

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 November 15, 2020

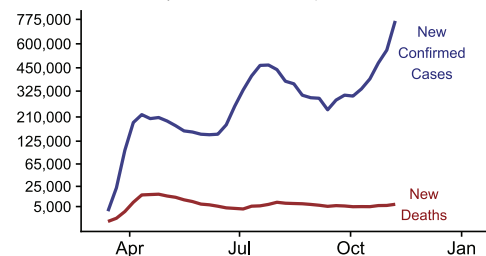
Following the historic and unprecedented COVID-19 economic shock in March 2020, financial markets over the past 8 months have nearly fully recovered, credit spreads have tightened, economic activity is rebounding, and employment growth has been steady. This progress has occurred despite the recent rise in COVID-19 cases in the United States, Europe, and in some other parts of the world. The ongoing economic expansion illustrates how economies have been resilient in coping with the effects of COVID-19, at least until vaccines are broadly distributed. Yet the path of economic output as measured by gross domestic product (GDP) remains below its pre-pandemic trend, and the recovery remains uneven as COVID-19-induced economic distress continues to weigh on certain sectors. Thus, policymakers are contemplating further economic stimulus. Moreover, both households and firms have bolstered their cash positions by increasing savings rates or taking advantage of historically low interest rates. Indeed, capital market activity has recently accelerated as households have refinanced mortgage debt, corporations have increased borrowing, and firms have increasingly entered public markets through initial public offerings (IPOs) or Special Purpose Acquisition Companies (SPACs).

The Path of New COVID-19 Cases Is Uncertain

After Falling for Several Weeks, the Rate of New U.S. COVID-19 Cases is Trending Upwards: The number of new confirmed COVID-19 cases peaked at over 450,000 per week in late July 2020 and then dropped to a weekly rate of fewer than 250,000 by mid-September (Figure 1.1). Similarly, newly reported deaths dropped to a rate near 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 led policymakers to partially reopen certain local economies. Although the number of new deaths continues to hold steady, data as of November 13 show that the number of new confirmed COVID-19 cases has risen to a weekly rate of more than 750,000. This uptick in new cases highlights the uncertainty over the path of COVID-19 going forward, as the world waits for the distribution of COVID-19 vaccines, and has prompted some local and state authorities to reverse or delay reopening protocols as a response.

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

Notes: Weekly; Vertical axis has a square-root scale



The Effects of the COVID-19 Recession on Employment Remain Uneven as Policymakers Contemplate Further Stimulus

The Effects of the COVID-19 Recession on Employment

Remain Uneven Across Sectors: Following the partial economic shutdown due to COVID-19, by April 2020 employment as measured by non-farm payrolls fell nearly 15% from its pre-pandemic highs (Figure 1.2; green line). Then, as citizens adjusted to public health measures and as local economies partially reopened, job gains quickly accelerated. These gains were concentrated in the sectors most hard-hit by the economic lockdowns associated with the pandemic (DERA Economic and Risk Outlook, July 2020; p. 1). While the economy continues to add jobs, job growth appears to be decelerating. This deceleration is likely because of the lingering effects of the pandemic, elevated job separation rates that continue to exceed pre-pandemic levels (Figure 1.3), and as the most immediately beneficial labor market firm-worker matches have likely already been realized. Data through October indicate that employment remains nearly 6.5% below its pre-pandemic highs (Figure 1.2; green line).

Figure 1.2: The Effects of the COVID-19 Recession Remain Uneven Across Sectors

Notes: Non-farm employment growth by sector from January 2020; Monthly

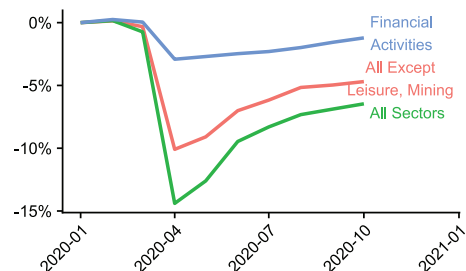
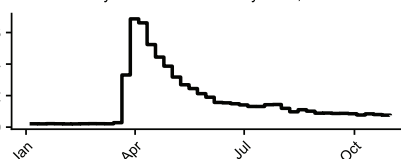


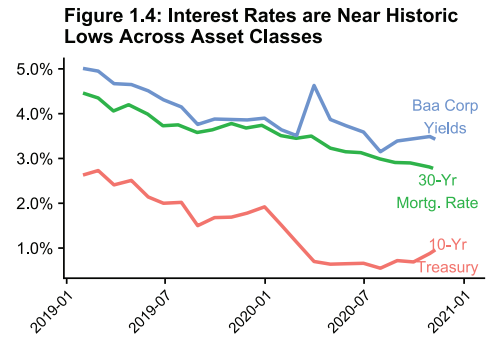
Figure 1.3: Initial Unemployment Claims Remain Above Pre-Pandemic Levels

Notes: Weekly Counts from January 2020; Millions

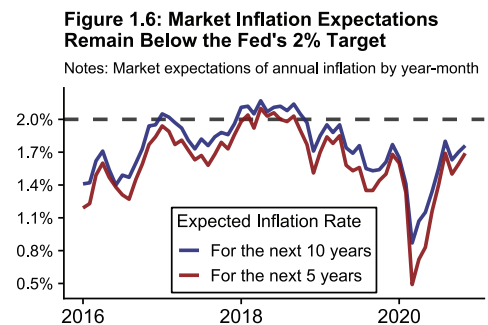
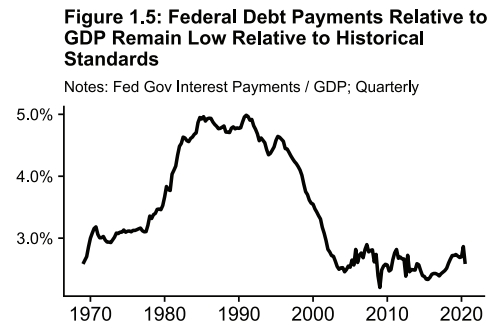


The pace of the economic recovery has been uneven, with some sectors performing better than others. Employment in the leisure and hospitality sector was directly hit by COVID-19-induced physical distancing protocols and thus fell markedly (DERA Economic and Risk Outlook, July 2020; p. 7). Likewise, the large decline in aggregate demand for raw materials due to COVID-19-related economic distress negatively impacted employment in the mining industry. Yet job losses in other industries have not been nearly as severe (Figure 1.2; red line), with employment in all industries except the leisure, hospitality, and mining sectors dropping only 4.7% from January to October 2020. There have also been relative bright spots across the U.S. jobs landscape. For example, employment in the financial sector (Figure 1.2; blue line), including the banking, insurance, and real estate industries, has remained relatively flat throughout 2020. Similar positive employment dynamics have also transpired in other industries, such as in the online retail and technology sectors. Broadly, for the United States to return to full employment, jobs will have to grow markedly from their current low base in severely affected industries (e.g., leisure and hospitality), the share of employment in less affected industries will have to increase relative to the overall labor force, or a combination of the two.

Following Unprecedented Policy Actions, Policymakers Are Considering Further Fiscal Stimulus To Combat the Continued COVID-19-Induced Economic Slowdown: Following the COVID-19-induced economic shock in March, Congress passed and the President signed the [CARES Act](#), which provided funding to help stem the rise in unemployment, as well as battle the health and related effects of the pandemic. Simultaneously, the Federal Reserve (Fed) implemented unprecedented monetary stimulus, lowered the fed funds rates to zero, announced unlimited purchases of Treasuries and agency mortgage-backed securities (MBS) and introduced a number of liquidity, purchasing, and lending facilities to further stabilize financial markets. Recently, the [Fed announced](#) that it would pursue an “average inflation targeting” approach, wherein it would target an average 2% inflation rate over time. Following episodes of limited price growth, the Fed would let inflation run moderately over 2%, thus its medium- or long-term forward guidance would likely signal lower future interest rates. Altogether, these actions, along with the uncertain future path of the economy, have contributed to near historically low interest rates for the U.S. government, firms, and households (Figure 1.4). Yet despite the continued exceptional monetary stimulus, elevated unemployment persists (Figure 1.2). Moreover, as noted by Chair Powell, new Fed policy tools are lending programs, not spending programs ([Congressional Testimony; 2020-09-22](#)) and typically target borrowers with the ability to repay their debts. Hence, legislators are considering direct fiscal stimulus to aid households and firms facing more challenging circumstances, but uncertainty persists as to the exact timing and extent of any aid packages. Yet as suggested by Chair Powell, the “risks of policy intervention are still asymmetric,” where fiscal policy actions that “ultimately prove to be greater than needed...will not go to waste” ([Chair Powell Speech; 2020-10-06](#)).



While fiscal aid in response to COVID-19 has [totaled approximately \\$3 trillion thus far](#), U.S. Government debt-service payments and borrowing rates remain low. Figure 1.5 shows that although tax receipts are falling and government debt is rising because of the COVID-19 recession, debt-service payments (e.g., Federal debt interest expenditures relative to GDP) remain low. The low Federal debt payment-to-GDP ratio is a direct consequence of historically low Treasury yields (Figure 1.4). Moreover, elevated government deficits do not appear yet to have “crowded out” other borrowers by increasing interest rates in other asset classes (Figure 1.4), a concern traditionally associated with [elevated government borrowing](#) (Blanchard, 1991. “Crowding Out.” *The World of Economics.*), or sparked expectations of elevated inflation rates (Figure 1.6). Thus, there appears to be room for the Federal Government to expand borrowing, at least in the near term, to implement further fiscal stimulus.

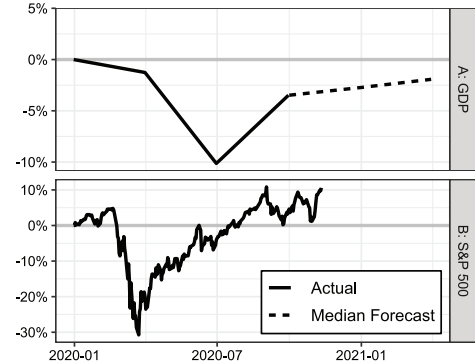


Equity Markets Have Recovered Faster than the Overall Economy

The Pace of the Equity Market Recovery Has Eclipsed Economic Recovery: Although recent data suggest that the economy remains below full employment (Figure 1.2), equity market performance coming off recent lows in March 2020 has been notable. Figure 1.7 highlights the relatively faster pace of the recovery in equity markets 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 fell by over 10% in the first half of 2020. A rapid GDP decline of this magnitude is unprecedented; in comparison, during the 2008-09 Great 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 over 50% from March 23 to November 13.

Figure 1.7: GDP Is Expected To Fall During 2020, While the S&P 500 Has Exceeded Its Jan 2020 levels

Notes: Growth from last value in 2019Q4; GDP is Quarterly; S&P 500 is Daily; GDP Forecasts from MarketWatch



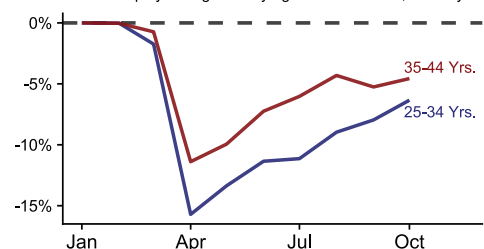
As noted in the previous issue of the *DERA Economic and Risk Outlook*, several factors in isolation or in combination may have contributed to the recent run-up in equity prices, including (1) COVID-19-induced increases in the frequency of internet shopping and remote work—trends that favor large technology firms, which constitute a substantial portion of value-weighted equity indices; (2) low expected interest rates that increase the present value of future profit streams; and (3) anticipation that the pandemic will not continue much longer, in part because of possible vaccine availability. The rapid recovery of financial markets relative to the real economy, including unemployment rates, and in spite of the recent uptick in COVID-19 cases, is indicative of the economy’s resilience as people cope with and live with COVID-19 and the related public health measures. Still, some sectors of the economy continue to experience severe stress.

The Economic Impact of COVID-19 Remains Uneven

The COVID-19 Pandemic Has Had Outsized Negative Impact on Younger Workers: Figure 1.8 plots employment growth by age from January 2020 for the 25-34 (blue line) and 35-44 (red line) age cohorts, two age groups in the prime years of their earnings lifecycles. Although employment has fallen for both age groups, younger workers have suffered from more severe job losses: through October 2020, employment for the 25-34 age group is down 6.3% versus 4.6% for the 35-44 age group.

Figure 1.8: Younger Workers Have Been Harder-Hit by the COVID-19 Recession

Notes: Employment growth by age from Jan 2020; Monthly

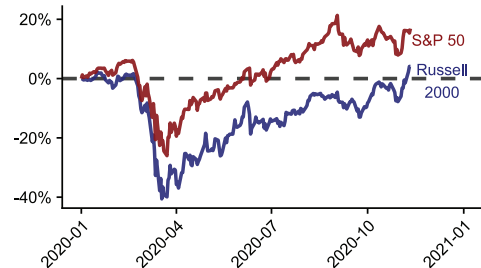


The relative employment decline for younger workers is also large when compared to other economic crises. For example, during the Great Recession, employment from peak to trough fell only 5% for the 25-34 age cohort versus 7% for the 35-44 age cohort. Yet the larger decline for 25-34 versus 35-44 aged workers during the current recession may be related to the industry employment makeup of the two groups. Those in the 35-44 cohort are more likely to work in management positions or in financial operations, positions that have been relatively less affected by the COVID-19 recession. According to [BLS data](#), 19% of workers in the 35-44 age cohort worked in those types of positions during 2019, compared to 15% for the 25-34 age cohort. Moreover, younger workers are also more likely to work in the food services industry (5.3% (25-34) versus 3.5% (35-44), according to 2019 [BLS data](#)), one of the industries most adversely impacted by the COVID-19 health protocols (DERA Economic and Risk Outlook, [July 2020](#); p. 1).

The Large Firms Outperformed Small Firms in the Immediate Aftermath of COVID-19-Induced Financial Market Distress, but Returns Have Been Similar Recently: Figure 1.9 shows that during COVID-19-induced financial market distress in March, the S&P 50, an index of the 50 largest companies, dropped only 26% from January 1 to March 23, 2020, whereas returns on the Russell 2000, an index of small firms, fell 40% over the same period. The larger drop for the Russell 2000 coincides with COVID-19's likely outsized impact on the often [more volatile income and revenue streams of smaller companies](#). The outperformance of large firms during March may also be related to the strong financial position of large firms in the lead-up to the pandemic as well as the sectoral makeup of firms in the S&P 50. The large firms that make up the S&P 50 generally have business models well suited to cope with the changes in consumer and firm behavior, such as those induced by COVID-19 health and physical distancing protocols. Then after financial distress eased in April, both the S&P 50 and the Russell 2000 moved upwards in parallel, highlighting the broad-based recovery in financial markets. Yet over the plotted sample period, the returns on smaller companies (Russell 2000) have yet to fully catch up to the returns on larger companies (S&P 50).

Figure 1.9: The Largest Firms Initially Outperformed Smaller Firms, but Recently Returns Have Been Similar

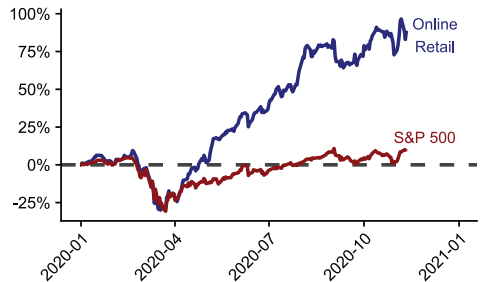
Notes: Equity returns from Jan 1, 2020; Daily



The COVID-19-Induced Shift to Online Shopping Has Led to Exceptional Equity Returns for Internet Retailers: As health protocols have encouraged households to maintain physical distancing or reduced capacity within business and offices, consumer behavior has changed dramatically. This has accelerated the trend towards online shopping, and away from traditional retail consumption, at least in the near term. As a result, returns on equity for online retailers (companies with at least 70% of their revenues from internet sales) have been exceptional (Figure 1.10), both soon after the introduction of COVID-19 health guidelines as well as more recently. The strong recent equity performance of online retailers, relative to broader market indices, likely indicates that stock market investors expect the trends favoring online retailers to continue over at least the near- and medium-term.

Figure 1.10: Online Retailers Continue To Outperform Broader Equity Indices

Notes: Equity returns from Jan 1, 2020; Daily

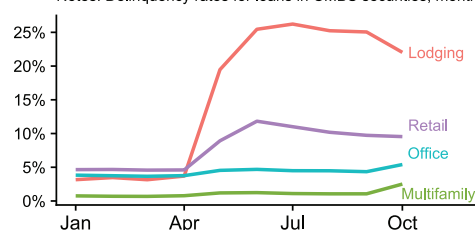


Delinquencies in Commercial Mortgage-Backed Securities (CMBS) are Concentrated in Lodging and Retail Properties:

With the advent of COVID-19 health restrictions, households markedly altered their lifestyles, minimizing travel, hotel stays, and physical shopping. As a result, hotels and retail stores have suffered from corresponding sharp declines in demand. In the commercial mortgage space, these dynamics have led to increased delinquencies for commercial loans backed by hotel and retail properties. Indeed, Figure 1.11 shows that delinquency rates for loans backed by lodging establishments (e.g., hotels) sold into CMBS reached over 26% (red line) and over 11% for those backed by retail properties (purple line). At the same time, through the summer of 2020, delinquency rates for loans backed by multifamily (green line) and office (blue line) properties remained flat.

Figure 1.11: COVID-19 Health Protocols Have Led to Substantial CMBS Loan Delinquencies For Lodging and Retail Properties

Notes: Delinquency rates for loans in CMBS securities; monthly



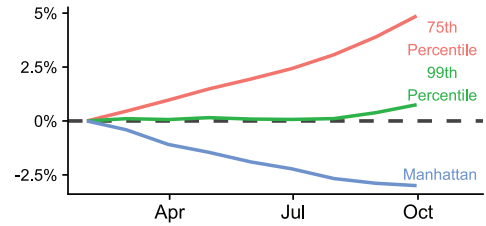
On the multifamily side, over 85% of outstanding multifamily commercial mortgages sold into CMBS are backed by government-sponsored agencies (e.g., Fannie Mae and Freddie Mac) and thus are perceived to carry no credit risk. Not surprisingly then, the delinquency rate in the CMBS multifamily sector is low. More broadly, many distressed renters received fiscal assistance via unemployment and other benefits through the CARES Act and related policies that allowed them to continue to make rent payments. Yet as the economic effects of the pandemic linger, both landlords and tenants have become increasingly concerned that distressed households may not be able to sustain rent payments going forward. Delinquency rates for loans backed by office properties have also remained relatively low despite the notable uncertainty in the future of urban and remote work. The low delinquency rate in the office category is likely a direct consequence of the longer leases that firms and related entities sign for such properties (SEC staff report, *U.S. Credit Markets Interconnectedness and the Effects of the COVID-19 Economic Shock*, p. 73), which may push any COVID-19-related delinquencies for this category further into the future. Yet, like in the multifamily sector, the most recent data indicate that delinquencies on office properties have increased only slightly.

Home Values in Suburban Neighborhoods Have Increased, While House Prices in the Densest Zip Codes Have Remained Flat or Fallen Slightly: The economic fallout associated with the COVID-19 recession has also created notable and heterogeneous effects across asset classes, but the degree of price heterogeneity (e.g., variance) in some cases is smaller than the heterogeneity experienced in more liquid markets, such as equity markets (Figures 1.7, 1.9, and 1.10). For example, price heterogeneity has surfaced across residential real estate markets, perhaps reflecting buyers and sellers adjusting preferences to account for COVID-19 physical distancing protocols and associated economic restrictions. Yet the variance in price realizations across housing markets has been noticeably small, even as media reports highlight substantial changes in housing preferences, for example, from urban to suburban locations.

Figure 1.12 summarizes these dynamics by plotting house price growth by population density at the 99th percentile (most dense, urban zip codes; green line) and the 75th percentile (more suburban zip codes; red line), as well as the house price growth for Manhattan, New York (blue line). House prices for relatively more suburban areas (red line) have increased with elevated buyer demand. However, house prices in the most dense zip codes have barely budged. This limited price variance highlights a unique feature of the COVID-19 recession. Unlike the Great Recession that emerged as a result of excesses in the economic and financial system, the current downturn materialized as a result of an exogenous shock: the pandemic and related health protocols. Thus, once the government implemented monetary and fiscal stimulus and COVID-19-induced financial distress eased, distressed sellers were few. With few distressed sellers, the asset fire sales often associated with economic crises largely did not occur. Potential sellers in relatively stable financial positions thus may have been reluctant to sell at depressed prices. In dense housing markets, the combination of low current demand and such reluctant sellers manifests as a small change in realized prices, but a **large reduction in transactions**. Similar dynamics have played out in other markets, like commercial real estate (SEC staff report, *U.S. Credit Markets Interconnectedness and the Effects of the COVID-19 Economic Shock*, p. 73).

Figure 1.12: House Prices in Suburban Zip Codes Have Increased, While Remaining Flat or Falling in High Density Areas.

Notes: The red and green lines show monthly zip code house price growth from Jan 2020 by population density at the 75th and 99th percentiles. The blue line shows house price growth for Manhattan, NY.



Both Households and Firms Have Bolstered Their Cash Positions

As Economic Uncertainties Persist, Household Savings Rates and Firms' Available Cash on Hand Have Increased:

As COVID-19-induced economic distress and uncertainty permeated across markets, both households and firms bolstered the cash on their balance sheets. Indeed, the household personal savings rate spiked to over 30% in April 2020 (Figure 1.13), its highest realization during the post-WWII period. This elevated savings rate is likely due to a combination of factors, including precautionary savings by households, COVID-19-induced partial economic lockdowns that limited consumption choices and household mobility, as well as a reduction in other debt-service payment (e.g., [mortgage payments through refinances](#)) due in part to historically low interest rates (Figure 1.4). As local economies have reopened and as households have adjusted to COVID-19 health protocols, the personal savings rate has retreated somewhat but remains nearly double its pre-pandemic levels.

Figure 1.13: The Household Personal Savings Rate Spiked with COVID-19-Induced Economic Uncertainty

Notes: Personal Savings / Disposable Income

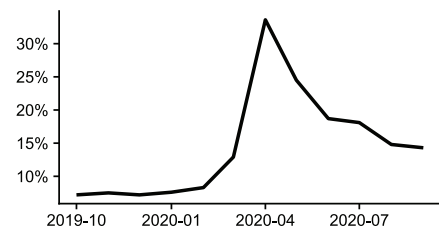
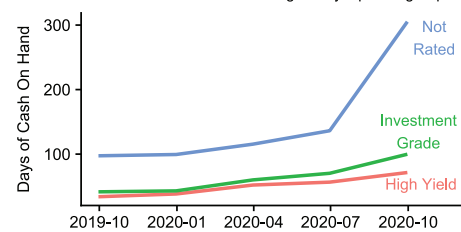


Figure 1.14: Firms' Days of Cash on Hand Increased During 2020

Notes: Available Cash / Average Daily Operating Expenses



Similarly, firms have increased available cash on hand, perhaps due to uncertain revenue outlook and attractive interest rates. Figure 1.14 plots the available days of cash on hand by firm credit rating. The figure shows that there has been a broad-based increase in cash on hand across all firms during 2020. Yet the largest increases in cash holdings (relative to average operating expenses) have been concentrated in firms without a credit rating (blue line) or with an investment grade rating (green line). This increase in cash on hand is likely driven in part by low interest rates (see Figure 1.4), economic uncertainty moving forward, and also perhaps by limited investment opportunities for both firms and investors.

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 in late March, two broad proxies of financial market risk, the corporate default spread (Baa - Aaa bond yields) and the Chicago Board Options Exchange (CBOE) Volatility Index (VIX), a proxy for equity market uncertainty, have fallen (Figure 1.15). 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 1.15: The Corporate Default Spread and The VIX Have Fallen From Recent Highs But Remain Elevated

Notes: Corp. Default Spread = Baa - Aaa Yields (% points)



Data Sources and Notes: **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 Center for Systems Science and Engineering (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, USCONS, MANEMP, USTPU, USINFO, USFIRE, USPBS, USEHS, USSERV, USGOVT). **Figure 1.3:** U.S. Employment and Training Administration, retrieved from FRED (ID: ICSA). **Figure 1.4:** Moody's, retrieved from Wharton Research Data Services (WRDS); Freddie Mac and Fed Board, retrieved from FRED (IDs: MORTGAGE30US, DGS10). **Figure 1.5:** Bureau of Economic Analysis (BEA), retrieved from FRED (IDs: A09IRC1Q027SBEA, GDP). **Figure 1.6:** U.S. Treasury, retrieved from FRED (IDs: PCEPILFE, T5YIE, T10YIE). **Figure 1.7:** Datastream; BEA, retrieved from FRED (IDs: GDPC1). **Figure 1.8:** BLS, retrieved from FRED (IDs: LNS12000089, LNS12000091). **Figure 1.9:** Datastream. **Figure 1.10:** Datastream. **Figure 1.11:** Moody's. **Figure 1.12:** Zillow. **Figure 1.13:** BEA, retrieved from FRED (ID: PSAVERT). **Figure 1.14:** Capital IQ; Days of cash on hand is available cash relative to average daily operating expenses (cost of goods sold, Selling, General and Administrative Expenses (SG&A); and interest expense) over the past 3 years (or 2 years, if only 2 years of data are available). **Figure 1.15:** Moody's, retrieved from WRDS; Datastream.

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

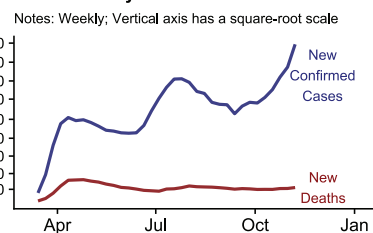
Key Takeaway: Following the onset of the COVID-19 recession in March, the U.S. unemployment rate increased to 14.7% in April 2020, and economic output declined substantially. Employment then bounced back over the summer and GDP grew substantially in 2020Q3. Likewise, consumption recently has exceeded pre-pandemic levels, likely as consumers make up for missed consumption opportunities resulting from pandemic-induced partial economic lockdowns; as the economy continues to rebound; and as mortgage and broader interest rates have fallen, which has allowed households to lower their debt-service payments. Yet the recovery is starting from a notably low base, several industries continue to face significant COVID-19-induced economic distress, and consumer confidence is weak—though trending slightly upwards. GDP is expected to grow steadily into 2021 but remain below its pre-pandemic trend.

The number of new confirmed COVID-19 cases peaked at over 450,000 per week in late July 2020 and then dropped to a weekly rate of fewer than 250,000 by mid-September (Figure 2.1).

Similarly, newly reported deaths dropped to a rate near 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 led policymakers to partially reopen certain local economies. Although the number of new deaths continues to hold steady, data as of November 13 show that the number of new confirmed COVID-19 cases has risen

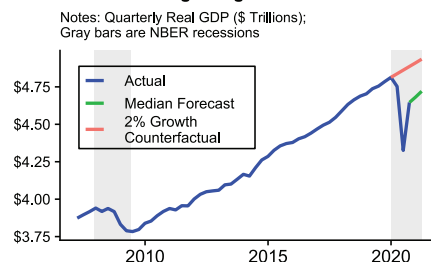
to a weekly rate of more than 750,000. This uptick in new cases highlights the uncertainty over the path of COVID-19 going forward, as the world waits for the distribution of COVID-19 vaccines, and has prompted some local and state authorities to reverse or delay reopening protocols as a response.

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



To help combat the COVID-19 pandemic, local, state, and federal U.S. policymakers issued stay-at-home guidelines for nonessential workers and encouraged physical distancing. Although many health experts argued that such actions were necessary for public health, they severely limit everyday economic activities. Figure 2.2 plots real quarterly GDP dating back to the Great Recession (blue line), as well as forecasted GDP for 2020Q3–2021Q1 (median forecasts tabulated by MarketWatch; green line). Gray bars are

Figure 2.2: A Sharp GDP Drop in 2020Q2, A Large Jump in 2020Q3, and Forecasted 3% Growth Beginning in 2020Q4

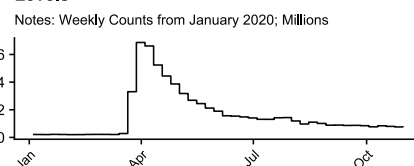


NBER recessions. While the U.S. economy was consistently expanding at a 2–3% annual rate prior to the onset of COVID-19, during the first half of 2020 GDP fell 10.1% from its peak in 2019Q4. In historical terms, a two-quarter GDP drop of this magnitude is unprecedented. During the Great Recession of 2008–09, GDP from peak to trough fell only 4%. According to the National Bureau of Economic Research (NBER) Business Cycle Dating Committee, the peak in U.S. economic activity occurred in February 2020, and a recession began thereafter (See [NBER Announcement](#)). Economic growth then surged in 2020Q3, and economic forecasters expect steady growth in 2020Q4 and into 2021 (Figure 2.2; green line). Yet output is predicted to remain below trend. Indeed, assuming that in the absence of the COVID-19 recession the U.S. economy would have grown at a 2% annual rate (Figure 2.2; red line), the lost economic output due to the COVID-19 outbreak just through 2020Q2 was \$620 billion. If the path of GDP follows analysts’ predictions (Figure 2.2; green line), by 2021Q1 lost economic output due to COVID-19, compared to the 2% growth counterfactual, will reach \$1.3 trillion.

As local economies continue to 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. Many factors will determine the time for recovery, including consumer confidence and spending, firm failures, 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 continue to 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, as restaurants reopen, unless customers enter those establishments to “dine in” in the same numbers or with the same frequency as before the slowdown, economic activity will not match pre-COVID-19 levels. Similarly, 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. Nonetheless, the United States registered robust economic growth at an annual rate of 33% in 2020Q3 and, as of early November, economic forecasts collected by MarketWatch (see Figure 2.2) expect over 3% annualized growth in both 2020Q4 and 2021Q1.

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 700,000 per week as of November 12 but remain above their pre-COVID-19 levels.

Figure 2.3: Initial Unemployment Claims Have Declined But Remain 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 United States subsequently lost over 22 million jobs during March and April. U.S. employment rebounded sharply in May and exhibited further gains each month through October, but non-farm payrolls remain 10 million off their February peak. 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 (Figure 2.5). As the economy partially reopened in May and through the summer, the unemployment rate has declined markedly to 6.9% as of October, but that rate remains above pre-pandemic levels.

Figure 2.4: After Non-Farm Payrolls Fell by 20 Million Because of the COVID-19 Pandemic, Labor Markets Have Steadily Recovered

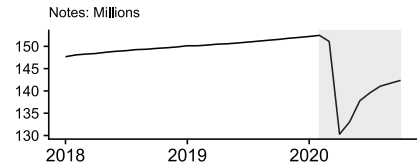
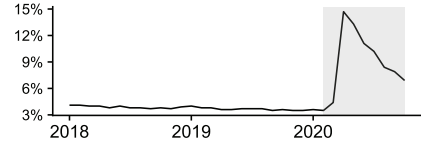
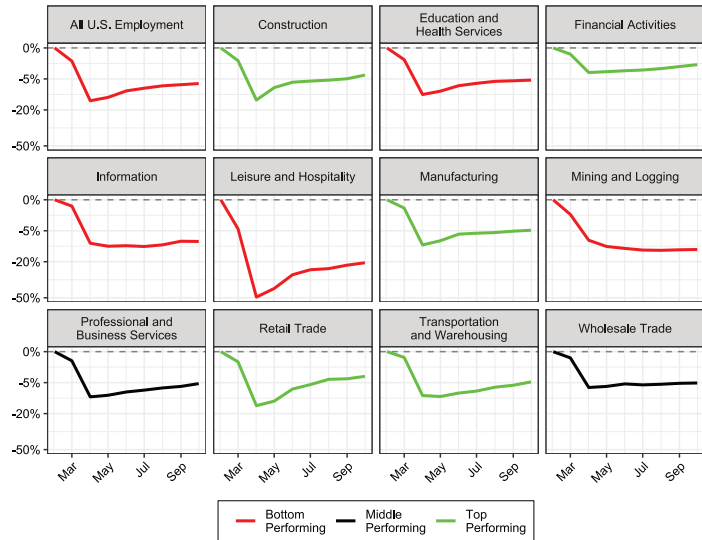


Figure 2.5: The Unemployment Rate Jumped To 14.7% in April, Before Falling To 6.9% By October



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 through October 2020 (red lines) include the education and health services (mostly due to employment declines in education), traditional information (e.g., non-internet publishing, motion picture, and non-internet broadcasting), leisure and hospitality, and mining and logging sectors. Employment growth in the leisure and hospitality industry is especially bleak, falling 50% with only a modest recovery to date. Yet job losses in other sectors have been substantially less severe. For example, employment in the financial sector is just slightly off its pre-pandemic highs.

Figure 2.6: Non-Farm 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 impact on employment in the education and health services, information, leisure and hospitality, and mining and logging services industries.

As the number of those employed and the number of those 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.

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

The COVID-19 recession also lowered consumer confidence and temporally stymied consumption. Figure 2.7 shows that the consumer confidence index dropped from 130 in February 2020 to 90 in April 2020, a 35% decline in the wake of the onset of the COVID-19 recession, with only a slight rebound through October. Retail sales also sank approximately 25% during March and April (Figure 2.8), likely because of declines in consumer confidence (Figure 2.7) and as physical distancing limited on-site shopping. Yet retail sales rebounded in May and then fully recovered to pre-pandemic levels in June. Recent data through October show that retail sales have exceeded their pre-pandemic trend. This uptick may be related to households making up for past missed consumption opportunities as economies reopen, the ongoing economic recovery, a decline in mortgage and other interest rates that reduce household monthly debt-service payments (Figure 1.4), or a combination of these factors.

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

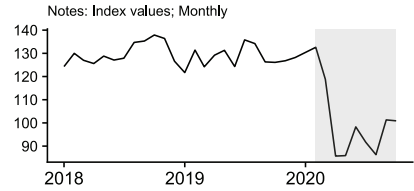
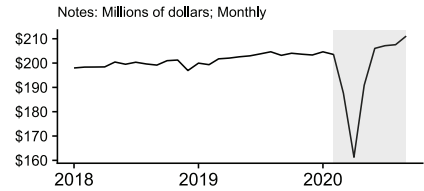


Figure 2.8: After Declining Sharply in March, Retail Consumption has Returned to Pre-Pandemic Levels



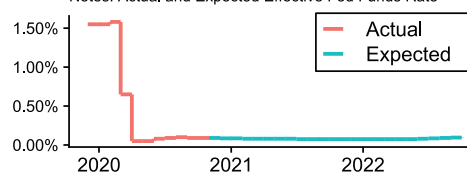
Monetary Policy and Interest Rates

Key Takeaway: In the immediate aftermath of 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. Since the start of the pandemic, the size of the Fed’s balance sheet has grown over \$3 trillion, with U.S. Treasuries constituting the bulk of the purchases. More recently, the Fed announced it would pursue an “average inflation targeting” approach, wherein it would target an average 2% inflation rate over time. However, inferred inflation expectations from Treasury markets indicate that market participants expect inflation to remain below the Fed’s 2% target over both the near- and medium-term. More broadly, and in line with accommodative monetary policy, the Treasury yield curve suggests a low risk-free rate for the foreseeable future. At the height of COVID-19-induced financial market distress, 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 in some cases remain higher than pre-pandemic levels.

As the COVID-19 pandemic unfolded, the Fed lowered the fed funds rate to a target range of 0–0.25% by 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 through 2022; hence, the Fed’s monetary stance is expected to remain accommodative as the economy recovers from the COVID-19 crisis. Indeed, in addition to large-scale asset purchases and a number of new extraordinary monetary policy tools, [Fed Chair Powell recently announced](#) that the Fed will target an average inflation rate of 2% over time. The key justification for this announcement centers on monetary policy efficacy in the current environment where both realized annual inflation and inflation expectations have remained below the Fed’s 2% target (as discussed below). Broadly, nominal interest rates—the interest rates typically quoted in the financial press and related publications—are the sum of the equilibrium, real interest rate plus inflation. If inflation (expectations) remain subdued, then nominal interest rates will naturally be low. In such a case, the Fed will have little room to implement interest rate reductions during a downturn, limiting the potency of this key monetary policy tool. Thus, targeting an average inflation rate of 2% is designed to allow the Fed more room to cut the fed funds rate during times of economic stress before short-term rates bump up against their zero lower bound.

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

Notes: Actual and Expected Effective Fed Funds Rate



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>.

At the height of COVID-19-induced financial market distress in March, 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 the establishment of facilities to support liquidity in various markets and target corporate bonds and exchange-traded funds (ETFs) in the primary and secondary markets [those rated BBB- (S&P); Baa3 (Moody’s) or higher, as of March 22, 2020, and BB- (S&P); Ba3 (Moody’s) at the time of purchase]. The programs also target AAA-rated ABS that are 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 2.10 shows the path of total Fed assets during the pandemic (blue line), as well as the asset classes that constitute the largest share of Fed assets in crisis response. To provide historical perspective, we also show data dating back to the Great Recession. From March 4, 2020, through the most recent data in the sample, November 4, 2020, Fed total assets increased nearly \$3 trillion to over \$7 trillion, a 70% gain. The bulk of this rise, consisting mostly of Treasury purchases (purple line), central bank liquidity swaps (red line), and MBS purchases (gold line), occurred in the immediate aftermath of COVID-19-induced financial market distress.

Figure 2.10: Fed Assets Increased Markedly to Counter the COVID-19 Recession

Notes: Trillions of dollars; Weekly; Vertical axis has a square root scale

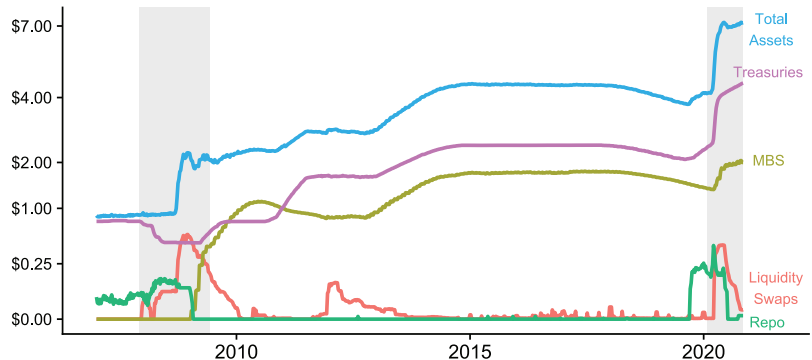


Figure Data Source: Fed Board, retrieved from FRED (IDs: WALCL, TREAST, WSHOMCB, WORAL, SWPT).

Figure 2.10 also highlights that liquidity swaps (red line) are primarily a crisis tool, with Fed assets in liquidity swaps rising at the height of financial market distress. Liquidity swaps with foreign central banks, intended to provide dollar liquidity to foreign markets, are transactions where foreign central banks sell their own currencies to the Fed for dollars. As COVID-19-related financial distress subsided in April and foreign central banks unwound their liquidity swap positions, total Fed assets leveled off with increases in Fed holdings in other classes making up the difference (e.g., Treasuries, MBS, and [various new extraordinary programs](#)).

A key difference between the COVID-19 monetary policy response, relative to the Great Recession, is the implementation of new Fed liquidity facilities and lending programs. Figure 2.11 plots Fed assets since the start of the COVID-19 crisis in a select number of these programs. Some of the liquidity facilities, such as the Money Market Liquidity Facility, increased market liquidity at the height of COVID-19-induced financial market distress, while others, such as the Payroll Protection Program and the Main Street Lending Facility, appear to represent longer term monetary stimulus. An interesting feature across all of these programs is that they represent a relatively small share of Fed total assets. Indeed, notice that the vertical axis in Figure 2.11 is in billions of dollars, whereas Figure 2.10 is in trillions. However, large purchases or lending are not necessarily required for these programs to have large market effects; for example, New York Fed research indicates that the mere announcement of Fed liquidity facilities had a substantial impact on borrowing costs and market behavior in the [commercial paper market](#), in the [corporate bond market](#), on [money market funds](#), and in the [municipal bond markets](#).

Figure 2.11: Total Assets in New Fed Liquidity Facilities and Lending Programs

Notes: Billions of dollars from February 5, 2020; Weekly

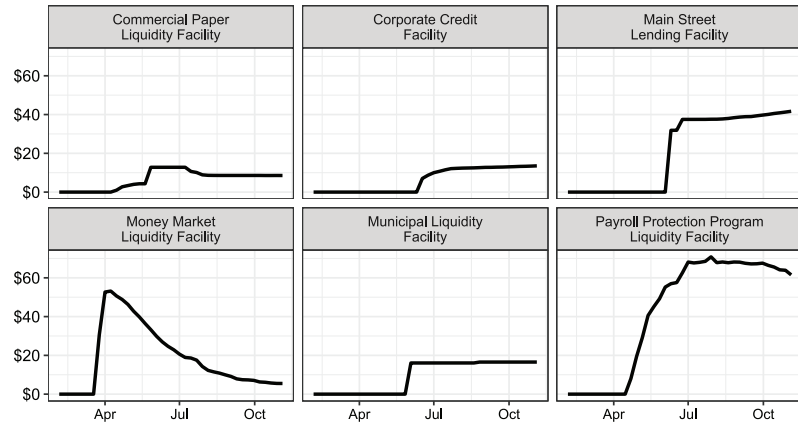
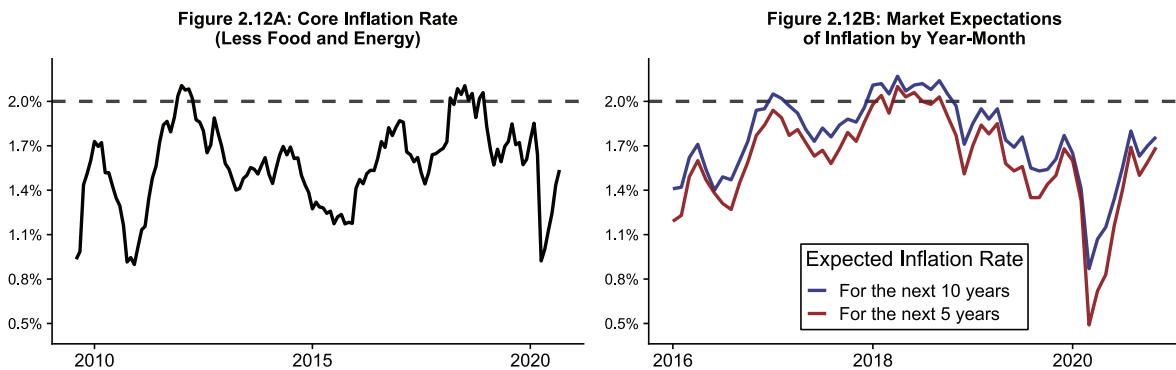


Figure Data Source: Fed Board, retrieved from FRED (IDs: H41RESPPAAC2HANWW, H41RESPPAAC2HNWW, H41RESPPAADHNWW, H41RESPPAAENWW, H41RESPPALDBNWW, H41RESPPALDJNWW).

Despite the Fed stimulus, inflation plummeted during the COVID-19-induced economic distress. 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 1% in April 2020. Inflation has since rebounded, but remains below the Fed’s 2% inflation target. 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; in April 2020, market participants had 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 declined sharply. Since then, inflation and inflation expectations have recovered but remain below the Fed’s 2% inflation target.

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

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)

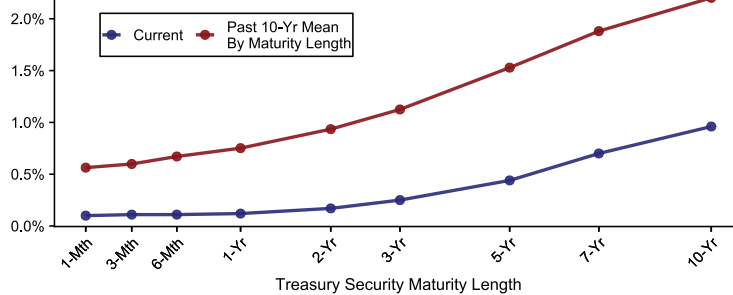


Figure Notes: The blue line is the current Treasury yield curve; the red line represents the past 10-year average, computed by taking the mean by each maturity date. For more on Term Premia, see [newyorkfed.org/research/data_indicators/term_premia.html](https://www.newyorkfed.org/research/data_indicators/term_premia.html).

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

low for longer maturities. Long-term yields 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, especially in certain sectors, 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 the Treasury, announced the establishment of corporate credit liquidity facilities. Yet the spread between Baa yields and Treasuries remains greater than pre-pandemic levels, congruent with lingering credit risks. In comparison, 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 2.8% as of November 8, 2020.

Figure 2.14: Baa Bond Yields Are Near Pre-Pandemic Lows, but Have Fallen Less Than Treasuries

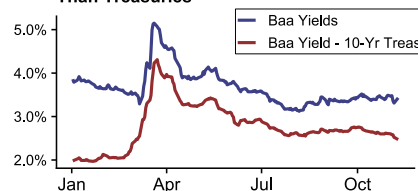
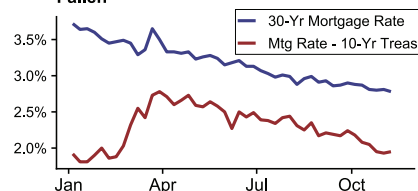


Figure 2.15: 30-Yr Mortgage Rates Have Fallen



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. Indeed, current low mortgage rates correlate with elevated retail spending (Figure 2.8).

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 (VIX) 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 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 liquidity. Indeed, credit ratings downgrades increased substantially in March 2020, but the pace of downgrades has slowed and returned to pre-pandemic levels as financial market stress has eased.

The impact of the COVID-19 pandemic on financial markets is apparent in the path of the VIX. During the height of COVID-19-induced financial market distress 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 has retreated (Figure 2.16B), owing to fiscal and monetary stimulus, the broad-based recovery in the economy and financial markets, 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 2.16A: The VIX Index Since the Great Recession

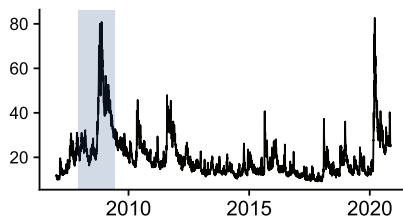
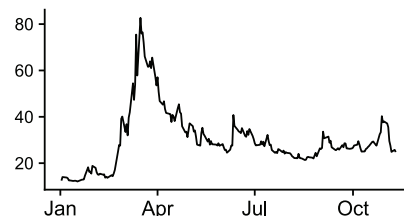


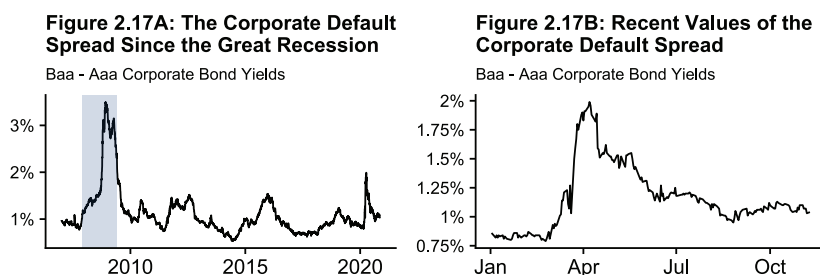
Figure 2.16B: Recent Values of the VIX Index



Key Figure Takeaway: The VIX 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 somewhat.

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

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 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.



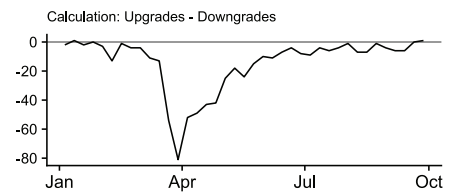
Key Figure Takeaway: The corporate default spread (Baa – Aaa corporate bond yields) increased in the wake of COVID-19-induced financial market distress but did not reach levels seen during the Great Recession. Recently, the corporate default spread has retreated but remains above its pre-pandemic levels.

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

Figure 2.17A also shows that while the recent rise in the corporate default spread is notable, the elevated values in March and mid-April were well below those seen during the Great Recession and perhaps suggest credit markets were less strained than in 2008-09. Figure 2.17B plots the recent path of the corporate default spread. Like the VIX (Figure 2.16B), the corporate default spread fell in mid-April. This trend reversal in the corporate default spread tracks various Fed announcements about the establishment of liquidity facilities, suggesting that credit conditions ameliorated with Fed actions along with a broader reduction of financial market stress. Yet Figure 2.17B also shows that the corporate default spread remains above pre-COVID-19 levels and, thus, material credit risks or material uncertainties may 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 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 and returned to pre-pandemic levels.

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



Data Sources Not Previously Mentioned: **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:** FRED, retrieved from FRED (ID: RRSFS). **Figure 2.9:** Datastream; Fed Board, retrieved from FRED (ID: FEDFUNDS). **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.

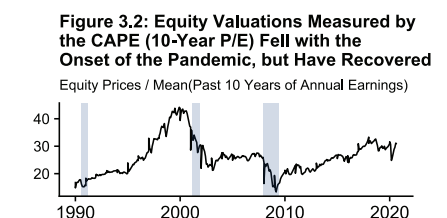
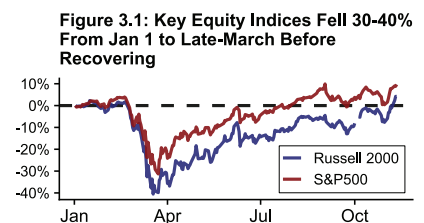


Markets

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 completely recovered from March lows, while indices of smaller companies have underperformed. Deviations in equity market performance between the S&P 500 and smaller firms occurred mostly in the immediate wake of pandemic-induced financial market distress. 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 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 these lower rated securities have also fallen.

Asset Values

After a historically long bull market, equity market prices fell sharply in the immediate wake of the COVID-19-induced economic slowdown. 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 had declined nearly 40%, coinciding with COVID-19’s likely outsized impact on the often **more volatile income and revenue streams of smaller companies**. By July, the S&P 500 had nearly fully recovered from its earlier lows, while the Russell 2000 has only recently reached its pre-pandemic levels.

Figure 3.3 proxies COVID-19 equity market impacts by sector, using ETF returns from February 10 to November 11, 2020. The hardest hit sectors over this time period (red lines) include the energy, financial, real estate (REITs), transportation, and utility sectors. The energy sector has faced large demand declines in the aftermath of the pandemic, 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 in the wake of COVID-19-induced economic distress, and the **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 and technology. Indeed, ETF prices for these sectors have recovered to at least their pre-pandemic levels, with an online retail ETF gaining more than 80% from aggregate market highs in February 2020. Likewise, retail firms have also outperformed, with retail sales returning to pre-pandemic levels (Figure 2.8).

Figure 3.3: ETF Returns By Category from February 10, 2020

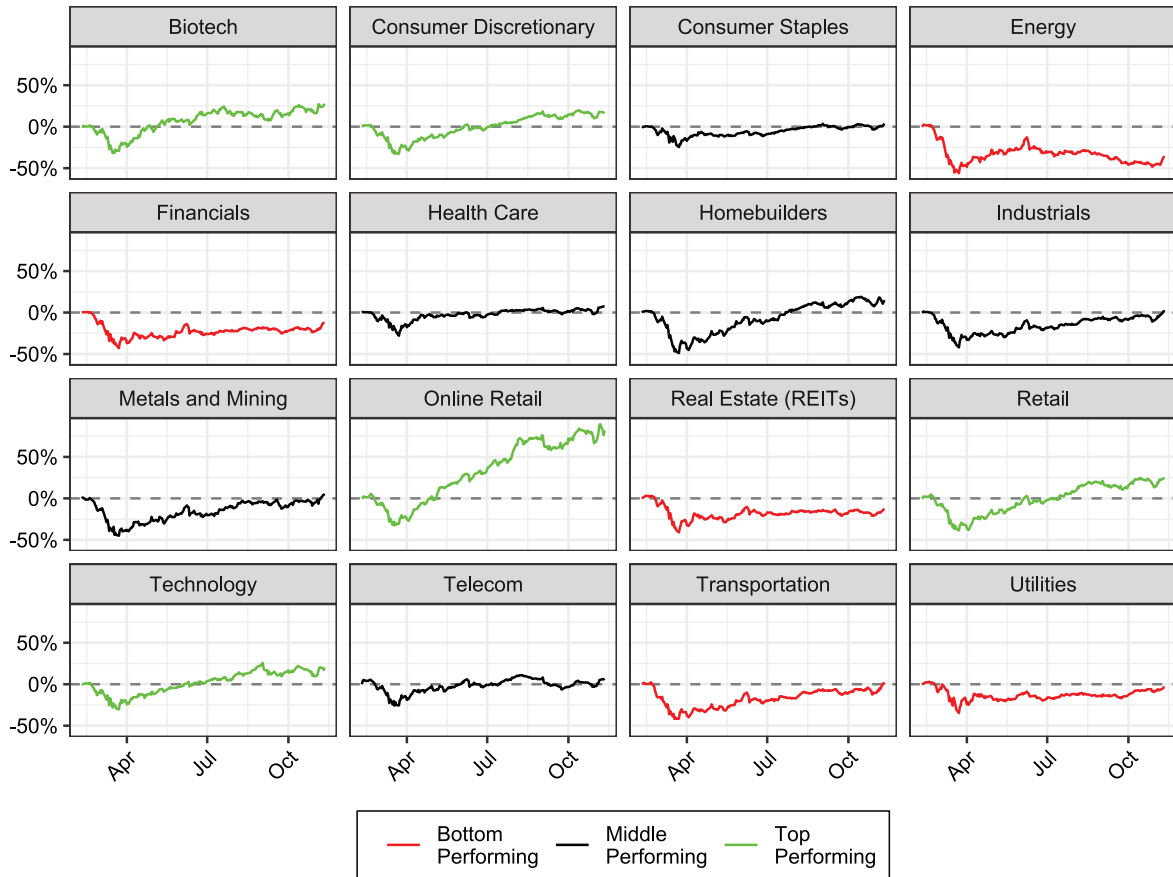
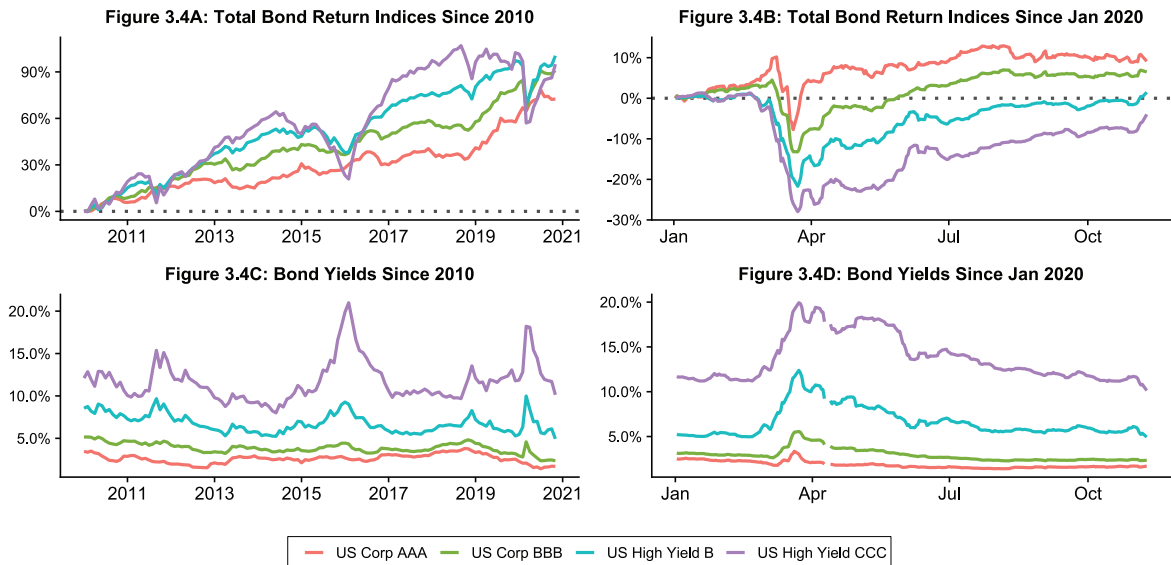


Figure Notes: Red lines are the five industries with the lowest (most negative) returns from February 10 to November 11, 2020. Green lines are the top performing industries in terms of returns from February 10 to November 11, 2020. Data source: Datastream.

For fixed income markets, Figure 3.4 displays total bond market returns and yields by credit rating. First, Figure 3.4A shows that bonds across asset classes have appreciated considerably since 2010. 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 3.4B). 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 coincided with a spike in yields (Figures 3.4C and 3.4D) that began to abate in April 2020. Since then, risk-free interest rates have fallen (Figures 1.4 and 2.13), and bond market conditions have eased considerably. Hence, yields across rating categories have returned to or fallen below their pre-pandemic levels (Figure 3.4D), as bond return indices have marched upwards (Figure 3.4B). The highest rated AAA bonds, in particular, have outperformed over the course of the COVID-19 crisis and, as of November 11, their yields were approximately one percentage point below their pre-COVID-19 levels in early January 2020.



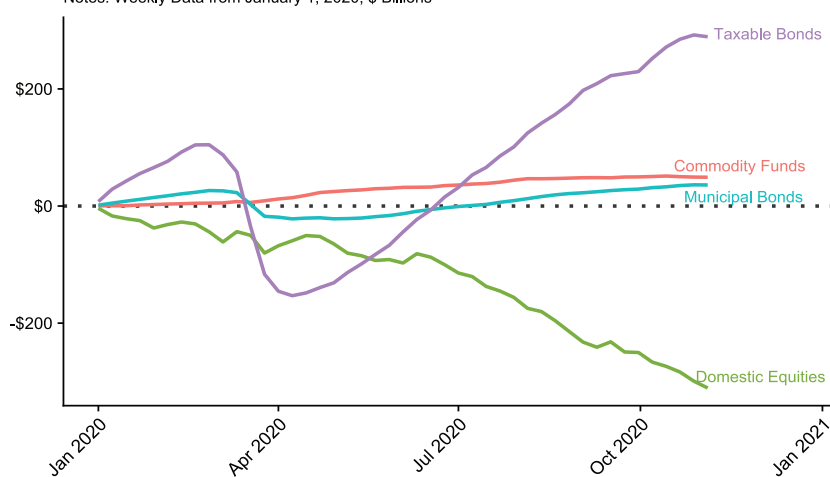
Mutual Fund, ETF and Money Market Fund Investors

Key Takeaway: With COVID-19-induced financial market volatility in March 2020, 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 in taxable bond funds. Total net fund flows into taxable bond funds have exceeded \$280 billion as of November 4, 2020.

Figure 3.5 presents weekly net fund flows into select classes of mutual funds and ETFs from January 7 to November 4, 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.

Figure 3.5: 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 distress. 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.

Taxable bonds include, for example, corporate bonds. ETFs sell large blocks of shares to, and only redeem them in large blocks 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.

Data Sources not previously mentioned: : **Figure 3.1:** Datastream. **Figure 3.2:** Datastream. **Figure 3.3:** Datastream. **Figure 3.4:** Ice Data Indices, LLC, retrieved from FRED (IDs: BAMLCCO1AAAATRIV, BAMLCCO3ATRIV, BAMLCCO4BBBTRIV, BAMLHYHO1BBTRIV, BAMLHYHO2BTRIV, BAMLHYHO3CMTRIV, BAMLCOA1CAAAY, BAMLCOA3CAEY, BAMLCOA4CBBEY, BAMLHOA1HYBBEY, BAMLHOA2HYBEY, BAMLHOA3HYCEY).

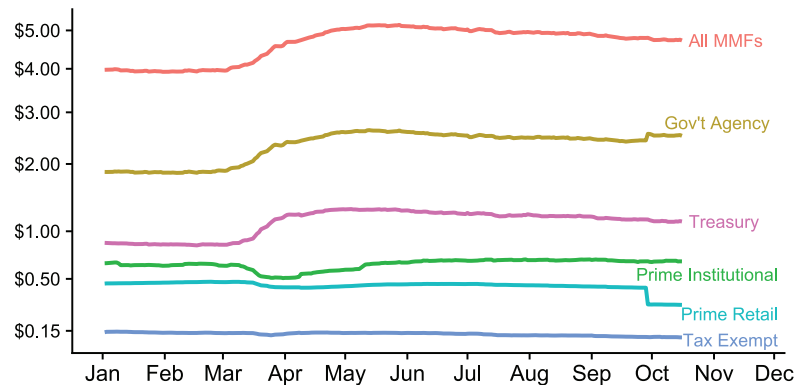
Net withdrawals from equity funds following the COVID-19 pandemic extended a longer term trend. This trend may be related to [media reports](#) of increased direct investment activity by retail investors in equities. In contrast, taxable bond funds experienced sizable inflows until late February 2020. Then, investors withdrew nearly \$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, announced the establishment of corporate bond liquidity facilities. Indeed, net fund flows into taxable bond funds increased by over \$400 billion from mid-April to October 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. Based on investments of the fund, MMFs can be defined as government, prime, and municipal (or tax exempt). The COVID-19 financial market dislocation in mid-March resulted in significant redemptions from some prime and tax-exempt MMFs, while Treasury and government agency MMFs experienced large inflows (Figure 3.6). The assets under management of the MMF industry reached an all-time high of \$5.2 trillion at the end of May. Since then, the MMF industry assets have steadily declined reaching \$4.8 trillion as of October, but still significantly higher than the \$4.0 trillion pre-pandemic level seen in February. For a more in depth look at MMFs, see [the Research Spotlight, "The Commercial Paper Market and Money Market Funds."](#)

Figure 3.6: 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 May 2020, assets under management of the MMF industry have been gradually declining.

Figure Data Source: Crane Data (Daily Data). Data Notes: Some fund families report their fund flows to CraneData on a less frequent basis potentially resulting in a temporary distortion of daily series.

Other Notes: Prime MMFs can invest in a broad range of short-term, high quality assets such as U.S. Treasury bills, federal agency notes, certificates of deposit, corporate commercial paper, repurchase agreements, and obligations of states, cities, or other types of municipal agencies. Government MMFs invest 99.5% or more of their total assets in short-term Treasury securities, securities issued by governmental agencies, repurchase agreements backed by these securities, or cash.

Borrowers, Securities Issuers, and Capital Formation

Key Takeaway: U.S. firms have raised record amounts of capital in public markets in 2020, especially during the 2nd quarter when the economic uncertainty surrounding the COVID-19 response was highest. The public firms that raised the most capital had high credit ratings, growing inventory and receivables, and positive profitability growth. Firms used the capital raised to increase cash balances and also to invest, including in acquisitions. Firms increased cash balances more when they had declining inventory and receivables (both likely sources of additional cash) and a dip in profitability, despite these firms' relative disadvantage in capital raising.

How much capital did U.S. firms raise, and how did they raise it?

Corporate borrowers issued \$2.2 trillion of fixed income securities and \$340 billion of equity securities in U.S. markets over January-November 2020.¹ The volume of fixed income issuance is the highest for any year since at least 1996 (2nd place is 2017 with \$1.7 trillion in 2020 dollars). The volume of equity issuance is the highest since 2000, when issuance was \$457.5 billion in 2020 dollars.

We analyze \$1.6 trillion of fixed income issuance and \$265 billion of equity issuance by U.S. public firms, from January to October 2020, using data from S&P's Capital IQ. The Capital IQ data also include \$80 billion of bank loan issuance during the same period. Figure 3.7a graphs the total amount of capital raised, with issues broken down into several subgroups by issuer characteristic. The first set of bars shows that firms with investment grade (IG) ratings raised much more capital than firms with high-yield (HY) ratings or no rating (NR), and that IG firms mostly raised capital in bond markets. HY and especially NR firms relied much more heavily on equity markets and on banks. The next three pairs of columns separate observations based on whether the issuer's inventory, receivables, or operating profitability had increased year over year, as of the quarter prior to the security issuance. Inventory is scaled by assets, receivables are scaled by sales, and operating profitability equals [revenues – cost of goods sold – selling, general, and administrative expenses – interest expense] scaled by assets.

These bars indicate that firms with growing inventory and firms that increasingly extended trade credit to customers were more active in public securities markets. Firms with growing profitability also raised slightly more capital (the final pair of bars). One reason why IG firms outpaced HY and NR firms in terms of security issuance is that IG firms tend to be larger. However, a different picture emerges in Figure 3.7b, which scales each debt or equity issuance by the issuer's assets and displays the medians for the same subgroups used in Figure 3.7a. Though debt and equity issues from NR and HY firms were smaller than issues from IG firms in aggregate, they were much larger as a percentage of the issuing firms' assets. The yellow bars in Figure 3.7b are also much larger than those in Figure 3.7a, indicating that smaller firms were relatively more active in equity markets—even among the subgroup of firms with IG ratings.

¹ See SIFMA Statistics, December 2020.

Figure 3.7a. Corporate Capital Raised in 2020 (\$ Billions)

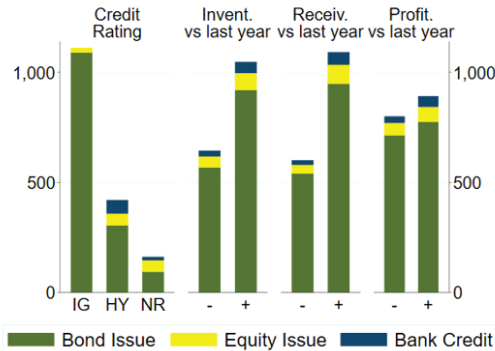
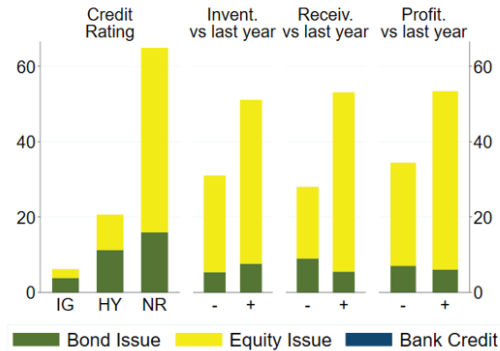


Figure 3.7b. Corporate Capital Raised in 2020 (Median % of Assets)



Firms can raise capital in public equity markets in three basic ways. The first is through a traditional IPO. Firms that are already public can return to the equity markets to sell additional shares in a “seasoned equity offering” (SEO). Finally, a private firm can transition to a publicly traded company through a de-SPAC transaction with a special purpose acquisition company (“SPAC”), a type of blank check company that has previously raised public equity in its own IPO.

Figure 3.8. U.S. Equity Sales, 2018-Q3 to 2020-Q3

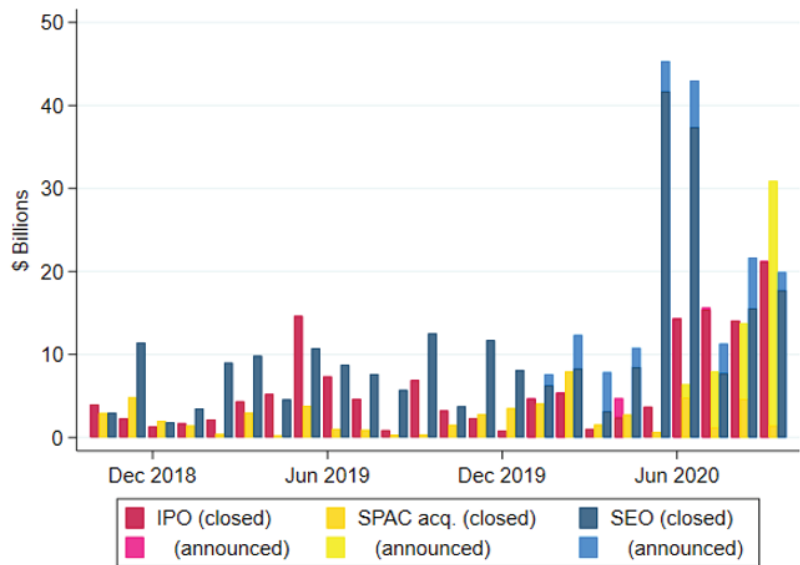


Figure 3.8 charts the volume of capital raised by U.S. public firms through these methods. IPO and SEO data are from Capital IQ and data on de-SPAC transactions are from Private-Raise. This figure shows a very large spike in SEOs in June and July of 2020, as firms raised cash. IPO activity was also relatively high in June and July, dipped slightly in August, and then continued to trend upward. The volume of closed or announced de-SPAC transactions was very high in 2020Q3, and in September 2020 it reached its highest level ever.

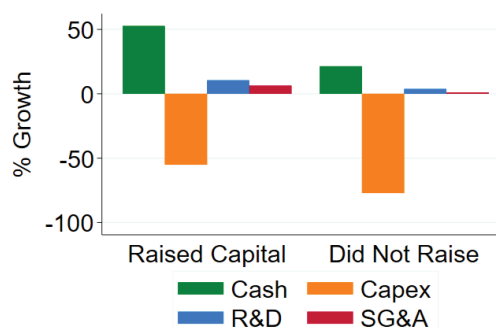
What did U.S. firms do with capital raised?

Two important motivations for raising capital are investment and precautionary cash savings, and U.S. firms appear to have used the capital they raised in 2020 for both purposes. Figure 3.9 plots the percentage growth in cash (cash divided by assets), rate of capital investment (capital expenditures divided by assets at the end of the previous quarter), R&D expenses, and SG&A expenses² for two groups of firms from 2020Q1 to 2020Q3—those that raised capital and those that did not. Firms that raised capital in some quarters but not in others during may appear in each group at different times. Growth rates of *Cash*, *R&D*, and *SG&A* are percentage changes over the previous four quarters. To address the possibility that capital expenditures are “lumpy,” or not evenly spaced over time, *Capex* growth in this figure is the capital investment rate divided by the average capital investment rate across the previous 20 quarters.

This figure shows that firms raising capital increased their cash balances much more than firms that did not raise capital in a given quarter, and they also increased spending on R&D and SG&A at a higher pace. Despite the large drop in the investment rate for both groups in 2020, firms that raised capital decreased their investment rate by a smaller amount.

Another possible use of capital is for investor payouts, particularly through share repurchases. We do not observe any meaningful differences in either gross or net share repurchases between firms that raised capital in 2020 and those that did not. Though the firms raising capital ought to have greater resources available to distribute to investors, it appears that motivations to invest and to stockpile cash outweighed motivations to fund investor payouts.

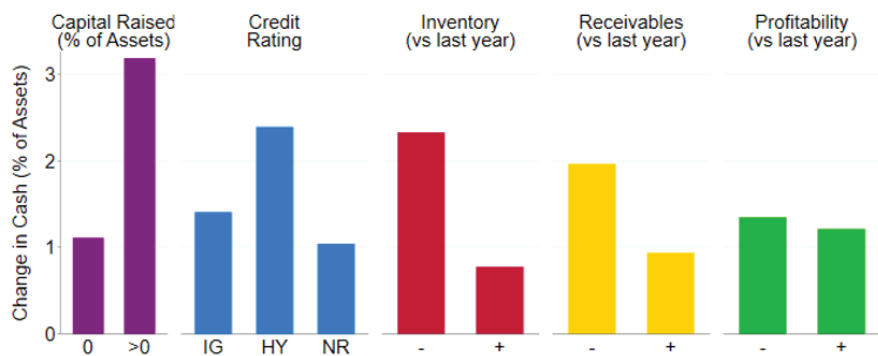
Figure 3.9. Change in Cash and Capital Expenditures, by Capital Raised



Data Source: Capital IQ

A further analysis of firms’ cash management during 2020 reveals additional likely sources of cash and likely motivations for raising cash. Figure 3.10 graphs firm-level changes (year over year) in cash as a percent of total assets as of 2020Q3.

Figure 3.10. Corporate Change in Cash (YoY), by Firm Characteristics



² SG&A is formally treated as an expense, but some components of SG&A are economically more similar to investment than overhead—e.g., website development, spending on I.T. systems, employee training, restructuring charges. Recent academic studies on corporate investment and intangible capital include SG&A—see, e.g., Peters and Taylor (2017) Intangible Capital and the Investment-q Relation, *Journal of Financial Economics* 123, 251-272. See also Eisfeldt and Papanikolaou (2014) The Value and Ownership of Intangible Capital, *American Economic Review: Papers and Proceedings* 104, 1-8.

The first subgraph separates firms based on whether or not they raised any capital in public markets in 2020. The second subgraph splits firms into IG, HY, and NR rating categories. The last three subgraphs separate firms into categories based on whether *Inventory* (inventory/assets), *Receivables* (accounts receivable/sales), or *Profitability* (operating profits/assets) was lower or higher in 2020Q3 than in 2019Q3.

This figure aligns with Figure 3.9 in showing greater increases in cash for firms that raised capital in debt or equity markets. The largest cash increases occurred among HY firms, possibly because their demand for precautionary cash was greater than for IG firms but their ability to raise capital was greater than for NR firms. Research³ finds that declines in inventory and in receivables help explain changes in U.S. firms' cash balances, and this figure supports those findings. There are two reasons why inventory and receivables should correlate with cash balances. The first is mechanical: inventory falls when firms do not incur the expense of replacing inventory and receivables fall when firms more aggressively collect from their customers. The second reason is that low inventories and receivables (less credit extended to customers) may be a temporary response to financial stress, leading to a higher demand for cash against the future expenses that will be needed to replenish inventory and reestablish normal sales terms with customers.

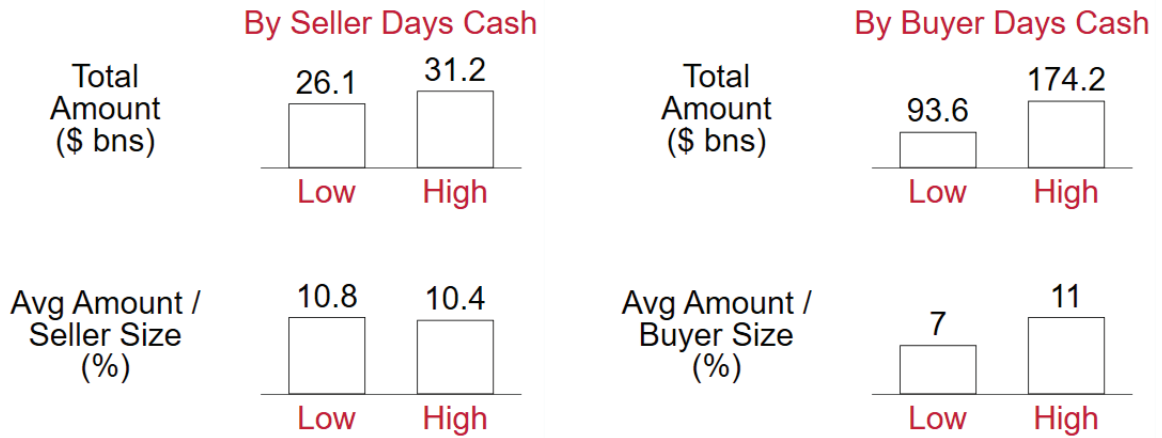
Low profitability may indicate financial stress and greater demand for precautionary savings, but it may also indicate relative inability to retain cash from operations. It is unclear, then, whether profitability ought to be positively or negatively related to firms' cash holdings in 2020. Figure 3.10 shows that firms whose profitability was lower in 2020Q3 than in 2019Q3 stockpiled slightly more cash over the same period.

Were asset sales/acquisitions a source or a use of cash?

Acquisition activity can also potentially be a source of cash for firms selling assets or a use of cash for firms acquiring assets. Figure 3.11 graphs the volume of M&A transactions during 2020 (top two graphs) and the average ratio of the transaction amount to the seller's or buyer's assets (bottom two graphs), for all transactions where data are available. Sellers (left graphs) and buyers (right graphs) are further divided into groups based on median firm *Days Cash*, or the ratio of cash and liquid securities to average operating expenses over the previous 3 years. *Days Cash* refers to the value as of the last quarter before the M&A announcement date. The data include 405 transactions where the seller was a U.S. public firm and 1,144 transactions where the buyer was a public U.S. firm. All transactions data and firm financial data are from Capital IQ.

³ See Bates, Kahle and Stulz (2009) Why do U.S. Firms Hold So Much More cash than They Used To? *Journal of Finance* 64, 1985-2021.

Figure 3.11. M&A Asset Sales, by Characteristics of Sellers and Buyers



The top-left graph shows that among all sellers in M&A transactions, sellers with high *Days Cash* sold slightly more assets overall, and the bottom-left graph shows that sellers with high and low *Days Cash* were comparable in the relative size of assets sold. The top-right graph shows that buyers with high *Days Cash* acquired much more assets overall, and the bottom-right graph shows that they also bought much larger assets as a percentage of buyer size. Overall, firms with large cash balances appear to have used some of that capital for acquisitions, but firms with low cash balances were not more likely to sell assets.

The COVID-19 pandemic and the associated restrictions on economic activity led to heightened uncertainty and greater demand for cash, and corporations may have also been enticed by historically low interest rates and elevated equity valuations during much of the year. Firms with strong fundamentals raised capital in debt and equity markets, and used it to boost cash balances and also to invest—including investments in R&D, SG&A, and acquisitions. Firms with weaker fundamentals raised less capital in public markets but retained a higher percentage of the capital raised as cash. Firms additionally raised cash in 2020 by allowing inventory and receivables balances to fall.

Spotlights

The Commercial Paper Market and Money Market Funds

Viktoria Baklanova, Igor Kozhanov, Isaac Kuznits, Trevor Tatum

Key Takeaways

The uncertainty and market volatility from the COVID-19 economic shock caused an unexpected increase in demand for cash and short-dated U.S. government securities leading to asset redemptions from certain types of money market funds (MMFs) and disrupting issuance of credit-related instruments. This disruption resulted in significantly constrained liquidity and higher funding costs. In particular, conditions in the commercial paper (CP) market began to deteriorate rapidly in the second week of March, when spreads of AA-rated nonfinancial CP reached new historical highs, while spreads for AA-rated financial CP widened to the highest levels since the 2007-2008 financial crisis.

As part of the general deterioration in market conditions, some prime and tax-exempt MMFs experienced heavy redemptions beginning in the second week of March 2020.⁴ Outflows from these funds abated quickly after the Federal Reserve's announcement of its support for the short term funding markets, including support for the CP issuers and MMFs in mid-March.

U.S. Short-Term Funding Market

A well-functioning short-term funding market (STFM) is critical to the real economy and to the broader capital markets. The U.S. STFM encompasses many types of participants and market sectors, which are themselves interconnected outside the STFM. Figure 4.1 shows various STFM market participants, their relative size, and their interconnections as of 2020-Q2, three months after the peak of the COVID-19-induced economic shock and distress in the financial markets in spring.⁵ A few observations are in order. The STFM contains many sub-markets (e.g., repo financing and CP) and several types of participants are central for orderly market functioning, such as broker-dealers. Some categories of participants, such as non-financial corporates or state and local governments, can participate as both short-term borrowers and short-term lenders.

The STFM has changed significantly since the pre-COVID-19 period. The most pronounced change in the STFM between the last quarter of 2019 and the middle of 2020 is the increased footprint of the federal government, which increased T-bill issuance used by many STFM participants. In turn, MMFs, primarily government MMFs, increased their holdings of Treasury securities three-fold from \$0.6 trillion to \$1.9 trillion.⁶

4 Prime MMFs can invest in a broad range of short-term, high quality assets such as U.S. Treasury bills, federal agency notes, certificates of deposit, corporate commercial paper, repurchase agreements, and obligations of states, cities, or other types of municipal agencies.

5 The state of the STFM as of 2019-Q4 and the effects of the COVID-19 economic shock were discussed, among many other things, in the SEC staff report entitled "U.S. Credit Markets: Interconnectedness and the Effects of the COVID-19 Economic Shock." Figure 5.1 updates Figure 2.1 from that report.

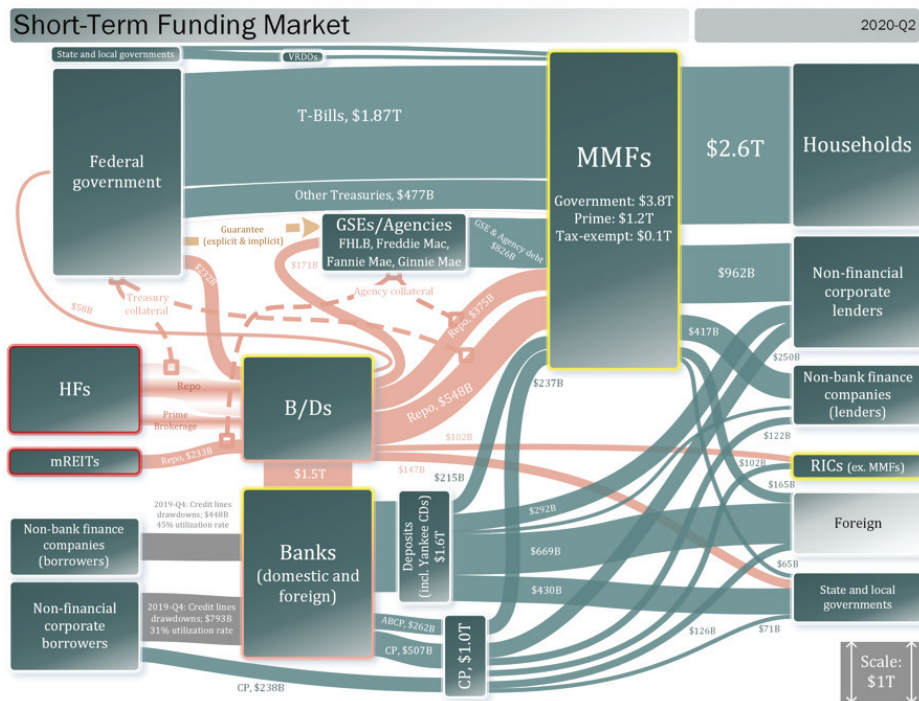
6 Government MMFs invest 99.5% or more of their total assets in short-term Treasury securities, securities issued by governmental agencies, repurchase agreements backed by these securities, or cash.

Relatedly, holdings of MMF shares by households increased from \$2.1 trillion to \$2.6 trillion and by non-financial corporate businesses from \$577 billion to \$962 billion.

In addition, non-financial corporate businesses increased their holdings of other cash and short-term financial instruments: cash and checkable deposits balances increased from \$1.27 trillion to \$1.77 trillion, while time and savings deposits increased from \$200 billion to \$300 billion. Overall, non-financial corporate businesses hold close to \$1 trillion cash and short-term financial instruments, more than at the end of 2019, according to the Financial Accounts of the United States. Non-financial corporate holdings of commercial paper (CP) have not changed over the same period.

In this Spotlight, we discuss the CP market and the evolving role of prime MMFs.⁷

Figure 4.1: U.S. Short-Term Funding Market, 2020-Q2



This figure shows borrowers on the left and lenders on the right, so that credit risk flows from left to right and money flows from right to left. The width of the bands represents outstanding credit as of the end of 2020-Q2 (\$1 trillion shown at bottom right for scale). Data sources and other technical details are in the SEC staff report [U.S. Credit Markets: Interconnectedness and the Effects of the COVID-19 Economic Shock](#). The figure does not include securities lending and prime brokerage activity because of the lack of reliable disaggregated (and in some cases, reliable aggregated) data. The figure also nets some repo connections for simplicity.

⁷ A large part of this Spotlight was published on November 9, 2020, as a separate report entitled “Primer: Money Market Funds and the Commercial Paper Market” on the website of the Division of Investment Management’s Analytics Office.

U.S. Commercial Paper Market

CP is unsecured, short-term debt issued for a specified amount to be paid at a specified date. CPs are issued at a discount, with minimum denominations of \$100,000 and terms normally ranging from 1 to 270 days.

Total U.S. CP outstanding was at \$1,007 billion at the end of June 2020, down by \$37 billion since the end of 2019 (Figure 5.2). This is around one half of \$2.2 trillion, the all-time high in CP outstanding reached in July 2007. The majority of the decline in CP outstanding since the financial crisis can be attributed to reduction in the asset-backed commercial paper (ABCP) issuance.

As of June 2020, ABCP outstanding were at \$214 billion accounting for 21% of the total CP outstanding (Figure 4.2). CP issued by U.S. financial firms were at \$189 billion (or 19% of the total); CP issued by nonfinancial firms were at \$166 billion (or 17% of the total); and non-U.S. financial and other firms were at \$438 billion (or 43% of the total).

Many types of institutional investors participate in the CP market, including investment companies, retirement accounts, state and local governments, financial and nonfinancial firms. As of June 2020, nonfinancial firms were the largest investors accounting for 25% of the total CP market followed by MMFs at 22% (Figure 4.3). Investments by financial firms were at 19% of the total. Other large CP investors are mutual funds (ex-MMFs) at 10%, state and local governments at 7% and pension accounts at 5%. The “Others” category includes smaller CP investors that collectively account for around 13% of the total CP outstanding.

The investor base in the CP market has changed over time. For example, MMFs used to account for a substantially larger share of the CP market at close to 47% in September 2001. Over the last 20 years, MMF participation in the CP market has declined markedly. One reason for the decline is that assets under management in government MMFs, which do not invest in the CP market, have grown, while assets in prime MMFs have declined, resulting in lower demand for CP from MMFs (Figure 4.4). On the other hand, CP investments of nonfinancial corporations have increased almost six-fold since 2000 to \$250 billion in June 2020 (or 25% of the total CP market) from \$46 billion in March 2000 (or 3% of the total CP market).

Figure 4.2: CP outstanding declined sharply after the financial crisis and stayed at around \$1 trillion

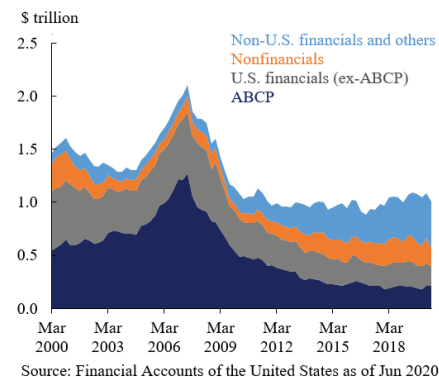


Figure 4.3: Nonfinancials account for the largest share of CP holdings at 25% followed by MMFs at 22%

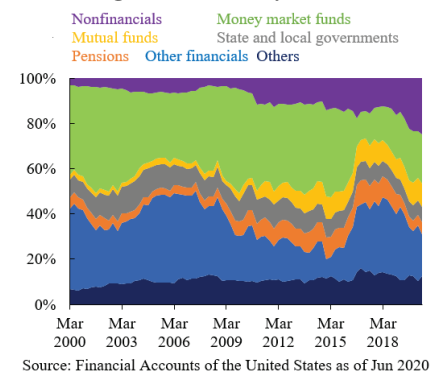
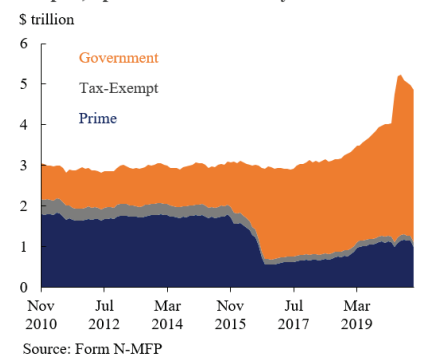


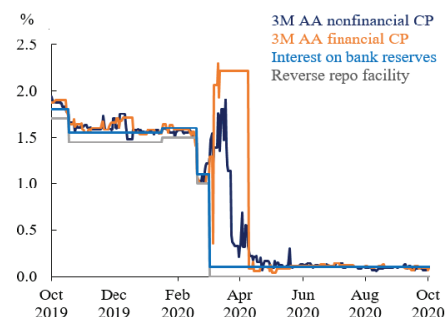
Figure 4.4: Total MMF assets reached \$4.2 trillion in April, up 29% from February levels



What happened in the CP market in mid-March 2020?

In mid-March 2020, CP rates increased, which is normally associated with a lack of investor demand (Figure 4.5), and became significantly more volatile, which is normally associated with elevated economic uncertainty. However, the broad scope of market developments at the onset of the COVID-19 pandemic complicates the attribution analysis. Corporate investors in the CP market may have reduced their allocations in anticipation of reduction in revenues. MMFs and mutual funds may have decreased their CP investments in anticipation of investor redemptions. Form N-MFP data show that prime MMFs, in particular, reduced their holdings of longer-dated CP. They did it to keep their buffers of weekly liquid assets (WLA) above 30% and were likely reluctant to purchase assets with maturities of more than seven days that would not qualify as WLA.⁸ This, in turn, limited ability of some CP issuers to issue longer-dated CP. Available data show that prime MMFs and short-term and ultra-short corporate bond mutual funds experienced significant outflows in March (Figures 4.6 and 4.7). Prime MMFs lost around 11% of their net assets in March. Similarly, short-term and ultra-short bond mutual funds lost around 10% of their assets.

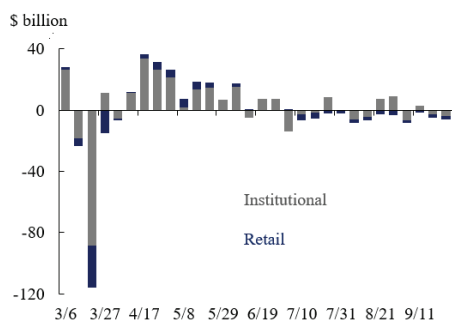
Figure 4.5: CP rates spiked in mid-March, but remained subdued in the recent months



Sources: Bloomberg, Federal Reserve

At the same time, some CP issuers may have turned to the CP market to bridge their funding needs. Overall, the CP outstanding increased in the first quarter of 2020 by \$44 billion, despite the spike in the CP rates. During the second quarter, CP issuers had fewer immediate borrowing needs amidst reduced economic activity and the CP outstanding declined by \$82 billion.⁹

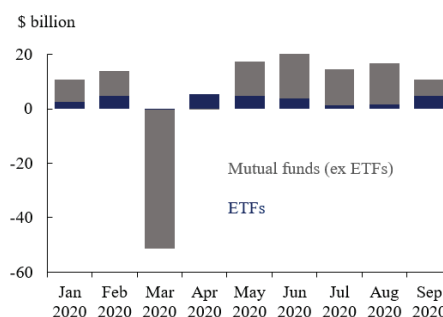
Figure 4.6: Prime MMFs saw large redemptions in March and reversal of flows in subsequent weeks



Note: Weekly asset changes take into account asset flows and valuation changes.

Source: Form N-MFP

Figure 4.7: Short-term and ultrashort corporate bond mutual funds experienced significant outflows in March and reversal of flows in subsequent months



Note: ETF - exchange-traded funds.

Source: Morningstar

⁸ All MMFs are required to invest at least 30% of their assets in securities that are considered weekly liquid. If a MMF's portfolio does not meet the minimum WLA level, it may not acquire any assets other than weekly liquid. An MMF board may impose liquidity fees or temporarily suspend redemptions if the fund's WLA decline below 30% of its total assets.

⁹ Additional information about the effects of the COVID-19 economic shock on the CP market can be found in the SEC staff report entitled "U.S. Credit Markets: Interconnectedness and the Effects of the COVID-19 Economic Shock."

What was the impact of the Federal Reserve’s Money Market Fund Liquidity Facility?

The Federal Reserve established the Money Market Mutual Fund Liquidity Facility (MMLF) on March 18, 2020, to broaden its program of support for the flow of credit to households and businesses.¹⁰ MMLF makes loans available to banks to finance assets purchased from prime and tax-exempt MMFs. MMLF started its operations on March 23 and initially intended to provide loans for purchases of CPs, but was extended to include purchases of certificates of deposit (CDs) and certain municipal securities. MMLF also enabled banks that purchased assets from affiliated MMFs to finance these purchases with loans from MMLF. In addition, since March, financial regulatory agencies have announced multiple emergency relief provisions for banks, advisers and funds. Following these actions, both market conditions and broader economic conditions in the U.S. appeared to improve with CP yields and their volatilities quickly falling in early April (Figure 5.5).

The outstanding amount of MMLF loans has been declining since April. The maximum MMLF utilization reached \$51 billion in the first two weeks of April, or under 5% of the net assets in eligible MMFs. For context, lending by a similar Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF) utilized in September 2008 reached about \$150 billion in its first 10 days of operation, or around 7.5% of assets in prime MMFs at that time.¹¹ As of September 30, 2020, the total outstanding amount of MMLF loans was around \$7 billion; MMLF accrued revenues from interest and fees to the Federal Reserve were around \$166 million, according to the report from the Federal Reserve.¹² Initially MMLF was scheduled to stop providing new loans after September 30, 2020, but was extended through March 31, 2021.¹³

¹⁰ See the description of [Money Market Mutual Fund Liquidity Facility](#). In the Coronavirus Aid, Relief, and Economic Security Act (H.R. 748, CARES Act), signed into law as P.L. 116-136 on March 27, 2020, Congress appropriated up to \$500 billion for the Treasury’s Exchange Stabilization Fund (ESF) to support Federal Reserve programs and temporarily permitted the use of the ESF to guarantee the money market fund industry. With respect to MMLF, the ESF provided \$10 billion as credit protection to the Federal Reserve.

¹¹ See analysis of AMLF utilization [here](#).

¹² See “Periodic Report: Update on Outstanding Lending Facilities Authorized by the Board under Section 13(3) of the Federal Reserve Act,” October 7, 2020 (available [here](#)).

¹³ See “Federal Reserve Board announces extension through March 31, 2021, for several of its lending facilities that were generally scheduled to expire on or around December 31”, available at <https://www.federalreserve.gov/newsevents/pressreleases/monetary20201130a.htm>.

Summary: Virtual Roundtable on Interconnectedness and Risk in U.S. Credit Markets

Abstract

In October 2020, SEC staff published a [report](#) on the interconnections among the various U.S. credit markets that sought to identify the extent to which these interconnections contributed to or mitigated risk, including systemic risk, during the period of market stress from the COVID-19 global economic shock of March 2020. On October 14, SEC staff held a public roundtable centered on the newly published report and featured a fireside chat with Chairman Jay Clayton and two panel discussions. The first panel discussion focused on the effects of COVID-19 on six credit markets spanning over \$40 trillion of outstanding debt, including the short-term funding, corporate bond, leveraged loan, residential and commercial real estate, and municipal securities markets. The second panel discussion addressed the interconnectedness of the market from a regulatory perspective and how the COVID-19 economic shock tested the resilience of the U.S. and international financial markets and the effects of monetary interventions and fiscal measures in jurisdictions around the globe. Panel members included leading market participants as well as both U.S. and international regulators. A recording of the webcast is available [here](#). This document is a staff summary of the roundtable. The Commission has expressed no view regarding the analysis, findings, or conclusions of the roundtable or of this summary.

The Agenda

SEC staff hosted the virtual Roundtable on Interconnectedness and Risk in U.S. Credit Markets on Wednesday, October 14, 2020.

The first panel provided a market perspective. Moderated by Sumit Rajpal (SEC), the panel members were David Finkelstein (Annaly Capital Management), Dawn Fitzpatrick (Soros Fund Management), Steven Goulart (MetLife), Barbara Novick (BlackRock), and Thomas Wipf (Morgan Stanley).

The fireside chat was moderated by Jay Clayton (SEC), and it included Mark Carney (COP 26 Finance Adviser and UN Special Envoy), Gary Cohn (former U.S. National Economic Council), Glenn Hutchins (North Island), and Lorie Logan (Federal Reserve Bank of New York).

The concluding panel discussed interconnectedness and risk from a regulatory perspective. The panelists were Tobias Adrian (International Monetary Fund), Natasha Cazenave (Autorité des Marchés Financiers), Andreas Lehnert (Board of Governors of the Federal Reserve System), and Brent McIntosh (Department of the Treasury), and the moderator was Dr. S.P. Kothari (SEC).

Closing remarks were made by Dr. Mohamed El-Erian (Queens' College).

The Markets Panel

The markets panel began its discussion by looking at the Federal Reserve Board's (Fed's) nine credit support facilities. A panelist explained that the liquidity facilities served two purposes. First, the facilities provided liquidity to markets that needed additional liquidity. Second, the facilities signaled that the Fed would step in with liquidity when needed. The willingness of the Fed to step in, and to do so in an unprecedented way, might have changed market expectations of Fed involvement on a prospective basis. "When volatility in markets is artificially suppressed, asset prices might be temporarily pushed up," said panelist Steven Goulart. "But that also diminishes natural signals that come from prices. Without the information that market-based pricing provides, over time, it becomes more difficult for investors to make the right investment decisions." Another panelist explained how issuers took advantage of this period to shore up their balance sheets—March, April, and May had record issuances of investment-grade debt.

The discussion turned to bid-ask spreads. A panelist noted that bid-ask spreads widened early in the crisis period as both institutions and individuals made a "dash for cash." The panelist stated that there were two providers of liquidity at the time, banks and proprietary trading firms. Banks pulled away from liquidity provision because using buffers in that way exposed them to potential liquidity and other implications related to stress testing and capital. Proprietary trading firms stepped back from market making—they turned off their trading algorithms—because they had concerns about the quality of data and increased volatility. Panelist Dawn Fitzpatrick said, "Until the Fed showed up, there really was no material marginal buyer."

In a discussion about improving the resilience of the short-term funding markets as a whole, panelist Tom Wipf said, "The Treasury market needs to work, and the repo market needs to work. And the thing that would serve to enhance that a lot would be to minimize to as close to zero as possible counterparty credit risk and intra-day credit risk."

The panel discussed money market funds during the crisis this year. Panelist Barbara Novick noted, "Everyone values liquidity in a period of uncertainty. Any solution [to the liquidity problem that] we think about has to take that as a given because, yes, people will run again for cash if there is a period of uncertainty of this magnitude." She expressed concern about the hard link between a money market fund having its liquidity drop below 30% and the triggering of a board meeting for considering whether to put down gates or impose redemption fees, which she believes may have spurred uncertainty.

The discussion included corporate bonds with an emphasis on corporate bond mutual funds and exchange traded funds (ETFs). A panelist discussed different ways of meeting funds' liquidity needs. One method is to adjust the fund's portfolio. For example, funds that hold mortgage backed securities (MBS) get large cash inflows from those underlying assets, while other funds might need to build "layers of liquidity" by holding cash, liquid assets, or larger issues. A distinctly different way of meeting funds' liquidity needs is through swing pricing, which forces the transacting shareholder to pay the fund for the demanded liquidity. The last part of the bond fund discussion focused on ETFs. ETFs were given high marks by the same panelist for providing transparency, liquidity, and efficiency.

A panelist stated that defaults in the corporate bond market have been high in 2020, and that the evidence suggests that defaults might get higher, but that the default rate varies substantially across industries. In particular, high-yield energy defaults rose to 24% in September while high-yield ex-energy defaults were less than 4%. However, the panelist noted that credit enhancements were much more common at the start of the 2020 crisis than they were during the 2008 Great Financial Crisis (2008 GFC), which might help explain why the 2020 default rate was not worse.

A panelist explained that credit risk transfer securities (CRTs) are not attractive securities for conservative investors such as insurance companies because CRTs are levered instruments that have junior positions in MBS that are typically rated BBB or lower. Panelist David Finkelstein expanded on the riskiness of CRTs when he said, “The combination of structure leverage and balance sheet leverage, when markets are volatile, can lead to pricing and selling pressure that goes well beyond the fundamental value.” Nevertheless, he noted that CRTs have a number of positive attributes, including that they enable government-sponsored enterprises to reduce their credit exposure.

Two panelists highlighted two risks in the mortgage market. First, many banks have left the origination and servicing markets, leaving thinly-capitalized non-bank entities in their place. This amplifies the cyclical access to credit. Second, mortgage real estate investment trusts (mREITs) are public companies with a high degree of transparency so activity is well known. One of the panelists suggested that leverage in this market needs to be reduced.

The panel ended with a discussion about the future of commercial real estate. A panelist noted that there are short-term weaknesses in many sectors, including hotels and experiential retail. Nevertheless, the panelist suggested that commercial real estate is a long-term asset that will perform well over a long-term horizon because firms are unlikely to have large portions of their employees telework over the long-term, firms might de-densify their offices to reduce health risks, and some real estate might be re-purposed.

Fireside Chat

The fireside chat panelists emphasized that “muscle memory” was a key reason the financial markets recovered so quickly in early 2020. When regulators and central banks needed to step in, they did not have to reinvent the wheel because they were able to review actions taken in response to the 2008 GFC. This enabled them to act quickly and decisively. Given the success of relying on the 2008 GFC playbook, panelists recommended that regulators and central banks take steps to memorialize the 2020 responses for use during future crises.

A panelist noted that the Treasury market is the world’s most liquid bond market and that it is used to benchmark a broad set of assets. The panelist highlighted that in normal times, these interconnections improve trading and pricing efficiency, but in March 2020, several key metrics increased dramatically due to heightened uncertainty stemming from the COVID-19 pandemic. The price premium of on-the-run Treasury securities increased dramatically as broad groups of investors bought on-the-run Treasury securities and sold off-the-run Treasury securities. Panelist Lorie Logan said, “The Federal Reserve’s purchases of Treasury securities and, I would say, more

importantly, its commitment to do more if necessary, I think, really helped stop this rapidly worsening dynamic that we saw. The impact was...direct through alleviating supply-demand imbalances. It was also indirect by reducing dealer inventories and better positioning the dealers to play their intermediary role and providing assurance that liquidity improvements would last for some time.”

A panelist noted that the bond ETF market has grown dramatically since the 2008 GFC, and that it is highly interconnected with the cash market for bonds. The panelist discussed how bond ETFs enhance liquidity and help improve the price transparency of the bond market. However, the panelist also noted that bond ETFs trade at a rapid velocity; they offer effectively daily liquidity; and they provide instant price transparency. This is problematic because bond ETFs represent ownership claims on loans that have none of those characteristics. He observed that bond ETFs are doing maturity transformation without all of the regulations of the banking sector.

Panelists discussed international cooperation during the early months of the pandemic, noting that the demand for US dollar liquidity extended beyond US borders. A panelist highlighted that although it is not well known, the Fed’s actions were extensive in the global dollar funding market. Another panelist emphasized how the Fed’s actions in swap, foreign exchange, and other markets helped the US by helping foreign investors better manage their dollar investments in the US.

The panel also discussed how today’s global markets are highly interconnected. Panelist Glenn Hutchins said, “To think of these markets as somehow separate is to have a very antiquated view of how markets are actually operating and how the infrastructure is functioning today.”

The panel discussed that one of the ongoing risks in the financial markets is infrastructure. A panelist noted that there have been huge investments in improving trading technologies in recent years that have not been matched by investment in clearing technologies. Indeed, equities trades happen in microseconds, but settle in days. The panelist argued that this delay exposes the buyer and seller to risk. Although margin requirements mitigate the settlement risk, the margin requirements are costly because they tie up capital, removing it from the markets during the long delay.

The panel also discussed access to credit across market participants. Panelist Gary Cohn said, “We’ve got those that have access to the capital markets and those that don’t. And there is...nothing in the middle right now.” Additionally, another panelist noted that some disadvantaged communities are not connected to the financial system. This panelist argued that rectifying this would create engines of capital accumulation that benefit the communities and the entire economy.

Panelist Mark Carney noted that during the 2008 GFC and the 2020 pandemic, regulators and central banks played essential roles by stepping in and allowing market participants to take a breath. He discussed how no private institution is able to provide the liquidity that is needed during systemic crisis periods: “The challenge for authorities is we cannot expect and should never expect private entities to self-insure for systemic risk. That is a ridiculous burden to put on private entities.”

The Regulatory Panel

The regulatory panel began with a discussion of three groups of actions taken by the Fed and the Treasury to stabilize the markets. First, to address strains in funding markets, the Fed and Treasury established a few emergency lending facilities to backstop commercial paper markets and money market funds, and they also opened a credit facility for primary dealers. Second, the Federal Open Market Committee (FOMC) took actions to aid in the functioning of the Treasury market, including purchases of Treasury and agency securities. Third, the Fed and Treasury created emergency lending facilities to backstop longer-term credit markets. A panelist highlighted that some of these tools were old—based on actions taken during the 2008 GFC—and were implemented quickly, while others were new and required more time to implement. Panelist Tobias Adrian said, “Money markets were drying up. Treasury markets were drying up. And equity/derivative markets were also severely strained. And so the very forceful, swift, and timely action [of the Fed and the Treasury] was extremely effective.”

The panel also discussed how the Fed and Treasury actions affected markets outside the US. Panelists mentioned that there were many indirect effects because the US is such a large part of the global economy, but that there were also numerous direct effects. For example, the Fed expanded its foreign exchange swap markets and its repo facilities. The discussion also highlighted the cooperation among global regulators and central banks, including the European Central Bank and the Bank of England that resulted in actions that cushioned the negative economic effects of the pandemic.

The panel continued the international discussion by focusing on money market funds in European and other international markets. A panelist explained that money market funds differ across the globe in terms of fund structure, fund currencies, and fund regulations. Yet, the most stress was in the US and European markets. “We consider last March as a real-life stress test...there had been very significant reforms in this segment of the market...with the objective of strengthening the resilience of money market funds...and still, for a second time in only a decade, there had to be interventions,” Natasha Cazenava said. Another panelist explained how bright lines tend to encourage run behavior due to a potential first-mover advantage, and suggested that one regulatory challenge is to preserve or enhance liquidity without creating a new psychological barrier.

The panel also discussed the concern held by some commentators that interventions by the Fed and the Treasury might, over the long term, encourage risk taking and increase moral hazard in the financial system. However, panelist Brent McIntosh explained, “The problems here were driven not by an inordinate amount of risk in the financial systems but driven by a health crisis that no one could have anticipated.”

The panel next discussed that some commentators have observed that policy interventions happened only in the credit and fixed income markets even though equity market volatility and losses were larger. Panelist Andreas Lehnert contrasted equity and credit markets by saying that “because equity markets are much more volatile...there is less leverage...the system is designed to take large losses.” Another panelist suggested that another reason for focusing on the credit

and fixed income markets is that credit market participants rely on the credit markets to finance themselves. Businesses, non-profits, state and local governments, and households rely on credit markets for their day-to-day operations. The panel also noted that the goal of the Treasury was not to support investors or to support the market per se. Instead, the Treasury interventions were targeted at keeping the economy running and workers supported.

The panel concluded by building on the fireside chat's conversation about potential underserved markets. The panelists made several points. First, the banking sector was well capitalized when the crisis began, and, unlike the 2008 GFC, the 2020 crisis is not a credit crisis. Second, the Small Business Administration's Paycheck Protection Program (PPP) distributed more than \$500 billion to small businesses, which is on par with the annual borrowing of small businesses. Third, there is some survey evidence that suggests that access to credit is not one of the most pressing problems of businesses right now.

Closing Remarks

Mohamed El-Erian offered closing remarks for the conference. He began with the hypothesis that "we have gotten hooked, as a society, on using public and private credit and leverage as a means to pursue economic growth." He argued that we, as a society, have gone too far over the last few decades with finance as a means to generate economic growth. He provided somber alternative interpretations of the current state of affairs. In reference to the 2008 GFC, for example, he said, "We won a very important war, the war against a global depression, and that was a meaningful win. But we didn't establish the peace, the peace of growth that is high, durable, inclusive, and sustainable."

There is an old Wall Street mantra that says "don't fight the Fed." Dr. El-Erian argued that that is changing into "rely on the Fed to cover your back." This reliance has already resulted in excessive risk taking that is irresponsible for the entire financial system, according to Dr. El-Erian. He argued that simply increasing the amount of leverage will not get the growth we need nor will relying on the Fed's umbrella to cover an increasingly large fraction of the financial markets ensure long-term stability. "There is going to have to be a fundamental mindset change," Dr. El-Erian concluded. "Otherwise, general financial stability is going to elude us. And if that happens, I think that certainly my daughters, and the ones after them, will suffer."



U.S. SECURITIES AND EXCHANGE COMMISSION