

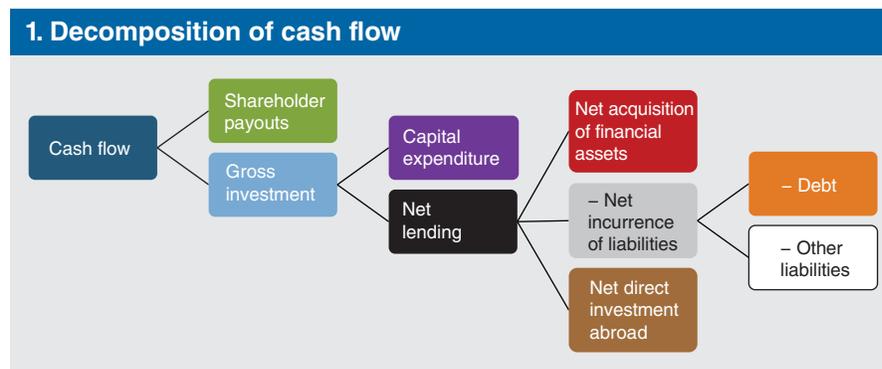
Chicago Fed Letter

Corporate cash flow and its uses

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We decompose corporate cash flow into its primary components to examine how funds are being internally allocated and to elucidate current trends in corporate behavior. By historical standards, capital investment has been low and shareholder payouts have been high over the past few years, although these patterns do not seem so abnormal once recent economic and financial conditions are factored in. That said, corporate debt levels are now somewhat higher than we would expect given the rather tepid economic recovery from the Great Recession.

Corporate profits have stagnated since 2012, and business fixed investment has continued to be sluggish. Yet, at least in nominal-dollar terms, corporate distributions to shareholders have remained near record levels, and industry studies indicate that U.S. corporations are holding historically high quantities of liquid assets. Thus, one concern is that firms may be hesitating to undertake productive projects, instead hoarding cash or perhaps bowing to stockholder pressure for unsustainably high payout ratios. At the same time, corporate debt issuance has been strong, raising concerns about the ability of firms to service their debt in an environment in which the funds are not being put to productive use, particularly if interest rates rise.



In this *Chicago Fed Letter*, we attempt to quantify the recent uses of corporate cash flows and provide some historical context. Relying largely on data from the *Financial Accounts of the United States*,¹ we show that, measured relative to both their assets and cash flows, corporations are indeed devoting

historically low levels of resources to capital expenditure (capex) and historically high levels to shareholder payouts. These facts, however, are not new—they represent the continuation of trends that have been in place for at least two business cycles² (since the early 2000s) and in some respects since the 1960s. For example, capex and shareholder-payout ratios are not substantially different today than they were ten years ago. It appears plausible that the weakness in capital expenditure and strength in shareholder payouts are simply endogenous responses tied closely to the economic environment, as well as the continuation of long-term secular trends. It is true that firms have taken

on more debt lately than we might have expected, but it is difficult to pin down whether they have done so specifically to return cash to shareholders.

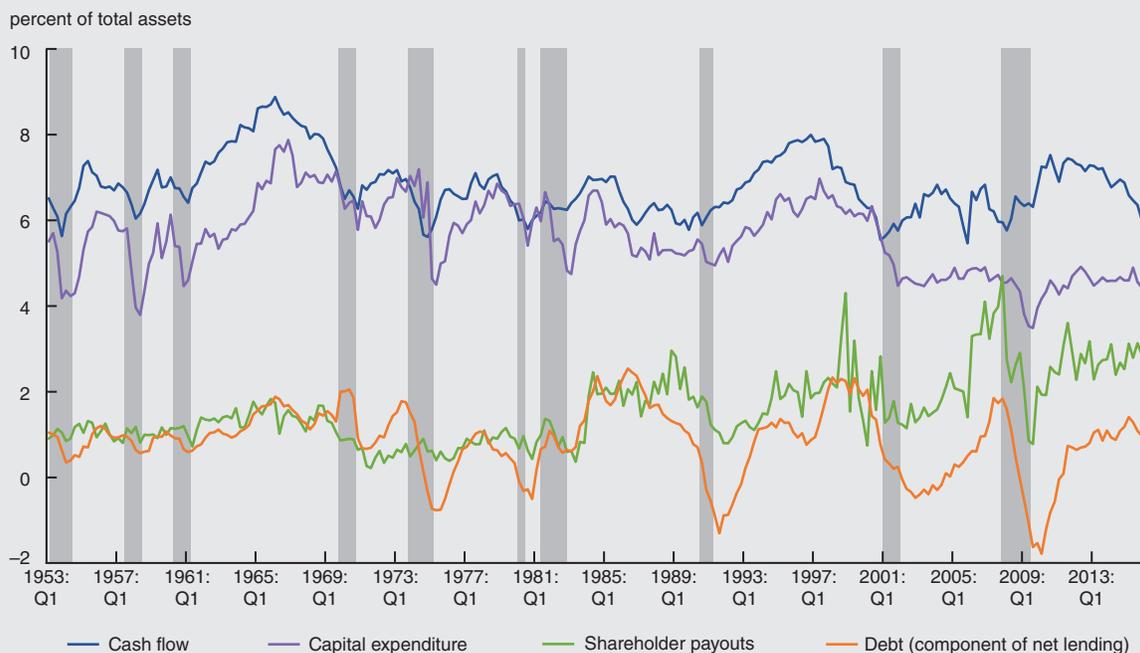
Definitions and accounting

We begin our analysis by reviewing the accounting concepts related to the sources and uses of corporate funds. Figure 1 (on front) illustrates the taxonomy. We define “cash flow” (the dark blue box on the left side) as the funds that firms have available to spend after covering their operating costs, payments to debtholders, and taxes.³ In 2015, corporate cash flows totaled \$2.5 trillion, or 14% of gross domestic product (GDP). However, on the whole, cash flows have sagged since 2013, reflecting the weakness in corporate profits. Firms can pay cash flows out to shareholders in the form of dividends or share repurchases (green box), or they can retain them; in the latter case, the funds are classified as “gross investment.”⁴ Gross investment (light blue box), in turn, can take the form of either capex, which is investment in real assets (purple box), or “net lending,” which is investment in financial assets (black box). By definition, net lending is equal to the financial assets that firms acquire in a given period, less the change in their liabilities. In addition to purely domestic lending and borrowing, these balances include direct investment of U.S. firms abroad and foreign direct investment in the United States.⁵

Figure 2 shows total cash flow over time, as well as its shareholder-payout and capex components, all expressed as a share of total corporate assets. The ratio of cash flows to assets is procyclical (i.e., rising when economic times are good and falling when they are bad). This pattern largely reflects the behavior of corporate profits.

Before about 2000, capex moved very closely with cash flows; this behavior could be consistent with credit constraints that make investment dependent on internally generated funds, or it could be simply a result of both series being sensitive to the state of the business cycle. Regardless, the co-movement disappears over the past 15 years. The correlation between the ratio of capex to assets and the ratio of cash flow to assets drops from 62% before 2000 to 3% since then. The average level

2. Cash flow and its components



NOTES: The displayed data are quarterly. Shading indicates official periods of recession as identified by the National Bureau of Economic Research.

SOURCES: Authors' calculations based on data from the Board of Governors of the Federal Reserve System, *Financial Accounts of the United States*; U.S. Bureau of Economic Analysis, *National Income and Product Accounts of the United States*; and Haver Analytics.

of capex has also fallen. Corporations devoted about 4.5% of their assets—or 73% of their cash flows—to capex in 2015. In the three decades prior to the 2001 recession, capex averaged about 6.0% of assets and 89% of cash flows.

Meanwhile, a long-term trend toward higher levels of shareholder payouts is also evident, as shown in figure 2. Both in absolute terms and as a fraction of assets, shareholder payouts have trended upward since the 1960s, with some acceleration since the 1980s. The most recent levels have been high by historical standards. However, the share of cash flows distributed to shareholders is still substantially lower than it was in 2006 and 2007, and it is only slightly higher than it was during some periods in the 1980s and 1990s.

Figure 2 also shows net incurrence of debt, perhaps the most important component of net lending. Debt issuance is cyclical; firms take advantage of easier borrowing conditions during expansions, and they delever by running off debt during recessions. Although debt has increased on net since the most recent financial crisis, it has not grown as fast (relative to assets) as in the previous three expansions.⁶ Since 2000, the correlation between shareholder payouts and net debt issuance has increased from 36% to 66%, which could be viewed as evidence that firms have increasingly issued debt to transfer funds to stockholders. Arguably, a general reduction in financial constraints over the past two decades could have also facilitated such behavior.

Still, debt has not grown particularly rapidly relative to corporate assets over the current expansion. As a fraction of assets, the level of debt (i.e., the stock variable associated with the flow shown in figure 2) is currently close to its historical average. A similar story holds for the broader measure of total liabilities to assets; indeed, that ratio was 42% at the end of 2015, close to its lowest level in three decades. Thus, whatever the purpose for issuing new debt over the past few years, it does not appear that firms are taking on unusually high levels of leverage.

Are corporate cash flow components “abnormal” today?

To explore whether the patterns documented in the previous section ought to be considered “abnormal,” we check whether they are out of line with projections of statistical models based on historical data. For example, while it is true that capex has recently been low relative to assets and cash flows, this could be explained by the relatively slow growth of the overall economy in recent years or perhaps by a longer-term secular trend. To tease the alternatives apart, we first run regressions of the dependent variables of interest (i.e., capex, shareholder payouts, and debt) on a complex set of independent variables to estimate their relationships. Then we use these regressions to construct out-of-sample projections of the dependent variables from the post-crisis period through 2016:Q1, feeding in the realized data of the independent variables. Big deviations between the regression-implied values and the realized data would suggest either that there has been a significant structural change (i.e., change due to industry-specific factors rather than the business cycle) in recent years or that the corporate sector has experienced a large and persistent shock.⁷

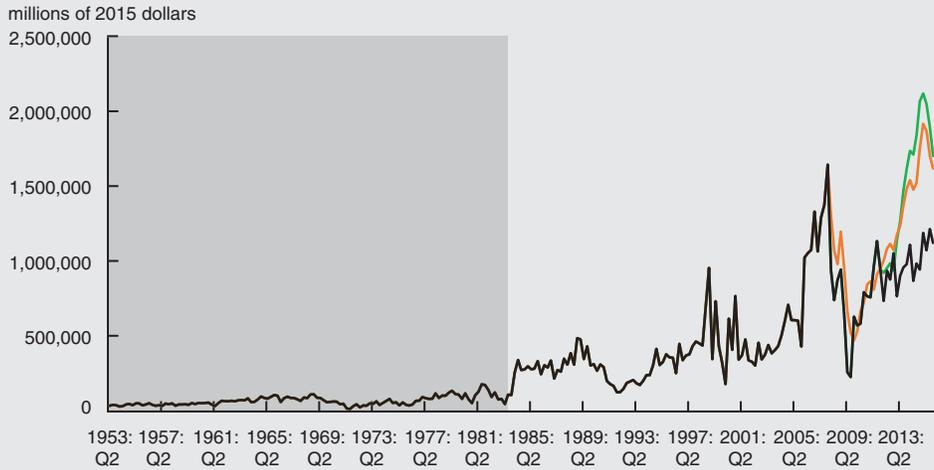
We estimate separate models for the capex and shareholder-payout variables discussed in the previous section, as well as for the level of corporate debt outstanding. In each case, we estimate the dependent variable in log levels of real (2015) dollars. The independent variables are one-quarter lags of log real GDP, corporate assets, and cash flows; lags of the growth rates of GDP, assets, and cash flows; lags of the price of investment relative to the GDP deflator, the ten-year nominal Treasury rate, and the Baa–Aaa corporate credit spread; four-quarter trailing GDP inflation; a lagged dependent variable; and a linear time trend. We run each model using quarterly data over two sample periods—one ending in 2007:Q4, when the Great Recession began, and the other ending in 2011:Q4, when GDP surpassed its pre-recession level. The results turn out to be somewhat sensitive to the sample over which the models are estimated. Thus, to determine the starting point of the sample for each regression, we conduct a Quandt–Andrews breakpoint test (using the 2011:Q4 date as the end of the sample).⁸

3. Corporate cash flow component behavior relative to regression-implied values

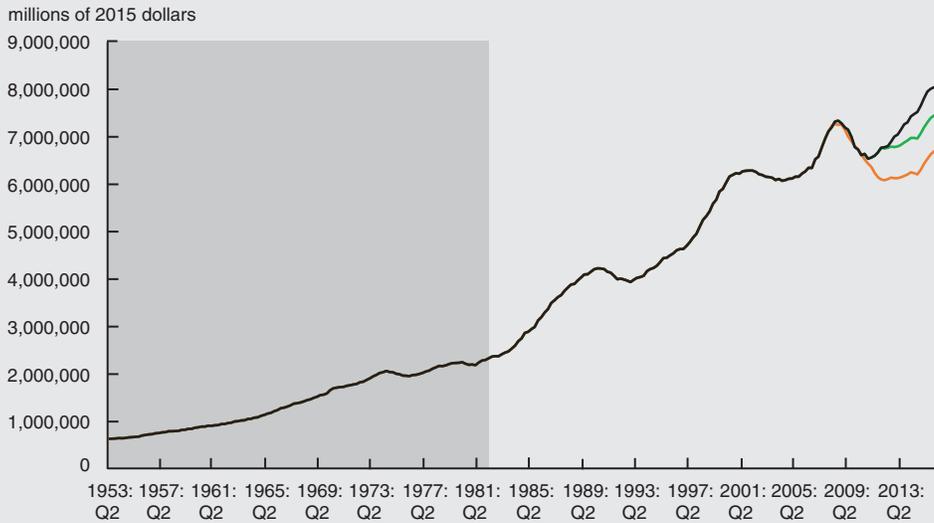
A. Capital expenditure



B. Shareholder payouts



C. Debt



— Regression, 2007:Q4 — Regression, 2011:Q4 — Actual

NOTES: The displayed data are quarterly. The gray area represents the portion of the data that is excluded from the regression estimation based on the Quandt–Andrews breakpoint test. See the text for further details.

SOURCES: Authors' calculations based on data from the Board of Governors of the Federal Reserve System, *Financial Accounts of the United States*; and U.S. Bureau of Economic Analysis, *National Income and Product Accounts of the United States*.

As expected, all three dependent variables load positively and with some significance on the levels or differences of GDP, cash flow, and corporate assets.⁹ Costs of borrowing and the relative price of investment are also frequently significant. The coefficient magnitude and significance patterns are generally similar between the sample that ends in 2007 and the sample that ends in 2011.

The projections based on the regression estimates are presented in figure 3. In each case, the gray area represents the portion of the data that is excluded from the estimation based on the break-point test. The orange lines show out-of-sample fitted values based on the estimation through 2007, while the green lines use the estimation through 2011.

The capex projections based on the regression estimates either through 2007 or through 2011 lie nearly on top of the realized data, indicating that the recent sluggishness in business fixed investment is not unusual given the evolution of the economic environment. In particular, corporate cash flows and GDP are two of the most economically significant variables for explaining the changes in capex, and both have been relatively weak over the course of this expansion.

The decline in shareholder payouts during the recession was in line with what the model would have projected based on the 2007 estimates. However, regression estimates either through 2007 or through 2011 would have predicted a substantially *greater* rebound in payouts than we have actually observed. Although it is difficult to pin down the reasons for the model's inflated projections in this case, these estimates appear to stem partly from the fairly strong corporate asset growth that we have observed over this expansion and the slowing in the decline of the relative price of investment.

Finally, the regression model for corporate debt indicates that actual debt levels are higher than we would have expected based on either the pre-2008 or pre-2012 experience. The estimates based on data through 2007 would have predicted about \$1 trillion less of corporate debt than currently exists. Thus, despite the fact that corporate leverage is not particularly high relative to historical levels, it does seem somewhat high relative to economic conditions. In particular, the model loads significantly on GDP, so the result in part reflects the fact that the ratio of corporate debt to GDP is currently at a historically high level.

Conclusion

Understanding the elements of corporate cash flows can be useful in effectively evaluating the overall productivity of domestic firms. Our analysis shows that corporations are devoting historically low levels of their resources to capital expenditure and historically high levels to shareholder payouts. However, once the economic and financial environment is taken into account, the recent behavior of capex is about what we would expect, and distributions to shareholders have actually been lower than we would expect. In contrast, corporate debt levels have risen somewhat faster during this expansion than the economic data would have normally predicted.

¹ Prior to 2013, the *Financial Accounts of the United States* were known as the flow of funds accounts. They are also referred to as the Federal Reserve's Z.1 statistical release. For more details, see <https://www.federalreserve.gov/releases/z1/>.

² For details on U.S. business cycles as identified by the National Bureau of Economic Research (NBER), see <http://www.nber.org/cycles.html>.

³ Specifically, we construct cash flow as the sum of total internal funds, net dividend payments, and the inventory valuation adjustment from the U.S. Bureau of Economic Analysis's *National Income and Product Accounts of the United States*. All data used here are for the entirety of the nonfinancial corporate business sector and are reported as seasonally adjusted annual rates.

⁴ This is *gross* investment in the sense that it does not factor in depreciation expense or mark-to-market gains and losses on corporate assets.

⁵ Note that the *Financial Accounts of the United States* record acquisitions of nonfinancial assets and equity positions at current market value, while they record the acquisition of fixed-income assets at face value, or par value (i.e., the stated value of the instrument at issuance).

⁶ Although issuance of corporate bonds and syndicated loans has at times been very strong since 2009, a large portion of the new-debt proceeds have gone to refinance existing debt, leaving overall leverage little changed on net. For the dates of the previous three expansions according to the NBER, see note 2.

⁷ This methodology broadly follows Joseph W. Gruber and Steven B. Kamin, 2015, “The corporate saving glut in the aftermath of the global financial crisis,” International Finance Discussion Papers, Board of Governors of the Federal Reserve System, No. 1150, <http://www.federalreserve.gov/econresdata/ifdp/2015/files/ifdp1150.pdf>.

⁸ For details on the breakpoint test, see Donald W. K. Andrews, 1993, “Tests for parameter instability and structural change with unknown change point,” *Econometrica*, Vol. 61, No. 4, July, pp. 821–856. Also, see Donald W. K. Andrews, 2003, “Tests for parameter instability and structural change with unknown change point: A corrigendum,” *Econometrica*, Vol. 71, No. 1, January, pp. 395–397.

⁹ In other words, in our models, GDP, cash flow, and corporate assets are positive and significant predictors of capex, shareholder payouts, and debt.

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ISSN 0895-0164