Capital Reallocation
and Capital Investment

By David Rodziewicz and Nicholas Sly

Corporate debt levels have grown substantially during the 10-year recovery from the global financial crisis. Even excluding the financial sector of the U.S. economy, the value of corporate bonds outstanding grew from approximately $3 trillion in 2008 to nearly $6 trillion in 2018. These bonds might be expected to fund investments that support firm expansion, as the U.S. economy has experienced strong growth over the last 10 years. However, much of the corporate debt has been used to reallocate capital through mergers and acquisitions rather than to fund new investment activity. In syndicated lending markets alone, approximately 20 percent of the credit extended to the corporate sector—$2 trillion over the last decade—financed acquisitions. Perhaps as a result, some market watchers have expressed concerns that corporations are taking on risky debt and not investing in new plants and equipment.

Crucial in weighing these concerns is identifying whether capital reallocation is a substitute for or complement to new investment. For example, firms may purchase equipment or structures from other businesses in place of investing in new capital. Consolidation within industries may also limit competition, diminishing firms' incentives to invest. In these cases, mergers and acquisitions may substitute for new investment, and when acquisition activity surges, the level of investment might be low. However, firms may also supplement their

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strategic merger and acquisition activity by purchasing new equipment, structures, or intellectual property. In this case, mergers and acquisitions may complement new capital investment, and when funding for mergers and acquisitions surges, the level of investment might be high. In reality, both substitution and complementary economic channels are likely to be at play. A key question is which channel dominates.

In this article, we show rising levels of merger and acquisition activity do not fully crowd out new capital investment, as both sales of existing capital between firms and investment in new capital tend to rise and fall together in the aggregate and within the majority of U.S. industries. Although measures of capital reallocation generally have limited detail about the value of capital exchanged or the method of financing, these measures still show that the ebb and flow of capital reallocation is substantial in magnitude. That investment and capital reallocation move together within most industries suggests that no single sector is driving the positive relationship observed in the aggregate. Moreover, the pervasive relationship between capital reallocation and investment suggests that a latent factor may be driving capital expenditures by firms broadly. We estimate this factor and find that it exhibits persistence over time, suggesting indicators of capital reallocation can be helpful in measuring the state of U.S. investment cycles.

Section I discusses several ways in which capital reallocation might be linked to real investment. Section II shows that capital reallocation and investment tend to co-move for the U.S. economy as a whole. Section III takes a narrower perspective and shows that this relationship holds within specific industries. Section IV estimates an underlying factor that drives both capital reallocation and investment.

I.   The Link between Merger and Acquisition Activity and Investment

Assessing the relationship between investment and capital reallocation can be challenging, because this relationship is subject to many, sometimes offsetting economic forces. The strategic behavior of firms might lead to either more or less investment following merger and acquisition activity. For example, Arnold and Javorcik (2009) find that acquisitions cause investment outlays to rise at acquired plants soon after a merger has taken place. However, Blonigen and Peirce (2016)

show that acquisition activity leads to rising markups among firms; this greater competitive pressure may deter other firms from undertaking some investments projects. Indeed, Philippon (2018) argues that consolidation and a rising concentration of activity among a few firms within industries have created shortfalls in U.S. investment. While acquired firms exhibit investment growth, suggesting a positive relationship between investment and capital reallocation, the subsequent effects on other competitors within an industry suggest widespread capital reallocation crowds out investment.

Investment and capital reallocation might be related for reasons other than the strategic behavior of firms. Some of the same underlying factors that encourage firms to invest might also encourage them to acquire other firms and subsume their capital. Jovanovic and Rousseau (2002) argue that firms with high book values relative to their costs of capital are simultaneously those most likely to invest and those most likely to engage in acquisitions, suggesting complementarity between the two activities. In addition, Lanteri (2018) shows that the prices of certain capital goods (aircrafts, ships, vehicles, and construction equipment) tend to fall in secondary markets during economic downturns, limiting firms' incentives to sell used capital goods during recessions. Since investment also tends to fall during recessions, this view suggests that underlying macroeconomic shocks would generate a positive relationship between capital reallocation and investment over time. In contrast, Eisfeldt and Rampini (2006) argue that the motives for capital reallocation are strongest during a recession: some firms are more adversely struck by a downturn than others, and these firms may sell used capital to relatively less affected firms at a time when investment is low.

Capital reallocation and investment are linked in several ways, and it is unclear which link dominates. As a result, it is difficult to know from economic theory whether investment and capital reallocation move together or in opposing directions over time. Given the large amount of credit issued to fund capital reallocation activities, identifying this relationship seems crucial. Thus, we examine whether these economic activities have tended to co-move in the U.S. economy over the last three decades.

II. An Aggregate View of Funding for Mergers and Acquisitions and Investment
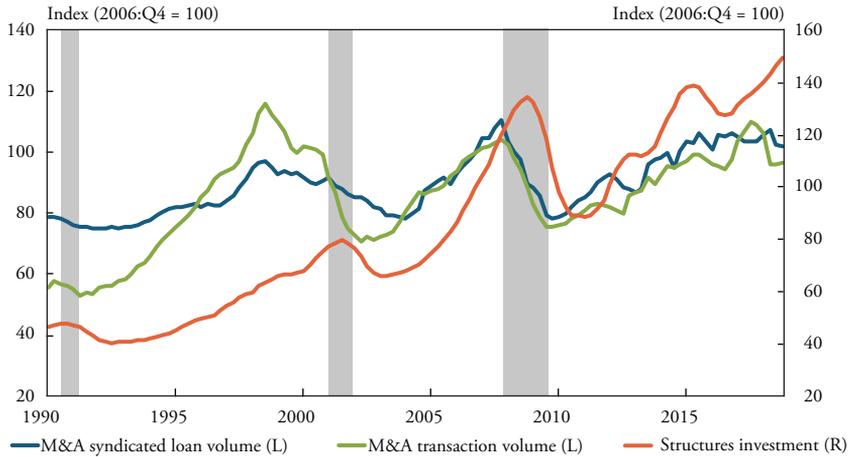
To assess whether U.S. capital reallocation and investment are largely substitutes or complements, we first consider the aggregate relationship between the two. We measure capital reallocation using the volume of merger and acquisition (M&A) activity in the U.S. economy. As discussed in Jovanovic and Rousseau (2002), a merger or acquisition is a particular form of capital reallocation in which the capital goods of a target firm are sold as a bundle, rather than sold individually on secondary markets. In this sense, M&A activity captures only a slice of total capital reallocation, albeit an important one.

We measure U.S. M&A activity in two ways. Our first measure is a simple count of the number of M&A transactions among U.S. firms each quarter from 1990 to the end of 2018, available from Thomson Reuters Eikon. These data contain a listing of publicly disclosed mergers and acquisitions among U.S. firms.[1] Although this measure is comprehensive in that it includes acquisitions financed through a variety of methods, it does not provide details on the monetary values of most M&As.[2] As a result, we also use a second measure—the volume of syndicated lending for the express purpose of funding acquisitions over the same time period.[3] These data are from Thomson Reuters' Loan Pricing Corporation Deal Scan database, generally referred to as "DealScan." Syndicated loan volumes are measured on a quarterly basis beginning in 1990, with dollar values measured on a historical basis (that is, measured in nominal dollars).

To smooth out seasonal fluctuations and other idiosyncratic volatility, we calculate four-quarter rolling sums of each measure so that each quarter has a measure of M&A activity accumulated over the previous year. For both the number of M&A transactions and the syndicated loan volumes for M&As, we observe the two-digit Global Industry Classification Standard (GICS) code for the firms involved.[4]
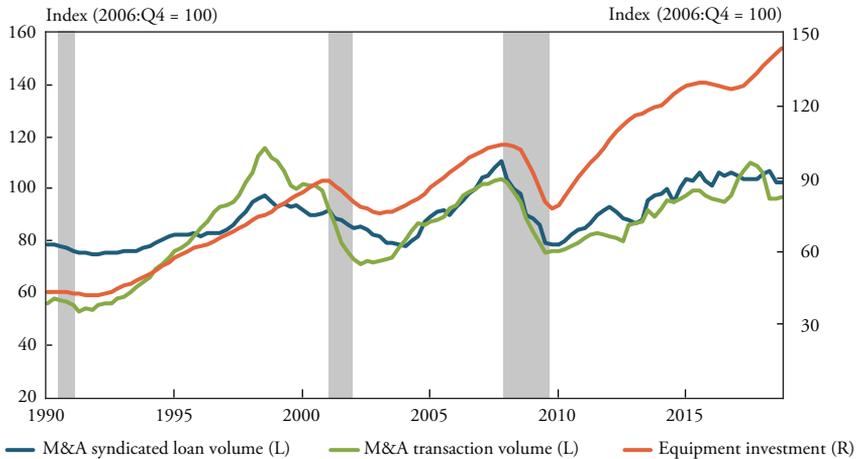
At the aggregate level, we obtain data on new capital investment in both equipment and structures from the National Income and Product Accounts (NIPA). Charts 1 and 2 use these data to plot four-quarter rolling sums of structures and equipment investment, respectively, against four-quarter rolling sums of both of our measures—the total number of U.S. M&As and the volume of syndicated funding for

Chart 1
Aggregate Structures Investment

Index (2006:Q4 = 100)   Index (2006:Q4 = 100)

M&A syndicated loan volume (L)   M&A transaction volume (L)   Structures investment (R)

Note: Gray bars denote National Bureau of Economic Research (NBER)-defined recessions at a monthly frequency.
Sources: Bureau of Economic Analysis (Haver Analytics), LPC DealScan, Thomson Reuters, and NBER (Haver Analytics).

Chart 2
Aggregate Equipment Investment

Index (2006:Q4 = 100)   Index (2006:Q4 = 100)

M&A syndicated loan volume (L)   M&A transaction volume (L)   Equipment investment (R)

Note: Gray bars denote NBER-defined recessions at a monthly frequency.
Sources: Bureau of Economic Analysis (Haver Analytics), LPC DealScan, Thomson Reuters, and NBER (Haver Analytics).

acquisitions. To facilitate comparisons, the dollar values for each investment series and for syndicated loans are expressed in historical prices and indexed to their respective levels in 2006:Q4.

Chart 1 shows that the run-up in M&A activity during the last three economic expansions coincided with growth in structures investment. Both the volume of corporate lending for acquisitions (blue line) and the actual number of mergers (green line) rose ahead of actual investment activity (orange line) during the dot-com bubble of the late 1990s, in the early 2000s, and during the recovery from the financial crisis. For example, during the late 1990s, the number of M&A transactions in the U.S. peaked at a historical high of nearly 10,000 in 1998:Q3 (not shown). Over the same period, structures investment continued to increase, peaking in 2000:Q4.

As the volume of M&A activity plummeted ahead of the last two recessions, so, too, did structures investment several quarters later. Following the burst of the dot-com bubble, M&A activity declined and hit a trough in 2002:Q2. Three quarters later, in 2003:Q1, structures investment reached its nadir.

Chart 2 shows a similar pattern between changes in M&A activity and changes in equipment investment. After funding for M&As peaked in 1998 (blue line), borrowing in syndicated lending markets began to decline, bottoming out in June 2002. One year later, the level of equipment investment (orange line) reversed its upward trend and hit a trough in March 2003. While total equipment investment has been trending higher over the last 30 years, the ebbs and flows have roughly coincided with fluctuations in the amount of syndicated lending to corporations for M&As.

The volume of capital reallocation within the U.S. economy illustrated in the charts is large. Due to data limitations, we can observe only the number of U.S. mergers and a proxy for the amount of financial activity associated with M&As. Syndicated lending markets account for a small subset of the total amount of credit issued for M&As (single banks, for example, may provide loans to acquirers outside of the syndicated lending market). Indeed, comparing our two data sources shows that only about 5 percent of M&As in the United States are financed on syndicated lending markets. Furthermore, the DealScan data may understate the value of an M&A transaction if the M&A is partially

financed by exchanges of equity, the issuance of commercial paper, or stipulations for future purchases of outstanding shares. As a result, our measures underestimate the total amount of capital reallocation that occurs in the U.S. economy at any given point in time.

Even when considering only the fraction of M&A activity that occurs with financing from syndicated lending markets, the measured volume of capital reallocation in 2018 comprised approximately 18 percent of the total volume of investment outside the financial and real estate sectors. Given that this figure incorporates roughly 5 percent of M&A transactions (with presumably only the largest transactions requiring syndicated funding), existing assets held by other firms are clearly vital sources of capital purchases for U.S. producers.

III.　Industry-Specific Borrowing, M&A Activity, and Capital Expenditures

The evidence in Charts 1 and 2 suggests investment and capital reallocation are complementary in the aggregate. However, the charts alone cannot show the extent to which the relationship is widespread across industries or present in a handful of specific industries. To address this concern, we next examine the relationship between investment and capital reallocation within specific industries.

To measure investment within specific industries, we aggregate firm-specific capital expenditures reported in S&P Global Market Intelligence's Compustat data for U.S. publicly traded firms.[5] These data provide quarterly measures of capital expenditures within individual sectors but are combed from public filings and so excludes investment by private firms in the U.S. economy at a given point in time. Previous research such as Asker, Farre-Mensa, and Ljungqvist (2014) shows that capital expenditures from U.S. public firms account for approximately 50 percent of total nonresidential investment spending. Moreover, the variation in measured capital expenditures closely matches changes in aggregate investment recorded in NIPA, as shown in Rodziewicz (2018). Thus, the capital expenditures data in Compustat proxy for investment within industries over the last three decades.[6]

We focus on sectors categorized by two-digit GICS codes, excluding the finance and real estate sectors. The consumer staples sector is
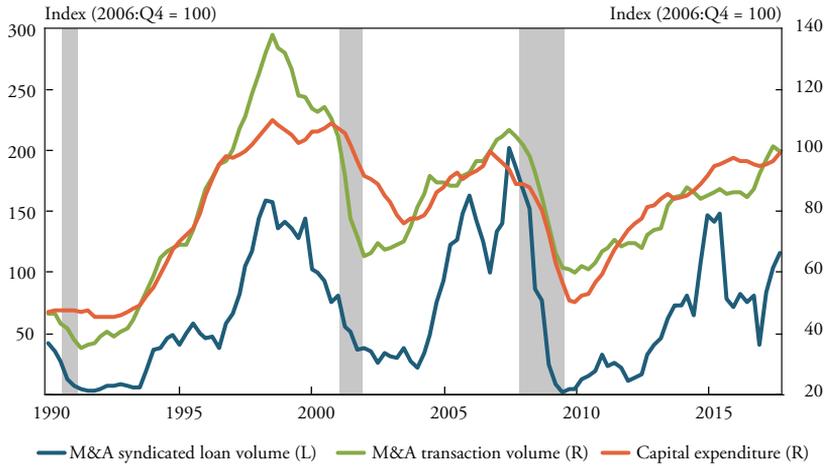
primarily composed of food and beverage companies and accounts for roughly 5 percent of investment. The consumer discretionary sector comprises household durable goods (such as automobiles and apparel) as well as services (such as hotels and haircuts) and accounts for approximately 10 percent of investment. The industrial sector includes producers of capital goods (such as heavy manufacturing and building products), commercial and professional services, and transportation, and makes up 13 percent of investment. The materials sector mainly comprises metals and mining (excluding energy), chemicals, packaging, and paper products, and totals 4 percent of investment. The energy sector (oil, gas, coal, and consumable fuels) and associated supply chains account for roughly 27 percent of investment. Finally, the telecommunications, information technology, healthcare, and utilities sectors account for 10 percent, 7 percent, 4 percent, and 20 percent of total investment, respectively. [7]

Consumer discretionary and consumer staples sectors

Capital expenditures in consumer-oriented sectors closely track the ebb and flow of merger waves. Chart 3 shows that the rise and fall of capital reallocation among firms in the consumer discretionary sector over the last 30 years—as measured by transaction volumes (green line) and syndicated lending for M&As (blue line)—coincides with increases and declines in capital expenditures during the same period (orange line). The peaks in capital expenditures in this sector occur at nearly the same time as the peaks in capital reallocation, as is evident in 1998 and in 2007. The timing of these peaks differs from the economy as a whole, as capital reallocation tends to precede capital investment in the aggregate (see Charts 1 and 2).
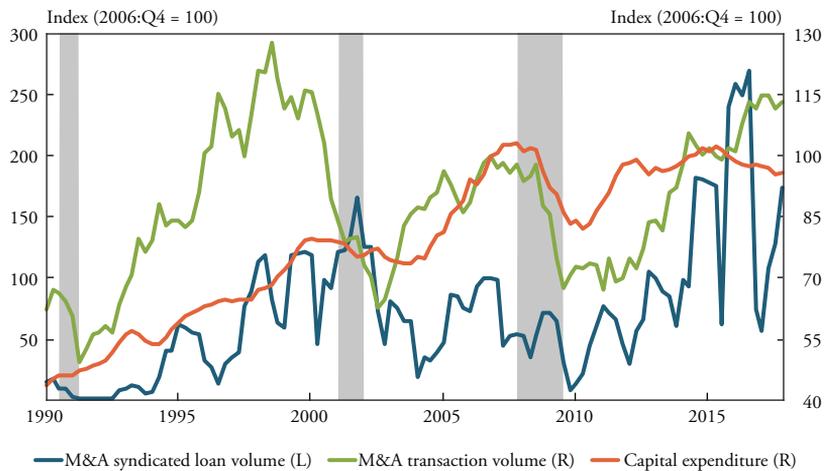
Chart 4 shows that capital expenditures in the consumer staples sector follow a similar pattern, rising and falling along with M&A activity. However, the syndicated lending market appears to be a less important source of financing for M&As within this sector. As a result, the typical amount of lending for M&A activity (blue line) looks more volatile due to the fact that at many points in time, no transactions are observed. Nevertheless, the peaks in the total number of M&A transactions in 1999 and 2007 coincide closely with the peaks in capital expenditures.

Chart 3
Consumer Discretionary

Index (2006:Q4 = 100)   Index (2006:Q4 = 100)

M&A syndicated loan volume (L)   M&A transaction volume (R)   Capital expenditure (R)

Note: Gray bars denote NBER-defined recessions at a monthly frequency.
Sources: Compustat, LPC DealScan, Thomson Reuters, and NBER (Haver Analytics).

Chart 4
Consumer Staples

Index (2006:Q4 = 100)   Index (2006:Q4 = 100)

M&A syndicated loan volume (L)   M&A transaction volume (R)   Capital expenditure (R)

Note: Gray bars denote NBER-defined recessions at a monthly frequency.
Sources: Compustat, LPC DealScan, Thomson Reuters, and NBER (Haver Analytics).

In both of these consumer-oriented sectors, the number of M&A transactions and recent levels of financing for acquisitions are somewhat above historical averages. If the typical positive relationship between capital investment and capital reallocation holds for these sectors, the momentum in M&A activity suggests modest growth in investment in 2019.
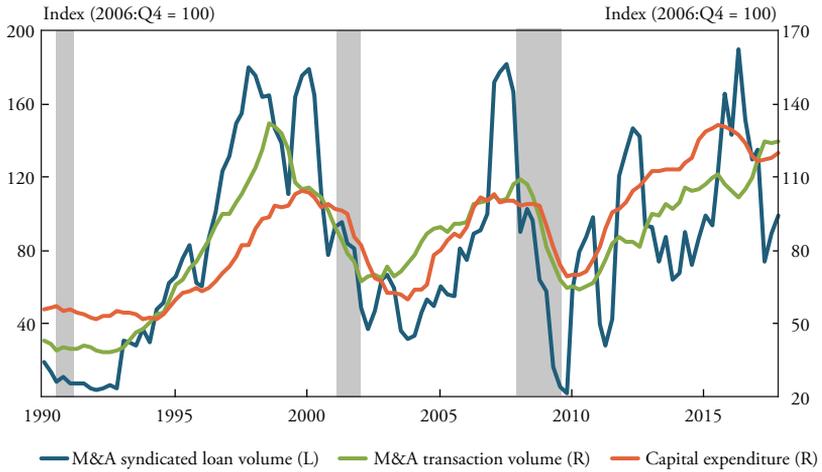
Industrials and materials sectors

Chart 5 illustrates the same complementary relationship between capital reallocation and capital expenditures within the industrials sector. However, the association between them more closely resembles the U.S. economy as a whole in that the ebbs and flows of M&A activity tend to precede the rises and falls in capital expenditures by industrial firms. For example, the number of M&A transactions peaked in 1998, two years prior to the peak in capital expenditures. As the number of M&A transactions declined around the turn of the century, the level of capital expenditures fell as well. During the current economic expansion, both M&As and investment have been rising together in the industrial sector.

Chart 6 shows that this relationship holds for the materials sector as well. Over the last two years, the flow of credit from syndicated lending markets to finance M&A activities fell precipitously in the materials sector. Around the same time, the level of capital expenditures also fell, even though both have been rising in other sectors.
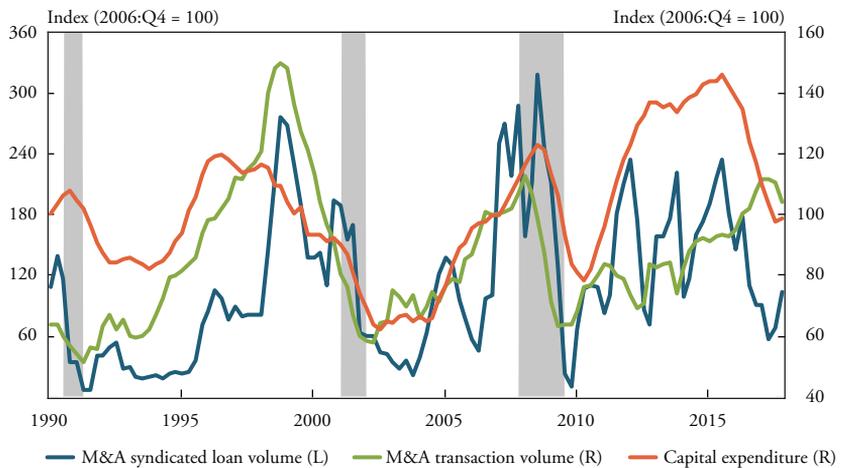
Energy sector

The amount of M&A activity and investment in the energy sector does not closely track the rest of the U.S. economy. Chart 7 shows that the level of both M&A activity and capital expenditures were relatively stable during the late 1990s, a time when most other sectors experienced surges in M&As. After 2005, the shale boom led to increased energy production in the United States, and accordingly, capital reallocation and investment both increased. In 2015, crude oil prices declined sharply and incentives to invest in oil production declined in the United States. Correspondingly, both M&As and capital expenditures fell and have remained below their 2015 peaks. The changes within the energy sector since 2015 are distinct from the much of the U.S. economy as a whole: although M&A activity has been steady or rising

Chart 5
Industrials

Index (2006:Q4 = 100)   Index (2006:Q4 = 100)

— M&A syndicated loan volume (L)   — M&A transaction volume (R)   — Capital expenditure (R)

Note: Gray bars denote NBER-defined recessions at a monthly frequency.
Sources: Compustat, LPC DealScan, Thomson Reuters, and NBER (Haver Analytics).
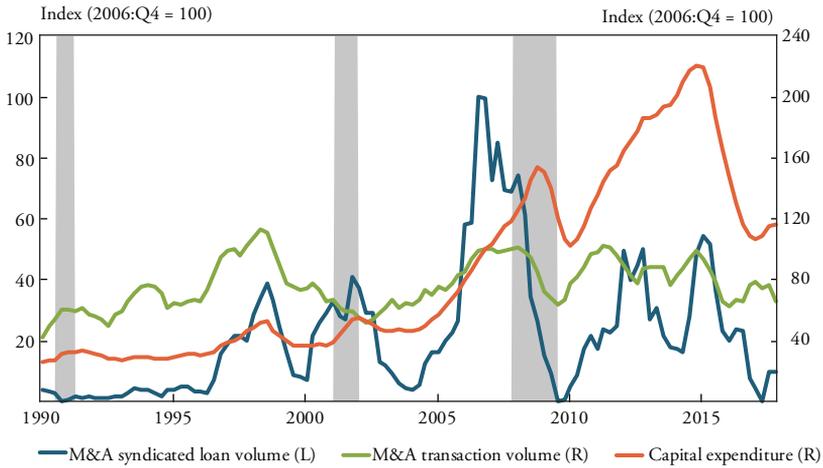
Chart 6
Materials

Index (2006:Q4 = 100)   Index (2006:Q4 = 100)

— M&A syndicated loan volume (L)   — M&A transaction volume (R)   — Capital expenditure (R)

Note: Gray bars denote NBER-defined recessions at a monthly frequency.
Sources: Compustat, LPC DealScan, Thomson Reuters, and NBER (Haver Analytics).

Chart 7
Energy

Index (2006:Q4 = 100)   Index (2006:Q4 = 100)

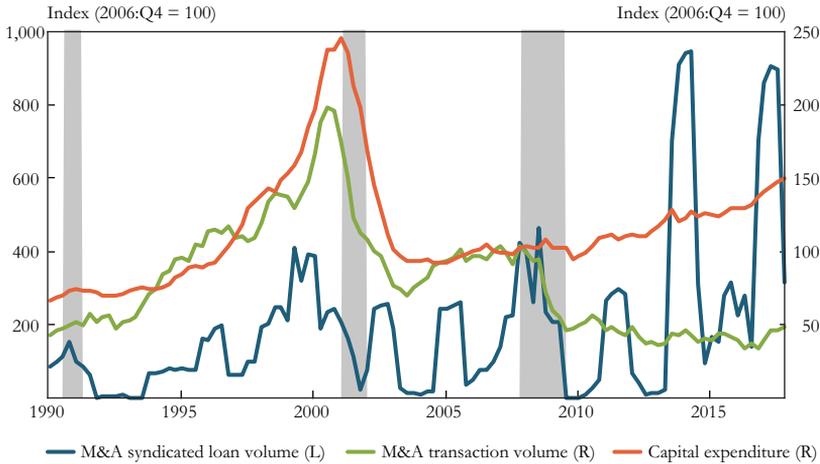Note: Gray bars denote NBER-defined recessions at a monthly frequency.
Sources: Compustat, LPC DealScan, Thomson Reuters, and NBER (Haver Analytics).

in most sectors, it has fallen over the last three years within the energy sector. However, the relationship between M&A activity and capital expenditures in the energy sector remains consistent with the aggregate economy. The industry-specific decline in both M&A activity and capital expenditures further confirms that capital reallocation indeed complements, rather than substitutes for, new investment.

Telecommunication and information technology sectors

M&A activity and capital expenditures in the telecommunication services sector were closely related before the global financial crisis; however, that relationship has become more tenuous in recent years. Chart 8 shows that throughout the 1990s, the number of M&A transactions rose steadily each year, as did the level of capital expenditures. Both series peaked in 2000, then fell precipitously in the early 2000s. But over the last 10 years, the level of capital expenditures has risen steadily while the number of M&A transactions has continued to fall. With the exception of a couple of large loans issued to finance acquisitions in the last two years, syndicated lending for M&As has fluctuated near its historic norm. The emergence of wireless communication technologies has likely kept capital expenditures rising steadily, and so

Chart 8
Telecommunication Services

Index (2006:Q4 = 100)   Index (2006:Q4 = 100)

Note: Gray bars denote NBER-defined recessions at a monthly frequency.
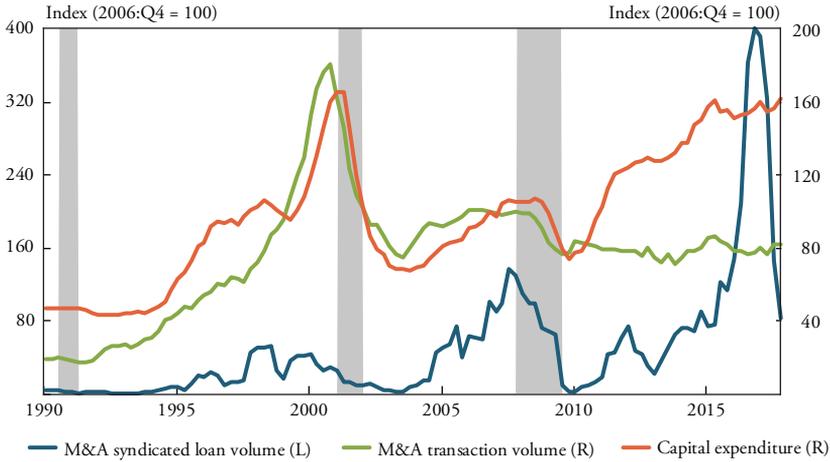Sources: Compustat, LPC DealScan, Thomson Reuters, and NBER (Haver Analytics).

the co-movement between capital reallocation and investment is less evident in the telecommunication sector than it used to be.

Similar to the telecommunications sector, the number of M&A transactions in the information technology sector coincided with the level of capital expenditures from 1990 through the global financial crisis (Chart 9). However, since 2010, the number of acquisitions has remained flat while capital expenditures have increased substantially. From 2011 to 2015, the level of syndicated lending for M&As was also fairly stable. In sum, the positive relationship between investment and capital reallocation does not appear to be as relevant for the telecommunications and information technology sectors as it was 20 years ago.
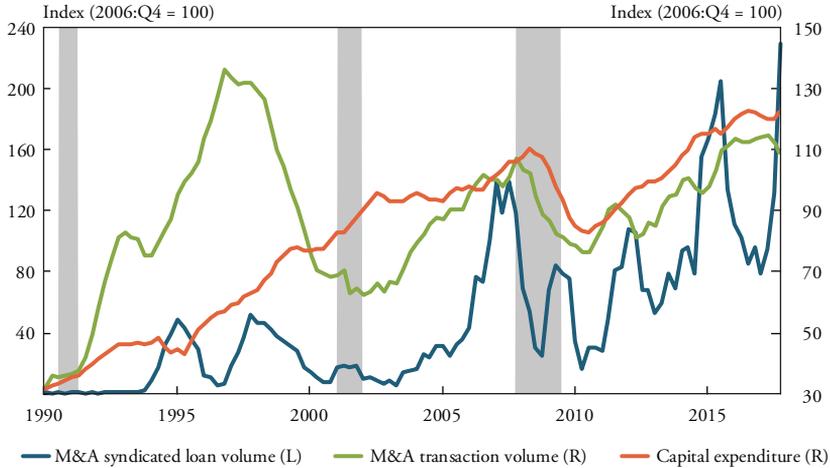
Health-care and utilities sectors

The health-care and utilities sectors exhibit no discernable relationship between capital reallocation and investment. Chart 10 shows that capital expenditures within the health-care sector have been trending upward over the last 30 years. However, in the early 1990s, when the volume of M&A activity surged above its historical average, the pace of investment increased only slightly. The number of acquisitions began to decline in 1996, and capital expenditures kept growing at a

Chart 9
Information Technology

Index (2006:Q4 = 100)   Index (2006:Q4 = 100)

Note: Gray bars denote NBER-defined recessions at a monthly frequency.
Sources: Compustat, LPC DealScan, Thomson Reuters, and NBER (Haver Analytics).

Chart 10
Health Care

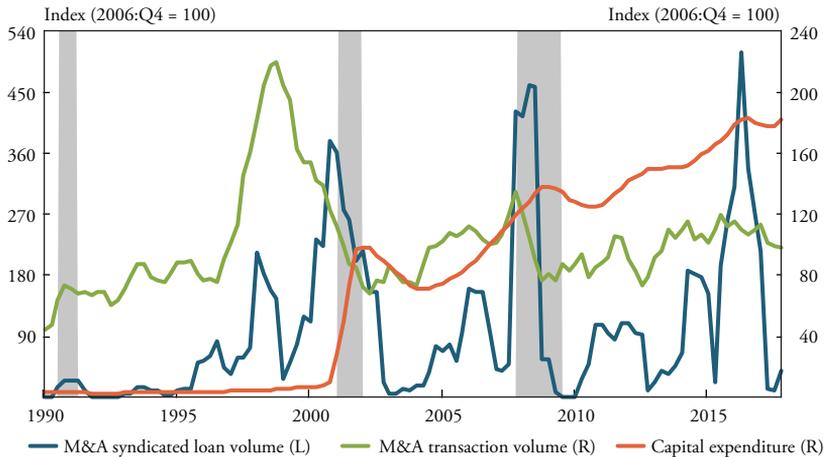Index (2006:Q4 = 100)   Index (2006:Q4 = 100)

Note: Gray bars denote NBER-defined recessions at a monthly frequency.
Sources: Compustat, LPC DealScan, Thomson Reuters, and NBER (Haver Analytics).

Chart 11
Utilities

Index (2006:Q4 = 100)   Index (2006:Q4 = 100)

M&A syndicated loan volume (L)   M&A transaction volume (R)   Capital expenditure (R)

Note: Gray bars denote NBER-defined recessions at a monthly frequency.
Sources: Compustat, LPC DealScan, Thomson Reuters, and NBER (Haver Analytics).

steady pace. In addition, increases in the number of M&A transactions and the volume of financing for M&As during the early 2000s did not coincide with faster growth in capital expenditures. For the large health-care sector, capital reallocation and investment do not seem to go hand-in-hand.

Capital reallocation and investment do not appear to be related in the utilities sector, either. Chart 11 shows that capital expenditures in the utilities sector were essentially flat until the early 2000s even as the amount of capital reallocation ebbed and flowed. Since the early 2000s, capital expenditures have risen steadily but with little relation to the amount of M&A financing or transactions. Despite the absence of a link in the health-care and utilities sectors, capital reallocation and investment move together for the overwhelming majority of U.S. industries.

IV.   Latent Factors Supporting Investment Activities

One possible explanation for the pervasive co-movement between capital reallocation and investment is that common factors are driving changes in firms' capital deployment strategies. A plausible mechanism for the common factor comes from the *Q* theory of investment, which

Table 1

Factor Loadings onto Investment and Capital Reallocation Series

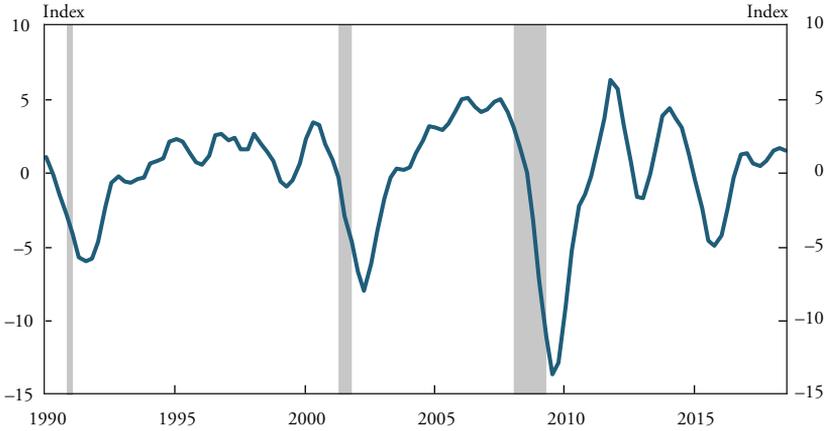| Investment series	Factor loadings
Structures investment	0.263*** (0.030)
Equipment investment	0.127*** (0.026)
M&A syndicated loan volume	0.064*** (0.025)
M&A transaction volume	0.047* (0.025)
Loglikelihood	–508.41
Factor AR coefficients	
First lag	1.59***
Second lag	–0.731***
Observations	115

   *   Significant at the 10 percent level
  **   Significant at the 5 percent level
***   Significant at the 1 percent level
Note: Standard errors are in parentheses.

suggests the same macroeconomic conditions that promote investment also promote acquisitions.

To test this explanation, we estimate a coincident index using a simple dynamic factor model that allows us to measure an underlying factor driving investment cycles in the U.S. economy. Specifically, we follow the standard approach in Stock and Watson (1989, 1991) and model the aggregate series of (log) equipment investment, structures investment, the volume of credit supplied in syndicated lending markets to finance M&As, and the number of M&A transactions as having a single common factor. We then model that factor in a second-order autoregressive process. We take first-differences for each series to ensure stationarity and standardize each observation according to the mean and standard deviation of its respective series. We estimate the model using maximum likelihood for the period 1990:Q1 through 2018:Q4.

The underlying factor loads positively on each type of capital investment and each measure of capital reallocation for the U.S. economy, suggesting that both new investment and capital reallocation tend to move in tandem with the underlying factor. Table 1 contains the factor loadings for each series. The estimated factor loading for the number of

Chart 12
Common Factor Underlying Investment Cycles

Note: Gray bars denote NBER-defined recessions at a monthly frequency.
Sources: Bureau of Economic Analysis (Haver Analytics), LPC DealScan, Thomson Reuters, NBER
(Haver Analytics), and authors' calculations.

M&A transactions is positive but only marginally significant. In other words, the volumes of investment and lending for M&A activity tend to move closely with an underlying factor, but the simple number of M&A transactions has a more tenuous relationship with that common factor. This is likely due to the fact that the number of transactions is too coarse of a measure (lacking any information on the size of M&A transactions) to precisely estimate its connection with any underlying factor. Chart 12 plots the (smoothed) estimates of the common factor over our sample period. The latest estimate of the underlying factor for the end of 2018 is modestly above zero. Given the positive loadings of the factor to investment activity and the persistence of the factor, the current estimates from the end of 2018 suggest that investment growth may remain slightly above its average over the coming months.

V.   Discussion

Recent growth in the volume of corporate debt used to finance acquisitions has raised questions about how this credit issuance is associated with real economic activity. This article demonstrates a simple fact about acquisition activity and investment—capital expenditures

tend to rise in parts of the U.S. economy where funding for acquisitions tends to flow. Put differently, large volumes of capital reallocation do not fully crowd out new investment by firms; instead, increases in M&A activity tend to complement growth in investment.

Market watchers often pay close attention to movements of workers between firms or between cities as indicators of the overall health and activity in labor markets. Our results suggest flows of capital between firms can similarly be useful in assessing the overall conditions that drive U.S investment. While acquisitions of other firms do not constitute new investment activity, they do allow acquiring firms to strategically position themselves and build their productive capacity, subsequently influencing overall growth in the U.S. economy.

Endnotes

[1]We include only those merger transactions where both the acquirer and target are U.S. firms. Including acquisitions of U.S. entities by foreign firms has little implications for overall M&A activity and no effect on our main conclusions.

[2]Monetary values are available for a fraction of the observed transactions in the Thomson Reuters database but missing for the majority of observations.

[3]Characteristics on each loan include details of maturity, size, pricing and purpose of the loan at the date of origination. One or more "facilities" are reported in terms of the syndicated "package" identification, or deal, between the borrower and lender(s). The base unit of observation is by individual "facility" or loan. We restrict our sample to include loans used for M&A purposes from 1990 to 2017 that originated in the United States, with 53,677 reported "facilities" and 37,838 "packages." Quarterly estimates of M&A syndicated loans are reported by aggregating loan value for each quarter.

[4]For each M&A series, we observe the three-digit Standard Industrial Classification code for each transaction, which we convert to a two-digit GICS code to facilitate the match with Compustat data.

[5]U.S. publicly traded firms are identified as companies incorporated in the United States. Compustat data are used with permission and are copyright © 2018, S&P Global Market Intelligence. Reproduction of any information, data or material, including ratings ("Content") in any form is prohibited except with the prior written permission of the relevant party. Such party, its affiliates and suppliers ("Content Providers") do not guarantee the accuracy, adequacy, completeness, timeliness or availability of any Content and are not responsible for any errors or omissions (negligent or otherwise), regardless of the cause, or for the results obtained from the use of such Content. In no event shall Content Providers be liable for any damages, costs, expenses, legal fees, or losses (including lost income or lost profit and opportunity costs) in connection with any use of the Content.

[6]Capital expenditures are firms' total investment expenditures on the purchase of, upgrades to, and maintenance of physical assets within a given quarter measured in nominal U.S. dollars. Capital expenditures exclude M&A activity. We use GICS codes to classify firms into distinct industries and exclude financial and real estate sectors from the analysis. The financial and real estate sectors are outliers in both their use and levels of debt and M&A activity, which are tenuously linked to real economic activities.

[7]The shares of investment within each sector are estimated based on five-year trailing averages of total capital expenditures by firms in each industry.

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