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What are firms borrowing for? The role of financial assets

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ABSTRACT

Recent studies show that nonfinancial corporate debt is weakly correlated with aggregate demand, raising the question: Why is the nonfinancial corporate sector borrowing? We use flow of funds data for fifteen advanced economies since 1990 to econometrically show that nonfinancial corporate borrowing primarily finances financial asset accumulation. We show that an increase in borrowing of one percent of GDP is associated with an increase in capital expenditures of only 0.013 percent of GDP, but a 0.82 percent of GDP increase in the acquisition of financial assets net of non-debt liabilities. This rise in net financial asset acquisition is dominated by gross financial asset accumulation. Furthermore, corporate borrowing is primarily associated with non-cash financial assets, and is not associated with foreign direct investment. These results suggest that the nonfinancial corporate sector's growing orientation toward accumulating financial assets underlies the weak relationship between their borrowing and aggregate demand.

1. Introduction

Recent studies have unveiled a puzzling pattern in advanced economies: expansions of nonfinancial corporate debt (i.e. the debt held by nonfinancial corporations) have a muted correlation with the subsequent trajectory of aggregate demand. For example, using sectoral data for a sample of advanced economies since the 1960s, Mian et al. (2017) find that increases in the stock of nonfinancial corporate debt have weak effects on future GDP, while Drehmann et al. (2018) present similarly weak correlations for increases in the flow of new borrowing. Jordà et al. (2022), in turn, find that the depth and duration of recessions are little affected by the size of previous corporate credit expansions.

One striking finding in this literature is that corporate borrowing has a muted effect on aggregate demand *even* in the short run. This result counters the common theoretical prior that firms borrow to finance fixed capital investment, giving rise to a positive short-run relationship between corporate borrowing and aggregate demand. The Keynesian tradition, for example, has long emphasized the need for additional purchasing power to finance desired increases in investment relative to the current flow of saving. By highlighting the financial sector's role in providing this finance through credit, this paradigm suggests a direct link between debt and short-run fluctuations in investment demand.[1] Likewise, theoretical work emphasizing market failures stemming from incomplete contracts contends that, because credit rationing is common in market economies, easing credit constraints may simultaneously raise borrowing and fixed capital investment as firms undertake previously rationed projects (Stiglitz and Weiss, 1981). A buoyant economy may also increase firms' cash flows relative to interest commitments, further relaxing credit constraints and generating positive feedback effects between aggregate spending and corporate borrowing (Fazzari et al., 1988). Models formalizing mechanisms through which borrowing and aggregate demand reinforce each other also show that credit markets may amplify demand upswings as cash flows rise, prudential norms become more permissive, and credit constraints ease (see, e.g., Fazzari et al., 2008; Ryoo, 2010, 2013). Notably, these models often emphasize a positive *short-run* relationship between borrowing and aggregate demand, even when they also include mechanisms – such as rising debt service burdens and deteriorating balance sheets – that generate crises over longer time horizons (see, for example, Stockhammer and

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[1] The Keynesian literature on the finance motive for money demand argues that, at the aggregate level, the desire to undertake additional expenditures on goods and services translates into higher demand for money balances (Keynes, 1937; Davidson, 1965; Chick, 1973). In turn, various flavors of theories of endogenous money emphasize the role of banks and credit markets in accommodating this demand through credit creation (see, e.g., Moore, 1988; Pollin, 1991; Fontana et al., 2020). This understanding is based on the notion that, even though higher saving generally results from higher spending *ex post* in demand constrained economies (per the Keynesian principle of effective demand), *ex ante* an increase in desired investment above current saving requires the availability of finance.

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Gouzoulis (2022) and, for a review, see Nikolaidi and Stockhammer (2017)).

Against this theoretical backdrop, the muted short-run relationship between nonfinancial corporate debt and aggregate demand found in the empirical literature is made all the more salient by a remarkable rise in nonfinancial corporate debt in advanced economies. Across Europe, North America, and Australia, average corporate debt rose from 50% of GDP in the 1970s to 75% in the 1990s, and 105% in the 2010s.[2] Furthermore, unlike corporate debt, the evidence on household debt does point to a positive short-run relationship between debt and aggregate demand. Both Mian et al. (2017) and Drehmann et al. (2018), for example, find that household debt expansions have significant positive correlations with GDP in the short-run (4–5 years), even as rising debt service commitments and lower future credit inflows eventually drive declines in spending. By comparison, the weak short-run relationship between corporate borrowing and real spending is puzzling.

Together, these patterns raise the question: what is the nonfinancial corporate sector borrowing for? In this paper, we contribute an explanation in which we show that a majority of firm borrowing is directed toward acquiring portfolio holdings of financial assets. Our analysis is based on the alternative possible uses of funds for new borrowing besides the financing of capital investment in the domestic economy. These alternatives include the replacement of equity as a source of external finance, the repayment of other non-debt liabilities, the financing of foreign direct investment and, most notably in our results, the accumulation of a portfolio of financial assets.

We use flow of funds data for the nonfinancial corporate sector in fifteen advanced economies between 1990 and 2021 to show that, while new borrowing is weakly associated with capital expenditure, it is strongly associated with a rise in holdings of financial assets net of non-debt liabilities. Specifically, the first main result of our dynamic panel data models is that an increase in borrowing equal to one percent of GDP is correlated with an increase in capital expenditures of only 0.013 percent of GDP, but an increase in the acquisition of financial assets net of non-debt liabilities of 0.82 percent of GDP (see Table 2). Second, we disaggregate financial assets net of non-debt liabilities to distinguish higher accumulation of financial assets from lower accumulation of liabilities other than debt, such as equity, pension schemes, etc. We show that, while a reduction in net equity issues and remaining liabilities account for part of this relationship between new borrowing and the acquisition of net financial assets, it primarily reflects financial asset accumulation (equal to 0.7 percent of GDP).

We also show three extensions of this baseline analysis, each of which acts as a falsification test of our main result that firm borrowing is translated into financial assets. First, we show that these contemporaneous patterns persist into several quarters. As such, financial assets are not a temporary place to park newly borrowed funds as, for example, real investment projects are finalized. Second, we show that most borrowed funds are held in *non-cash* financial assets. Thus, firms do not initially hold borrowed funds as cash before allocating them to capital investment in near-term quarters. Third, we use economy-wide balance of payments data to show that the rise in corporate financial assets is *not* dominated by outward foreign direct investment (FDI). Outward FDI may, in fact reflect higher spending on fixed capital abroad that is recorded as financial assets in the domestic economy. This finding reinforces the conclusion that the main use of borrowed funds in the short term is the accumulation of financial assets as portfolio holdings.

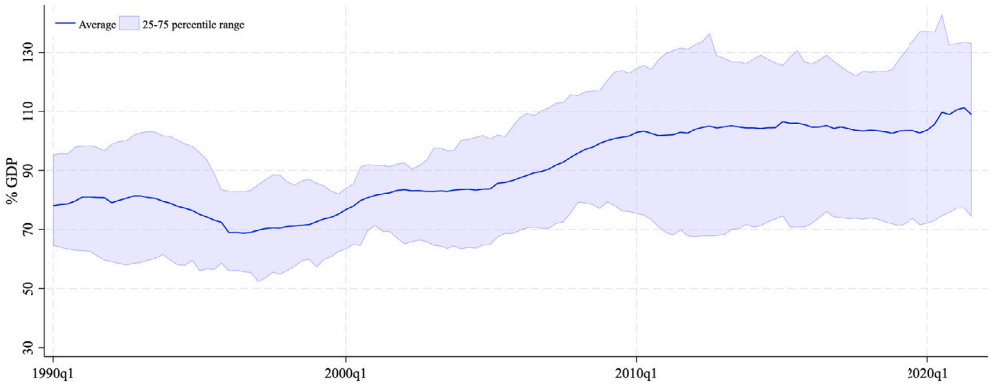
This result that new borrowing is strongly correlated with expanded portfolios of financial assets and, to a lesser extent, with a reduction in net equity issues contributes a new explanation to the puzzle that corporate debt expansions have weak short-run effects on aggregate expenditure on domestic goods and services (Jordà et al., 2016; Mian et al., 2017; Drehmann et al., 2018; Jordà et al., 2022). This result also casts light into three further strands of the literature. First, recent work establishes that, while new equity issues are primarily used to finance capital expenditure, increases in net debt (gross debt minus financial assets) are primarily used to reduce net equity issues rather than to finance capital expenditure. In line with our estimates, Frank and Sanati (2021) find that each new dollar of net debt in the U.S. business sector is associated with a modest increase of only 0.14 dollars in nonfinancial assets. In contrast, each dollar of new equity issues is associated with an increase in real assets of 0.93 dollar. Frank and Sanati (2021) also show that, while equity issues tend to precede real asset growth, net debt accumulation instead tends to follow real asset growth and *precede* equity repurchases. This temporal pattern suggests that firms have used equity issues to finance real asset growth in recent decades, but that debt finance is used, in part, to return cash to shareholders. Frank and Sanati (2021)'s definition of net debt does not, however, consider the acquisition of financial assets as a possible use of borrowed funds. Our results, therefore, build on their findings by showing that debt not only finances payouts to shareholders, but also – and primarily – finances the accumulation of financial assets by nonfinancial corporations.

Second, our results cast light on the large literature documenting a rise in corporate saving relative to capital expenditure across advanced economies (De Souza and Epstein, 2014; Gruber and Kamin, 2016; Chen et al., 2017; Dao and Maggi, 2018; Cesaroni et al., 2018; Behringer, 2020; Villani, 2021) and changes in borrowing behavior (Narayan et al., 2021). As we discuss in Section 3, this rise implies that the rate at which the corporate sector accumulates financial assets relative to financial liabilities has also increased. In turn, the fact that this trend coincides with a rise in corporate debt as a share of GDP in several advanced economies suggests that the accumulation of financial assets net of non-debt liabilities has, *ex post*, absorbed a growing share of new borrowing. The accounting framework we lay out in Section 3 makes these relationships explicit, and our econometric results in Section 4 provide direct evidence for this link using within-country variation.

Third, our results speak to the literature on the financialization of U.S. nonfinancial corporations, which has emphasized a post-1980 rise in financial assets relative to the capital stock of these corporations. This literature has linked financial asset growth to both firm-level volatility (Davis, 2018) and to a higher share of total earnings coming from portfolio income (Krippner, 2005). At the same time, shareholder value orientation has increased the importance of short-term returns as a driver of managerial decision making (Crotty, 2005; Lazonick and O'Sullivan, 2000; Orhangazi, 2008; Davis, 2017). A long period of low interest rates may have also contributed to a shift in corporate finance strategies by making borrowing relatively less expensive. In turn, financialization and shareholder value orientation are linked to key macroeconomic outcomes, including, perhaps most notably, slowing fixed investment rates (e.g. Stockhammer, 2004; Orhangazi, 2008; Demir, 2009; Davis, 2018; Tori and Onaran, 2018). These behavioral mechanisms underlie our main result that corporate borrowing has been linked to financial asset accumulation rather than fixed capital accumulation. Furthermore, our results address a previously unanswered issue in this literature, by identifying a key source of funds (i.e. new borrowing) that the corporate sectors of advanced economies have used to finance financial asset acquisitions.

The paper is organized as follows. In Section 2, we provide motivating evidence that nonfinancial corporate debt expansions are weakly correlated with subsequent aggregate demand. In Sections 3 and 4, we then turn to our main analysis, which considers alternate uses for borrowed funds beyond capital investment. In Section 3, we describe the data and introduce the accounting and estimation framework. In Section 4, we present and discuss the results. Section 5 concludes.

[2] These numbers are average nonfinancial corporate debt-to-GDP ratios using quarterly debt data from the Bank of International Settlements for Australia, Austria, Canada, Denmark, Finland, France, Germany, Greece, Italy, Netherlands, Portugal, Spain, Sweden, the United Kingdom, and the United States. See Section 2 and Appendix A for a detailed description of definitions and data sources.



Notes: The figure plots average nonfinancial corporate debt to GDP from 1990Q1 through 2021Q3, as well as its 25th and 75th percentiles, using quarterly debt data from the Bank of International Settlements and GDP data from the national accounts for Australia, Austria, Canada, Denmark, Finland, France, Germany, Greece, Italy, Netherlands, Portugal, Spain, Sweden, the United Kingdom, and the United States. The debt-to-GDP ratio is debt relative to the sum of nominal GDP in the previous four quarters. For more details on data sources, see Appendix A.

Fig. 1. Nonfinancial corporate debt as a percentage of GDP.

2. Nonfinancial corporate debt, investment, and GDP

We begin by documenting the weak correlation between nonfinancial corporate debt expansions and domestic real activity that has been established in the previous literature (Mian et al., 2017; Drehmann et al., 2018; Jordà et al., 2016) and which motivates our analysis in Sections 3 and 4. To do so, we draw on the specification in Mian et al. (2017) that uses Jordà (2005) local projections to estimate the dynamic responses of GDP and investment to shocks in nonfinancial corporate debt. We use sectoral debt data from the Bank for International Settlements (BIS) "Long series on total credit to the nonfinancial sectors" and data on quarterly real GDP and gross fixed capital formation from national accounts (see Appendix A for details on the data). To define the nonfinancial corporate and household debt-to-GDP ratios, we normalize debt (D^{BIS}) by the sum of nominal GDP in the previous four quarters ($d_{it}^{j} = \left(D_{it}^{j,BIS} / \sum_{l=0}^{4} Y_{it-l-1}\right)$, where $j = \{NFC, HH\}$). Fig. 1, which plots the nonfinancial corporate debt-to-GDP ratio, shows the dramatic rise in corporate debt cited in the introduction, wherein this ratio rises from an average of 78.1% in 1990Q1 to 108.9% in 2021Q3.

Using this data, we regress the logarithms of real GDP and real business investment on the lagged nonfinancial corporate debt-to-GDP ratio for each country i and year t, where the coefficients of interest are $\hat{\beta}_{NFC1}^{h}$ for horizons $h \geq 0$:

$$z_{it+h} = \alpha_i^h + \theta_t^h + \sum_{p=1}^{P} \beta_{NFCp}^h d_{it-p}^{NFC} + \sum_{p=1}^{P} \beta_{HHp}^h d_{it-p}^{HH} + \sum_{p=1}^{P} \gamma_p^h z_{it-jp} + \epsilon_{it+h} \quad (1)$$

In Eq. (1), the dependent variable z_{it+h} is alternately log real GDP (y_{it+h}) or the log of real business investment (I_{it+h}). We include country fixed effects (θ_i^h) to control for unobserved country-specific heterogeneity that is constant in time, and time fixed effects (α_t^h) to control for unobserved global factors that may explain across-country variations in economic activity (e.g. oil crises). We also control for the household-debt-to-GDP ratio and lagged values of the dependent variable (z).[3] We set $P = 8$ quarters.[4] We estimate Eq. (1) using a fixed effects OLS estimator, and report standard errors clustered by country.

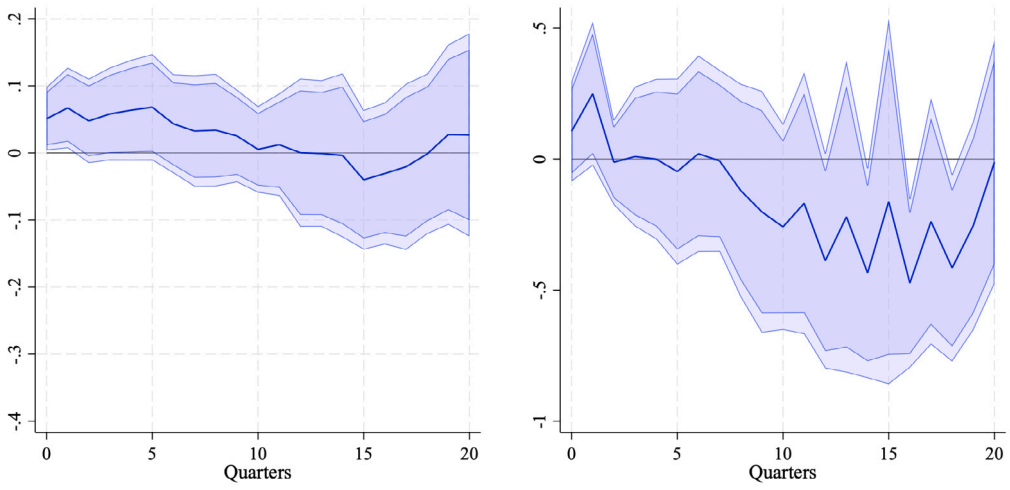
Fig. 2 plots the responses of log real GDP (Fig. 2a) and the log of real business investment (Fig. 2b) to a one percentage point temporary increase in the nonfinancial corporate debt-to-GDP ratio in $t-1$ (d_{it-1}^{NFC}) for five years ($h = 0, \ldots, 20$). These figures highlight weak short-run relationships between nonfinancial corporate debt and both GDP and real investment. First, Fig. 2a shows that, while the relationship between a shock to the nonfinancial corporate debt-to-GDP ratio and real GDP is indeed positive in the short term, these coefficients are small (and statistically insignificant at most horizons). At horizon 0, for example, a one percentage point increase in the nonfinancial corporate debt-to-GDP ratio is associated with a 0.05% increase in real GDP (significant at the 10% level). This estimate is very small in economic terms: average quarterly GDP growth in our sample is 0.42% and the average quarterly change in the nonfinancial corporate debt-to-GDP ratio is only 0.33 percentage points (suggesting that a one percentage point shock is quite large). After horizon 12, the estimates become weakly negative. At its minimum at horizon 15, for example, a one percentage point increase in the nonfinancial corporate debt-to-GDP ratio in $t-1$ is associated with a 0.04% decline in real GDP.[5]

In turn, Fig. 2b shows a similarly weak short-run relationship between nonfinancial corporate debt and business investment. Investment is the key channel through which firm borrowing is expected to stimulate aggregate demand, and one would expect that shocks to nonfinancial corporate debt will, all else equal, raise real investment in the short run. At its peak in the second horizon, however, a one percentage point increase in the corporate debt-to-GDP ratio is associated with only a 0.25% increase in real investment. Given average quarterly real investment growth of 0.39% and – as noted above – an

[3] The large T dimension of our panel mitigates concerns about Nickell bias stemming from the inclusion of a lagged dependent variable (Nickell, 1981).

[4] This choice of lag length follows Montiel Olea and Plagborg-Møller (2021), who argue for lag-augmented local projections with many lags and controls when data are persistent and the longest forecast horizon is a non-negligible fraction of the sample.

[5] In contrast, shocks to household debt generate short-term booms (Mian et al., 2017). The relationship between household borrowing and GDP growth is described by the series of β_{HH1}^h in Eq. (1). While the coefficient at $h = 0$ is very similar for firm and household debt, β_{HH1}^h subsequently rises to 0.12 at horizon 5; 0.15 at horizon 6; and 0.20 at horizon 10. This coefficient peaks almost three years after the shock at the 12th horizon, when a one percentage point increase in the household debt-to-GDP ratio is associated with a 0.21% increase in GDP growth.



(a) Real GDP (b) Real investment

Notes: This figure plots the response of log real GDP (y_{it+h}, panel A) and the log of real business investment (I_{it+h}, panel B) to a one percentage point increase in the nonfinancial corporate debt-to-GDP ratio in $t-1$ (d_{it-1}^{NFC}). The (blue) solid line is the estimated coefficient. Dark and light shaded regions are 90% and 95% confidence intervals using HAC standard errors clustered by country.

Fig. 2. Local projections: real GDP (y_{it+h}) and real business investment (I_{it+h}). (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

average quarterly change in the corporate debt-to-GDP ratio of 0.33 percentage points per year, this coefficient is small in economic terms. These results are, therefore, inconsistent with the prior that debt is primarily channeled toward real investment.

Thus, as in Mian et al. (2017), Drehmann et al. (2018), and Jordà et al. (2016), Fig. 2 captures a surprisingly weak link between firm debt and real economic activity, and contrasts the conventional wisdom that shocks to debt or borrowing stimulate investment demand and GDP in the short run. As such, these patterns raise the question: What are firms borrowing for? Moving forward in this paper, we provide an explanation for this puzzling lack of a short-run relationship based on alternative uses of borrowed funds.

3. Accounting framework and stylized facts

We use data on sources and uses of funds to unpack how uses of borrowed funds other than domestic capital investment explain the low responsiveness of real activity to nonfinancial corporate debt. Specifically, we investigate whether borrowed funds have instead been used to accumulate financial assets or finance foreign direct investment, neither of which is directly related to higher capital investment in the home economy.

We motivate our empirical analysis using the accounting identity in Eq. (2), which shows that the nonfinancial business sector's capital account balance equals its financial account balance, up to a statistical discrepancy. The relationship between these two accounts is a convenient way to state the constraint that sources and uses of funds must equal each other. The capital account balance describes the extent to which internally generated funds (augmented by net capital transfers received) are sufficient to finance capital expenditure — i.e. the accumulation of nonfinancial assets (fixed capital, inventories, and non-produced nonfinancial assets). This balance is shown on the left-hand side of Eq. (2) as the difference between gross saving plus net capital transfers received (S_{it}) and capital expenditure (Capex_{it}). The financial account balance appears on the right-hand side of Eq. (2) as the accumulation of financial assets (ΔA_{it}) minus new borrowing (i.e. the accumulation of debt liabilities, ΔD_{it}), net equity issues (ΔE_{it}), and the accumulation of remaining liabilities (ΔL_{it}). To facilitate the exposition, we refer to the sum of ΔE_{it} and ΔL_{it} as *non-debt liabilities*.[6]

The equality of the two balances is intuitive: when internal funds exceed capital expenditure, financial assets necessarily grow in excess of financial liabilities, and the sector is a net lender to other domestic and external institutional units. By contrast, when internal funds fall short of capital expenditure, the resulting financing gap must be closed by running down assets or borrowing from other institutional units — i.e. the net accumulation of debt and non-debt liabilities. While the two balances are identical by construction, the fact that the underlying data are obtained from different sources results in a statistical discrepancy, which is often of non-negligible magnitude. This discrepancy is shown in Eq. (2) by η_{it}.

$$\underbrace{S_{it} - \text{Capex}_{it}}_{\text{Capital Account}} = \underbrace{\Delta A_{it} - (\Delta D_{it} + \Delta E_{it} + \Delta L_{it})}_{\text{Financial Account}} + \underbrace{\eta_{it}}_{\text{Discrepancy}} \tag{2}$$

Because our interest lies in the allocation of new borrowing, we rearrange Eq. (2) to show that new borrowing (ΔD_{it}) equals the accumulation of financial assets net of non-debt liabilities ($\Delta A_{it} - \Delta E_{it} - \Delta L_{it}$) minus the capital account balance ($CA_{it} = S_{it} - \text{Capex}_{it}$), adjusted for the discrepancy. We also normalize all quantities by nominal GDP (Y_{it}) to obtain:

$$\underbrace{\frac{\Delta D_{it}}{Y_{it}}}_{\text{New borrowing}} = \underbrace{\frac{\Delta A_{it} - (\Delta E_{it} + \Delta L_{it})}{Y_{it}}}_{\substack{\text{Accumulation of financial assets} \\ \text{net of non-debt liabilities}}} - \underbrace{\frac{CA_{it}}{Y_{it}}}_{\text{Capital Account}} + \underbrace{\frac{\eta_{it}}{Y_{it}}}_{\text{Discrepancy}} \tag{3}$$

[6] More specifically, in the national accounting data that we use in this paper, new borrowing (ΔD_{it}) includes changes in the stocks of outstanding bonds and loans; net equity issues (ΔE_{it}) include issues minus repurchases of own equity; and changes in the remaining liabilities (ΔL_{it}) include changes in derivatives, employee stock options, pension schemes, and other accounts payable. The accumulation of financial assets (ΔA_{it}) include changes in both cash-like and non-cash financial assets.

To compute the balances in Eq. (3), we extend the quarterly dataset from Section 2 to include the components of the capital and financial accounts of nonfinancial corporations as reported by national statistical agencies under the common framework of the System of National Accounts (SNA) 2008, yielding an unbalanced panel from 1990Q1 to 2021Q3.[7] Specifically, data for 1990–1998 include the United States, Canada, Australia, and the United Kingdom; data for 1999–2012 also include Germany, Spain, Finland, France, Greece, Italy, the Netherlands, Portugal, and Sweden; and data for 2013–2021 also include Denmark. Importantly, to be consistent with the definition of the financial account, we only use data on changes in the stocks of financial assets and liabilities from *transactions*, such as acquisitions and disposals of financial assets, new equity issues, the contracting of new debt, the repayment of existing debt, etc. We, therefore, ignore the effects of *revaluation and other changes*, such as changes in the market prices of financial instruments and debt write-offs, which also cause changes in the stocks of financial assets and liabilities, but do not result from transactions.

Table 1 shows these balances averaged across countries and over seven periods from 1990 to 2020.[8] These balances reveal three main patterns. First, new borrowing raises the average corporate debt-to-GDP ratio in all periods. If we focus on the post-1999 years, when our dataset coverage expands to include most European countries, new borrowing averages 4.2% of GDP per year. Average borrowing is highest in the years leading up to the 2008 crisis, reaching 7% of GDP between 2004 and 2008, and then declines to 2.24% of GDP between 2009 and 2019. This data is consistent with the rising stock of nonfinancial corporate debt as a share of GDP shown in Fig. 1, which increases significantly in the 1990s and 2000s, but stabilizes after 2008.

Second, Table 1 shows that the average capital account balance rises over these decades. Between 1999 and 2003, for example, this balance is −0.16% of GDP. Thus, corporate saving fell short of capital expenditure in the average country and, as a result, nonfinancial corporations were net borrowers from other institutional units. From the early 2000s, however, corporate saving exceeds capital expenditure, with the capital account averaging 0.71% of GDP between 2004 and 2019. This rise partly reflects the aftermath of the 2008 crisis, which is characterized by lagging investment spending and generalized efforts to deleverage (indeed, the capital account balance reaches 1.67% of GDP in the period between 2009 and 2012, and again rises after the 2020 crisis, to 2% of GDP). The fact that the average capital account is consistently positive since 2004, however, suggests that its rise also has a secular component, as noted in the literature on the corporate 'saving glut' in advanced economies (Dao and Maggi, 2018; Gruber and Kamin, 2016; Chen et al., 2017; Behringer, 2020).

Third, Table 1 shows that the accumulation of financial assets net of non-debt liabilities is consistently positive. This balance mirrors new borrowing: after averaging 4.4% of GDP between 1999 and 2003, it rises in the years leading to the 2008 financial crisis, averaging 5.4% between 2004 and 2008, and then declines to an average of 2.24% between 2009 and 2019. As a result of this long and nearly uninterrupted accumulation of financial assets (net of non-debt liabilities), along with revaluation effects, the financial holdings of nonfinancial corporations in our sample rise from an average of 128% of GDP in 1995 to 171% of GDP in 2018.[9]

What is the main lesson from this data? Table 1 shows that, in recent decades, the nonfinancial corporate sector of the average country has accumulated debt while closing its financing gap, eventually enjoying an excess of internal funds over capital expenditure. We stress that accounting relationships do not warrant a behavioral interpretation of firms' intentions. When seen from an *ex-post* and aggregate perspective, however, this data suggest that – rather than being absorbed by investment in fixed capital and other nonfinancial assets – additional borrowed funds may have been absorbed by the accumulation of financial assets (net of non-debt liabilities).

4. Empirical strategy and results

The stylized facts in Section 3 are consistent with the finding that rising debt has been disconnected from investment spending and aggregate demand fluctuations. Simple averages may, however, mask important cross-country heterogeneity in the levels of borrowing, capital expenditure, and financial asset accumulation. In this section, we therefore examine these relationships using an econometric model that uses only within-country variation, while also accounting for common trends, persistence in financial variables, and the potential role of other covariates. The model allows us to examine whether the average advanced economy is characterized by a low responsiveness of capital expenditure to new borrowing. It also allows us to independently examine the correlations between innovations in borrowing and alternative uses of funds, including the acquisition of financial assets, net equity issues, remaining liabilities, and FDI.

We estimate these relationships using variations on the following dynamic panel data model:

$$z_{it} = \alpha_i + \theta_t + \beta\left(\frac{\Delta D_{it}}{Y_{it-1}}\right) + \sum_{p=1}^{P}\delta_p\left(\frac{\Delta D_{it-p}}{Y_{it-p-1}}\right) + \sum_{p=1}^{P}\gamma_p z_{it-p} + \lambda'\mathbf{x}_{it} + \varepsilon_{it} \quad (4)$$

where $^{\Delta D_{it}}/_{Y_{it-1}}$ is new borrowing as a ratio of lagged GDP, and the dependent variable (z_{it}) represents a use of borrowed funds, such as capital expenditure or the acquisition of financial assets, expressed as a ratio of contemporaneous GDP.[10] All specifications control for fixed country-level characteristics (α_i) and common time-varying shocks (θ_t). In each case, the coefficient of interest is β, which shows the contemporaneous correlation between each dependent variable and an increase in new borrowing as a share of GDP. Importantly, while our specification accounts for obvious sources of bias (including time-constant heterogeneity across countries and unobserved lagged effects, which we discuss below), each β reflects a contemporaneous partial correlation, rather than a causal effect. To facilitate interpretation, we

[7] For detailed data sources, see Appendix A. To ensure consistency across the components of the capital and financial accounts, in this section we use non-seasonally adjusted data and include only the quarterly observations spanning full calendar years (we use annual data for the United States, since non-seasonally adjusted data is unavailable). We exclude Ireland and Belgium. We exclude Belgium because of inconsistencies among the reported components of the national financial accounts, and we exclude Ireland because of substantial volatility in the series of capital expenditure (this volatility may reflect the special role played by Ireland in the international financial system as the headquarters of several large multinational companies, rather than by the ordinary credit and investment policies of resident nonfinancial firms).

[8] We break the data into seven periods of roughly equivalent length that also (i) take into account changes in country coverage over time (and, in particular, a large increase in country coverage when most European countries join the sample in 1999) and (ii) ensure that years with major economic crises (e.g. 2008) do not lie in the middle of any period. We exclude 2021 data for this table because we only have data for the first three quarters.

[9] The statistical discrepancy is non-negligible, averaging 1% of GDP since 1999. However, this discrepancy has a positive sign in all periods (except 1994–1998, during which our sample of countries is restricted). A positive discrepancy implies that the recorded accumulation of financial assets (net of non-debt liabilities) consistently falls short of the recorded flow of new borrowing and the capital account balance. The sum of these two components gives the total resources available to finance the accumulation of financial assets net of non-debt liabilities (see Eq. (3)). As such, it is unlikely that the periods of high recorded rates of acquisition of financial assets reflect measurement error; on the contrary, measurement error appears to understate the amount of financial asset accumulation.

[10] We normalize new borrowing by lagged GDP to prevent contemporaneous disturbances to GDP from causing spurious correlations between the ratios. All series used in this section are seasonally adjusted.

Table 1
Sources and uses of funds in the nonfinancial corporate sector.

	Capital account	Financial assets (net of non-debt liab.)	New borrowing	Discrepancy	Countries
	CA/Y	$[\Delta A-(\Delta E+\Delta L)]/Y$	$\Delta D/Y$	η/Y	
1990–1993	−0.48	0.44	1.77	0.85	4
1994–1998	−0.65	3.07	3.51	−0.22	4
1999–2003	−0.16	4.41	5.93	1.36	14
2004–2008	−0.00	5.41	7.02	1.60	14
2009–2012	1.67	2.57	1.79	0.89	14
2013–2019	0.68	2.61	2.49	0.56	15
2020	2.01	5.69	4.24	0.57	15

Notes: The table shows the average (across countries and periods) of the balance in the capital account, and the flow of financial assets (net of non-debt liabilities) and new borrowing, as a percentage of GDP. The discrepancy is equal to the difference between the capital account and the financial account, that is: $\eta = CA - \Delta A - (\Delta D + \Delta E + \Delta L)$. The balances were computed using annualized, non-seasonally adjusted data (annual data was used for the United States, since non-seasonally adjusted data is not available). Only quarterly observations spanning full calendar years were included. Data for 1990–1998 includes the United States, Canada, Australia, and the United Kingdom. Data for 1999–2012 also includes Germany, Spain, Finland, France, Greece, Italy, the Netherlands, Portugal, and Sweden. Data for 2013–2020 also includes Denmark. For definitions and data sources, see Section 3 and Appendix A.

multiply all ratios by one hundred, so that β captures an innovation in new borrowing equal to one percent of GDP.

Country-level fixed effects ensure that our results are not biased by persistent differences across countries, such as differences in country size and institutional differences in the degree to which firms rely on bank loans versus bond issuances as a source of finance.[11] In our preferred specification, we also control for lags of the dependent and independent variables. These lags ensure that borrowing is conditionally uncorrelated with past levels of the variable of interest and, in particular, with firms' decisions to adjust their portfolios following unobserved shocks to the value of their holdings.[12] For robustness, we also report estimates from specifications that exclude lagged terms, as well as specifications that control ($\mathbf{x}_{it}$) for real GDP growth, the change in stock prices, and government bond yields.[13] These controls account for conditions in product, equity, and bond markets that may influence decisions to both borrow and acquire assets.

4.1. Are borrowed funds used to accumulate real assets?

Table 2 presents our main result: borrowing correlates strongly with the acquisition of financial assets, but not with capital expenditure. Columns (1)-(3) show estimates for capital expenditure and columns (4)-(6) show estimates for the acquisition of financial assets net of non-debt liabilities. Our preferred specifications, which include the lagged terms described above, are in columns (2) and (5).

The coefficient in column (2) implies that an increase in borrowing of one percent of GDP is associated with an increase in capital expenditure of only 0.013 percent of GDP (and this response is, moreover, statistically insignificant at conventional levels). In contrast, column (5) shows that the same increase in borrowing is associated with an increase in the acquisition of net financial assets of 0.82 percent of GDP (statistically significant at the 1% level). These coefficients are robust both to the inclusion of control variables (columns 3 and 6) and to the exclusion of lagged terms (columns 1 and 4). These results show that, on the one hand, expansions in corporate debt fail to correlate with upswings in capital investment in the average advanced economy. Instead, they highlight the role of financial asset accumulation as an alternative destination for borrowed funds.[14]

Using local projections, we also extend the specification in Eq. (4) to show that the results in Table 2 persist beyond the contemporaneous quarter. In doing so, we consider the possibility that, even if the funds made available by borrowing are initially held in financial assets, the corporate sector may reallocate these funds toward capital investment in subsequent quarters. If this is the case, then the contemporaneous correlations in Table 2 may dissipate over additional horizons. For example, if new borrowing is initially held in financial assets as capital investment plans are finalized and then allocated toward investment in a subsequent (but near term) quarter, then shocks to borrowing may be associated with short-term increases in capital investment that are not captured by the contemporaneous coefficients in Table 2.

As in Eq. (4), we estimate the following regression for horizons $h = 0, \ldots, 8$:

$$z_{it+h} = \alpha_i^h + \theta_t^h + \beta^h \left(\frac{\Delta D_{it}}{Y_{it-1}} \right) + \sum_{p=1}^{P} \delta_p^h \left(\frac{\Delta D_{it-p}}{Y_{it-p-1}} \right) + \sum_{p=1}^{P} \gamma_p^h z_{it-p} + \varepsilon_{it} \quad (5)$$

where the coefficients of interest are the series of β^h that show the dynamic relationships between increases in new borrowing and both capital expenditures and the acquisition of net financial assets as shares of GDP. Following our preferred specification, we control for four lags of the dependent and independent variables, include country and time fixed effects, and cluster standard errors on country and time. Thus, the case when $h = 0$ corresponds to columns (2) and (5) in Table 2.

We show results of these local projections in Fig. 3, where the solid red and blue lines plot the estimates for capital expenditure and financial assets, respectively, and the dark and light shaded regions are 90% and 95% confidence intervals. We plot the results for both capital expenditures and financial assets on the same figure to highlight the relative magnitude of the responses for the two variables and, in particular, that the response of capital expenditures to new borrowing is far lower than that of net financial assets at all time horizons. This figure shows, first, that the conditional correlation between capital expenditures and shocks in new borrowing remains close to zero over

[11] For example, in our sample the share of bonds in the total debt of U.S. nonfinancial corporations (60.6% on average since 1990) is four times larger than in the average of all other countries (15% on average since 1990).

[12] We include four lags of both new borrowing and the dependent variable. This choice is consistent with studies using quarterly macroeconomic data. The results are also robust to variation in lag length. Panel unit root tests reject the null hypothesis of a unit root for all variables used in our specifications. As in Section 2, the long time dimension of our panel (on average, there are 84 observations per country in our baseline specifications) also ensures that Nickell bias is not a concern.

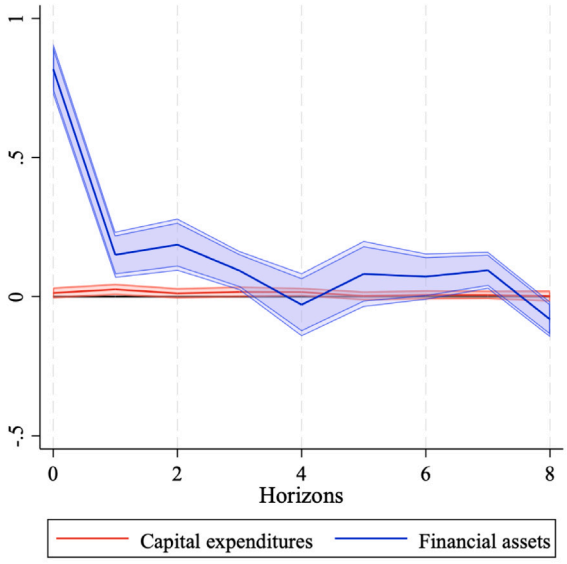
[13] The source of these variables is the OECD. For more details, see Appendix A.

[14] In addition to the results presented in this section, Appendix B includes specifications showing that the findings in Table 2 are robust to various sub-samples (excluding and including the Great Financial Crisis of 2008, excluding the period after the Covid crisis, restricting the sample to more a balanced panel starting in 1999), to different specifications that control for the stock of debt of nonfinancial corporations (in percent of GDP) and for other determinants of financial assets accumulation including inflation, short- and long-term interest rates, to redistricting new borrowing to either bonds or loans, and to phases of the business cycle.

Table 2
Capital expenditure and financial assets net of non-debt liabilities: Responses to new borrowing.

Dependent variable:	Capital expenditure			Financial assets (net of non-debt liab.)		
	(1)	(2)	(3)	(4)	(5)	(6)
$\frac{\Delta D_{it}}{Y_{it-1}}$	0.056**	0.013	0.013	0.760***	0.820***	0.823***
	(0.021)	(0.010)	(0.010)	(0.055)	(0.047)	(0.045)
Observations	1428	1380	1378	1458	1410	1408
Country FE	Y	Y	Y	Y	Y	Y
Quarter FE	Y	Y	Y	Y	Y	Y
Lagged dep. and indep. vars	N	Y	Y	N	Y	Y
Controls	N	N	Y	N	N	Y

Notes: This table reports the results of the dynamic panel data model in Eq. (4) where the dependent variables are capital expenditures (columns 1–3) and financial assets net of non-debt liabilities (columns 4–6). Financial assets net of non-debt liabilities include financial asset holdings minus the sum of net equity issues and remaining non-debt liabilities. Each dependent variable is a percent of contemporaneous GDP and borrowing is a percent of lagged GDP. All columns include country and year fixed effects. Columns 2 and 5 also include four lags of the dependent and independent variables. Columns 3 and 6 include four lags of the dependent and independent variables, as well as controls for real GDP growth, the change in stock prices, and government bond yields. Standard errors are clustered on country and quarter. All series are seasonally adjusted. For more details on data sources, see Appendix A.



Notes: This figure plots the response of capital expenditures (red line) and financial assets net of non-debt liabilities (blue line) to a one percentage point increase in new borrowing as a share of GDP ($\frac{\Delta D_{it}}{Y_{it-1}}$). Dark and light shaded regions are 90% and 95% confidence intervals clustered by country and quarter.

Fig. 3. Response of capital investment and financial asset acquisition to new borrowing. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

all eight horizons. The coefficient at $h = 0$ matches that of column 2 of Table 2 (0.013 and statistically insignificant). Over each subsequent horizon, the magnitude remains very small: its peak in horizon 1, an increase in borrowing of one percent of GDP is associated with a response in capital expenditure of 0.026 percentage points of GDP (significant at the 5% level). Second, Fig. 3 shows that, while the magnitude of the coefficient describing the relationship between new borrowing and the acquisition of financial assets net of non-debt liabilities is largest on impact (equal to 0.82 at horizon 0, as reported in Table 2), the positive and significant relationship lingers over the subsequent three quarters. Even more importantly, there is no reversal in sign. As such, higher borrowing and financial asset acquisition today is not associated with a divestment in financial assets in near-term quarters, as would be the case if firms reallocate funds initially held as financial assets toward other uses over time.

4.2. Unpacking the financial account: If not real assets, then what?

What accounts for the positive association between borrowing and the accumulation of financial assets net of non-debt liabilities? In this section, we extend our analysis to show that, even while borrowed funds may substitute for equity as a source of finance and pay down other liabilities, new borrowing is most strongly associated with the accumulation of financial assets.

Recall that we define the accumulation of financial assets net of non-debt liabilities as the accumulation of financial assets minus the sum of net equity issues and the change in remaining liabilities (see Eq. (3)). As a result, the strong, positive association between borrowing and the accumulation of these assets described above may reflect not only the accumulation of financial assets, but also a reduction in net equity issues and/or remaining liabilities. The relationship between borrowing and net equity issues is of particular interest, as debt and equity are alternative sources of external funds for firms. Both the 'pecking order'

Table 3
Financial assets, net equity issues, and remaining liabilities: Responses to new borrowing.

Dependent variable:	Financial assets		Net equity issues		Remaining liabilities	
	(1)	(2)	(3)	(4)	(5)	(6)
$\frac{\Delta D_{it}}{Y_{it-1}}$	0.699***	0.703***	−0.077**	−0.078***	−0.050	−0.048
	(0.070)	(0.069)	(0.026)	(0.026)	(0.046)	(0.045)
Observations	1410	1408	1410	1408	1410	1408
Country FE	Y	Y	Y	Y	Y	Y
Quarter FE	Y	Y	Y	Y	Y	Y
Lagged dep. and indep. vars	Y	Y	Y	Y	Y	Y
Controls	N	Y	N	Y	N	Y

Notes: This table reports the results of the dynamic panel data model in Eq. (4) where the dependent variables are financial assets (columns 1–2), net equity issues (columns 3–4), and remaining liabilities (columns 5–6). Net equity issues are new issues minus repurchases of own equity. Remaining liabilities include derivatives, employee stock options, pension schemes, and other accounts payable. Each dependent variable is a percent of contemporaneous GDP and borrowing is a percent of lagged GDP. All columns include country and year fixed effects, and four lags of the dependent and independent variables. Standard errors are clustered on country and quarter. All series are seasonally adjusted. For more details on data sources, see Appendix A.

theory of corporate capital structure (Myers and Majluf, 1984; Myers, 2001) and the literature on shareholder value orientation (Lazonick and O'Sullivan, 2000) suggest a negative correlation between new borrowing and net equity issues. For example, this negative correlation could indicate that firms have taken advantage of easing credit constraints and a low interest rate environment through much of this period to substitute borrowed funds for equity in order to lower constraints on management and/or to bolster share prices. These hypotheses are borne out by recent empirical evidence for the US corporate sector, which points to the use of borrowed funds to fund equity repurchases (see Mason, 2015; Frank and Sanati, 2021).

Table 3 presents the independent responses of financial assets, net equity issues, and remaining liabilities (each as a share of GDP) to new borrowing. For brevity, we only show our preferred specification that include lagged terms. As expected, both net equity issues and remaining liabilities are negatively correlated with borrowing. Column (3) shows that an increase in borrowing of one percent of GDP is associated with a decrease in net equity issues of 0.077 percent of GDP (significant at the 5% level), while column (5) shows that remaining liabilities decrease by 0.05 percent of GDP (insignificant at conventional levels). These results suggest that firms do take advantage of borrowing opportunities to substitute debt for equity finance and to pay down other liabilities. These results also reiterate a conclusion of the previous literature and, in particular, Frank and Sanati (2021) that one role of new borrowing is to return funds to shareholders. Unlike Frank and Sanati (2021), however, our specification directly compares the magnitudes of the responses of net equity issues, remaining liabilities, and gross financial asset acquisitions to innovations in borrowing. In turn, column (1) shows that the same increase in borrowing is associated with a substantively larger rise in the accumulation of financial assets equal to 0.7 percent of GDP (significant at the 1% level). Thus, while repurchases are indeed one outlet for borrowed funds, our results also highlight a new aspect of corporate borrowing, wherein the accumulation of financial assets is, in fact, the main use of borrowed funds.

4.3. Is cash driving the accumulation of financial assets?

Next, we show that, rather than the initial infusion of cash that follows the settlement of a borrowing transaction, the acquisition of financial assets primarily reflects non-cash financial assets. We divide financial assets into two categories: *cash-like* assets, which is comprised of currency, deposits and money market funds; and *non-cash* assets, which include bonds, equity shares, derivatives, and remaining financial instruments.[15] Table 4 presents the results of our dynamic panel data model for these two categories of financial assets. Again, columns (2) and (5) show our preferred specification, which includes four lags of the dependent and independent variables, while columns (1) and (4) exclude these lags and columns (3) and (6) include lags as well as the series of macroeconomic controls discussed above. These results show that, while an increase in borrowing of one percent of GDP is associated with an increase in cash-like assets net of non-debt liabilities of 0.1 percent of GDP (statistically significant at the 1% level), this same increase in borrowing is associated with a far stronger increase in non-cash assets of 0.62 percent of GDP (also statistically significant at the 1% level).

4.4. Is there a role for foreign direct investment?

Finally, we consider the possibility that capital investment is still an important use for borrowed funds, but that a significant part of this debt-financed investment takes place outside domestic economies. With the caveat that data limitations require us to measure FDI at the economy-wide (rather than the sectoral) level, we find little evidence to suggest that nonfinancial corporations make significant use of borrowed funds to finance FDI.

Our data on financial assets include equity held by domestic nonfinancial corporations against counterparties domiciled abroad. Such equity acquisitions are classified as FDI when they result in the acquisition of control or significant influence over the administration of enterprises domiciled abroad, generally requiring the acquisition of at least a 10% equity stake in a foreign-domiciled enterprise.[16] While the Balance of Payments reports acquisitions of equity that constitute FDI separately from the acquisition of foreign equity as a purely financial (or 'portfolio') investment for the economy-wide level, our sectoral dataset neither identifies the counterparty (domestic or foreign) nor the size of the equity stake. As a result, part of what we identify as the acquisition of financial assets may, in fact, reflect the acquisition of productive assets located abroad. To the extent that the underlying flows may correspond to 'greenfield' investments — i.e. the acquisition of newly produced assets to build or expand operations, as opposed to the acquisition of ownership of existing operations — part of the borrowed funds may translate into new capital formation and, as such, into aggregate demand in the destination economy.

Since nonfinancial corporations are a leading contributor to the rise in cross-border asset holdings observed in recent decades (Lane and

[15] We exclude Canada from these regressions, as it does not report the full breakdown of cash and noncash financial assets.

[16] The SNA guidelines classify foreign-domiciled enterprises in relation to the investing domestic entity into three main categories: branches (when equity holdings control 100 per cent of the voting power), subsidiaries (when equity holdings control over 50 per cent of the voting power), and associates (when equity holdings control between 10 and 50 percent of the voting power). See SNA (2008).

Table 4
Cash and non-cash financial assets: Responses to new borrowing.

Dependent variable:	Cash			Non-cash financial assets		
	(1)	(2)	(3)	(4)	(5)	(6)
$\frac{\Delta D_{it}}{Y_{it-1}}$	0.077***	0.097***	0.099***	0.639***	0.617***	0.620***
	(0.022)	(0.021)	(0.021)	(0.074)	(0.078)	(0.076)
Observations	1331	1287	1285	1331	1287	1285
Country FE	Y	Y	Y	Y	Y	Y
Quarter FE	Y	Y	Y	Y	Y	Y
Lagged dep. and indep. vars	N	Y	Y	N	Y	Y
Controls	N	N	Y	N	N	Y

Notes: This table reports the results of the dynamic panel data model in Eq. (4) where the dependent variables are cash and cash-like assets (columns 1–3) and non-cash financial assets (columns 4–6). Cash and cash-like assets include currency, deposits and money market funds. Non-cash financial assets include bonds, equity shares, derivatives, and remaining financial instruments. Each dependent variable is a percent of contemporaneous GDP and borrowing is a percent of lagged GDP. All columns include country and year fixed effects. Columns 2 and 5 also include four lags of the dependent and independent variables. Columns 3 and 6 include four lags of the dependent and independent variables, as well as controls for real GDP growth, the change in stock prices, and government bond yields. Standard errors are clustered on country and quarter. All series are seasonally adjusted. For more details on data sources, see Appendix A.

Table 5
Economy-wide foreign direct investment: Response to new borrowing.

Dependent variable:	Direct equity investment		
	(1)	(2)	(3)
$\frac{\Delta D_{it}}{Y_{it-1}}$	0.103	0.064	0.061
	(0.066)	(0.071)	(0.072)
Observations	1258	1210	1208
Country FE	Y	Y	Y
Quarter FE	Y	Y	Y
Lagged dep. and indep. vars	N	Y	Y
Controls	N	N	Y

Notes: This table reports the results of the dynamic panel data model in Eq. (4) where the dependent variable is economy-wide foreign direct investment. Foreign direct investment refers to economy-wide direct equity investment as reported in the Balance of Payments. The dependent variable is a percent of contemporaneous GDP and borrowing is a percent of lagged GDP. All columns include country and year fixed effects. Columns 2 also includes four lags of the dependent and independent variables. Column 3 includes four lags of the dependent and independent variables, as well as controls for real GDP growth, the change in stock prices, and government bond yields. Standard errors are clustered on country and quarter. All series are seasonally adjusted. For more details on data sources, see Appendix A.

Milesi-Ferretti, 2008; Avdjiev et al., 2014), it is important to consider the extent to which nonfinancial corporate borrowing correlates with FDI. In the absence of sector-level data on foreign direct investment, we examine this correlation using economy-wide Balance of Payments data. Specifically, we examine the correlation between new nonfinancial corporate borrowing and economy-wide equity FDI, using the share of gross direct equity investment in GDP from the Balance of Payments as the dependent variable in Eq. (4).

The results, which we report in Table 5, show that nonfinancial corporate borrowing is not strongly correlated with economy-wide FDI. In our preferred specification in column (2), an increase in borrowing of one percent of GDP is associated with an increase in FDI of 0.06 percent of GDP, which is also statistically insignificant at conventional levels. As such, we do not find strong evidence that globalization is a complementary explanation for the low response of *domestic* investment to borrowing by nonfinancial corporations. Rather, our results reinforce our main conclusion that the primary use of borrowed funds is to fund the acquisition of financial assets as 'bona-fide' portfolio holdings against both domestic and foreign counterparties.

5. Conclusion and discussion

In this paper, we isolate a systematic link between new borrowing and the accumulation of financial assets by nonfinancial corporations. By highlighting the relative importance of financial assets, as compared to capital investment, as a destination for borrowed funds, our results contribute a new explanation to the weak empirical relationship between corporate debt or borrowing and real economic activity (Mian et al., 2017; Drehmann et al., 2018).

Our main results, which we obtain from data for the nonfinancial corporate sector of fifteen advanced economies, show that an increase in borrowing of one percent of GDP is correlated with an increase in the acquisition of financial assets net of non-debt liabilities of 0.82 percent of GDP. While a reduction in net equity issues and liabilities accounts for part of this relationship, the bulk of this correlation reflects (gross) financial asset acquisition (equal to 0.7 percent of GDP). In contrast, the same increase in borrowing is associated with an increase in capital expenditures of only 0.013 percent of GDP.

We also consider three possible falsification checks of our conclusion that financial assets are an important destination for borrowed funds. First, we show that the contemporaneous relationships persist into several quarters. Thus, we do not find evidence that the nonfinancial corporate sector simply holds new borrowed funds in financial assets temporarily as they finalize capital investment projects. Second, and similarly, we show that most borrowed funds are held in non-cash financial assets. Third, we show that outward FDI, which may reflect higher spending on fixed capital *abroad* even if not in the domestic economy, is only weakly correlated with corporate borrowing.

The financialization literature points to possible behavioral mechanisms that can provide a framework for interpreting our results. This literature has now long-emphasized a post-1980 shift in the nonfinancial corporate sector's asset composition away from fixed capital and toward financial assets (see, for example, Orhangazi, 2008), and linked this shift to changes in the macroeconomic and institutional environment facing firms. First, for example, there has been an increase in firm-level sales volatility (Comin and Philippon, 2005). Rising firm-level volatility has been linked to a lower demand for capital investment over this period (Davis, 2018). In light of higher volatility, firms may be less willing to tie up funds in long-term and irreversible fixed capital, and

instead prefer to acquire relatively more liquid (i.e. financial) assets for precautionary motives.

Second, there has been a reorientation in managerial objectives toward greater shareholder value orientation, which emphasizes prioritizing shareholder returns – for example, through dividends and stock buybacks – over longer-term and irreversible fixed capital investments (Lazonick and O'Sullivan, 2000). As part of this reorientation in corporate strategy, there has been a growing 'portfolio conception' of corporations, wherein firms are treated as bundles of assets, rather than as traditional capital-accumulating enterprises focused on core competencies (Crotty, 2005). In line with our results, these shifts in corporate governance strategy are aligned with greater short-termism and, thus, with greater preference for financial assets, which not only have short-term payoffs but can also be easily liquidated and re-oriented toward shareholder payouts. Accordingly, an empirical literature has used measures of firm-level volatility and increasing shareholder value orientation, and linked both mechanisms to slowing fixed capital accumulation (Stockhammer, 2004; Orhangazi, 2008; Demir, 2009; Davis, 2018; Tori and Onaran, 2018).

In addition to drawing a behavioral interpretation from the financialization literature, our paper also contributes to this literature by considering the source of financing for financial assets. To date, work on financialization has identified explanations for why nonfinancial corporations hold more financial assets, but not the source of financing. Our results address this gap by linking financial asset accumulation to new borrowing. In doing so, our analysis also suggests that the corporate governance shifts that have driven financial asset accumulation – namely, the entrenchment of shareholder value ideology – may be tied to increased indebtedness. This possible link raises questions for future research about the links between shareholder value orientation, rising leverage, and longer-term instability (see Nikolaidi and Stockhammer, 2017, for a survey of models analyzing the link between evolving tolerance for debt service burdens and crises). Finally, we also provide new support to the financialization narrative by establishing evidence that the link between borrowing and financial asset acquisition does *not* mistakenly ascribe fixed capital investment abroad to domestic financial assets (under the heading of FDI). In doing so, we help disambiguate domestic financialization from globalization as a key process underlying rising nonfinancial corporate debt in advanced economies (see Fiebiger, 2016; Rabinovich, 2019, for papers questioning whether measured financial asset accumulation reflects foreign capital investment).

The allocation of borrowed funds toward financial assets also takes place during a period with concurrent rises in both corporate debt and saving relative to capital expenditure. In this broader macroeconomic context, research explaining the concurrence of lower costs of credit, higher corporate saving, and lower incentives for real investment illuminate our results. Since the early 1980s, real interest rates have declined across advanced economies (Del Negro et al., 2019; Jordà et al., 2019), suggesting falling real borrowing costs for corporations. The literature has identified a number of factors that have contributed to higher demand for assets issued in advanced economies and, thus, a decline in their yield. These factors include savings surpluses in emerging economies in the context of current account imbalances; more stringent capital and collateral requirements after the 2008 financial crisis; higher demand for foreign reserves by the monetary authorities of emerging economies; and accommodative monetary policy in advanced economies (see Bernanke, 2005; Summers, 2015; Borio et al., 2017; Taylor, 2017; Skott, 2016).

The concurrent rise in corporate saving relative to investment demand that we emphasize in Section 3 has also been linked to rising markups and a falling labor share of income, resulting from higher market concentration and a decline in the bargaining power of labor (Stansbury and Summers, 2020; Taylor, 2017; De Loecker et al., 2020). This broader macroeconomic context of high liquidity and low aggregate demand helps explain our results, by suggesting that – because slow demand implies fewer profitable opportunities for fixed capital investment – the nonfinancial corporate sector has instead taken advantage of cheap borrowing to build positions in financial assets.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request

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Appendix A. Data appendix

A.1. Data sources

Nominal and real GDP: ABS (Australia); Eurostat (Austria, Finland, France, Germany, Greece, Italy, Netherlands, Portugal, Spain); StatCan (Canada); DST (Denmark); SCB (Sweden); ONS (United Kingdom); BEA (United States).

Credit by all sectors to nonfinancial corporations: Bank of International Settlements (all countries).

Capital account of the nonfinancial corporate sector: ABS (Australia); Eurostat (Austria, Denmark, Finland, France, Germany, Greece, Italy, Netherlands, Portugal, Spain, Sweden); StatCan (Canada); ONS (United Kingdom); BEA (United States).

Financial account (transactions) of the nonfinancial corporate sector: ABS (Australia); ECB (Austria, Denmark, Finland, France, Germany, Greece, Italy, Netherlands, Portugal, Spain, Sweden); StatCan (Canada); ONS (United Kingdom); FED (United States).

Equity Foreign Direct Investment, total economy: ABS (Australia); Eurostat (Austria, Denmark, Finland, France, Germany, Greece, Italy, Netherlands, Portugal, Spain, Sweden); StatCan (Canada); ONS (United Kingdom); BEA (United States).

Change in stock prices and government bond yields: OECD (all countries).

Consumer price index: National sources (all countries).

Central bank policy rate: BIS (all countries).

A.2. Data coverage

Regressions in Section 4**: 1990q1-2021q3**: United States, Canada (excl. capital expenditure, cash and noncash financial assets, and equity foreign direct investment), Australia, and the United Kingdom. **1997q1-2021q3**: Canada (capital expenditure). **1998q4-2021q3**: France, Finland, Sweden, Spain. **1999q1-2021q3**: Austria, Germany, Greece (excl. equity foreign direct investment), Italy, Netherlands (excl.

Table 6
Responses to new borrowing: Accounting for the great financial crisis and the Covid crisis.

Dependent variable:	Capital expenditure			Financial assets (net of non-debt liab.)		
	(1)	(2)	(3)	(4)	(5)	(6)
$\frac{\Delta D_{it}}{Y_{it-1}}$	0.013	0.013	0.009	0.758***	0.880***	0.819***
	(0.008)	(0.014)	(0.006)	(0.064)	(0.049)	(0.042)
Observations	578	800	1273	608	800	1303
Country FE	Y	Y	Y	Y	Y	Y
Quarter FE	Y	Y	Y	Y	Y	Y
Lagged dep. and indep. vars	Y	Y	Y	Y	Y	Y
Controls	Y	Y	Y	Y	Y	Y
pre-GFC	Y	N	N	Y	N	N
post-GFC	N	Y	N	N	Y	N
pre-Covid	N	N	Y	N	N	Y

Notes: This table reports the results of the dynamic panel data model in Eq. (4) in the main text using three alternative samples. Columns 1 and 4 include only the 1990–2007 period, excluding the period after the 2008 Great Financial Crisis (GFC). Columns 2 and 5 include only the post-2008 period. Columns 3 and 6 include only the 1990–2019 period, excluding the period after the Covid crisis. The dependent variables are capital expenditures (columns 1–3) and financial assets net of non-debt liabilities (columns 4–6). Financial assets net of non-debt liabilities include financial asset holdings minus the sum of net equity issues and remaining non-debt liabilities. Each dependent variable is a percent of contemporaneous GDP and borrowing is a percent of lagged GDP. All columns include country and year fixed effects, four lags of the dependent and independent variables, as well as controls for real GDP growth, the change in stock prices, and government bond yields. Standard errors are clustered on country and quarter. All series are seasonally adjusted. For more details on data sources, see Appendix A.

Table 7
Responses to new borrowing: Accounting for the stock of debt of nonfinancial corporations.

Dependent variable:	Capital expenditure		Financial assets (net of non-debt liab.)	
	(1)	(2)	(3)	(4)
$\frac{\Delta D_{it}}{Y_{it-1}}$	0.013	0.013	0.820***	0.823***
	(0.010)	(0.010)	(0.046)	(0.045)
Observations	1380	1378	1410	1408
Country FE	Y	Y	Y	Y
Quarter FE	Y	Y	Y	Y
Lagged dep. and indep. vars	Y	Y	Y	Y
Controls	N	Y	N	Y
NFC Debt to GDP	Y	Y	Y	Y

Notes: This table reports the results of the dynamic panel data model in Eq. (4) in the main text, including the stock of debt of nonfinancial corporations (in percent of GDP and described in Section 2 of the main text) as a control. The dependent variables are capital expenditures (columns 1–3) and financial assets net of non-debt liabilities (columns 4–6). Financial assets net of non-debt liabilities include financial asset holdings minus the sum of net equity issues and remaining non-debt liabilities. Each dependent variable is a percent of contemporaneous GDP and borrowing is a percent of lagged GDP. All columns include country and year fixed effects, and four lags of the dependent and independent variables. Columns 2 and 4 also include controls for real GDP growth, the change in stock prices, and government bond yields. Standard errors are clustered on country and quarter. All series are seasonally adjusted. For more details on data sources, see Appendix A.

Table 8
Capital expenditure and financial assets net of non-debt liabilities: Responses to new loans.

Dependent variable:	Capital expenditure			Financial assets (net of non-debt liab.)		
	(1)	(2)	(3)	(4)	(5)	(6)
$\frac{\Delta D^L_{it}}{Y_{it-1}}$	0.051**	0.014	0.013	0.765***	0.809***	0.812***
	(0.021)	(0.011)	(0.010)	(0.054)	(0.051)	(0.049)
Observations	1428	1380	1378	1458	1410	1408
Country FE	Y	Y	Y	Y	Y	Y
Quarter FE	Y	Y	Y	Y	Y	Y
Lagged dep. and indep. vars	N	Y	Y	N	Y	Y
Controls	N	N	Y	N	N	Y

Notes: This table reports the results of the dynamic panel data model in Eq. (4) where the dependent variables are capital expenditures (columns 1–3) and financial assets net of non-debt liabilities (columns 4–6). Financial assets net of non-debt liabilities include financial asset holdings minus the sum of net equity issues and remaining non-debt liabilities. Each dependent variable is a percent of contemporaneous GDP and borrowing is a percent of lagged GDP. Borrowing is only restricted to new loans without new bonds. All columns include country and year fixed effects. Columns 2 and 5 also include four lags of the dependent and independent variables. Columns 3 and 6 include four lags of the dependent and independent variables, as well as controls for real GDP growth, the change in stock prices, and government bond yields. Standard errors are clustered on country and quarter. All series are seasonally adjusted. For more details on data sources, see Appendix A.

equity foreign direct investment), Portugal. **2003q2-2021q3**: Netherlands (equity foreign direct investment) **2008q1-2021q3**: Greece (equity foreign direct investment) **2012q1-2021q3**: Canada (equity foreign direct investment). **2012q4-2021q3**: Denmark. **2013q1-2021q3**: Spain (equity foreign direct investment).

Notes: All series were downloaded using the Haver Analytics platform, which aggregates data from the original sources. ABS: Australian Bureau of Statistics, BEA: Bureau of Economic Analysis, BIS: Bank of International Settlements, DST: Statistics Denmark, ECB: European Central Bank, FED: Federal Reserve Board, SCB: Statistics Sweden, StatCan: Statistics Canada, ONS: Office for National Statistics.

Table 9
Capital expenditure and financial assets net of non-debt liabilities: Responses to new bonds.

Dependent variable:	Capital expenditure			Financial assets (net of non-debt liab.)		
	(1)	(2)	(3)	(4)	(5)	(6)
$\frac{\Delta D^{B}_{it}}{Y_{it-1}}$	0.095**	0.011	0.011	0.639***	0.734***	0.740***
	(0.035)	(0.020)	(0.021)	(0.122)	(0.151)	(0.150)
Observations	1428	1380	1378	1458	1410	1408
Country FE	Y	Y	Y	Y	Y	Y
Quarter FE	Y	Y	Y	Y	Y	Y
Lagged dep. and indep. vars	N	Y	Y	N	Y	Y
Controls	N	N	Y	N	N	Y

Notes: This table reports the results of the dynamic panel data model in Eq. (4) where the dependent variables are capital expenditures (columns 1–3) and financial assets net of non-debt liabilities (columns 4–6). Financial assets net of non-debt liabilities include financial asset holdings minus the sum of net equity issues and remaining non-debt liabilities. Each dependent variable is a percent of contemporaneous GDP and borrowing is a percent of lagged GDP. Borrowing is only restricted to new bonds without new loans. All columns include country and year fixed effects. Columns 2 and 5 also include four lags of the dependent and independent variables. Columns 3 and 6 include four lags of the dependent and independent variables, as well as controls for real GDP growth, the change in stock prices, and government bond yields. Standard errors are clustered on country and quarter. All series are seasonally adjusted. For more details on data sources, see Appendix A.

Table 10
Capital expenditure and financial assets net of non-debt liabilities: Responses to new borrowing (post-1999 sample).

Dependent variable:	Capital expenditure			Financial assets (net of non-debt liab.)		
	(1)	(2)	(3)	(4)	(5)	(6)
$\frac{\Delta D_{it}}{Y_{it-1}}$	0.053**	0.013	0.012	0.764***	0.826***	0.828***
	(0.021)	(0.010)	(0.010)	(0.055)	(0.047)	(0.045)
Observations	1310	1268	1266	1310	1270	1268
Country FE	Y	Y	Y	Y	Y	Y
Quarter FE	Y	Y	Y	Y	Y	Y
Lagged dep. and indep. vars	N	Y	Y	N	Y	Y
Controls	N	N	Y	N	N	Y

Notes: This table reports the results of the dynamic panel data model in Eq. (4) where the dependent variables are capital expenditures (columns 1–3) and financial assets net of non-debt liabilities (columns 4–6). Financial assets net of non-debt liabilities include financial asset holdings minus the sum of net equity issues and remaining non-debt liabilities. Each dependent variable is a percent of contemporaneous GDP and borrowing is a percent of lagged GDP. All columns include country and year fixed effects. Columns 2 and 5 also include four lags of the dependent and independent variables. Columns 3 and 6 include four lags of the dependent and independent variables, as well as controls for real GDP growth, the change in stock prices, and government bond yields. Standard errors are clustered on country and quarter. All series are seasonally adjusted. For more details on data sources, see Appendix A.

Table 11
Capital expenditure and financial assets net of non-debt liabilities: Responses to new borrowing in extended models.

Dependent variable:	Capital expenditure			Financial assets (net of non-debt liab.)		
	(1)	(2)	(3)	(4)	(5)	(6)
$\frac{\Delta D_{it}}{Y_{it-1}}$	0.013	0.014	0.012	0.821***	0.820***	0.825***
	(0.010)	(0.010)	(0.010)	(0.046)	(0.047)	(0.046)
$\pi_{i,t}$	−0.028			−0.080		
	(0.048)			(0.160)		
$i^{CB}_{i,t}$		0.090			0.124	
		(0.055)			(0.128)	
$i^{Gov}_{i,t}$			−0.061**			0.214**
			(0.024)			(0.074)
Observations	1376	1380	1379	1398	1410	1409
Country FE	Y	Y	Y	Y	Y	Y
Quarter FE	Y	Y	Y	Y	Y	Y
Lagged dep. and indep. vars	Y	Y	Y	Y	Y	Y
Controls	N	N	N	N	N	N

Notes: This table reports the results of an extended version of the dynamic panel data model in Eq. (4) where the dependent variables are capital expenditures (columns 1–3) and financial assets net of non-debt liabilities (columns 4–6). Financial assets net of non-debt liabilities include financial asset holdings minus the sum of net equity issues and remaining non-debt liabilities. Each dependent variable is a percent of contemporaneous GDP and borrowing is a percent of lagged GDP. All columns include country and year fixed effects and four lags of the dependent and independent variables. Columns 1 and 4 include annual CPI inflation ($\pi_{i,t}$). Columns 2 and 5 include the level of the central bank policy rate ($i^{CB}_{i,t}$). Columns 3 and 6 include the yield on 5- to 10-year government bonds ($i^{Gov}_{i,t}$). Standard errors are clustered on country and quarter. All series but interest rates are seasonally adjusted. For more details on data sources, see Appendix A.

Table 12
Capital expenditure and financial assets net of non-debt liabilities: Responses to new borrowing over the business cycle.

Dependent variable:	Capital expenditure			Financial assets (net of non-debt liab.)		
	(1)	(2)	(3)	(4)	(5)	(6)
$\frac{\Delta D_{it}}{Y_{it-1}}$	0.013	0.019	0.06	0.820***	0.824***	0.815***
	(0.010)	(0.013)	(0.010)	(0.047)	(0.054)	(0.056)
$\text{Recession}_{i,t}$		−0.058			0.010	
		(0.070)			(0.484)	
$\text{Recession}_{i,t} \times \frac{\Delta D_{it}}{Y_{it-1}}$		−0.012			−0.009	
		(0.012)			(0.059)	
$\text{Expansion}_{i,t}$			0.058			−0.010
			(0.070)			(0.489)
$\text{Expansion}_{i,t} \times \frac{\Delta D_{it}}{Y_{it-1}}$			0.012			0.009
			(0.012)			(0.059)
Observations	1380	1380	1380	1410	1410	1410
Country FE	Y	Y	Y	Y	Y	Y
Quarter FE	Y	Y	Y	Y	Y	Y
Lagged dep. and indep. vars	Y	Y	Y	Y	Y	Y
Controls	N	N	N	N	N	N

Notes: This table reports the results of an extended version of the dynamic panel data model in Eq. (4) where the dependent variables are capital expenditures (columns 1–2) financial assets net of non-debt liabilities (columns 3–4). Financial assets net of non-debt liabilities include financial asset holdings minus the sum of net equity issues and remaining non-debt liabilities. Each dependent variable is a percent of contemporaneous GDP and borrowing is a percent of lagged GDP. All columns include country, year fixed effects, and four lags of the dependent and independent variables. Columns 1 and 3 include the interaction of new borrowing with a recession dummy (Recession_{it}). Columns 2 and 4 include the interaction of new borrowing with an expansion dummy (Expansion_{it}). Recessions and expansions are identified using the OECD based Peak-to-Trough Recession Indicators. Standard errors are clustered on country and quarter. All series are seasonally adjusted. For more details on data sources, see Appendix A.

Appendix B. Additional robustness checks

See Tables 6–12.

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