded in Hong Kong dollars (HKD).<sup>6</sup>

U.S. investors have always been permitted to purchase and sell B Shares and H Shares, but A Shares were limited to mainland Chinese investors until the launching of the Qualified Foreign Institutional Investor (QFII) program in 2002.<sup>7</sup> Controls on A Shares have been periodically relaxed since the launch of QFII, including the 2014 introduction of the Stock Connect and the Bond Connect trading programs that permit two-way trading between Hong Kong and China.<sup>8</sup>

As the Chinese domestic financial market became more accessible to foreigners, in recent years, providers of global financial market indexes started to increase the weight of Chinese markets in some of their indexes.<sup>9</sup> For example, as of June 2020 all three major equity index providers (MSCI, FTSE, and S&P) have included A Shares in their emerging markets indexes. Between May and November 2019, the MSCI Emerging Markets index increased its coverage of A shares listed on the Shanghai and Shenzhen stock exchanges from 5% to 20%, and as of November 2019 its resulting overall index weight in A Shares became approximately 4%.<sup>10</sup> By adding A Shares, the MSCI Emerging Markets index weight on China rose from about 28% to about 33%.<sup>11</sup> Other indexes beyond these three have also started to include A Shares, with different degrees of weights depending on their geographical focus and/or risk profile.

Foreign investors also have easy access to certain parts of the fixed income markets in China thanks to the inclusion of Chinese sovereign and policy bank bonds<sup>12</sup> by some major global financial market indexes. Chinese corporate bonds and other types of bonds<sup>13</sup> are also available through QFII or Bond Connect. Panel B of Table 1 reports statistics for select indexes that include Chinese domestic bonds (hereafter, *Domestic Bonds*).

**Table 1. Selected Global Indexes' Weights on A Shares and Domestic Bonds**

*Panel A. A Shares*

Index	Inclusion Process	Stock Inclusion Change	New Weight of A Shares
MSCI Emerging Markets <sup>a</sup>	May 2019 - Nov 2019	from 5% to 20%	4%
FTSE Emerging Index <sup>b</sup>	Jun 2019 - Jun 2020	from 0 to 25%	5.4%
S&P Emerging BMI <sup>c</sup>	Sept 2019	from 0 to 25%	5.5%

*Panel B. Domestic Bonds*

Index	Inclusion Process	Securities Type/Quantity	New Weight of Domestic Bonds
Bloomberg Barclays Global Aggregate Index <sup>d</sup>	Apr 2019 - Nov 2020	386 Chinese government and policy bank bonds	from 0 to 5.5%
JPM GBI-EM Global Diversified <sup>e</sup>	Feb 2020 - Nov 2020	9 Chinese sovereign bonds	from 0 to 10%
FTSE Government Bond Index (WGBI) <sup>f</sup>	Inclusion decision expected in Sept 2020 <sup>g</sup>	Unknown number of Chinese sovereign bonds	from 0 to 6% (expected)

a <https://www.msci.com/www/blog-posts/emerging-markets-since-china-a/01662775315>

b <https://www.ftserussell.com/blogs/china-shares-inclusion-seven-key-points>

c <https://www.indexologyblog.com/2019/03/28/are-you-ready-for-china-a-share-inclusion/>

d <https://www.bloomberg.com/company/press/bloomberg-add-china-bloomberg-barclays-global-aggregate-indices/>

e <https://www.reuters.com/article/china-markets-bonds/update-2-jpmorgan-adds-china-to-emerging-bond-index-from-february-2020-idUSL5N25V3F4>

f [https://markets.jpmorgan.com/research/email/fhqqi299/EVQJuomMYOQFhWtrQNiDkA/GPS-3120982-0#research-document-GPS-3120982--section\\_16](https://markets.jpmorgan.com/research/email/fhqqi299/EVQJuomMYOQFhWtrQNiDkA/GPS-3120982-0#research-document-GPS-3120982--section_16)

g FTSE Russell would keep China on its watch list until a planned review in September 2020. [https://research.ftserussell.com/products/downloads/Fixed\\_Income\\_Country\\_Classification\\_March\\_2020\\_Results.pdf](https://research.ftserussell.com/products/downloads/Fixed_Income_Country_Classification_March_2020_Results.pdf)

In Table 2, we estimate the dollar exposure of U.S. mutual funds to A Shares and Domestic Bonds. We identify \$43.5 billion of these securities held across 664 funds at the end of April 2020, out of which there were \$37.2 billion in A Shares and \$6.3 billion in Domestic Bonds. This dollar exposure will likely increase as A Shares and Domestic Bonds are included in more global indexes in the coming months and years.

Security	# of U.S. Funds	AUM (\$ billion)	Exposure (\$ billion)
A Shares	586	2,477	37.2
Domestic Bonds	95	673	6.3
Total	664	2,959	43.5

Source: Morningstar holdings reported at the end of April 2020 and DERA staff calculations. The exposure is based on holdings tagged by Morningstar as Chinese and traded in local currency only. (A Shares trade in renminbi.) The sum of number of funds and AUM across A Shares and Domestic Bonds does not add up to the total because some funds have exposures to both A Shares and Domestic Bonds.

Table 3 reports our estimated 2020 year-end size of U.S. mutual funds' investments in A Shares (Panel A) and Domestic Bonds (Panel B). Our estimates are simply the product of current fund size (as of April 2020) and the expected year-end index weights of the index chosen by the fund as its benchmark.<sup>14</sup> These figures are imprecise for several reasons. First, we include only funds that use as their benchmarks certain indexes from the six index providers listed in the table. Second, the index providers might not implement the changes that they have announced. Third, mutual funds might not allocate their Chinese investments in the same proportion as the index.

By the end of 2020, we estimate that there will be \$38.9 billion of investment in A Shares across the three major equity indexes (Panel A). We also estimate that there will be \$15.8 billion of U.S. mutual funds' exposure to the Domestic Bond market via Bloomberg, JP Morgan, and FTSE global market indexes (Panel B). The IMF estimates that the expected inclusion of Chinese domestic securities into major global indexes will generate up to \$450 billion net inflow into the Chinese economy, which equals 3 to 4% of China's GDP, in the next two years.<sup>15</sup>

<i>Panel A. Exposure to A Shares</i>			
Index	# of US Funds	AUM (\$ billion)	Exposure (\$ billion)
MSCI <sup>a</sup>	1,179	1,851	27.6
FTSE Russell <sup>b</sup>	25	492	10.4
S&P <sup>c</sup>	72	62.7	0.9
Total	1,277	2,346	38.9

Panel B. Exposure to Domestic Bonds

Index	# of US Funds	AUM (\$ billion)	Exposure (\$ billion)
Bloomberg Barclays Global <sup>e</sup>	95	114.0	7.4
JPM GBI-EM <sup>f</sup>	34	15.9	1.6
FTSE WGBI <sup>g</sup>	47	110.4	6.9
Total	176	240.4	15.8

Source: Morningstar holdings reported at the end of April 2020 and DERA staff calculations.

- a Expected weights of A Shares in different MSCI indexes are as follow: ACWI = 0.4%, ACWI ex US = 0.9%, EM = 4%, Asia Pacific = 2.5%, Asia ex Japan = 4.0%, Golden Dragon = 7.4%, China All = 10.3%, China A = 100%.
- b Expected weights of A Shares in different FTSE Russell indexes are as follow: Global (All World) = 0.6%, Global ex US = 1.3%, EM = 5.4%, EM All cap = 5.7%, China All = 15%, China A = 100%.
- c Expected weights of China A shares in different S&P indexes are as follow: Global (BMI or property) = 0.6%, Global ex US = 1.3%, Emerging BMI = 5.5%, China (Total China or BMI or 500) = 15.1%.
- e Expected weight in Bloomberg Barclays Global Aggregate = 5%, Bloomberg Barclays Global Aggregate Ex US = 9%.
- f Expected weight in JPM GBI-EM Global Diversified = 10%.
- g Expected weight in FTSE World Government Bond Index = 6%. (The following indexes included China in 2017, but no funds are currently following them: 52.6% in the FTSE EMGBI, 10.0% in the EMGBI-Capped, 58.9% in AGBI and 20.0% in AGBI-Capped)

In addition to mutual funds, there are a number of other large U.S. investors that might look to global financial market indexes when making investment decisions, including public and private pension funds, endowments, foundations, and hedge funds. For example, the Federal Thrift Retirement Investment Board (FTRIB) that oversees retirement savings for U.S. government employees voted last year to change the benchmark index on one of its large funds from an index that excludes A Shares to one that includes A Shares,<sup>16</sup> though implementation of that decision has since been delayed.<sup>17</sup>

As shown in the Appendix, out of the ten largest state level public U.S. pensions, we identify that nine have allocated some of their funds to track one or more benchmark indexes that have exposure to A shares (mainly MSCI indexes with A exposure) or their investments include holding A Shares directly. For one of the pension funds we examined, such information is not available, based on the latest financial reports of these funds.<sup>18</sup> As of September 2019, the federally administrated Pension Benefit Guaranty Corp. (PBGC)'s portfolio includes a sizable emerging market allocation that has exposure to A Shares because that allocation tracks the MSCI Emerging Market Index.<sup>19</sup> Other public pension funds may also have exposure to Chinese companies via investments in venture capital funds that invest in A Shares.<sup>20</sup>

## Risks of Investing in A Shares and Domestic Bonds

Various market participants have identified certain heightened risks associated with investing in A Shares and Domestic Bonds, including the following:

**Fraud.** Fraud is a commonly expressed concern with respect to Chinese firms, whether incorporated inside or outside China. With frequent government intervention and limits on credible standards in corporate governance, the risk of insider dealings, market manipulation and other misconduct increases.<sup>21</sup>

**Default Risk.** China's debt ratios are steadily increasing. Its non-financial debt-to-GDP ratio rose from approximately 150% in 2008 to approximately 250% in September 2018.<sup>22</sup> With the recent slowdown in economic growth, this material debt load poses an increased default risk. Over the last two years, China reached back-to-back record years of bond defaults with the 2019 level (\$18.6 billion) being four times higher than the 2017 level. Defaults are concentrated among privately owned enterprises, which are facing tightening in credit conditions and lower levels of government support. The default rate on bonds was over 4% in the first 11 months of 2019, up from 0.8% in 2017.<sup>23</sup>

**Volatility.** Compared with the U.S. equity market, which with the size of mutual funds and ETFs is largely an institutional market, the mainland Chinese equity market is dominated by retail investors who account for over 80% of the trading volume.<sup>24</sup> These investors tend to have shorter holding periods for their investments and are more likely to respond to short-term price movements than institutional investors. The different nature of China's investor base, along with the underlying riskier nature of Chinese issuers, is viewed as having contributed to trading activity that, in turn, led to episodes of high volatility in the Shanghai and Shenzhen markets, especially during market stress.<sup>25, 26</sup>

**Corporate Incentives.** Article 19 of China's Corporate Law stipulates that "In companies, Communist Party organizations shall...be set up to carry out activities of the Party."<sup>27</sup> Thus, Chinese companies' priorities may be different from those of U.S. shareholders. As an example cited by market participants, the Industrial and Commercial Bank of China (ICBC), which is the world's largest bank in terms of total assets and is included in the MSCI Emerging Market Index, deployed \$430 million (RMB 3 billion) to shore up the Bank of Jinzhou in response to governmental direction. ICBC's investor announcement regarding this transaction provided only a very brief and general explanation for the investment.<sup>28</sup>

**Lack of Transparency in Bond Markets.** Bond ratings in China have been characterized as systematically skewed upward, reflecting both minimum rating requirements for issuance and implicit guarantees. More than 80 percent of all Chinese bond issuers are rated AA and above.<sup>29</sup> Many accounting or market practices with respect to bond issuers are not in line with international standards. For example, firms that appear stable or growing may in reality be exposed to large, undisclosed risks. Without access to accurate market and accounting information, investors are limited in their ability to accurately assess asset values.

**Lack of Hedging Tools.** Regulatory constraints, capital requirements, and operational costs are among the reasons few hedging products are currently available to investors wanting to protect against downside risk in the Chinese market. The lack of a Chinese stock-index futures market that covers medium and small-cap stocks is particularly problematic for foreign investors seeking to protect their positions. Given that the Chinese government concluded that much of the 2015 market turmoil was due to derivative products,<sup>30</sup> it is an open question as to whether developments are forthcoming in this regard.

**Macroeconomic Shocks.** Other than the long-term inherent risks in China’s financial system, there are also economic shocks that may interrupt China’s (and sometimes the global) economy, like the COVID-19 pandemic. Given the country’s large, low-income population with limited purchasing power,<sup>31</sup> and a growth model that relies heavily on fixed investments and exporting,<sup>32</sup> the economic impact of global macroeconomic shocks can have more significant consequence for the Chinese economy and its domestic financial market and capital flow than for those of other countries.<sup>33</sup>

**National Security Risk.** The increasing exposures of U.S. investors to Chinese financial markets that are intertwined with the Chinese government’s political agenda has raised national security questions for the U.S.<sup>34,35</sup> For example, certain domestic Chinese companies are included in global financial market indexes, despite being directly involved in activities contrary to U.S. interests. Table 4 reports Chinese companies that are in the MSCI China A Index and that are also either in the U.S. government’s *Entity List* or have been designated as a “national security threat” by certain U.S. agencies. Companies on the Entity List are deemed to have been “acting contrary to the national security or foreign policy interests of the United States” or are a “threat to the national security of the U.S.”<sup>36</sup> Despite official U.S. policies banning a number of these companies from doing direct business with U.S. persons, their increasing index inclusion has led to an indirect flow of investments from U.S. investors into these companies.

**Table 4. MSCI China A Index Companies that Are on the Entity List or Have Been Banned**

Company	Entity List or Banned
Dahua Technology	Entity List
Hikvision	Entity List
IFLYTEK	Entity List
FiberHome	Entity List
ZTE	FCC Designates it as National Security Threat*

Source: <https://www.msci.com/index-consultations> and <https://www.bis.doc.gov/index.php/policy-guidance/lists-of-parties-of-concern/entity-list> and <https://www.fcc.gov/document/fcc-designates-huawei-and-zte-national-security-threats>

\* Currently banned by the Federal Communications Commission from purchase of equipment using U.S. public funds

**U.S.-China Policy Adjustment.** Over the last few years, U.S.-China trade relationships have taken a center stage. Recently, the president issued a memorandum directing the President’s Working Group on Financial Markets, which includes officials from the Commission, the Treasury Department, the Federal Reserve Board, and the Commodity Futures Trading Commission, to study issues relating to, among other things, risks to U.S. investors and financial markets posed by differing practices of Chinese companies listed on U.S. markets.<sup>37</sup> Following Beijing’s decision to impose its national security law in Hong Kong, the administration also announced plans to revoke the special trade status of Hong Kong, as it is deemed no longer maintaining a high degree of autonomy from China. Table 5 shows that at the end of April 2020, U.S. mutual funds’ exposure (equities and bonds) to Chinese firms available in different exchanges totals approximately \$385 billion, with \$183 billion available via Hong Kong’s market. Total U.S. mutual funds’ exposure to Hong Kong dollar denominated security holdings are approximately \$264 billion. These holdings may be subject to increased volatility to the extent that Hong Kong’s special trade status is revoked.

**Table 5. U.S. Mutual Funds’ Exposures to Chinese Securities and HKD Denominated Securities**

*Panel A. Exposure to Chinese Firms Headquartered in China*

<b>Currency</b>	<b>Exposure (\$ billion)</b>
Renminbi (Shanghai, Shenzhen)— A Shares and Domestic Bonds	43.5
Hong Kong Dollars (Hong Kong)	183.2
U.S. Dollars (New York)	156.5
Other Currencies	2.1
<b>Total</b>	<b>385.2</b>

*Panel B. Exposure to Hong Kong Dollar Denominated Securities*

<b>Location of Headquarters</b>	<b>Exposure (\$ billion)</b>
China	183.2
Hong Kong	71.8
U.S.	4.0
Others	4.8
<b>Total</b>	<b>263.7</b>

Source: Morningstar holdings reported at the end of April 2020 and DERA staff calculations.

## Conclusion

The inclusion of Chinese domestic securities (A Shares and Domestic Bonds) into global financial market indexes has raised a series of concerns for U.S. investors related to the transparency, functioning, and integrity of the Chinese market. With the increasing number of Chinese domestic securities becoming eligible for inclusion in various global financial market indexes, there is significant risk of U.S. investors becoming more exposed to companies potentially subject to U.S. policies, sanctions, and/or tariffs. While many of these issues are geopolitical in nature, it is nevertheless important for U.S. investors to be cognizant of the risks. The evolution of weighting in these indexes and the broader considerations discussed above warrant continued monitoring. The issues discussed above are further complicated by the ongoing COVID-19 global pandemic, which has already caused significant effects in global financial markets and global policy discussions.

Appendix: Large U.S. Public Pension Funds' Exposure to China A Shares			
Pension	AUM (\$ bil)	Benchmark with China A Share Exposure (in bold)	Link to Recent Financial Report
California Public Employees	\$376.86	Five out of its seven sub-funds track <b>MSCI ACWI IMI (Net)</b> (among other benchmarks).	<a href="https://www.calpers.ca.gov/docs/board-agendas/202006/invest/item06c-01_a.pdf">https://www.calpers.ca.gov/docs/board-agendas/202006/invest/item06c-01_a.pdf</a>
California State Teachers	\$230.209	International equity include 55 China A share companies, with a total market value of \$332 mil	<a href="https://www.calstrs.com/investment-table/international-equities">https://www.calstrs.com/investment-table/international-equities</a>
New York State Common	\$213.241	Public Equity fund is benchmarked to <b>MSCI All Country World Index (ACWI)</b> . Its Total Non U.S. Equity Composite fund (\$27 bil) tracks the <b>MSCI ACWI Ex U.S. IMI (MSCI ACWI Ex U.S. to 1/1/17)</b>	<a href="https://www.osc.state.ny.us/sites/default/files/retirement/documents/pdf/2019-11/comprehensive-annual-financial-report-2019.pdf">https://www.osc.state.ny.us/sites/default/files/retirement/documents/pdf/2019-11/comprehensive-annual-financial-report-2019.pdf</a>
Florida State Board	\$163.135	Its Global Equity Fund tracks a custom version of the <b>MSCI All Country World Investable Market Index (ACWI IMI)</b> , in dollar terms, net of withholding taxes on nonresident institutional investors, adjusted to reflect the provisions of the Protecting Florida's Investments Act.	<a href="https://www.sbafla.com/fsb/Portals/FSB/Content/Performance/Annual/2018_2019_AIR.pdf?ver=2020-02-20-125811-027">https://www.sbafla.com/fsb/Portals/FSB/Content/Performance/Annual/2018_2019_AIR.pdf?ver=2020-02-20-125811-027</a>
Texas Teachers	\$153.126	External Public Total World Equity - Invests in equity securities in countries represented in the <b>MSCI ACWI Value Index</b> , as well as certain other global markets	<a href="https://www.trs.texas.gov/TRS%20Documents/cafr_2019.pdf">https://www.trs.texas.gov/TRS%20Documents/cafr_2019.pdf</a>
New York State Teachers	\$122.5	Its international equity portfolio, which represented 17.2% of System assets, generated a return of 1.3%, in line with its benchmark, <b>the MSCI ACWI Ex-U.S. index</b> . The global equity portfolio, which represented 2.1% of System assets and is exclusively actively managed, returned 1.2% trailing its benchmark, <b>the MSCI ACWI index</b> , by 4.5%.	<a href="https://www.nystrs.org/Library/Publications/Annual-Reports/2019CAFR.pdf">https://www.nystrs.org/Library/Publications/Annual-Reports/2019CAFR.pdf</a>



Wisconsin Investment Board	\$114.63	na	<a href="https://7ffb9e60-f2dc-4359-b148-1db6b9d76c71.filesusr.com/ugd/69fc6d_e0c664dc85964d78953e358163b6a534.pdf">https://7ffb9e60-f2dc-4359-b148-1db6b9d76c71.filesusr.com/ugd/69fc6d_e0c664dc85964d78953e358163b6a534.pdf</a>
Washington State Board	\$112.47	Its Collective Investment Trust Funds are composed by three parts, each tracking 1) Morgan Stanley Capital International (MSCI) U.S. Investable Market Index (passive); <b>2) the MSCI Emerging Markets Investable Market Index (passive); 3) MSCI Emerging Markets Investable Market Index (active)</b>	<a href="https://www.sib.wa.gov/financial/pdfs/annual/ar19.pdf">https://www.sib.wa.gov/financial/pdfs/annual/ar19.pdf</a>
North Carolina	\$111.37	Its Equity Collective Investment Trusts follows five equity index funds. Out of which, the BlackRock International Index Fund seeks to replicate the composition and performance of the <b>MSCI ACWI Ex-USA Index</b> .	<a href="https://files.nc.gov/retire/documents/files/Reports/June_30_2019NC_CAFR.pdf">https://files.nc.gov/retire/documents/files/Reports/June_30_2019NC_CAFR.pdf</a>
Ohio Public Employees	\$100.71	As of December 31, 2019, its Non-U.S. Equity Benchmark (net) include: <b>55% MSCI World Index x U.S. Standard (net), 31% MSCI Emerging Markets Standard Index (net)</b> .	<a href="https://www.opers.org/pubs-archive/financial/cafr/2019-OPERS-Comprehensive-Annual-Financial-Report-CAFR.pdf">https://www.opers.org/pubs-archive/financial/cafr/2019-OPERS-Comprehensive-Annual-Financial-Report-CAFR.pdf</a>

Source: The 2018 AUMs are based on this research paper, [https://www.thinkingaheadinstitute.org/en/Library/Public/Research-and-Ideas/2019/09/P\\_I\\_300\\_2019\\_research\\_paper](https://www.thinkingaheadinstitute.org/en/Library/Public/Research-and-Ideas/2019/09/P_I_300_2019_research_paper). New York City Retirement System is excluded in the above table, as the AUM reflected in its financial report is less than \$100 billion (the AUM in the research paper may have included a few other pensions in New York City).

- 1 This is a spotlight by the staff of the Division of Economic and Risk Analysis (DERA) of the U.S. Securities and Exchange Commission (Commission). The Commission, as a matter of policy, disclaims responsibility for any private publication or statement of any of its employees. The views expressed herein are those of DERA staff and do not necessarily reflect the views of the Commission or other members of the Commission staff.
- 2 Some of those listed companies are very large. For example, Alibaba Group Holding Ltd (BABA.N), Baidu Inc. (BIDU.O) and JD.com Inc. (JD.O), have a combined U.S. market capitalization of more than \$500 billion (<https://www.uscc.gov/sites/default/files/Chinese%20Companies%20on%20U.S.%20Stock%20Exchanges.pdf>).
- 3 Critics have also argued that China-based companies listed in the U.S. have an unfair advantage compared with U.S. corporations as they *de facto* circumvent the accounting and governance standards to which U.S. corporations are subject. See, e.g., <https://www.cnbc.com/2020/04/03/luckin-coffee-debacle-is-a-painful-reminder-of-fraudrisk.html> and [https://www.realclearpolitics.com/articles/2019/10/19/why\\_are\\_american\\_investors\\_funding\\_chinese\\_fraud\\_141540.html](https://www.realclearpolitics.com/articles/2019/10/19/why_are_american_investors_funding_chinese_fraud_141540.html) and <https://tax.thomsonreuters.com/news/president-trump-criticizes-chinese-firms-refusal-to-follow-auditrules-seeks-solutions/>. As of April 2020, out of the 269 unique issuers that PCAOB identifies on its website as being public companies whose PCAOB-registered auditor is located in a jurisdiction having obstacles to PCAOB inspections, 239 have auditors based in mainland China or Hong Kong (<https://pcaobus.org/International/Inspections/Pages/IssuerClientsWithoutAccess.aspx>).
- 4 See, e.g., <https://www.sec.gov/news/public-statement/emerging-market-investments-disclosure-reporting>
- 5 Shares in Chinese companies that are incorporated and listed outside of China are referred to by other names, including *Red Chips*, *P Chips*, *S Chips*, *N Shares*, *L Shares*, and *G Shares*. In prior years, U.S. investors who wanted exposure to China got it by investing in N Shares or American Depositary Receipts, both of which trade on U.S. exchanges. See [https://research.ftserussell.com/products/downloads/Guide\\_to\\_Chinese\\_Share\\_Classes.pdf](https://research.ftserussell.com/products/downloads/Guide_to_Chinese_Share_Classes.pdf)

- 6 Before 19 February 2001, domestic Chinese citizens were prohibited from trading B Shares. See <http://www.lehmanlaw.com/resource-centre/faqs/securities/what-are-b-shares.html>
- 7 See <http://www.szse.cn/enqfii/aboutqfii/>
- 8 The QFII program's initial capital controls have been relaxed over the years, and the quotas were removed on 07 May 2020. See <https://www.safe.gov.cn/en/2020/0507/1677.html>, <https://www.law360.com/articles/1279403/china-s-relaxed-financial-sector-may-aid-foreign-investors>. See also [https://www.hkex.com.hk/Mutual-Market/Stock-Connect?sc\\_lang=en](https://www.hkex.com.hk/Mutual-Market/Stock-Connect?sc_lang=en) and <https://www.marketwatch.com/story/heres-what-investors-need-to-know-about-mscis-inclusion-of-china-a-shares-in-its-indexes-2018-05-31>
- 9 "How China Pressured MSCI to Add Its Market to Major Benchmark", <https://www.wsj.com/articles/how-china-pressured-msci-to-add-its-market-to-major-benchmark-11549195201>
- 10 *Inclusion* is different from *weight*. The former is the proportion of Chinese stocks that is included in the index, while the latter is the proportion of the overall index that is based on Chinese securities.
- 11 See Panel A of Table 1 for the corresponding statistics for the FTSE Emerging Index and the S&P Emerging BMI.
- 12 Policy bank refers to China Development Bank, the Agricultural Development Bank of China, and the Export-Import Bank of China, see e.g. <http://www.chinadaily.com.cn/a/201909/11/WS5d788406a310cf3e3556afaa.html>
- 13 Other bond types available through Bond Connect include Negotiable Certificate Deposit (NCD), asset-backed security (ABS), etc., see <https://www.chinabondconnect.com/en/Primary/Primary-Information/Onshore.html>
- 14 For example, a \$100 million fund that tracks an index that has an expected 5% weight at the end of 2020 will have a projected exposure of \$5 million. The expected year-end index weights used in our estimates are either what the equity index providers have implemented, or the weights announced by the relevant bond index providers (Bloomberg and JP Morgan) or market expectation (FTSE Russell).
- 15 <https://blogs.imf.org/2019/06/19/china-deepens-global-finance-links-as-it-joins-benchmark-indexes/>
- 16 [https://www.msci.com/documents/1296102/12275477/China\\_A\\_Further\\_Weight\\_Increase\\_Feb\\_2019\\_Presentation.pdf](https://www.msci.com/documents/1296102/12275477/China_A_Further_Weight_Increase_Feb_2019_Presentation.pdf) and <https://www.msci.com/documents/10199/822e3d18-16fb-4d23-9295-11bc9e07b8ba>
- 17 <https://www.tsp.gov/whatsnew/Content/index.html#fundDefer>
- 18 The ten largest state public pension funds that we examined are as follows (2018 AUM in parentheses): California Public Employees' Retirement System (\$376 billion), California State Teachers Retirement System (\$230 billion), New York State Common Retirement Fund (\$213 billion), Florida State Board of Administration (\$175 billion), Texas Teachers Retirement System (\$153 billion), New York State Teachers Retirement System (\$122 billion), Wisconsin Investment Board (\$114 billion), Washington State Board (\$112 billion), North Carolina Retirement Systems (\$111 billion) and Ohio Public Employees Retirement System (\$101 billion). Source of the pension funds' AUM: [https://www.think-ingaheadinstitute.org/en/Library/Public/Research-and-Ideas/2019/09/P\\_1\\_300\\_2019\\_research\\_paper](https://www.think-ingaheadinstitute.org/en/Library/Public/Research-and-Ideas/2019/09/P_1_300_2019_research_paper)
- 19 About a quarter of PBGC's International Public Stock fund, which accounts for 9.6% of its total AUM of \$119 billion, tracks MSCI EM, see <https://www.pbgc.gov/sites/default/files/pbgc-fy-2019-annual-report.pdf>
- 20 U.S. Teachers and Firefighters Are Funding Rise of China Tech Firms, <https://www.bloomberg.com/graphics/2019-china-tech-money-threatened-by-trade-war/>
- 21 [https://www.realclearpolitics.com/articles/2019/10/19/why\\_are\\_american\\_investors\\_funding\\_chinese\\_fraud\\_141540.html](https://www.realclearpolitics.com/articles/2019/10/19/why_are_american_investors_funding_chinese_fraud_141540.html), <https://www.wsj.com/articles/that-calm-chinese-stock-market-its-engineered-by-the-government-1527775089> and <https://www.cnn.com/2018/09/11/chinas-stock-market-is-still-immature-so-volatility-is-to-be-expected-former-pboc-governor-says.html>
- 22 <https://www.internationalinvestment.net/opinion/4001647/china-debt>
- 23 <https://www.ft.com/content/068a83e0-27a7-11ea-9305-4234e74b0ef3> and <https://www.reuters.com/article/china-markets-default/chinas-private-firms-face-record-default-risk-to-stay-high-in-2020-fitch-idUKL4N28K1YM>

- 24 In terms of size, the China equity market remains relatively small at only 46.5% of GDP, compared with over 100% of GDP for most developed economies (<https://cammackretirement.com/knowledge-center/insights/china-a-shares-the-implications-for-u-s-investors> and <https://www.ceicdata.com/en/indicator/china/equity-market-index>).
- 25 See, e.g., <https://blog.alliancebernstein.com/library/will-china-export-volatility-as-equity-markets-open>, <https://www.cnbc.com/2015/07/02/why-are-chinas-stock-markets-so-volatile.html>, <https://www.cnbc.com/2018/09/11/chinas-stock-market-is-still-immature-so-volatility-is-to-be-expected-formerpboc-governor-says.html>
- 26 DERA staff calculations show that the daily price volatility on the Chinese stock markets has been higher than that for other Asian markets over the last 5, 10, 15 and 20 years. Moreover, using data from the last nine years, the *CBOE China ETF Volatility Index* had a standard deviation of 6.7, while the S&P 500-based *CBOE VIX* had a standard deviation of 5.3.
- 27 See <https://www.ilo.org/dyn/hatlex/docs/ELECTRONIC/92643/108008/F-186401967/CHN92643Eng.pdf>
- 28 “China’s Banking Sector Risks and Implications for the U.S.,” staff report by U.S.-China Economic and Security Review Commission. (<https://www.uscc.gov/research/chinas-banking-sector-risks-and-implications-united-states>)
- 29 See <https://www.wsj.com/articles/s-p-rating-is-landmark-for-chinese-bond-market-11562835842>
- 30 <https://www.bloomberg.com/opinion/articles/2019-12-01/msci-raises-bar-on-china-stocks-under-increased-u-s-criticism>
- 31 “600 million Chinese earn 1,000 RMB a month — so are the Chinese rich or poor?,” <https://www.thinkchina.sg/600-million-chinese-earn-1000-rmb-month-so-are-chinese-rich-or-poor>
- 32 <https://www.imf.org/en/News/Articles/2017/08/09/NA081517-China-Economic-Outlook-in-Six-Charts>
- 33 [https://www.iif.com/Portals/0/Files/content/1\\_IIF\\_Capital%20Flows%20Tracker\\_April.pdf](https://www.iif.com/Portals/0/Files/content/1_IIF_Capital%20Flows%20Tracker_April.pdf)
- 34 See, e.g. “The emergence of China, Inc.: behind and beyond the trade war” ([https://www.researchgate.net/publication/341357034\\_The\\_emergence\\_of\\_China\\_Inc\\_behind\\_and\\_beyond\\_the\\_trade\\_war](https://www.researchgate.net/publication/341357034_The_emergence_of_China_Inc_behind_and_beyond_the_trade_war)), “Congress Urged to Block Certain Chinese Investments in the U.S.” (<https://www.pillsburylaw.com/en/news-and-insights/congress-urged-to-block-certain-chinese-investments-in-the-us.html>), and “How China’s Economic Aggression Threatens the Technologies and Intellectual Property of the United States and the World” (page 11, <https://www.whitehouse.gov/wp-content/uploads/2018/06/FINAL-ChinaTechnology-Report-6.18.18-PDF.pdf>)
- 35 The China Securities Regulatory Commission requires listed companies to “set up Chinese Communist Party and carry out Party activities”. Furthermore, China’s 2017 National Intelligence Law states that any organization shall support and cooperate with state intelligence and that the state protects any organization that aids See, e.g., [https://www.theepochtimes.com/china-requires-all-publicly-listed-companies-to-establish-communist-party-branches\\_2565214.html](https://www.theepochtimes.com/china-requires-all-publicly-listed-companies-to-establish-communist-party-branches_2565214.html) and <https://www.reuters.com/article/us-china-governance-party/chinas-listed-firms-need-to-beef-up-communist-party-building-activity-regulator-says-idUSKBNIJB16F>.
- 36 The U.S. Department of Commerce’s Bureau of Industry and Security (BIS) first published the “Entity List” in 1997 to inform the public of entities engaging in activities that could result in an increased risk of the diversion of exported, re-exported, and transferred (in-country) items to weapons of mass destruction programs. Since then, grounds for inclusion have expanded to activities sanctioned by the U.S. State Department and activities contrary to U.S. national security and/or foreign policy interests. (<https://www.bis.doc.gov/index.php/policy-guidance/lists-of-parties-of-concern>)
- 37 <https://www.whitehouse.gov/presidential-actions/memorandum-protecting-united-states-investors-significant-risks-chinese-companies/>



U.S. SECURITIES AND EXCHANGE COMMISSION