

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



DERA Economic and Risk Outlook

S.P. KOTHARI

Director and Chief Economist
and

DERA Research Staff

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Table of Contents

Key Highlights	1
Macroeconomic Indicators.....	1
Borrowing, Securities Issuance, and Capital Formation.....	1
Financial Market Stress.....	2
Macro-Financial Overview	3
Economic Fundamentals and Growth	3
Monetary Policy and Interest Rates.....	3
Financial Market Signals.....	5
Market Segments	7
Markets and Intermediaries	7
Investors.....	11
Borrowers, Securities Issuers, and Capital Formation.....	14
Household Borrowing and Asset-Backed Securities	19
Research Spotlight	21
Collateralized Loan Obligations (CLOs).....	21

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Key Highlights

Market signals are mixed: On the macroeconomic front, strong labor markets and economic growth indicate solid domestic economic fundamentals, while waning global economic activity and trade tensions may weigh on future output. In debt markets, there is elevated borrowing, but debt servicing burdens are within normal historical ranges. Similarly, more firms are entering the public markets via initial public offerings (IPOs), apparently as a result of favorable conditions in the public equity markets, particularly for certain sectors. Overall, despite the mixed signals, financial market stress remains low.

Macroeconomic Indicators

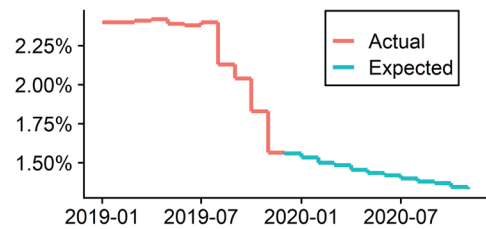
Strong Domestic Economic Fundamentals

Recent economic growth and monetary stimulus have contributed to strong economic fundamentals, robust labor markets, and high asset values.

Global Growth Concerns and Falling Interest Rates

Trade tensions, a slowing global economy, and low inflation expectations have led the yield curve, a historically leading economic indicator, to signal low future growth. Hence, interest rates have fallen and investors are expecting further interest rate declines as seen in Figure 1.1, which plots actual values as well as market expectations of the fed funds rate.

Figure 1.1: Actual and Expected Fed Funds Rate



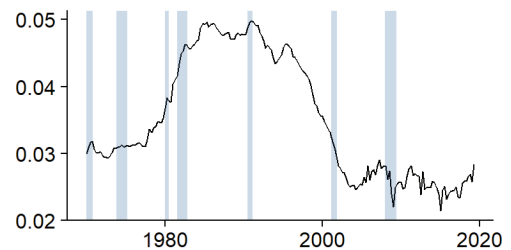
Borrowing, Securities Issuance, and Capital Formation

Mixed Debt Signals - Elevated Borrowing but Normal Debt Servicing Burdens

With low interest rate expectations, the federal government, businesses, and households have all increased borrowing, coinciding with a rise in securitizations of higher yielding household and corporate debt. However, because of positive economic growth, high asset values, and low interest rates, debt servicing burdens are within normal historical ranges

as seen from the graph of U.S. government interest payments relative to Gross Domestic Product (GDP) in Figure 1.2. Corporate debt servicing burdens in aggregate show a similar pattern.

Figure 1.2: U.S. Govt Interest Payments / GDP



Elevated Corporate Activity

Correlated with a rise in asset values, higher profits, low borrowing costs, and favorable tax incentives, more firms have entered public markets via IPOs, apparently as a result of favorable conditions in the public equity markets, particularly for certain sectors. At the same time, certain public firms have pursued stock buy backs and increased dividends. A substantial portion of this activity is concentrated in global, high cash generating firms.

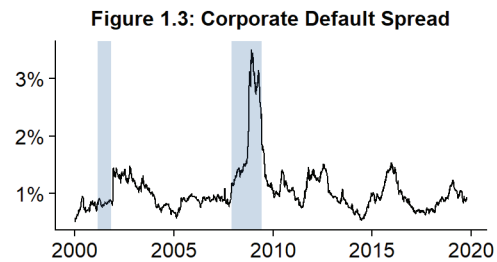
Financial Market Stress

Continued Low Indicators of Financial Market Stress

Concerns about global economic activity have not tightened financial market conditions.

The corporate default spread (Baa - Aaa bond yields), a broad-based proxy for financial market stress, remains near its historical lows (See Figure 1.3). Likewise, broker-dealers,

key financial intermediaries, have their highest post-Great Recession levels of excess capital, potentially giving them room to expand their balance sheets and facilitate market activity during a contraction.



Note: The U.S. economy added 136,000 jobs in September 2019, and the unemployment rate declined to its historically low level of 3.5%.

Figure and Data Notes: Blue bars are NBER recessions. Unemployment statistics are from the BLS Monthly Economic Situation Summary. Figure data sources are The Federal Reserve Economic Database (FRED), Datastream and the Chicago Board of Trade (CBOT) (Figure 1.1); FRED and BEA (Figure 1.2); and FRED and Moody's (Figure 1.3). Retrieved using FRED IDs: FEDFUNDS (fig 1.1) A091RC1Q027SBEA, GDP (fig 1.2); DAAA, DBAA (fig 1.3).

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 path of interest rates; and (3) financial market signals and credit conditions.

Economic Fundamentals and Growth

Key Takeaway: Economic growth remains positive coinciding with strong labor markets.

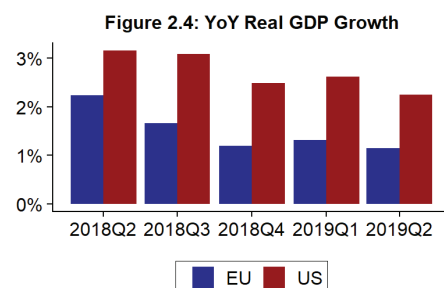
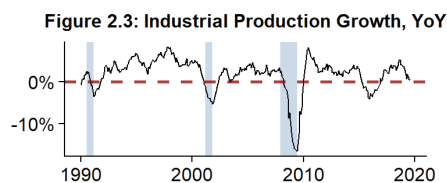
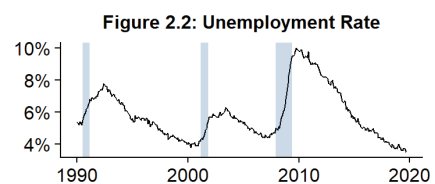
The U.S. economy enjoys a continued broad-based economic expansion, registering positive year-over-year (YoY) GDP growth (Figure 2.1). Favorable economic conditions have translated into a historically low unemployment rate of 3.5% (Figure 2.2). Conversely, YoY growth in industrial production, while still positive, has trended downward recently (Figure 2.3), coinciding with diminished global economic activity, slowing business investment, trade uncertainty, and weakening exports.

The U.S. macroeconomic conditions have been diverging from those in other parts of the world. For instance, over the last five quarters, U.S. GDP growth has been consistently above 2%, while European Union (EU) growth has waned, with YoY EU GDP growth falling to 1% in 2019Q2 (Figure 2.4). The weak global economy may adversely impact the United States through trade and export channels or through foreign profits of U.S. companies.

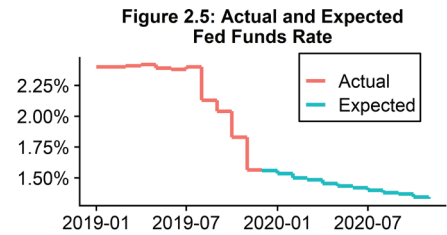
Monetary Policy and Interest Rates

Key Takeaway: Because of low expected global growth, trade tensions, and low expected inflation, market participants anticipate further monetary easing.

Because of international trade uncertainty, low expected inflation, and a divergence in U.S. growth versus foreign growth, the Federal Reserve (Fed) recently cut the fed funds rate by 75 basis points (0.75%), marking the first rate reductions since the Great Recession of 2007-09.

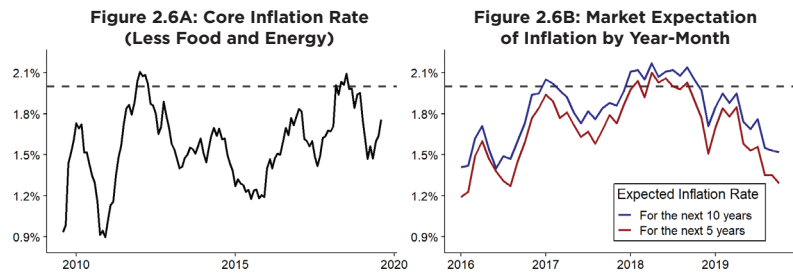


Even after these recent reductions, fed funds futures indicate expectations of an additional interest rate cut over the next year (Figure 2.5). Although markets often struggle to predict interest rate changes, Figure 2.5 implies that traders expect further monetary easing and the fall of the fed funds rate from its current target range of 1.50-1.75% to below 1.4%.



While Fed policy statements have cited trade tensions and the international growth concerns discussed above, recent and expected interest rate cuts also stem from the persistently low inflation shown below in Figures 2.6A and 2.6B.

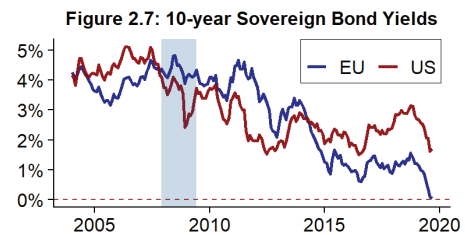
The Fed maintains a 2% (symmetric) inflation target. Yet as seen in Figure 2.6A, core inflation exclusive of food and energy rarely reached the 2% target over the last decade. Looking forward, Figure 2.6B plots market participants' aggregate inflation expectations over the next 5 years (red line) or the next 10 years (blue line) from a given point in time (5-year or 10-year breakeven inflation rate). Overall, bond traders expect average inflation over the next 5 or 10 years to remain below 1.7%, suggesting that recent Fed stimulus combined with expectations of future rate changes and economic growth will not yield 2% annual inflation. The spread between 10-year and 5-year expected inflation in the most recent data is about 20 basis points and widening, implying especially low inflation expectations in the next 5 years relative to the 10-year horizon.



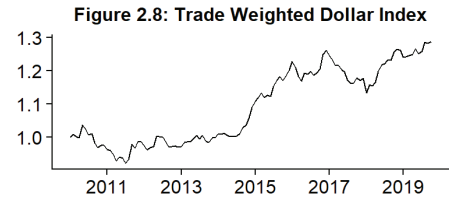
Key Figure Takeaways: Monetary stimulus since the Great Recession has failed to consistently push inflation to the 2% target, and hence low inflation is a justification for interest rate cuts. Yet over the next 10 years, financial markets expect annual inflation to average below 1.7%.

Figure Data Source: FRED and U.S. Treasury. Retrieved using FRED IDs: PCEPILFE; TSYIE; TIOYIE

Even after the recent monetary stimulus, U.S. interest rates have continued to diverge from those of foreign counterparts. For example, Figure 2.7 plots 10-year sovereign bond yields for the United States and a Euro Zone average. While the paths of those yields have been similar as recently as 2014, the paths then split as U.S. growth remained above 2%, while Euro Zone growth lagged. Thus, U.S. yields relative to the Euro Zone have risen. Recent global economic worries, monetary stimulus, and expected low inflation have pushed down yields in both economic areas, but the spread in interest rates between the United States and the Euro Zone persists.



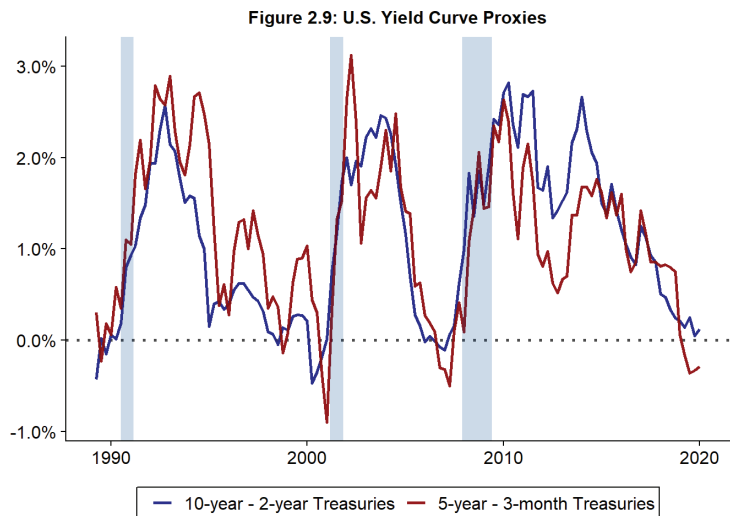
The elevated interest rate spread, where U.S. rates exceed those in the Euro Zone, and the corresponding diverging trend correlate with a strengthening U.S. dollar (Figure 2.8), perhaps as investors earn relatively higher interest rates in the United States. From a domestic economic perspective, the stronger dollar weakens U.S. exports and the dollar value of foreign profits earned abroad.



Financial Market Signals

Key Takeaway: The yield curve is signaling a potential growth slowdown, but signals of credit risk and financial stress remain muted.

Financial market signals are mixed. Figure 2.9 below plots two versions of the yield curve (term spread) for U.S. Treasury Rates: (a) 10-year minus 2-year (blue line) and (b) 5-year minus 3-month (red line). Economists often contend that “inversion” of the yield curve, when the shorter term Treasury yield is higher than longer term yields, predicts subdued economic growth. For example, prior to the previous recessions (1990, 2001, and 2007), both yield curve proxies inverted (fell below zero).

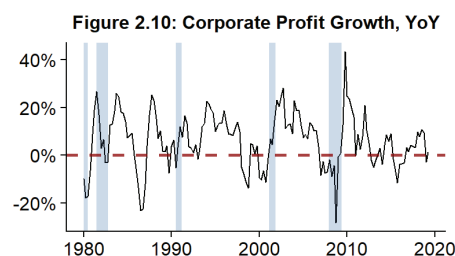


Key Figure Takeaway: Financial markets are possibly signaling an upcoming U.S. recession as portions of the yield curve have inverted.

The latest available data indicate that the 5-year minus 3-month spread has inverted, perhaps signaling an upcoming economic downturn. Likewise, the 10-year minus 2-year yield curve proxy recently hit the zero threshold at the same time that major European economies faced marked slowdowns and tensions between the United States and China escalated.

Note: The yield curve may not necessarily signal a recession this cycle: Although a historically accurate predictor of recessions, the signaling power of the yield curve to anticipate a downturn going forward needs to be weighed against new domestic and global factors that may be altering this signal. These factors include quantitative easing, abnormal arbitrage opportunities created by low interest rates in foreign economies, or increased global demand for U.S. securities. See recent comments by Janet Yellen and Alan Greenspan (“Janet Yellen says yield curve inversion may be false recession signal this time” CNBC News, 2019-08-14). Figure Data Source: FRED and Fed Board. Retrieved using FRED IDs: T10Y2Y, DGS5, DGS3MO

In line with the potentially negative signal in the yield curve, YoY U.S. corporate profit growth, though a noisy signal of economic cycles, retreated sharply according to recent data (Figure 2.10). This decline in corporate profits coincides with the heightened trade tensions and global economic uncertainties discussed above. The diminished corporate profits may also be related to the strong U.S. dollar that has appreciated 13% since January 2018 relative to a trade-weighted basket of foreign currencies. Over 40% of S&P 500 revenue is generated abroad. Thus, a strengthening dollar may adversely impact foreign U.S. corporate profits as well as domestic business investment.



Despite the foregoing risk signals, financial stress—relative to historical norms—remains damped as seen in the plots of the VIX Volatility Index (Figure 2.11A) and the Financial Sector

Figure 2.11A: Volatility Index (VIX)

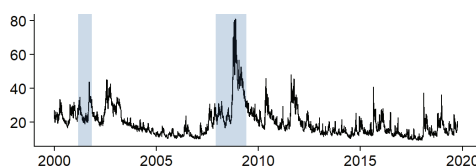
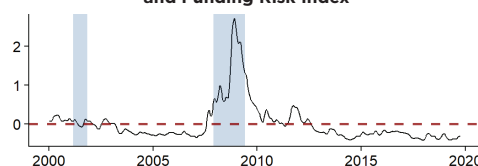


Figure 2.11B: Financial Sector Volatility and Funding Risk Index



Key Figure Takeaway: Despite economic growth concerns, financial market stress remains damped relative to historical comparisons.

Figure Notes: The VIX index is an option implied equity market volatility index. For the Chicago Fed Financial Sector Volatility and Funding Risk Index, positive values indicate tightening financial conditions. Data Sources: FRED (Retrieved using FRED ID: NFCIRISK), Datastream, CBOE, the Chicago Fed, and Brave and Kelley (2017).

Volatility and Funding Risk Index from the Chicago Fed that aggregates several key indicators of financial funding risk (Figure 2.11B). Both plots show that market volatility is near the low end of its historical distribution.

Finally, in mid-September 2019, interest rates spiked in the overnight repurchase agreement (repo) market. Fed Chair Powell stated (Press Conference; 2019-09-18) that the spike was likely due to a reduced supply of funds correlated with technical factors where private entities simultaneously moved funds to finance corporate tax payments and Treasury purchases. The Fed then intervened in these markets to prevent subsequent short funding rate spikes. To further support short-term funding markets, on October 11, 2019, the Fed and the Federal Reserve Bank of New York announced Fed purchases of \$60 billion of Treasury Bills per month at least into 2020Q2, as well as overnight and term repo operations. Fed officials do not expect the repo market spikes or these liquidity operations to impact either long-term interest rates or the broader economy.

Data Sources not previously mentioned: FRED and BLS (fig 2.2); FRED and Fed Board (fig 2.3); FRED, BEA, and Eurostat (fig 2.4); FRED and OECD, "Main Economic Indicators - complete database", Main Economic Indicators (database), <http://dx.doi.org/10.1787/data-00052-en> (Accessed on 2019-09-15) (fig 2.7); FRED and Fed Board (fig 2.8); FRED and BEA. Retrieved using FRED IDs: UNRATE (fig 2.2); INDPRO (fig 2.3); GDPC1, CLVMEURSCAB1GQEA19 (fig 2.4); IRLTLT01EZM156N, IRLTLT01USM156N (fig 2.7); TWEXB (fig 2.8); CPATAX (fig 2.10)

Market Segments

The mission of the U.S. Securities and Exchange Commission, which spans market segments, 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 and their intermediaries; (2) investors; and (3) borrowers, securities issuers, and other entities that raise capital. The chart below illustrates the interlinkages between these three segments.



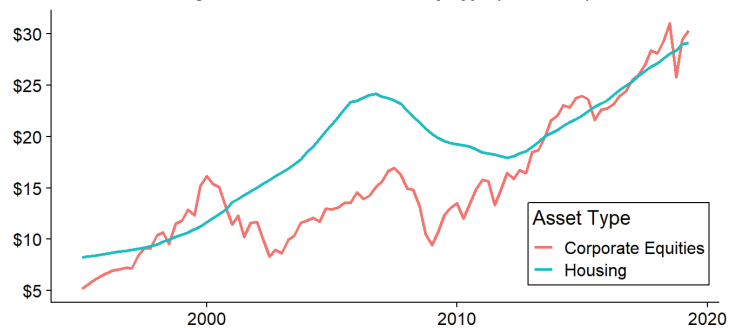
Markets and Intermediaries

Key Takeaway: Market valuations across asset classes have risen since the Great Recession began in the late 2000s and have also risen more recently; but, with increased economic uncertainty, more volatile assets (such as lower rated bonds) have underperformed. Financial intermediaries overall remain well-positioned relative to post-Great Recession levels.

Asset Values

Despite economic growth concerns, asset values remain near all-time highs. Figure 3.1 plots the market value of U.S. nonfinancial corporate equities and owner-occupied housing. Following the asset price booms in equities (late 1990s) and housing (early 2000s), post-Great Recession asset prices have marched upwards in lockstep with strong growth and falling interest rates. Recent data show that the value of corporate nonfinancial equities is \$30 trillion compared to \$29 trillion for owner-occupied housing.

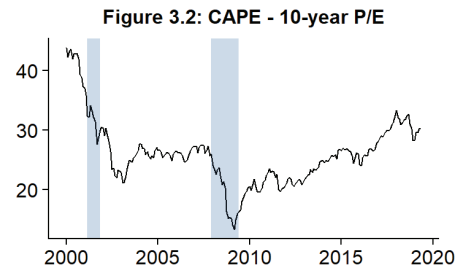
Figure 3.1: Real Asset Values by Type (Trillions \$)



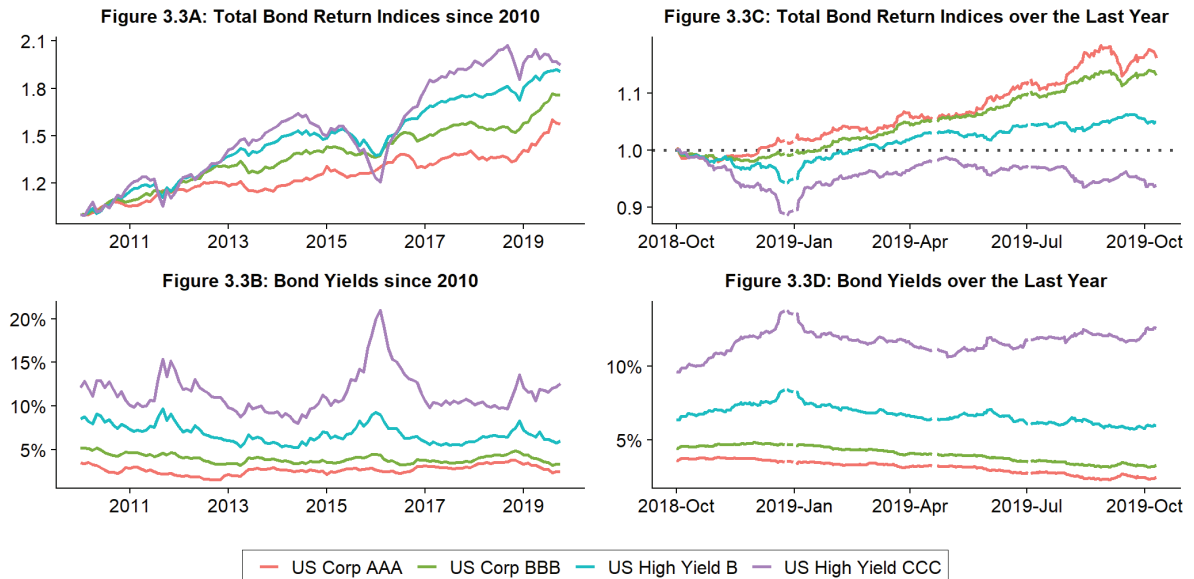
Key Figure Takeaway: Market values of housing and equities have trended upward in unison since the Great Recession because of strong economic growth and low interest rates.

Figure Notes: Market values for nonfinancial corporate equities and owner-occupied housing. Data Source: FRED and Federal Reserve Flow of Funds. FRED IDs: NCBCEL, HOOREVLMHMV

Increasing asset prices have also engendered elevated valuations in equities: Figure 3.2 shows the S&P 500 index relative to its 10-year moving average of earnings, the so-called “Shiller P/E” or cyclically adjusted price-to-earnings ratio (CAPE). In line with asset values, equity valuations consistently climbed following the Great Recession, suggesting expectations of continued growth; but the climb might also be partially due to declining interest rate expectations. Interestingly, the 10-year P/E ratio remains well below its early 2000s highs.



For fixed income markets, Figure 3.3 displays total bond market returns and yields by credit rating. First, Figure 3.3A shows that bonds across asset classes have generated sizable returns since 2010, where the return indices for the lower rated B and CCC (or lower) bonds have nearly doubled over this time period. However, the prices associated with the lower rated bonds are more volatile, as seen by the large drops in late 2011, 2016, and 2018. The yields in Figure 3.3B echo the volatility in lower quality bonds but also suggest that investors have recently begun to demand increased compensation for holding lower quality CCC-rated assets as their yields are rising, even in a falling interest rate environment.



Key Figure Takeaway: Bond prices have increased recently as the Fed implemented monetary easing and as interest rates fell. But lower rated bonds have underperformed.

Figure Data Source: FRED and ICE BofAML Indices. Retrieved using FRED IDs: BAMLCC0A1AAATRIV, BAMLCC0A4BBBTRIV, BAMLHYHOA2BTRIV, BAMLHYHOA3CMTRIV, BAMLCOA1CAAAY, BAMLCOA4CBBBEY, BAMLHOA2HYBEY, BAMLHOA3HYCEY

Figure 3.3C further highlights signs of potential stress or sector dislocation in the fixed income market. Figure 3.3C shows that the best performing bonds, in terms of total returns, over the past year have been investment grade AAA- and BBB-rated securities despite their lower yields (Figures 3.3C and 3.3D). Thus, investors are driving up the prices of higher rated bonds, relative to their below investment grade counterparts, perhaps signaling a flight to safety. Indeed, returns on the weakest credit, specifically, the lowest rated high-yield bonds and leveraged loans, are negative over the last year. The performance of the CCC-rated bonds is substantially worse than even their B-rated counterparts. As the prices for the CCC-rated bonds are volatile, their decline does not necessarily foreshadow financial market distress. Nonetheless, the depressed prices for these assets (Figure 3.3C) imply that investors may expect higher future defaults. This latter point is also seen in the diverging yields between CCC-rated and investment grade bonds in Figures 3.3B and 3.3D.

Broker-Dealers

Broker-Dealer Definition: In general, a broker-dealer is an SEC-registered entity that acts as intermediary in the buying or selling of financial securities for itself or on behalf of others.

Data Source for Broker-Dealer Section: FOCUS Filings

Broker-dealers (BDs) are intermediaries that facilitate transactions in securities. BDs can play a dual role—they act as brokers when they trade for a client in exchange for a commission and act as dealers when they trade for their own accounts. There are approximately 3,700 BDs registered with the Commission. Their business models vary greatly, spanning from a few large levered firms that offer both a full range of brokerage services (e.g. providing research and recommendations, and executing orders) and dealing functions (e.g. financing through the repo market, lending or borrowing securities, and proprietary trading), to a myriad of unlevered firms that mainly generate revenues through commissions and fees from their brokerage activities.

Table 1. A Stylized BD balance Sheet

Assets	Liabilities and Equity
Cash	Equity
Instruments owned	Instruments sold but not yet owned
Reverse repo/securities borrowing	Repo/securities lending
Brokerage receivables	Brokerage payables

During the 2008 crisis, the business of many large BD firms proved to be unstable. Even though the balance sheets generally consisted of liquid assets (e.g., U.S. Treasuries), a significant portion of their financing was accomplished via overnight repos.

Since then, there has been a noticeable reduction in risk in reaction to the financial crisis, even though the SEC’s capital and liquidity requirements for broker-dealers have not materially changed since the crisis. In addition, many large firms quickly became part of bank holding companies subject to statutory supervision by the Fed. A number of factors, including technological innovation, the growing role of electronic trading and increased competition, has also narrowed bid-ask spreads in certain stocks and constrained some BDs’ profits from trading and intermediating certain customer order flow, contributing to a number of BDs partially stepping back from making markets and further reducing their need for large balance sheets. As a result, BDs have increasingly acted as agents, matching trades among customers (dealer bypass). Figure 3.4 depicts the reduction in BDs’ balance sheets, from around \$7 trillion pre-crisis to \$4.5 trillion as of 2019Q2.

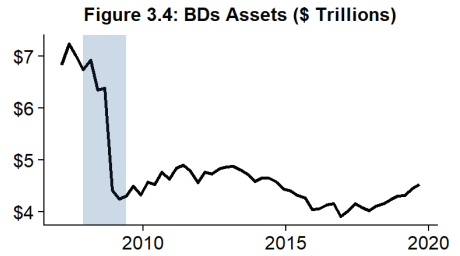


Figure 3.5A displays the evolution of BDs’ assets and liability structure over time. BDs’ deleveraging is attested to by the increase in the proportion of *Total Equity* which, alongside *Subordinated Debt*, now accounts for approximately 10% of BDs’ balance sheet. *Customer Payables* and *Other* line items from brokerage activities have increased. On the contrary, *Repos* and *Securities Loaned*, which are typically short-term forms of financing, have decreased, going from over 60% pre-crisis to 45% in 2018, though witnessing a slight uptick in the last eight quarters.

BDs borrow through the repo market to finance the purchase of securities for their own accounts or sell them to customers. Other times, BDs enter into securities lending and repo transactions with some counterparties and offset them with other counterparties (*Reverse Repos* and *Securities Borrowing*), earning a spread stemming from the difference between the lending (reverse repo) rate and the borrowing (repo) rate. When that happens, BDs act as intermediaries between borrowers and lenders in the repo market. Transactions, however, are not always perfectly matched in terms of maturity or liquidity and credit risk of the collateral, hence exposing the BD to potential risks stemming from maturity, liquidity, and credit transformation.

Figure 3.5A: BD Assets (%)

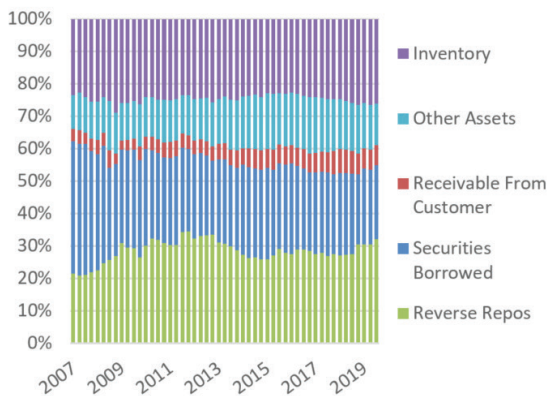
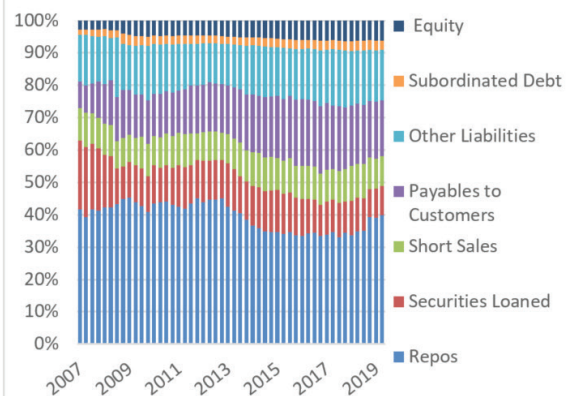
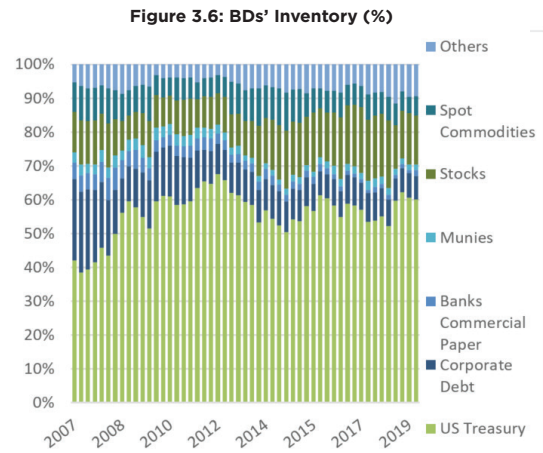


Figure 3.5B: BD Liabilities and Capital (%)

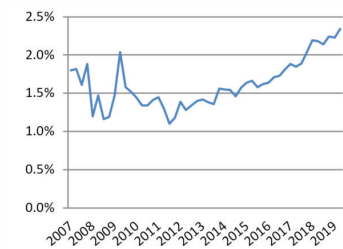


The composition of securities held by BDs in their inventories has also changed over time. The decline in risk appetite post-crisis, coupled with regulatory changes like the enactment of the Volcker rule and banks' capital requirements, has moved BDs away from making markets in corporate bonds and other securities. Figure 3.6 displays the increase in U.S. treasuries held by BDs in their inventories, from about 40% pre-crisis to 60% now, at the expense of corporate bonds. When considering the robust level of bond issuance in recent years, the declining proportion of BDs' bond holdings becomes even more significant, highlighting how BDs have stepped away from fixed income markets at exactly the same time that investors, like asset managers, have poured money into those markets.



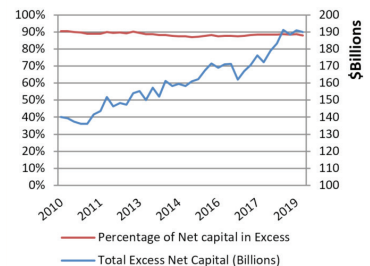
The partial shift in BDs' business model appears to be having its intended effect. Return on Assets (ROA) has been trending up since the crisis. (See Figure 3.7.) Regulatory capital ratios are well above the levels required by statute, with over 85% of BDs' net capital currently being in excess of minimum requirements. (See Figure 3.8.) With their highest post-crisis level of excess net capital—approximately \$200 billion—BDs appear to have some room to expand their balance sheets and facilitate market activity if markets enter a contraction.

Figure 3.7: BDs' Return on Assets (ROA)



Altogether, BDs' funding risks seem to have been mitigated post-crisis by the overall decrease in BDs' leverage, increase in quality of assets held in inventory, regulatory actions aimed at improving the structure of the repo market, and the use of longer-term financing for less liquid positions. Nevertheless, some fragilities related to BDs' wholesale funding model remain.

Figure 3.8: BDs' Excess Net Capital

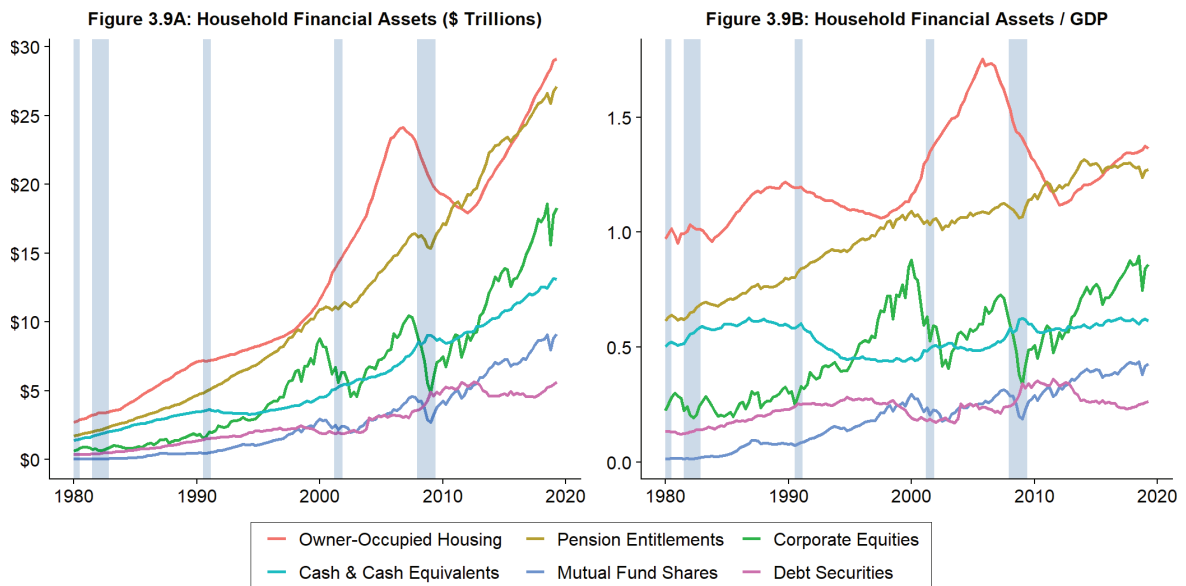


Investors

Key Takeaway: The market value of financial portfolios has increased markedly, corresponding with large asset price growth in housing and equities. Moreover, mutual fund and exchange traded fund (ETF) investors continue to allocate more funds to bonds relative to equities.

Household Investors

Figure 3.9 displays household portfolio holdings separately by asset class—Figure 3.9A shows the trends in levels (\$ trillions) and Figure 3.9B plots asset values relative to GDP.



Key Figure Takeaway: Household assets have experienced broad-based increases since the Great Recession, with the largest gains attributed to pension entitlements, housing, and corporate equities.

Figure Data and Notes: FRED, Federal Reserve Flow of Funds, and authors' calculations. Holdings are separate by asset class. Pension entitlements are current value of benefits that households have accrued, regardless of whether the pension plan is fully funded. Retrieved using FRED IDs: HOOREVLMHMV, CDCABSHNO, TSDABSHNO, MMFSABSHNO, BOGZILM154022005Q, HNOCEA, HNOVFSA, HNOVFAQ027S

The two largest asset classes for household investors in terms of their financial portfolios are owner-occupied housing and pension entitlements, both valued at over \$25 trillion according to recent data. Yet while pension entitlements have been increasing steadily since the 1980s (especially compared to GDP; see Figure 3.9B), home values have exhibited considerable fluctuations. Figure 3.9B shows that during the 2000s boom, home values reached over 1.5 times GDP, before retreating during the 2007 housing bust and then climbing steadily relative to GDP in recent years.

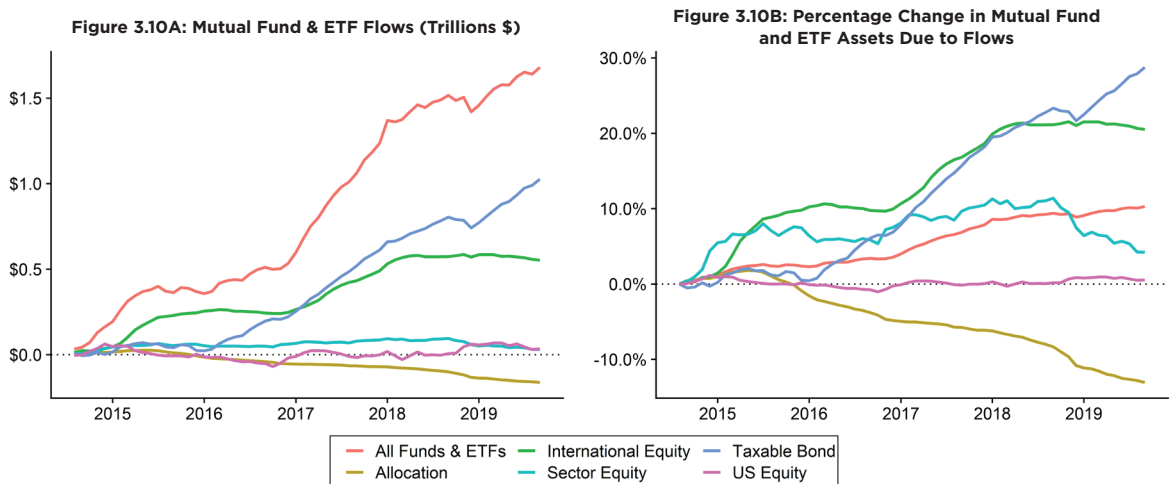
Corporate equities are the third largest asset class for households. The post-Great Recession run-up in stocks has propelled household assets in this share class to over \$17 trillion (Figure 3.9A). Together, household assets in owner-occupied housing, pension entitlements, and corporate equities exceed \$70 trillion.

Smaller pieces of the household portfolio (in order of household asset allocation, using the most recent data) include cash and cash equivalents, mutual fund shares, and debt securities. Collectively, household assets in these classes near \$28 trillion (Figure 3.9A).

Mutual Fund and ETF Investors

Figure 3.10 presents mutual fund and ETF flows (fund inflows and outflows, excluding price appreciation or depreciation of the underlying assets) by fund type for all funds (red line) and selected categories. Figure 3.10A shows cumulative fund flows (trillions of dollars), and Figure 3.10B plots the percentage change in mutual fund and ETF total net assets. Overall, investors' flows in mutual funds and ETFs have resulted in an increase of more than \$1.5 trillion in Assets Under Management (AUM) since 2014 (red line). Inflows in taxable bond funds (blue line) have been the main driver, accounting for roughly two-thirds, \$1 trillion, of the overall growth. The upward trend of bonds' inflows has been even more noticeable in percentage terms, with a cumulative increase of almost 30% over the last 5 years.

Unlike bond funds, there has been nearly no net change in assets because of fund flows for U.S. equities. Likewise, net flows into international equity funds tapered off beginning in January 2018 and have stayed flat since. Finally, the only category to experience net fund outflows were allocation funds (gold line). These funds typically invest in a diversified portfolio of both bonds and stocks. Overall, there appears to be an increasing appetite for investments in bonds and fixed income markets compared to equities.



Key Figure Takeaway: Since 2014, mutual fund and ETF investments have increased by more than \$1.5 trillion. Approximately two-thirds of those funds have been allocated to bonds.

Figure Data Source: Morningstar and authors' calculations.

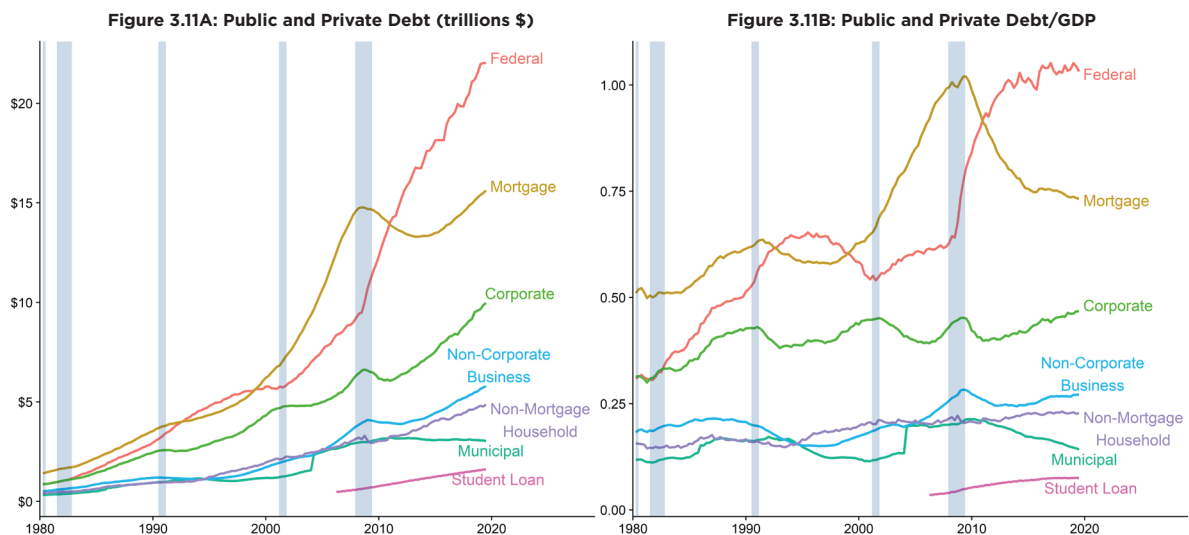
Other Notes: ETFs are obligated to redeem creation units from institutional market participants, although retail investors do not engage directly in redemptions or subscriptions.

Borrowers, Securities Issuers, and Capital Formation

Key Takeaway: The federal government, households, and corporations have increased borrowing as interest rates have remained low. In addition, new firms have increasingly entered public markets via IPOs, apparently as a result of favorable conditions in the public equity markets, particularly for certain sectors. At the same time, certain public firms have pursued stock buy backs and increased dividends where share buybacks and dividend payments remain above 4% of firm market value. A substantial portion of this activity is concentrated in global, high cash generating firms.

Debt Overview

While the market values of both housing and corporate equities have increased, the paths of mortgage debt and corporate debt have diverged. Figure 3.11A plots the levels of debt by category and Figure 3.11B plots debt relative to GDP.



Key Figure Takeaway: Business, federal, and non-mortgage household debt have been increasing, while mortgage and municipal debt have declined relative to GDP.

Figure Data Source: FRED and Flow of Funds. FRED IDs: GFDEBTN, MDOAH, NCBDBIQ027S, NCBL, NNBL, SLGSDODNS, CCLBSHNO, BLNECLBSHNO, OLALBSHNO, SLOAS

Mortgage debt (gold line) increased markedly in the 2000s, subsequently leading to the Great Recession. In the last decade, mortgage debt surpassed its pre-crisis high but, relative to GDP, has fallen notably. Thus, falling mortgage debt relative to GDP, combined with elevated housing prices, has built record levels of home equity for households in the aggregate (Figure 3.12).

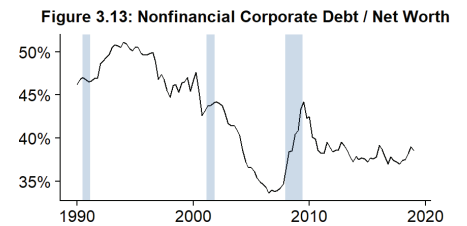
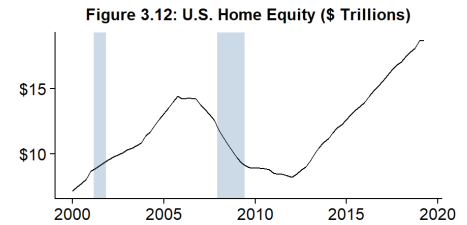
Unlike in housing markets, corporate debt relative to GDP (green line; Figure 3.11b) has risen since the Great Recession. Likewise, debt of non-corporate businesses has also trended upwards since 2015. While the quality of corporate lending has potentially deteriorated, as suggested by a rising proportion of lower quality loans, aggregate corporate debt as a fraction of firm valuation sits near historically low levels (Figure 3.13).

U.S. IPOs, Dividends, and Share Buybacks

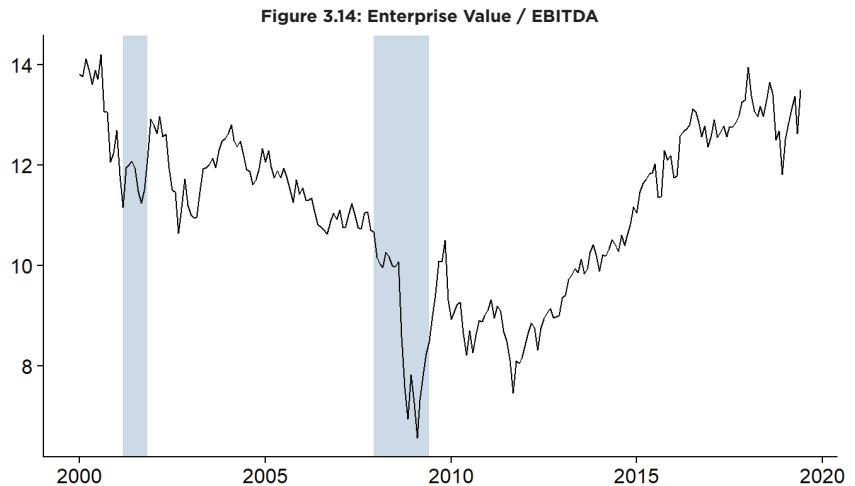
As noted in the Macro-Financial Overview, U.S. equity valuations are high relative to historical standards. An additional way of examining the value of U.S. companies is to plot their Enterprise Value relative to Earnings Before Interest, Taxes, Depreciation, and Amortization (EBITDA) for the S&P 500, where we can interpret the Enterprise Value / EBITDA ratio as the cost to purchase S&P 500 firms, relative to their earnings.

Enterprise Value / EBITDA was high in 2000, but crashed around the recessions in 2001 and 2007. Currently, this metric sits at the upper end of its range because of high earnings growth (at least until recently) and in spite of slowing global growth and trade uncertainties highlighted in our Macro-Financial Overview. An additional contributing factor to elevated valuations besides robust earnings growth appears to be historically low interest rates.

These elevated valuations may entice private firms to enter public equity markets via IPOs. The table below shows summary statistics for IPOs over the last 5 years, both in terms of the number of IPOs and the dollar volume.



Key Takeaway for U.S. IPOs, Dividends, and Share Buybacks: High firm valuations and profits have coincided with elevated IPOs, dividend payments and share buybacks.



Key Figure Takeaway: Corporate firm values relative to earnings are near historical highs.

Figure Notes: Data for S&P 500 firms. Enterprise Value (EV) is a proxy for a firm's total value defined as EV = capitalization + preferred shares + minority interest + debt - total cash. Often, EV is used to determine the price it would cost to buy a company. Figure Data Source: Bloomberg.

Table 2: IPO Summary Statistics

Table 2: IPO Summary Statistics

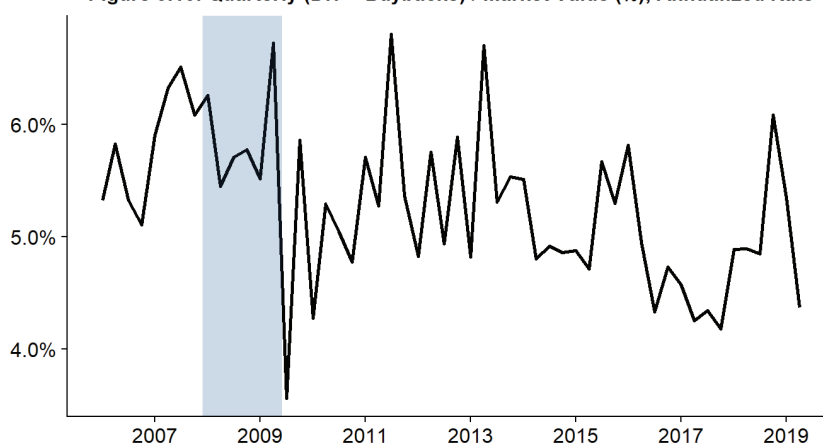
Variable	2019Q2 Value	5-yr Qrtly Trend	5-yr Max	5-yr Min	QoQ % Chng	YoY % Chng
IPOs - Number	62		75	25	↑ 67.57%	↓ -8.82%
IPOs - \$ (Billions)	\$20.04		\$20.04	\$2.83	↑ 27.43%	↑ 76.74%

Key Table Takeaway: IPO activity is near its 5-year high.

Table Notes: Data from Capital IQ and authors' calculations.

Following the declines in IPO activity in late 2018 and early 2019 because of the lapse in SEC appropriations that limited SEC staff as well as perhaps market volatility, IPO activity in the most recent quarter has spiked: In 2019Q2, 62 U.S. firms entered public markets (82% of the 5-year max) with a market value of \$20 billion. Driven by large technology companies, and congruent with private firms that perhaps are capitalizing on high equity valuations, this represents the largest quarterly IPO origination dollar volume in the last 5 years.

Figure 3.15: Quarterly (Div + Buybacks) / Market Value (%); Annualized Rate



Key Figure Takeaway: The total payout ratio for 2019Q2, (Dividends + Share Buybacks) / Market Value, remains near its post-Great Recession mean, at 4.4%.

Figure Data Source: Wharton Research Data Service (WRDS), Compustat-Capital IQ, and authors' calculations.

Next, figure 3.15 plots the total payout ratio defined as (Dividends + Share Buybacks) / Market Value for all public firms back to 2006. The graph shows that firms sharply pulled back dividend payments and share repurchases, relative to market capitalizations, in the aftermath of the Great Recession, but resumed payouts thereafter. While volatile at the quarterly frequency, the payout ratio in the past ten years has remained relatively stable between 4.5 and 6.5 percent, suggesting that payments to shareholders rose in line with the equity valuation of the companies. The total payout ratio for 2019Q2 is 4.4%, slightly below the post-Great Recession mean of 5.1%. Given the market capitalization of equities, the total payout ratio translates into shareholders receiving about \$360 billion per quarter in 2019 compared to \$230 billion per quarter in 2011. The considerable intra-year fluctuation in payout is due to seasonality and market fluctuations, and not likely due to variation in economic fundamentals.

Household Borrowing

Key Takeaway for Household Finance: Strong labor markets have bolstered households' ability to repay debt, but mortgage origination quality is declining in areas adjacent to strong labor markets.

Bolstered by strong labor market fundamentals and low interest rates, delinquencies and defaults on mortgages, credit cards, and consumer loans are at historic lows for consumer loans in aggregate (Figure 3.16). However, with increased affordability concerns, especially in major coastal cities, certain key indicators are signaling a potential decline in mortgage origination quality. Figure 3.17 plots three key mortgage origination metrics since 2000: The percentage of originations with a loan-to-value ratio (LTV) over 80% (High LTV Loans); the percentage of loans with a monthly debt-service-to-income ratio (DTI) over 43% (High DTI Loans); and the percentage of mortgage originations with a FICO credit score less than 660 (Low Credit Score Loans), where a credit score below 660 often signifies a subprime loan.

While the portion of subprime loans (FICO < 660) is at the low end of its range, the percentage of high DTI and high LTV loans has spiked in recent years. As noted above, this is likely because of increasing affordability concerns in many major cities. The map in Figure 3.18 explores the geographic distribution of high DTI mortgages (the percentage of mortgages with an origination DTI over 43%) in 2018.

Figure 3.16: Delinq. Rate on Consumer Loans

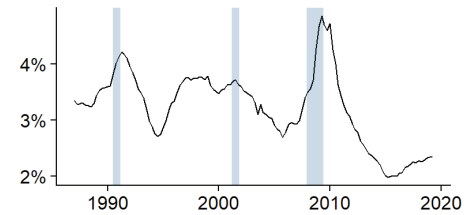
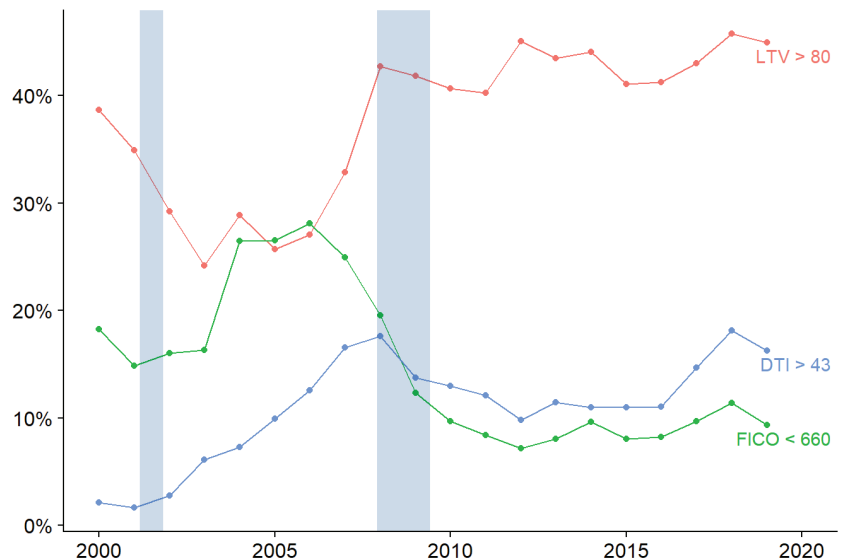


Figure 3.17: Percent of Mortgage Origination by Credit Quality

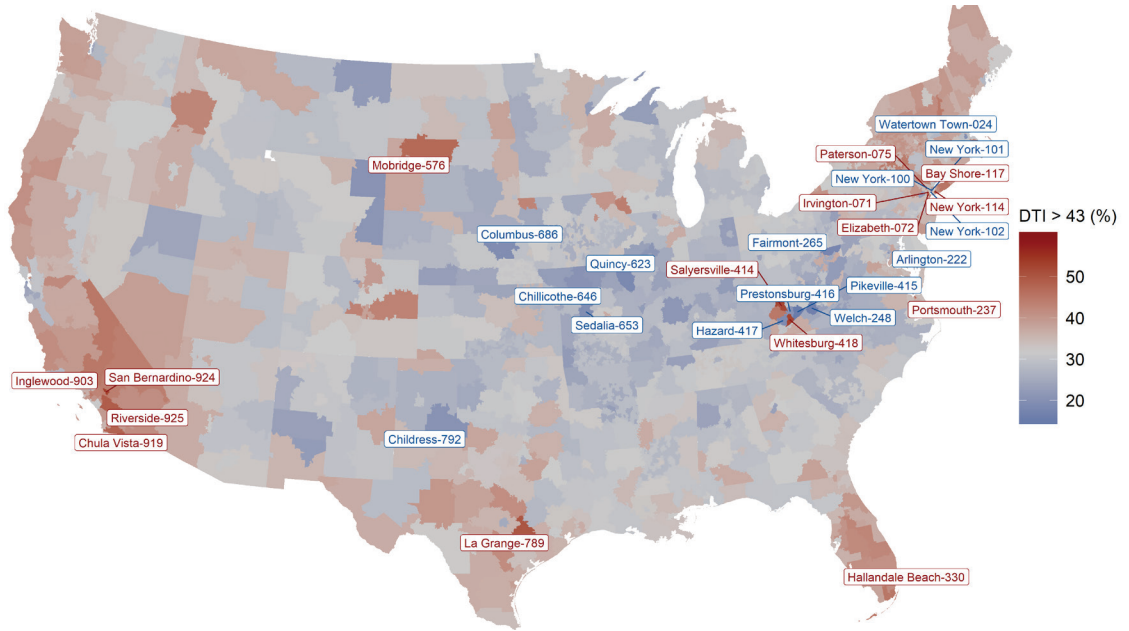


Key Figure Takeaway: Origination loan-to-value (LTV) and debt-service-to-income (DTI) ratios have recently spiked, as house prices have outpaced incomes in high-growth local labor markets.

Figure Notes: The percentage of mortgage originations with an LTV > 80 (red line; High LTV Loans); the percentage of originations with a DTI > 43 (blue line; high DTI Loans); and the percentage of mortgages with FICO < 660 (green line; low credit score loans). Figure Data Source: Corelogic and authors' calculations.

The areas with the largest portion of high DTI mortgages (dark red on the map) are adjacent to high priced areas, especially surrounding the Los Angeles, New York, and Austin housing markets. This indicates that borrowers facing affordability concerns are moving just outside of the largest cities to achieve homeownership while retaining access to these labor markets.

Figure 3.18: Origination DTI > 43 (%): 2018



Key Map Takeaway: High DTI mortgage originations are concentrated in housing markets adjacent to strong labor markets.

Map Notes: The percentage of mortgages with an origination DTI > 43% by three-digit U.S. Zip Codes (the first three digits of each zip code). Labeled three-digit zip codes correspond to the tails of the distribution where the three-digit zip code is appended to the city name. Figure Data Source: Corelogic and authors' calculations.

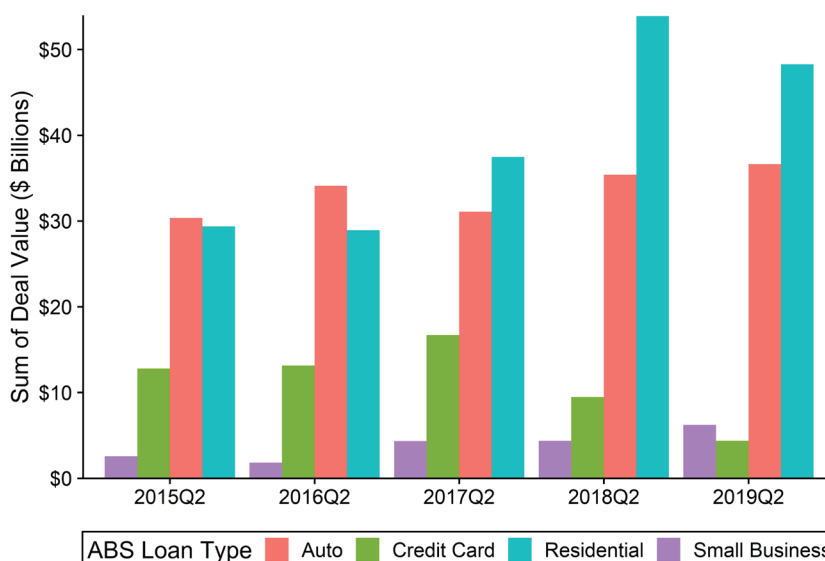
Household Borrowing and Asset-Backed Securities

Expanding to other household loan types and private label asset-backed securities (ABS), securities comprised of a pool of underlying loans, we consider origination volume for privately issued ABS—ones backed by auto, credit card, residential, or small business loans. Figure 3.19

plots origination volume (in billions of dollars) for the most recent quarter of available data, 2019Q2, as well as for the second quarter of the 4 preceding years. Overall, residential mortgages overtook auto loans in 2017 as the largest securitized household loan segment in the private space. In 2018Q2, private label residential mortgage-backed securitization volume topped \$50 billion, before retreating slightly in 2019Q2. Similarly, securitized credit card debt issuance has tapered off since 2017, while small business and auto loan issuance has been increasing.

Overall, total private ABS issuance has increased substantially since 2015, but growth in certain segments, such as credit card or residential ABS, has dampened in the recent period. While the amounts plotted in Figure 3.19 document instances of increased securitization, the private market is still tiny compared to Agency (Fannie Mae and Freddie Mac) as well as Ginnie Mae securitization. Together, in 2018, Fannie, Freddie, and Ginnie issued \$1.2 trillion of mortgage-backed securities. Moreover, while the increases in Figure 3.19 suggest that the private securitization frontier is expanding, further research is needed to ascertain whether this increase corresponds to an increase in supply of securitized debt, an increase in demand from investors, or both. These dynamics in private securitization have important implications for both households and investors, especially in this low interest rate environment.

Figure 3.19: Private ABS Loan Issuance Volume By Household Loan Type



Key Figure Takeaway: Private asset-backed issuance has increased markedly since 2015 with the largest growth in residential mortgages.

Figure Data Source: ABSNet

Data Sources not previously mentioned: Datastream and Robert Shiller (fig 3.2); FRED and Federal Reserve Flow of Funds (fig 3.12); Datastream (fig 3.13); FRED and Fed Board (fig 3.16). Retrieved using FRED IDs OEHRENWBSHNO (fig 3.12); DRCLACBS (fig 3.16).



Research Spotlight

Collateralized Loan Obligations (CLOs)

By Igor Kozhanov and DERA Research Staff

Overview and Key Takeaways: This Research Spotlight takes a deep look at Collateralized Loan Obligations (CLOs). A CLO is a unique form of actively managed ABS that invests in loans. The CLO market has grown rapidly in recent years, and many SEC regulated investment funds have significant holdings of CLOs. However, few open-end mutual funds (the type of funds that engage in liquidity transformation) have concentrated positions in CLOs.

Leveraged loans are an important financing mechanism for companies rated below investment grade, particularly for small- and medium-sized companies. The Collateralized Loan Obligation (CLO), a unique form of actively-managed ABS that is collateralized by bank loans, is an important source of capital for such loans: approximately half of the institutional leveraged loans outstanding are held through CLOs.

The leveraged loan and CLO markets have been growing rapidly in recent years. CLO issuance in 2018 exceeded its previous (pre-crisis) peak in 2006. By the end of 2018, the amount of CLOs outstanding was well above the peak level reached immediately prior to the financial crisis (Figure 4.1).

Figure 4.1: CLO amount outstanding (left panel) and Issuance (right panel)

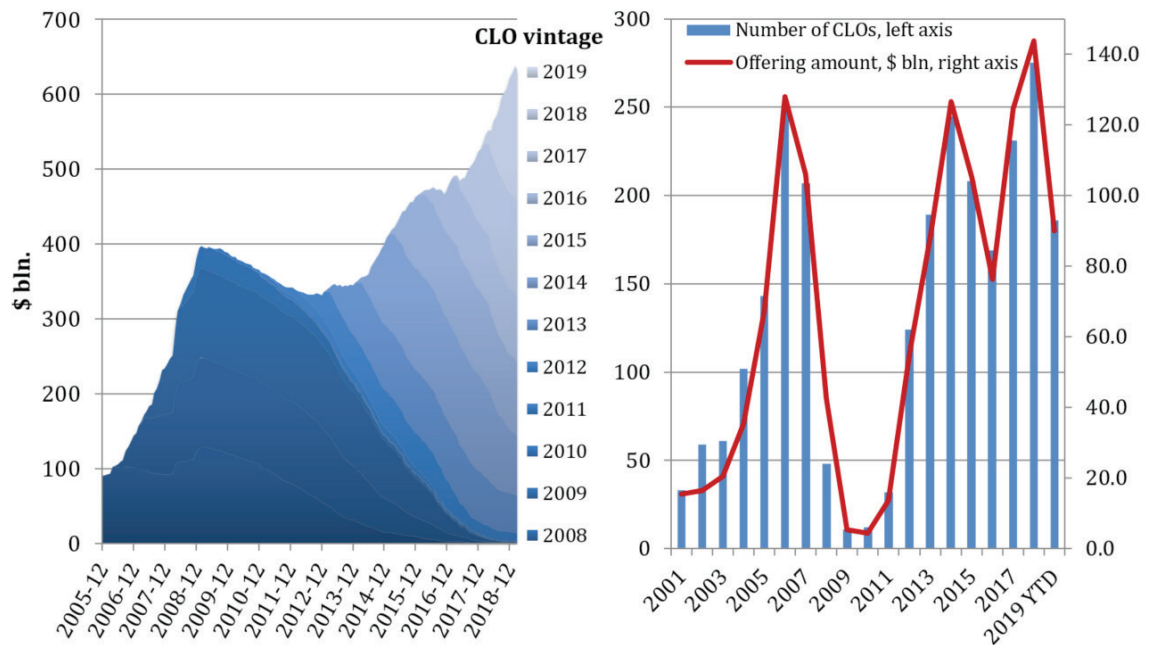


Figure Data Source: Moody's and AB Alert

During the low interest rate, “reach for yield” environment of 2014–2018, investor demand for leveraged loans grew significantly. This demand was accompanied by growth in debt issuance by lower-rated firms. In addition, leveraged loans, which tend to carry floating rates, offered a hedge against rising interest rate expectations common in this period. However, the value of this hedging property might be reduced as the prospect of rate hikes declines, potentially shifting investors’ demand away from floating rate loans.

Many investors have exposures to leveraged loans through CLOs. CLOs resemble closed-end funds in that their portfolios are actively managed. In this respect, they are different from most other forms of ABS, which tend to be backed by static loan pools. A distinguishing feature of the CLO market is that most CLO sponsors are “CLO specialists”—they do not sponsor other types of ABS (Figure 4.2, right panel).

Within the CLO asset class today, the vast majority are so-called “arbitrage CLOs” otherwise known as “open-market CLOs.” In arbitrage CLOs, the sponsor’s loan portfolio consists of broadly syndicated loans acquired in the open market. This is in contrast to “balance sheet CLOs” where the loan’s originator uses CLOs to fund their originations. This distinction is important because unlike sponsors of balance sheet CLOs, arbitrage CLO managers are not subject to a 5% credit risk retention requirement. Balance sheet CLOs account for only a small share of the overall CLO market (Figure 4.2, left panel).

Figure 4.2: CLO types and CLO sponsors

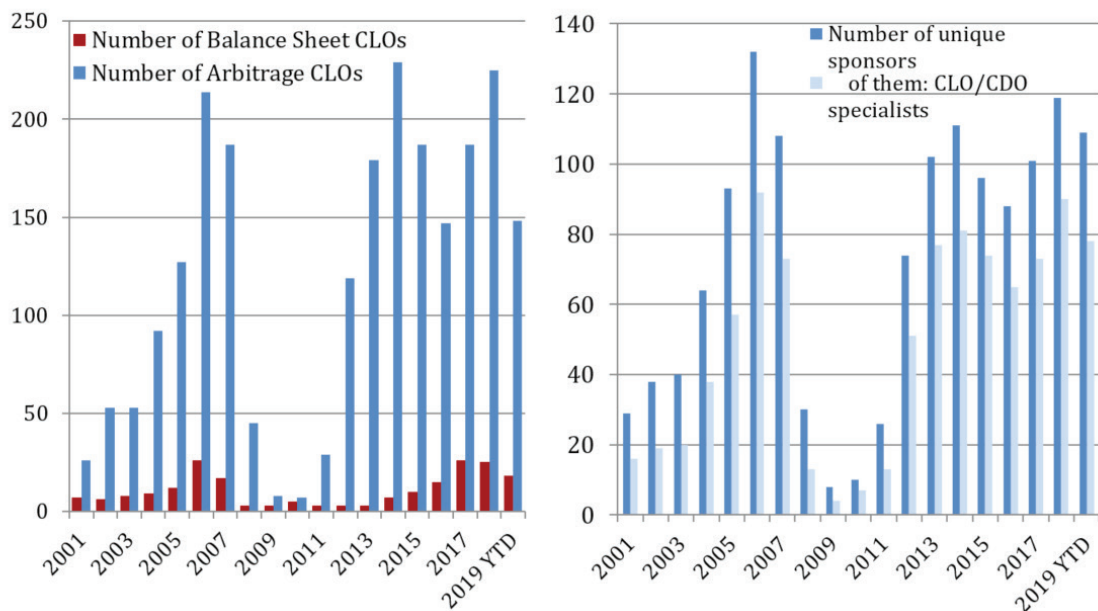


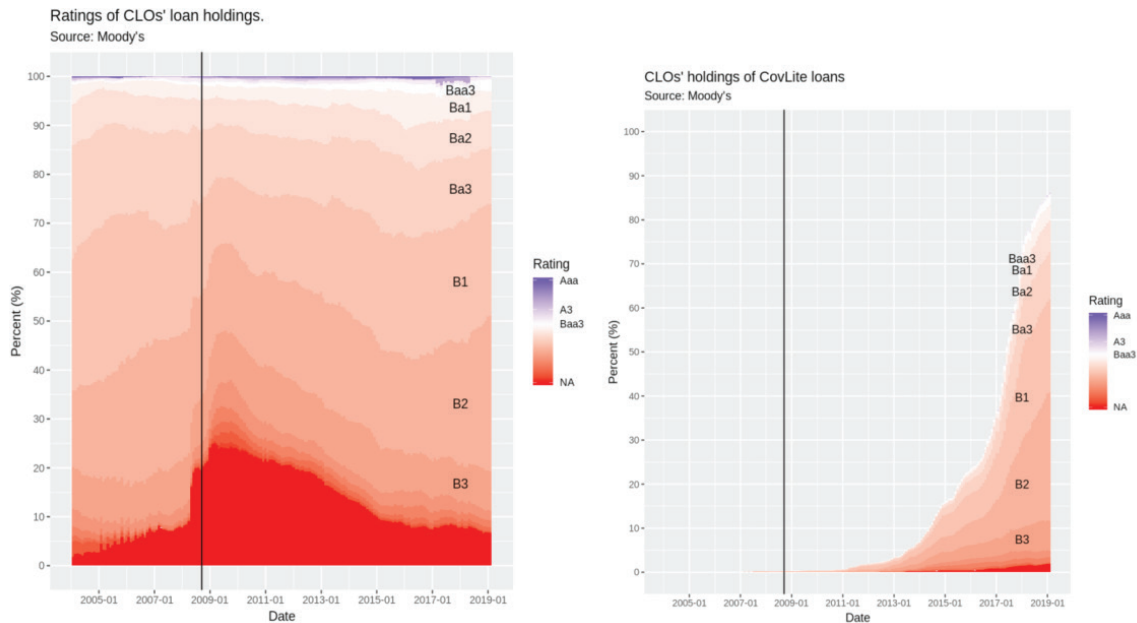
Figure Data Source: AB Alert

CLO portfolios consist primarily of non-investment grade loans. The left panel of Figure 4.3 plots CLO holdings by credit rating over time. Although the share of unrated loans has decreased markedly since 2009, the share of loans rated B2 or lower (on the Moody's scale, or B or lower on the S&P scale) has increased significantly in recent years.

In addition, loans in CLO portfolios have increasingly featured fewer lender protections, or “covenants”. The right panel of Figure 4.3 plots CLO holdings of loans deemed (by Moody's) likely to be “covenant-lite.” Covenants are contractual provisions in loan documents that protect lenders from adverse actions by borrowers. Covenant-lite loans lack the “maintenance covenants” that trigger default if certain financial ratios are not maintained. Thus, investors in these loans have fewer tools to force renegotiation. In addition, deterioration in the financial condition of borrowers not subject to maintenance covenants may not come to light as quickly. Because covenant-lite loans have fewer conditions that can trigger a “technical default”, defaults for these loans are likely to be delayed and to produce lower recoveries.

The proliferation of covenant-lite loans may be due to changes in in the investor base for leveraged loans over the last decade. Dispersed, non-bank institutional investors such as CLOs and mutual funds are not positioned to monitor borrowers' compliance with maintenance covenants as are banks with concentrated holdings. Moreover, these non-bank investors are accustomed to investments in debt instruments with fewer covenants (such as bonds) and are also accustomed to secondary market trading of assets in their portfolios—all of which increase their comfort with covenant-lite loans.

Figure 4.3: Composition of CLO holdings



The CLO securitization process converts assets typically rated below investment grade, which serve as collateral backing the structure, into tranches with a range of ratings going from AAA to the unrated (and very risky) equity tranche.

Leveraged loans and CLOs have a diverse investor base. Figure 4.4 shows how the amounts outstanding of broadly syndicated leveraged loans and CLOs are distributed across different investor types. About 50% of outstanding leveraged loans, by value, are held by CLOs and about 20% of leveraged loans are held by funds and investment companies that are registered with the Commission under the Investment Company Act (U.S. open-end funds commonly known as “mutual funds”, ETFs, closed-end funds, and Unit Investment Trusts). On the CLO side, the investor base is well diversified: about 50% of CLO holders are U.S. bank holding companies, insurance companies, and registered funds, each holding relatively similar shares of the market. However, there are still substantial data gaps in this area, and we cannot identify large fractions of investors in CLOs.

Figure 4.4: Leveraged loans and CLO investor base

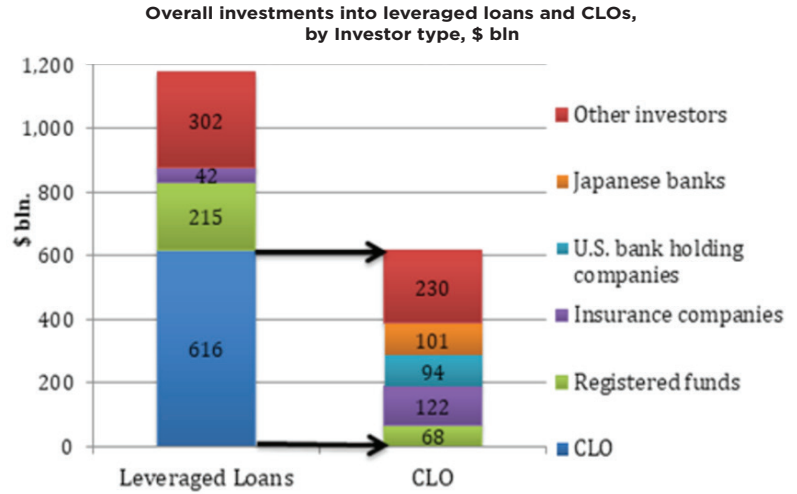
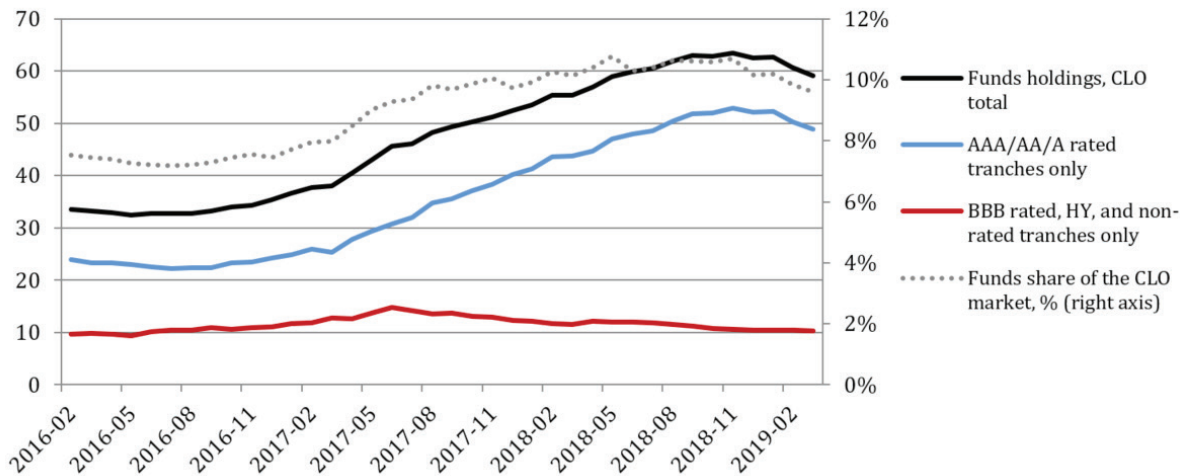


Figure Notes: Data as of 2018 year end. For leveraged loans holdings, ‘Other investors’ include banks, hedge funds, pension funds, foreign investors, and other investors; for CLO holdings – hedge funds, pension funds, foreign investors, and other investors.

Figure Data Sources: LSTA, Morningstar, AM Best, Form Y-9C, Thomson-Reuters DataScope, and Reuters.

Figure 4.5: Funds’ holdings of CLO



Registered investment funds are exposed to leveraged loans directly (through holdings) and indirectly (through holdings of CLOs). Registered investment funds' holdings of CLOs have grown since 2016, but registered investment funds still represent a small fraction (~10%) of CLO holders (Figure 4.5). Most of the growth in fund holdings of CLOs have been in tranches rated single A or higher. Funds with large CLO exposure tend to be small, and many of these small funds are closed-end funds (Figure 4.6). Closed-end funds do not redeem shares daily and do not engage in liquidity transformation. Thus, runs from such closed-end funds would be unlikely to affect the CLO market at large.

Figure 4.6: Individual funds' exposures of CLO

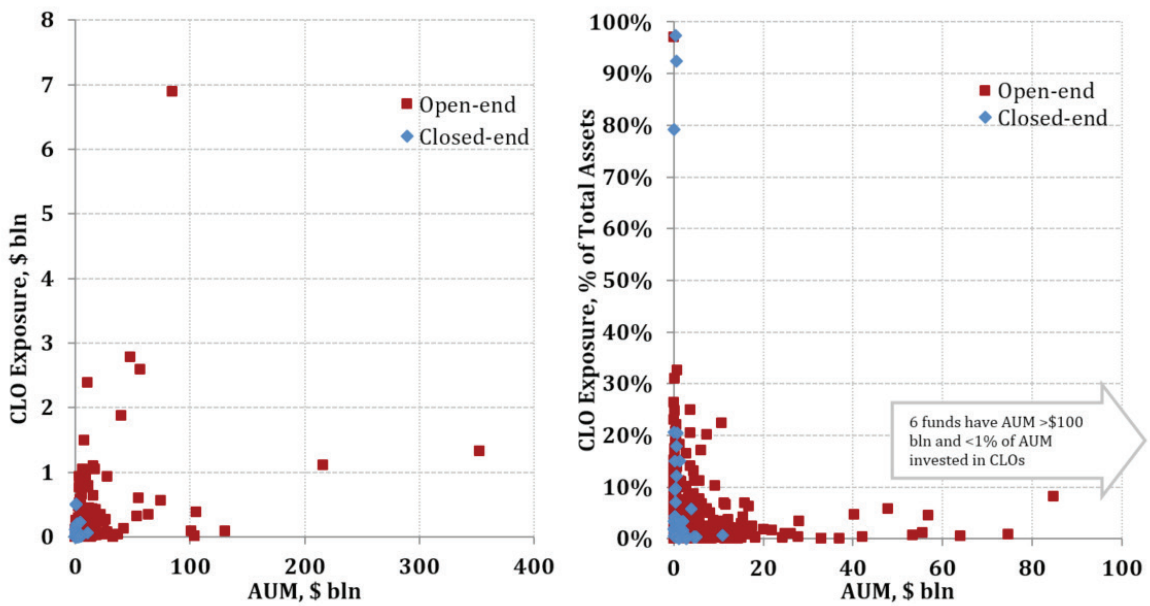


Figure Data Source: Morningstar and Thomson-Reuters DataScope



U.S. SECURITIES AND EXCHANGE COMMISSION