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WORKING PAPER

No. 202 • December 2019 • Hans-Böckler-Stiftung

FACTOR SHARES AND THE RISE IN CORPORATE NET LENDING

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ABSTRACT

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Factor shares and the rise in corporate net lending*

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December 18, 2019

Abstract

The corporate sector has turned from a net borrowing position to a net lending position in many advanced countries over the past decades. This phenomenon is rather unusual as the corporate sector had historically borrowed funds from other sectors in the economy. In this paper, we analyze how changes in the distribution of income between wages and profits have affected corporate net lending in a sample of 40 countries for the period 1990-2016. A consistent finding is that an increase (decrease) in the corporate profit share leads to an increase (decrease) in corporate net lending, controlling for other corporate net lending determinants. We disentangle the effects of the profit share on corporate saving and investment and explore a number of alternative explanations of our results, including changes in the cost of capital, shifts in the composition of industrial sectors, the growing importance of intangible capital, and a temporary crisis phenomenon. We conclude that factor shares are an important driver of macroeconomic trends and that the rise in corporate profits has contributed considerably to the improvement in the corporate net lending position across countries.

Keywords: Corporate saving, investment, income distribution, cost of capital

JEL Classifications: E21, E22, E25, G30

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1 Introduction

In this paper, we analyze how changes in factor shares affect corporate saving and investment behavior. Over the past decades, the corporate sector has turned from a net borrowing position to a net lending position in major advanced countries (e.g. Chen et al., 2017; Dao and Maggi, 2018). This phenomenon, which has gained growing attention in the aftermath of the Great Recession of 2008, is rather unusual as corporations had historically borrowed funds from other sectors in the economy to finance their investment spending. It has also been noted that corporate sector behavior plays an important role in accounting for current account differentials in the recent past (IMF, 2017, 2019*a*). In a number of countries with large and persistent current account surpluses, such as Germany, Japan, the Netherlands, or South Korea, the corporate sector has recorded high and rising financial surpluses already before the Great Recession. By contrast, major current account deficit countries, such as the United Kingdom or the United States, exhibit no, or less pronounced upward trends in corporate net lending, at least prior to the Great Recession. Given that corporate sector behavior plays a key role for national current account dynamics (Behringer and van Treeck, 2018), it is increasingly important to understand the drivers of corporate net lending.

In recent years, there has also been a revival of interest among economists in the evolution of factor shares and its macroeconomic implications. While there is consensus about the declining labor share of income in most countries since the early 1980s, the main question of controversy is whether this decline can be interpreted as largely an equilibrium outcome resulting from competitive forces such as technological change and a decrease in the relative price of capital, or as the result of non-competitive developments such as rising market power. The answer to this question is also relevant to the analysis of the macroeconomic implications of changes in factor shares including corporate sector trends.

How does the increase in corporate net lending relate to changes in the distribution of income between wages and profits? The effects of changes in factor shares on corporate saving and investment, and hence the corporate financial balance, are theoretically ambiguous. An increase in the profit share has a positive effect on corporate saving if these additional resources are retained within the corporate sector rather than distributed to shareholders in the form of dividends. But if a higher profit share is also accompanied by higher investment, the corporate financial balance may remain unaffected or even decrease. Chen et al. (2017), in a recent contribution, stress the role of changes in the cost of capital for the link between factor shares and trends in the corporate sector. They develop a dynamic general equilibrium model with heterogeneous firms in which capital market imperfections imply that firms prefer to finance investment projects with internal saving rather than with external funds. In response to a reduction in the cost of capital, firms

substitute away from labor and toward capital to such an extent that the labor share declines and corporate profits increase. Given the stability of dividend payments, the increase in profits leads to an increase in corporate saving. While interesting, Chen et al. (2017) are not able to explain the improvement in the net lending position of the corporate sector because the decline in the cost of capital also generates an increase in the investment rate in their model. However, investment booms are difficult to find in the data for the pre-crisis period. On the contrary, as argued by Gutiérrez and Philippon (2017*b*) for the case of the United States, the phenomenon of "investmentless growth" during the past two decades or so may, in fact, be related to decreased competition leading to both increasing markups and lower investment. Similarly, IMF (2019*b*) present tentative firm-level evidence that the rise in the corporate saving rate is closely linked to increased concentration in corporate sales and assets, which has occurred alongside rising markups and profitability.[1]

The contribution of the present article is to analyze the corporate balance effects of changes in the distribution of income between wages and profits for a sample of 40, mainly industrialized, countries for the period 1990-2016. We also inquire into the functional chains linking the functional income distribution and the corporate financial balance and examine whether changes in the profit share affect primarily corporate saving or investment. One important challenge is to identify the underlying mechanism through which the profit share may affect the corporate financial balance. We test the relevance of the cost of capital hypothesis empirically and examine whether changes in the relative price of investment goods, corporate income taxes and the real interest rate have contributed to an increase in corporate saving above investment. Moreover, we consider the possibility that the link between the profit share and the corporate financial balance reflects long-term changes in the structure of the economy. Firstly, the relative contribution of the manufacturing sector to GDP has declined in most advanced countries over the past decades, whereas the share of GDP accounted for by services experienced a sharp increase. This change in the composition of industrial sectors could have led to a decline in the wage share and an increase in the profit share. Moreover, the shift from manufacturing toward services may have also affected the corporate financial balance because financial constraints tend to be more severe for services than for manufacturing firms. Secondly, the corporate balance effects of the profit share may be associated with shifts in the composition of investment toward intangible assets. On the one hand, an increase in the share of intangible capital could lead to an increase in profits through competitive payments for intangible services and a decrease in (measured) investment, a possibility discussed by Gutiérrez and Philippon (2017*a*). On the other hand, the shift toward more investment in intangible capital may also contribute to higher corporate saving. Falato et al. (2013) suggest that

[1] See Autor et al. (2017, 2019), Barkai (2019), and Grullon et al. (2019) for evidence of rising concentration; see De Loecker and Eeckhout (2018), De Loecker et al. (2019), and Diez et al. (2018) for evidence of rising markups.

corporations with a high share of intangibles need to accumulate internal funds as intangible capital cannot be pledged as collateral to raise external financing. Finally, we ask whether the pattern of the corporate financial balance has changed significantly during the Great Recession. In most countries, the corporate balance positions have increased strongly since the global financial crisis, reflecting both increases in corporate saving and declines in corporate investment. Gruber and Kamin (2016) discuss the possibility that the global financial crisis caused a structural break in corporate sector behavior, possibly due to a persistently raised level of uncertainty about future demand or fundamentally changed requirements of corporations to initiate investment projects.

Our main findings are as follows: Firstly, we find significant effects of changes in the profit share on the corporate financial balance, controlling for other determinants of the corporate financial balance. There is also evidence that the profit share affects the corporate financial balance mainly through its positive effect on corporate saving whereas the effect on corporate investment is found to be very limited. This implies that an increase in profits raises corporate saving more than investment. The effects of the profit share on the corporate financial balance and its components are robust throughout our various specifications. Accounting for variations in the profit share contributes considerably to understanding changes in the corporate financial balance, especially during the period running up to the global financial crisis. Secondly, the effects of the profit share on corporate saving are unlikely to be the reflection of a substitution away from labor and toward capital arising from a decline in the cost of capital. Our results rather suggest that other factors, such as rising corporate market power, may contribute to explaining the observed trends in the profit share and the corporate financial balance. Thirdly, the effects of the profit share are robust for the non-financial corporate sector and persist when we control for shifts in the sectoral composition of economic production and the growing importance of intangible capital. Finally, we do not find evidence that the corporate sector behavior has changed significantly as a result of the global financial crisis starting in 2007. Since the wake of the crisis, global corporate net lending has reached a historical high, but in most countries the pattern rather follows a secular trend and thus cannot be explained by a temporary crisis phenomenon.

The remainder of the paper is structured as follows. In Section 2, we review the theoretical and empirical literature on the determinants of corporate sector behavior. Section 3 discusses important stylized facts about trends in the corporate financial balance and its components, sectoral financial balances, and the sources and uses of the corporate financial balance. Section 4 presents the empirical analysis. Section 5 concludes.

2 Literature review

The contribution of our paper is to analyze the implications of changes in factor shares for trends in the corporate sector within a panel estimation analysis. It builds on two strands in the literature. Firstly, our work is related to a number of studies that analyze the determinants of corporate net lending but so far have not addressed the role of factor shares in a rigorous fashion. Secondly, there is an emerging literature, based on sector-level and firm-level data, documenting a decline in the labor share of income across countries in recent decades.

2.1 Determinants of corporate sector behavior

Although recent academic and policy-oriented debates have noted the importance of corporate sector behavior as a driving force of macroeconomic trends (e.g. Gruber and Kamin, 2016; IMF, 2017, 2019*a*; Dao and Maggi, 2018; Behringer and van Treeck, 2019), the literature on the potential determinants of corporate net lending is still relatively scarce.

One of the first descriptions of corporate sector behavior with a view to understanding the main factors behind trends in corporate saving and investment is provided by IMF (2006). They demonstrate, based on national accounts data, that the levels of corporate net lending increased substantially in most G7 countries in the early 2000s and ask whether the upward trend is a temporary or more permanent phenomenon. Moreover, they attribute the rise in corporate net lending to a number of factors, including lower tax and interest payments that improved corporate profitability and the decline in the relative price of investment goods that lowered investment spending. Similarly, André et al. (2007) analyze the drivers of corporate sector behavior in OECD countries. While confirming the findings by IMF (2006), they also emphasize the importance of cyclical and financial effects for the rise in corporate net lending in the early 2000s. Both IMF (2006) and André et al. (2007) conclude that the corporate net lending positions would likely decline if investment spending recovers and the process of deleveraging is completed. This scenario, however, has not materialized and corporate net lending has increased further in most countries in recent years.

Gruber and Kamin (2016) focus on the rise in corporate net lending in the aftermath of the global financial crisis. They estimate standard investment equations for a sample of OECD countries for the period 1995-2008 and compare out-of-sample forecasts of these models with actual real investment spending to assess whether the relationship between investment and its fundamental determinants has shifted since the crisis. Their results suggest that the post-crisis weakness in investment spending was largely in line with fundamentals and thus most likely reflects an endogenous response to the macroeconomic disruptions associated with the global financial crisis.

They conclude, therefore, that the rise in corporate net lending does not appear to reveal a shift in corporate (investment) behavior relative to past norms. The analysis by Gruber and Kamin (2016) focuses exclusively on the factors behind the decline in investment spending after the global financial crisis. In a number of advanced countries, however, corporate net lending started to rise far before the global financial crisis. This naturally raises the question as to whether the underlying causes of the increase in corporate net lending are a combination of both temporary and structural factors. Moreover, the rise in corporate net lending prior to the global financial crisis cannot be attributed to a decline in investment spending but is rather due to a long-term upward trend in corporate saving.

Dao and Maggi (2018) provide a detailed descriptive analysis of trends in corporate sector behavior using both cross-country national accounts and firm-level data.[2] They show that the rise in corporate net lending is a pervasive phenomenon across major industrialized countries over the last two decades, although most pronounced in countries with persistent current account surpluses. Moreover, they find that the trend towards higher corporate saving is concentrated among large firms, driven by rising profitability, lower financing costs, and reduced tax rates. Dao and Maggi (2018) also study the relationship between corporate net lending and cash holdings and argue that the motives for the rise in cash holdings are likely to play an important role in driving corporate saving and net lending.[3] While the combination of national accounts and firm-level data certainly contributes to a better understanding of the main trends in corporate sector behavior, the analysis by Dao and Maggi (2018) remains largely inconclusive with regard to the fundamental causes for the rise in corporate net lending.

2.2 Factor shares and corporate sector behavior

In recent years, there has been renewed interest in the evolution of factor shares and its determinants (e.g. Elsby et al., 2013; Karabarbounis and Neiman, 2014; Piketty, 2014; Rognlie, 2015; Autor et al., 2017, 2019; Dao et al., 2017; Koh et al., 2018; Barkai, 2019). However, this literature has developed rather independently of the literature on corporate sector behavior, and few attempts have been made at analyzing the link between factor shares and corporate net lending in a systematic fashion.

At the theoretical level, the effects of changes in the distribution between wages and profits on

[2] A few studies have approached the issue of corporate sector behavior with a focus on specific countries or groups of countries. Armenter and Hnatkovska (2017) emphasize the link between taxes and the accumulation of net financial assets of the U.S. non-financial corporate sector in the 2000s due to a precautionary motive. Bacchetta and Benhima (2015) and Fan and Kalemli-Özcan (2016) study the relationship between corporate saving and financial frictions in emerging countries.

[3] The determinants of the rise in cash holdings, especially by U.S. firms, have been extensively discussed in the corporate finance literature (see, e.g., Opler et al., 1999; Foley et al., 2007; Bates et al., 2009; Falato et al., 2013).

corporate saving and investment, and hence the corporate financial balance, are ambiguous. An increase in the profit share has a positive effect on corporate saving if dividend payments do not fully absorb the rise in corporate profits. However, if a higher profit share also leads to an increase in investment activity, the corporate financial balance may remain unchanged or even decrease.

Chen et al. (2017) relate trends in factor shares and corporate saving to the decline in the cost of capital. They develop a dynamic general equilibrium model in which capital market imperfections lead firms to finance investment projects with internal saving rather than with external funds. In response to a reduction in the cost of capital, the model generates an increase in corporate saving above corporate investment. According to Chen et al. (2017), the most important drivers of this change are the global declines in the real interest rate, the price of investment goods, and corporate income taxes. The mechanism is that, with an elasticity of substitution above one in production, the decline in the cost of capital leads to a decline in the labor share and an increase in corporate profits. Given the stability of dividend payments, the increase in profits leads to an increase in corporate saving.

While interesting, the model does not square well with a number of empirical observations. Firstly, the improvement in the corporate net lending position is significantly underestimated as the model also generates an increase in the investment rate in response to a decline in the cost of capital. However, investment booms are difficult to find in the data for advanced economies in recent decades. Moreover, Gruber and Kamin (2016) find a positive effect of the cost of capital on investment for a sample of OECD countries, although the estimated effect is small. Similarly, Sajedi and Thwaites (2016) present cross-country evidence showing that investment rates are positively related to the relative price of investment goods. Secondly, in the empirical calibration of the model, the parameters are proxied to represent global trends since the beginning of the 1980s. The authors, however, do not systematically examine cross-country differences in the cost of capital and their implications for the evolution of factor shares and corporate net lending. For instance, the relative price of investment goods has declined relatively strongly in the United Kingdom and the United States where the profit share and corporate saving increased less. By contrast, in Germany or Japan, corporate profits and corporate saving have increased more substantially while the decline in the relative price of investment goods has been relatively minor. Gutiérrez and Philippon (2017*a*,*b*) offer an alternative explanation of the relationship between profit shares and corporate investment for the United States. Decreasing competition may lead to both, higher markups and profit shares on the one hand, and lower investment on the other hand. Generally speaking, even although the potential importance of changes in factor shares for macroeconomic trends has been recognized in the literature, the implications of factor shares for corporate net lending has not been systematically analyzed within a macro panel analysis.

3 The data

This Section documents a number of stylized facts about trends in the corporate sector. We focus primarily on the G7 economies and China. These eight countries accounted for more than 60% of global GDP during the last decade.

3.1 The evolution of corporate net lending

Figure 1 presents the development of GDP-weighted averages of corporate saving, investment and net lending for the G7 countries for the period 1980-2016.[4] All variables are converted into U.S. dollars using market exchange rates for the respective year. Since the 1980s, the corporate sector of the G7 countries has turned from a net borrowing position to a net lending position. The rise in the corporate financial balance seems to be driven primarily by a long-term upward trend in corporate saving in percent of GDP. By contrast, the investment ratio has remained relatively stable over the period 1980-2007. After the outbreak of the global financial crisis, investment spending in percent of GDP declined sharply which has contributed to the high level of the corporate financial balance.

We further examine the presence of trends by regressing the corporate financial balance, saving and investment against a linear time trend. The analysis is performed for a sample of G7 countries and China and for the full sample of 40 countries over the period 1980-2016 (Table 1). Columns 1 and 4 of Panel A show that the estimated coefficient on the linear trend in the corporate financial balance is statistically significant and of positive sign both for the sample of G7 countries and China and the full sample. The upward trend in the corporate financial balance was largely driven by a positive trend in the corporate saving ratio (Columns 1 and 4 of Panel B). The estimated coefficient on the linear trend in the corporate investment ratio is slightly negative but statistically insignificant (Columns 1 and 4 of Panel C). We also test for differential effects in the corporate financial balance and its components during the Great Recession using an interaction term between the linear trend and a dummy variable which takes a value of one for the years 2008-2012. The results in Columns 2 and 5 of Panel C suggest a slightly negative trend in the corporate investment ratio during the Great Recession. The coefficients on the interactions terms are, however, quantitatively negligible and statistically insignificant. The positive trends in the corporate saving and the financial balance remain unchanged during the Great Recession. As a further robustness check, we include real GDP growth to capture business cycle effects. The results are generally robust to the inclusion of real GDP growth. Columns 3 and 6 of Panel A show that the corporate financial balance fluctuates with the business cycle and this largely reflects variations in

[4]Figure 1 excludes China because it is a clear outlier both in terms of the corporate saving-to-GDP ratio and the corporate investment-to-GDP ratio; see Figure 2.

investment spending (Columns 3 and 6 of Panel C). The corporate saving ratio, by contrast, is not significantly affected by the business cycle (Columns 3 and 6 of Panel B).

Although the aggregate corporate financial balance of the G7 countries increased strongly since the 1980s, the variation across countries was considerable. Figure 2 shows that Germany, Italy, Japan and to a lesser extent Canada experienced a secular upward trend in the corporate financial balance since the 1980s, driven by a rise in corporate saving. In France and the United Kingdom, the corporate financial balance exhibits cyclical variations which are less clearly determined by corporate saving. The United States show no clear trend over time in the corporate financial balance prior to the global financial crisis. During the Great Recession, however, the corporate financial balance was at a historical level due to a rise in corporate saving and a fall in corporate investment. In China, the corporate sector is in a net borrowing position since the early 1990s but shows pronounced swings in corporate saving and investment.

3.2 Corporate net lending and current account balances

In the period leading up to the global financial crisis starting in 2007, the current account positions of a number of large countries have widened considerably. The United Kingdom and the United States, in particular, have recorded large and persistent current account deficits prior to the global financial crisis. These current account deficits were matched by large current account surpluses in Japan, Germany and China. By definition, the current account balance is the sum of the financial balances of the household sector, the corporate sector and the government sector.

Figure 3 shows sectoral contributions to the current account balances for the G7 countries and China for the period 1980-2016. As can be seen from the Figure, the pattern of corporate sector behavior toward higher saving is an important distinguishing factor between surplus and deficit countries. In current account surplus countries, most notably Germany and Japan, the corporate sector has turned from a pronounced net borrowing position in the 1980s and 1990s to a large and persistent net lending position since the late 1990s/early 2000s. In China, corporate net lending was highly negative in the early 1990s, but then increased strongly together with the current account balance until the mid-2000s. In these countries, the increase in corporate net lending was not sufficiently offset by a corresponding decrease in household net lending. The corporate sector thus accounts for a substantial part of the build-up of large and persistent current account surpluses in China, Germany and Japan prior to the global financial crisis. The United Kingdom and the United States, the two main current account deficit countries prior to the global financial crisis, experienced large decreases in the household financial balance during the last two decades before the crisis, whereas the corporate financial balance exhibits no clear trend. In recent years, both the United Kingdom and the United States have significantly increased the financial

balance of the corporate sector and the household sector. Thus, there is little evidence that changes in the corporate financial balance are fully offset by changes in the household financial balance across the G7 countries and China.

Figure 4 plots changes in the corporate financial balance against changes in the current account balance and against changes in the household financial balance for a larger sample (multi-year averages 1980/83 versus 2012/16). As is apparent from the Figure, changes in the corporate financial balance are positively related to changes in the current account balance, despite a negative correlation of changes in the corporate and household financial balance. This finding is generally consistent with incomplete piercing of the corporate veil by private households. Changes in the corporate financial balance feed through to the current account balance, even although they are partly offset by opposite changes in the household financial balance.

3.3 An accounting perspective on the rise in corporate net lending

The corporate financial balance exhibited a secular trend relative to GDP in a number of large countries over the last decades. In order to understand the driving forces behind this development from an accounting perspective, we decompose the corporate financial balance. The corporate financial balance is defined as the difference between saving and investment of the corporate sector:

$$FB^C = S^C - I^C \tag{1}$$

where FB^C is the corporate financial balance. S^C and I^I denote, respectively, saving and investment of the corporate sector. Corporate saving is equal to profits that are not distributed as dividends:

$$S^C = \pi^C - D^C \tag{2}$$

where π^C denotes corporate profits and D^C denotes dividends. We substitute the definition of corporate saving from Equation 2 into Equation 1 and rearrange the accounting identity to relate changes in the corporate financial balance in percent of GDP more directly to its components:

$$\frac{FB^C}{Y} = \frac{S^C}{Y} - \frac{I^C}{Y} = \frac{\pi^C}{Y}\left(1 - \frac{D^C}{\pi^C} - \frac{I^C}{\pi^C}\right) \tag{3}$$

Equation 3 shows that the corporate financial balance in percent of GDP will rise as the profit

share increases, as retained earnings increase relative to profits or as investment decreases relative to profits. The share of profits that are retained by the corporate sector increases when dividend payments decrease relative to profits.

Figure 5 shows the development of corporate investment and dividend payments in percent of corporate profits and the financial balance in percent of GDP for the G7 countries and China for the period 1980-2016. We focus on the non-financial corporate sector as data on dividend payments are not available for the total corporate sector. In Germany and Japan, investment has declined relative to profits prior to the global financial crisis, but there has only been a moderate increase in dividend payments relative to profits. As a result, the financial balance of non-financial corporations has significantly increased relative to GDP. In the United Kingdom and the United States, by comparison, the financial balance fluctuated around a largely constant trend during the decades before the crisis. In these countries, the corporate sector has passed on higher profits to the household sector which has compensated the decline in investment relative to profits during the 2000s. In China, the increase in the financial balance of non-financial corporations until the late 1990s and the subsequent decline is mirrored in the development of investment relative to profits.

The decomposition in Equation 3 shows that the corporate profit share and the corporate financial balance are inherently linked, but need not necessarily move in the same directions. In Figure 6, we plot changes in the profit share against changes in the corporate financial balance and its components for a larger sample (multi-year averages 1980/83 versus 2012/16). There is a clear positive relationship between changes in the corporate profit share and the corporate financial balance (upper panel). From Figure 6, it is also apparent that the correlation between changes in the profit share and changes in corporate saving (middle panel) is stronger than the correlation between changes in the profit share an changes in corporate investment (lower panel). This observation tentatively suggests that an increase in the profit share raises corporate saving more than investment. In Section 4, we test the link between the profit share and the corporate financial balance more formally in a multivariate estimation framework.

3.4 How was the rise in corporate net lending used?

Corporations can use their saving for a combination of investments in physical capital, accumulation of cash and other financial assets, repayment of debt, or increases in equity buybacks net of issuances. Our analysis documents that the difference between corporate saving and investment has increased in most countries over the last decades. We now examine how the rise in corporate saving has affected the composition of aggregate corporate balance sheets.

Figure 7 shows how the saving of non-financial corporations has been allocated across different

types of financial assets in the G7 countries over the period 1995-2016.[5] The graphs on the left-hand side present the change in financial liabilities minus the change in financial assets of long-term debt securities and loans in percent of corporate saving. The graphs on the right-hand side present the change in financial assets minus the change in financial liabilities of cash holdings and equity in percent of corporate saving. We define cash holdings as the sum of currency and deposits, short-term securities and investment fund shares, following Dao and Maggi (2018).

The graphs on the left-hand side of Figure 7 show that non-financial corporations in Japan have used on average more than 20 percent of their rising saving to repay debt obligations over the period 1996-2005 which has been the result of a long-lasting balance sheet adjustment process after the financial crisis of the early 1990s. Non-financial corporations in Germany and, to a lesser extent, in France have also used part of their saving for the net repayment of either long-term debt securities or loans during the late 1990s and early 2000s. In Canada, the United Kingdom and the United States, non-financial corporations have markedly reduced their dependence on external financing in the period following the burst of the dotcom bubble. After the global financial crisis, non-financial corporations have increased their net repayments of debt in all countries.

Our analysis, however, suggests that non-financial corporate sector saving has not primarily been used for the repayment of debt. For most countries, the accumulation of cash holdings and equity was quantitatively more important than repaying debt. As can be seen from the right-hand side of Figure 7, non-financial corporations tended to invest their saving largely into cash holdings in almost all G7 countries. Over the period 1995-2016, the average share of saving used for the accumulation of cash holdings ranged between 5.4 percent in Japan and 14.1 percent in the United Kingdom. In addition, the non-financial corporate sector has accumulated substantial amounts of equity since the mid-1990s, especially in the United Kingdom and the United States. The accumulation of equity primarily reflects higher net foreign direct investment and increases in net equity buybacks from the household sector. Note that national accounts treat equity buybacks as if they were negative issuances.[6] Thus, a change in the preference for equity buybacks relative to dividends would increase the corporate financial balance. The reason is that the value of equity buybacks net of issuances is part of corporate saving whereas dividend payments are considered as a form of corporate dissaving in national accounts.[7]

[5] Figure 7 excludes China due to lack of available data.

[6] A negative value of equity liabilities indicates that equity buybacks exceed the issuance of new equity. This translates into an increase in our measure of equity as shown in Figure 7 which is defined as the change in financial assets minus the change in financial liabilities.

[7] Chen et al. (2017) show that subtracting the value of net equity buybacks from corporate saving does not significantly affect the evolution of the global corporate saving rate. Similarly, Gruber and Kamin (2016) document a small trend in net equity buybacks in percent of GDP for OECD countries.

4 Empirical analysis

4.1 The corporate balance model

This section illustrates the analytical framework behind the empirical analysis. The corporate financial balance is by definition equal to the difference between saving and investment of the corporate sector:

$$FB^C = S^C(X_S) - I^C(X_I) = FB^C(X_S, X_I) \tag{4}$$

where FB^C is the financial balance of the corporate sector. S^C and I^C denote saving and investment. X_S and X_I refer to factors that may affect saving and investment, respectively.

Equation 4 suggests that it is important to consider both saving and investment determinants to build a comprehensive model of the corporate financial balance. The selection of the explanatory variables used in our regression model is based on the recent theoretical and empirical literature on the saving and investment behavior of the corporate sector. In particular, we include proxy variables to control for the corporate balance effects of cyclical fluctuations, precautionary motives in the face of uncertainty, foreign direct investment activities and changes in trend growth prospects or the stock market.

In the following, we briefly describe the explanatory variables and possible effects on the corporate financial balance and its components: We use real GDP growth to capture the effect of business cycle fluctuations on the corporate financial balance. Higher real GDP growth may affect corporate expectations about future income which induces an expansion in investment and a lower financial balance. Conversely, a negative shock to real GDP growth should be associated with an increase in the corporate financial balance resulting from more prudent financial behavior and postponed investment spending due to a lack of aggregate demand. Stock price volatility is used to account for precautionary motives associated with risks to financial market stability. Firms will likely reduce investment spending and increase their financial balances during periods of financial turbulences and higher uncertainty in order to accumulate financial assets and strengthen their balance sheets. The expected GDP growth rate (5 years ahead) is used to measure the underlying growth potential of an economy. Lower trend growth prospects may reflect a lack of profitable investment opportunities and are thus a disincentive to current investment spending leading to a higher corporate financial balance. Conversely, countries with higher trend growth rates are expected to invest more and have a lower financial balance. We include net foreign direct investment flows in percent of GDP as a proxy for the corporate sector globalization process. An increase in

foreign investment activities of multinational firms should be associated with an increase in the corporate financial balance as reinvested profits of foreign direct investment firms are recorded as corporate saving in the national accounts.[8] We use stock market capitalization in percent of GDP as a proxy for Tobin's q to examine whether corporate investment behavior and the corporate financial balance are related to changes in the stock market. A higher stock market capitalization may signal an increase in the market value of capital relative to its replacement costs which should encourage corporations to expand investment in capital.

In addition to these determinants, we include the corporate profit share in our corporate balance regressions. While we expect a positive relationship between the profit share and corporate net lending, we are also interested in whether the impact of the profit share works primarily through corporate saving or corporate investment. In addition, we use different indicators measuring the cost of capital to empirically assess the hypothesis by Chen et al. (2017) that the rise in both the profit share and corporate net lending can be attributed to a lower cost of capital.

4.2 Estimation strategy

The empirical analysis is based on the corporate balance model in Equation 4. The most general version of the regression specification can be written as follows:

$$FB^{C}_{i,t} = X_{i,t}\Gamma + \beta_1 PS^{C}_{i,t} + \mu_i + \lambda t + \varepsilon_{i,t} \tag{5}$$

where $i = 1, \ldots, N$ and $t = 1, \ldots, T$ denote the cross-sectional and time dimensions, respectively. The dependent variable $FB^{C}_{i,t}$ is the corporate financial balance in percent of GDP and $X_{i,t}$ is a set of explanatory variables including real GDP growth, stock price volatility, expected GDP growth, net FDI flows in percent of GDP, and stock market capitalization in percent of GDP. $PS^{C}_{i,t}$ refers to the corporate sector profit share in percent of GDP. The model also includes country fixed effect μ_i and a linear time trend t. $\varepsilon_{i,t}$ is a residual error term with zero mean.

We can inquire further into the functional chains linking the profit share and the corporate financial balance by estimating Equation 5 with the same explanatory variables for corporate saving and investment, which by definition sum up to the corporate financial balance. We can thus test whether a change in the profit share and the other explanatory variables affects primarily corporate saving or investment.

[8] Reinvested earnings on foreign direct investment consist of the retained earnings of the foreign direct investment firm which are treated as if they were distributed and remitted to foreign direct investors in proportion to their ownership of the equity of the firm and then reinvested in the firm.

We work with an unbalanced panel that includes 40 countries for which series on the explanatory variables are available for the period 1990-2016. The sample consists largely of advanced economies but also a few emerging economies. The following countries are included in the sample: Australia, Austria, Belgium, Brazil, Bulgaria, Canada, Chile, China, Colombia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Latvia, Lithuania, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Peru, Poland, Portugal, Slovakia, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, United Kingdom, and the United States. Variable definitions and data sources are provided in Appendix A.

We estimate the corporate balance regression model using generalized least squares (GLS) based on a sample of annual observations. As the data on the dependent variable display autocorrelation, we implement a correction for first-order autocorrelation within panels and specify that the coefficient of the AR(1) process is common across panels. The estimation strategy largely follows Phillips et al. (2013) which provide a conceptual and methodological framework for the empirical analysis of current account balances. The regression model includes country fixed effects to account for idiosyncratic differences in corporate saving and investment behavior across countries which are unlikely to be explained by the other variables. Some specifications also include a linear time trend.

4.3 Results

4.3.1 What drives the rise in corporate net lending?

Table 2 presents the results for different variants of Equation 5. The specifications are based on GLS estimations with a panel-wide AR(1) correction. Columns 1 and 2 show the results for the baseline model without the profit share variable. We use lagged variables in those cases where simultaneity bias may be expected. Estimated coefficients are statistically significant and have expected signs and plausible magnitudes.

Our estimations show that real GDP growth is negatively related to the corporate financial balance. The coefficient on real GDP growth implies that a 1 percentage point decrease in economic growth leads to a 0.29 percentage point increase in the corporate financial balance. This result is consistent with the hypothesis that the rise in corporate net lending partly reflects an endogenous response to the business cycle. The stock price volatility has a statistically significant and positive effect on the corporate financial balance, a finding that may be explained through precautionary motives in the face of uncertainty. An increase in stock price volatility by 10 percentage points is associated with a higher corporate financial balance of about 0.7 percent of GDP. Lower trend

growth prospects significantly increase the corporate financial balance. This result may reflect a lack of profitable investment opportunities which can cause a decline in investment spending and a higher corporate financial balance. According to our estimates, a decrease in expected GDP growth by 1 percentage point raises the corporate financial balance by 1.28 percentage points. The coefficient on net FDI flows is also statistically significant, with the expected positive sign. The estimated coefficient is about 0.03, reflecting the improvement of a country's corporate financial balance position due to foreign investment activities of multinational firms. Finally, stock market capitalization is negatively linked to the corporate financial balance, in line with the standard Tobin's q argument. Our estimates suggest that an increase in stock market capitalization of 10 percent of GDP reduces the corporate financial balance by about 0.18 percent of GDP. In Column 2, a linear trend is added to the regression model. The results are generally robust in terms of size and significance of the estimated coefficients, compared with the model from Colum 1. The estimated coefficient suggests that the corporate financial balance exhibits a statistically significant positive trend which is of a similar size as in Section 3.[9]

When the corporate profit share is included in the model as an additional regressor (Column 3), the model fit improves, as indicated by the R-squared and the root mean squared error (RMSE). The estimated coefficient on the corporate profit share is highly significant and of positive sign. It implies that a 1 percentage point increase in the corporate profit share leads to a 0.51 percentage points increase in the corporate financial balance. This is consistent with the hypothesis that the rise in corporate net lending is partly attributable to changes in the distribution of income between wages and profits. Column 4 shows that the coefficient on the linear trend in the corporate financial balance is considerably smaller when the profit share is added to the regression model.[10] The profit share variable included in the corporate balance model of Table 2 is not only statistically, but also economically significant. The graphs shown in Figure 8 are based on the estimation results reported in Column 4 of Table 2, where the profit share is included as an explanatory variable. While the left graph of Figure 8 shows the overall very good performance of the model, the right graph shows that the profit share variable explains almost 9 percent of the otherwise unexplained variation in the corporate financial balance.

We also estimate the model for corporate saving and investment separately. By definition, the corporate financial balance is equal to the difference between saving and investment. Hence, estimations for the components of the corporate balance may yield further insights into the ways in which the variables affect corporate saving and investment.

[9]Note that the estimation results are robust to using time fixed effects. However, the coefficient on stock price volatility becomes statistically insignificant when time fixed effects are added to the regression model.

[10]Note that the estimation results are robust to controlling for cross-sectional correlation of the errors.

According to our estimates, real GDP growth appears to operate mainly through the investment channel (Columns 7 and 8). This result suggests that for countries with declining investment spending in recent years, the increase in corporate net lending partly reflects the slowdown in economic growth, thus confirming the analysis by Gruber and Kamin (2016). However, there is little evidence that the rise in corporate saving reflects an endogenous response to cyclical fluctuations (Columns 5 and 6). Stock price volatility also appears to be unrelated to corporate saving. By contrast, the estimated effect of stock price volatility on the investment ratio is statistically significant and negative. Similarly, the forecast growth rate is a statistically significant determinant of the investment ratio. This result suggests that low growth prospect may contribute to periods of depressed investment spending, in line with concerns about secular stagnation (Summers, 2014). The forecast growth rate affects the corporate financial balance also through the saving channel which possibly reflects higher dividend payments during periods of favorable growth perspectives. The saving channel also plays a significant role for net FDI flows while stock market capitalization appears to operate through the saving and investment channel.

The corporate profit share is positively related to corporate saving and this effect is highly significant. The estimated coefficient implies that a 1 percentage point increase in the profit share leads to a 0.6 percentage points increase corporate saving in percent of GDP (Column 5). By contrast, the effect of the profit share on the investment ratio is substantially smaller (Column 7) which implies that the rise in profits increases corporate saving more than corporate investment. Again, the results are robust to the inclusion of a linear trend (Columns 6 and 8).

4.3.2 Is the profit share effect due to lower cost of capital?

In this Subsection, we analyze whether the link between the profit share and the corporate financial balance is due to a decline in the cost of capital. Chen et al. (2017) emphasize that changes in the cost of capital are important for understanding the evolution of corporate saving and the financial balance. They argue that, with an elasticity of substitution above one in production, a decline in the cost of capital leads to a decline in the labor share and an increase in corporate profits. Given the stability of dividend payments, the increase in profits implies an increase in corporate saving. According to Chen et al. (2017), the most important drivers of this change are the declines in the price of investment goods, corporate income taxes and the real interest rate. We test the relevance of the cost of capital hypothesis empirically and examine whether changes in the relative price of investment goods, corporate income taxes and the real interest rate contribute to the rise of corporate saving and the financial balance.

Columns 1 and 2 of Table 3 present the results for the corporate balance model based on a sample for which data on the relative price of investment goods, corporate income taxes, and real

interest rates are available. The results are very similar compared with the models from Table 2, Columns 2 and 4, in terms of size and significance of the estimated coefficients. The profit share is found to be statistically significant and the fit of the model improves relative to the model in Column 2.

In the models presented in Columns 3-5, measures for the relative price of investment goods, corporate income taxes and real interest rates were added to the baseline model (excluding the corporate profit share). The relative price of capital goods is significantly and negatively related to the corporate financial balance. A 1 percentage point decline in the relative price of capital goods increases the corporate financial balance by 0.1 percentage points (Column 3). The corporate income tax rate is not a statistically significant determinant of the corporate financial balance (Column 4). The estimated effect of real interest rates on the corporate financial balance is statistically significant and positive. A 1 percentage point increase in real interest rates raises the corporate financial balance by 0.14 percentage points (Column 5).

In Columns 6-8, we present models for the corporate financial balance as well as corporate saving and investment in which all measures for the different components of the cost of capital are included in the estimation. While the estimated effects of the relative price of investment goods, corporate income taxes, the real interest rate and the control variables remain stable overall, compared to the models in Columns 3-5, the results differ from the analysis by Chen et al. (2017). Our estimations show that the relative price of investment goods is negatively related to the corporate financial balance (Column 6). However, we do not find evidence that the decline in the relative price of investment goods is associated with an increase in corporate saving (Column 7), as predicted by Chen et al. (2017). Our results rather suggest that the corporate balance effects of changes in the relative price of investment goods stem from a positive effect on corporate investment (Column 8). Although this finding may seem counterintuitive, it is consistent with empirical evidence indicating that the elasticity of substitution between capital and labor is less than one (e.g. Antràs, 2004; Oberfield and Raval, 2014; Lawrence, 2015; Gechert et al., 2019). On the one hand, a decline in the relative price of investment goods reduces the costs to pursue a given investment project and thus lower nominal spending is needed to achieve a given investment volume. On the other hand, a decline in the relative price of investment goods also creates incentives for additional investment projects due to the lower cost of capital. Theoretically, the effect of the relative price of investment goods on the (nominal) investment ratio depends on the elasticity of substitution between capital and labor. If the elasticity of substitution is less than one, then a decline the relative price of investment goods should lead to a decline in the investment ratio as the volume of investment increases less than the price falls. Moreover, we do not find evidence that changes in the real interest rate affect the corporate financial balance through the saving channel

(Column 7). According to our estimates, the real interest rate is negatively related to corporate investment (Column 8) which translates into an overall positive effect on the corporate financial balance (Column 6). By contrast, in the model by Chen et al. (2017), a decline in the real interest rate generates an increase in corporate saving above corporate investment through its impact on the cost of capital and the labor share.[11] Finally, the fit of the model increases only slightly, with the R-squared rising from 0.59 in the baseline model (Column 1) to 0.6 in the model including measures for the different components of the cost of capital (Column 6). Overall, there is only limited evidence that the decline in the cost of capital fully accounts for the increase in corporate profits and the rising corporate net lending positions across countries in recent decades. Our results rather suggest the possibility that other factors, such as decreased competition leading to higher markups, might explain the link between the profit share and the corporate financial balance. Unfortunately, due to lack of data, we cannot provide a direct test of this hypothesis in our macro panel analysis.

4.3.3 Robustness

The estimations reported in Table 4 perform three sets of robustness checks. Firstly, in Columns 1-3, we present models for the non-financial corporate sector. The corporate sector consists of both non-financial corporations and financial corporations (e.g. banks, pension funds or insurance companies). Given that the behavior of the total corporate sector is largely driven by non-financial corporations, and in order to clarify whether the results are sensitive to trends in the financial corporate sector, we also estimate the regression model for the non-financial corporate sector.

The results reported in Columns 1-3 are very similar to those obtained for the total corporate sector. The estimated coefficients of the explanatory variables are mostly statistically significant and have expected signs. The profit share of the non-financial corporate sector is positively related to the financial balance of the non-financial corporate sector and this effect appears to operate mainly through the saving channel. As can be seen in Columns 1-3 of Table 4, the estimated effects of the profit share on the financial balance of the non-financial corporate sector and its components are similar in magnitude, compared to the estimations reported in Table 2. Thus, the results suggest that the link between the profit share and the financial balance of the total corporate sector is not driven by trends in the financial sector.

Secondly, we test whether shifts in the sectoral composition affect the link between the profit share and the corporate financial balance. Over the last decades, most advanced countries have

[11] In Chen et al. (2017), changes in real interest rates are quantitatively very important for the evolution of corporate saving. Their counterfactual exercises show that removing the decline in the real interest rate would actually lead to a decrease in corporate saving.

gone through significant structural changes related to their composition of industrial sectors. The relative contribution of the manufacturing sector to GDP has declined whereas the share of GDP accounted for by services experienced a sharp increase in almost all countries. This change in the sectoral composition could have contributed to a decline in the labor share due for example to the lower prevalence of trade unions in the services sector. At the same time, the shift from manufacturing toward services is likely to be accompanied by a higher corporate financial balance as financial constraints tend to be more severe in the services sector.

The estimations reported in Columns 4-6 include the value added of services in percent of GDP as an additional regressor to capture the increasingly important role of the services sector. According to our estimates, the value added of services is positively related to the corporate financial balance (Column 4). A 1 percentage point increase in the value added of services raises the corporate financial balance by 0.44 percentage points. The corporate balance effects of changes in the sectoral composition appear to operate mainly through the saving channel (Column 5) which is consistent with the notion that firms in certain services industries are typically faced with more restricted access to external financing. As can be seen in Columns 4-6 of Table 4, the estimated coefficients on the corporate profit share remain virtually unchanged, compared with the models from Table 2, even when we control for changes in the sectoral composition.

Thirdly, we also analyze the role of intangible capital for the link between the profit share and the corporate financial balance. In recent years, a number of studies have documented a shift in the composition of investment toward intangible assets across countries (e.g. Corrado et al., 2009; Corrado et al., 2012). Gutiérrez and Philippon (2017*a*) discuss the possibility that an increase in the share of intangible capital could lead to an increase in profits through competitive payments for intangible services and a decrease in (measured) investment. The shift toward more investment in intangible capital might also contribute to higher corporate saving. As intangible capital is more difficult to use as collateral for external borrowing, corporations with a high share of intangibles need to accumulate internal funds in order to avoid being financially constrained in the future (Falato et al., 2013).

In Columns 7-9, we present models in which the share of intangibles in investment is included as an additional regressor.[12] The estimated effect of the share of intangible investment on the corporate financial balance is statistically significant and positive (Column 7). A 1 percentage point increase in the share of investment in intangible assets raises the corporate financial balance by 0.32 percentage points. Our results show that share of investment in intangible assets is positively related to corporate saving, in line with the analysis by Falato et al. (2013). There is also evidence

[12]Note that the sample is somewhat smaller due to the availability of data on intangible investment. Moreover, we do not include Ireland in the estimations because it is a clear outlier in terms of investment in intangible assets.

for a negative link between the share of intangibles and corporate investment which is consistent with previous findings (e.g. Döttling and Perotti, 2017; Döttling et al., 2017; Gutiérrez and Philippon, 2017*a*,*b*; Alexander and Eberly, 2018; Döttling et al., 2018; Crouzet and Eberly, 2019). However, the results in Column 7-9 suggest that the estimated coefficients on the corporate profit share remain roughly the same, compared with the models from Table 2, even when the share of intangible investment is added to the models.

4.3.4 Has corporate net lending been different during the Great Recession?

We also address the question of whether the pattern of the corporate financial balance has been different during the global financial crisis and its aftermath. Indeed, the corporate financial balance reached a historic high in the G7 countries during the global financial crisis after 2007 (see Figure 1) and this pattern was widespread across other advanced economies. Gruber and Kamin (2016) hypothesize that the sharp rise in the corporate financial balance since the global financial crisis might represent a break with the past. They discuss the possibility that the crisis has persistently raised the level of uncertainty about future demand or that corporations require higher returns to initiate new investment projects.

The results in Table 5 do not support such a hypothesis, however. In Column 1, the corporate balance model is estimated for the period 1990-2007. The results for the pre-crisis sample are similar to those obtained for the full sample in terms of size and significance of the estimated coefficients (Column 4 of Table 2). We also test for differentials in the pattern of the corporate financial balance during the Great Recession compared to the non-crisis sample. In Columns 2-7 of Table 5, we extend the specification by adding interaction terms between the explanatory variables and a dummy variable for the Great Recession, which takes a value of one for the years 2008-2012. This approach allows us to examine whether the behavior of the corporate sector has been different during the Great Recession. The effects of the explanatory variables on the corporate financial balance are generally robust to the inclusion of the interaction terms. Our estimations show, however, that the coefficients on the interaction terms are mostly quantitatively negligible and statistically insignificant. Interestingly, the estimated effect of real GDP growth on the corporate financial balance seems to be even smaller during the Great Recession. Thus, the results of the different specifications reported in Table 5 suggest that the rise in the corporate financial balance cannot be explained by a temporary crisis phenomenon but rather follows a secular trend overlaid by cyclical fluctuations.

5 Concluding remarks

Recent academic and policy-oriented debates have highlighted the importance of corporate sector behavior as a potential driver of macroeconomic trends (e.g. Gruber and Kamin, 2016; IMF, 2017, 2019*a*; Dao and Maggi, 2018, Behringer and van Treeck, 2019). Another much debated empirical phenomenon is the decline in the labor share (and the rise of corporate profits) across countries since the early 1980s (e.g. Elsby et al., 2013; Karabarbounis and Neiman, 2014; Piketty, 2014; Autor et al., 2017, 2019; Dao et al., 2017; Barkai, 2019).

The present paper contributes to these debates by analyzing the role of the functional income distribution for corporate saving and investment behavior. We document that the corporate sector has moved from a net borrowing position to a net lending position in major advanced countries over the past decades. Contrary to common belief, the rise of corporate net lending started well before the onset of the global financial crisis. Moreover, the financial surplus of the corporate sector prior to the global financial crisis cannot be attributed to shifts in investment behavior. Instead, the rise in corporate net lending was largely driven by a secular upward trend in corporate saving.

A robust finding of our analysis is that changes in factor shares have statistically and economically significant explanatory power for the understanding of the evolution of corporate net lending. Rising corporate profits at the expense of declining labor income have translated into higher corporate saving and turned the corporate sector from a net borrower to a net saver. Moreover, it appears unlikely that the corporate balance effects of the profit share reflect the substitution away from labor and towards capital in response to a decline in the cost of capital, as suggested by Chen et al. (2017). This explanation would imply an increase in corporate investment as the decline in the cost of capital induces firms to produce with greater capital intensity. However, investment booms are difficult to find in the data for the pre-crisis period. Rather, our results are consistent with recent tentative evidence that rising corporate saving across advanced countries is closely linked to greater concentration in corporate sales and assets and to increased markups (IMF, 2019*b*).

The trends in the evolution of corporate saving and corporate net lending have important implications not only for aggregate demand and national current account dynamics but also for the evolution of income inequality. Conventional measures of income inequality based on administrative tax data typically do not include undistributed income such as corporate retained earnings (Piketty et al., 2018). As corporate ownership is much more unequally distributed than household income, available tax data likely underestimate top income shares in those countries where corporate retained earnings have increased in recent years. Given the significant amount and high

concentration of corporate income the picture of income distribution trends over the last decades might markedly change in a number of major countries. An important task for future research is thus to analyze the distributional implications of rising corporate retained earnings.

References

Alexander, L. and Eberly, J. (2018), 'Investment hollowing out', *IMF Economic Review* **66**(1), 5–30.

André, C., Guichard, S., Kennedy, M. and Turner, D. (2007), Corporate Net Lending: A Review of Recent Trends, OECD Economics Department Working Papers 583, OECD Publishing.

Antràs, P. (2004), 'Is the U.S. aggregate production function Cobb-Douglas? New estimates of the elasticity of substitution', *The B.E. Journal of Macroeconomics* **4**(1), 1–36.

Armenter, R. and Hnatkovska, V. (2017), 'Taxes and capital structure: understanding firms' savings', *Journal of Monetary Economics* **87**(C), 13–33.

Autor, D., Dorn, D., Katz, L. F., Patterson, C. and Reenen, J. V. (2017), 'Concentrating on the fall of the labor share', *American Economic Review* **107**(5), 180–185.

Autor, D., Dorn, D., Katz, L. F., Patterson, C. and Reenen, J. V. (2019), 'The fall of the labor share and the rise of superstar firms', *The Quarterly Journal of Economics* (forthcoming).

Bacchetta, P. and Benhima, K. (2015), 'The demand for liquid assets, corporate saving, and international capital flows', *Journal of the European Economic Association* **13**(6), 1101–1135.

Barkai, S. (2019), 'Declining labor and capital shares', *Journal of Finance* (forthcoming).

Bates, T. W., Kahle, K. M. and Stulz, R. M. (2009), 'Why do U.S. firms hold so much more cash than they used to?', *Journal of Finance* **64**(5), 1985–2021.

Behringer, J. and van Treeck, T. (2018), 'Income distribution and the current account', *Journal of International Economics* **114**(C), 238–254.

Behringer, J. and van Treeck, T. (2019), The Corporate Sector and the Current Account, FMM Working Paper 43-2019, IMK at the Hans Boeckler Foundation, Macroeconomic Policy Institute.

Chen, P., Karabarbounis, L. and Neiman, B. (2017), 'The global rise of corporate saving', *Journal of Monetary Economics* **89**(C), 1–19.

Corrado, C., Haskel, J., Iommi, M. and Jona-Lasinio, C. (2012), Intangible Capital and Growth in Advanced Economies: Measurement and Comparative Results, CEPR Discussion Papers 9061, C.E.P.R. Discussion Papers.

Corrado, C., Hulten, C. and Sichel, D. (2009), 'Intangible capital and U.S. economic growth', *Review of Income and Wealth* **55**(3), 661–685.

Crouzet, N. and Eberly, J. C. (2019), Understanding Weak Capital Investment: The Role of Market Concentration and Intangibles, NBER Working Papers 25869, National Bureau of Economic Research, Inc.

Dao, M. C., Das, M., Koczan, Z. and Lian, W. (2017), Why Is Labor Receiving a Smaller Share of Global Income? Theory and Empirical Evidence, IMF Working Papers 17/169, International Monetary Fund.

Dao, M. C. and Maggi, C. (2018), The Rise in Corporate Saving and Cash Holding in Advanced Economies: Aggregate and Firm Level Trends, IMF Working Papers 18/262, International Monetary Fund.

De Loecker, J. and Eeckhout, J. (2018), Global Market Power, NBER Working Papers 24768, National Bureau of Economic Research, Inc.

De Loecker, J., Eeckhout, J. and Unger, G. (2019), 'The rise of market power and the macroeconomic implications', *The Quarterly Journal of Economics* (forthcoming).

Diez, F. J., Leigh, D. and Tambunlertchai, S. (2018), Global Market Power and its Macroeconomic Implications, IMF Working Papers 18/137, International Monetary Fund.

Döttling, R., Gutiérrez, G. and Philippon, T. (2017), Is there an investment gap in advanced economies? If so, why?, *in* 'Investment and growth in advanced economies', Conference proceedings: ECB Forum on Central Banking, European Central Bank, pp. 129–193.

Döttling, R., Ladika, T. and Perotti, E. C. (2018), The (Self-) Funding of Intangibles, CEPR Discussion Papers 12618, C.E.P.R. Discussion Papers.

Döttling, R. and Perotti, E. C. (2017), Secular Trends and Technological Progress, CEPR Discussion Papers 12519, C.E.P.R. Discussion Papers.

Elsby, M., Hobijn, B. and Sahin, A. (2013), 'The decline of the U.S. labor share', *Brookings Papers on Economic Activity* **44**(2), 1–63.

Falato, A., Kadyrzhanova, D. and Sim, J. W. (2013), Rising Intangible Capital, Shrinking Debt Capacity, and the US Corporate Savings Glut, Finance and Economics Discussion Series 2013-67, Board of Governors of the Federal Reserve System (US).

Fan, J. and Kalemli-Özcan, S. (2016), 'Emergence of Asia: reforms, corporate savings, and global imbalances', *IMF Economic Review* **64**(2), 239–267.

Foley, C. F., Hartzell, J. C., Titman, S. and Twite, G. (2007), 'Why do firms hold so much cash? A tax-based explanation', *Journal of Financial Economics* **86**(3), 579–607.

Gechert, S., Havranek, T., Irsova, Z. and Kolcunova, D. (2019), Death to the Cobb-Douglas Production Function, FMM Working Paper 51-2019, IMK at the Hans Boeckler Foundation, Macroeconomic Policy Institute.

Gruber, J. W. and Kamin, S. B. (2016), 'The corporate saving glut and falloff of investment spending in OECD economies', *IMF Economic Review* **64**(4), 777–799.

Grullon, G., Larkin, Y. and Michaely, R. (2019), 'Are US industries becoming more concentrated?', *Review of Finance* **23**(4), 697–743.

Gutiérrez, G. and Philippon, T. (2017*a*), Declining Competition and Investment in the U.S., NBER Working Papers 23583, National Bureau of Economic Research, Inc.

Gutiérrez, G. and Philippon, T. (2017*b*), 'Investmentless growth: an empirical investigation', *Brookings Papers on Economic Activity* **48**(2), 89–190.

IMF (2006), Awash with Cash: Why are Corporate Savings so High?, World Economic Outlook, International Monetary Fund.

IMF (2017), External Sector Report, IMF Policy Paper, International Monetary Fund.

IMF (2019*a*), External Sector Report, IMF Policy Paper, International Monetary Fund.

IMF (2019*b*), The Rise of Corporate Market Power and its Macroeconomic Effects, World Economic Outlook, International Monetary Fund.

Karabarbounis, L. and Neiman, B. (2014), 'The global decline of the labor share', *The Quarterly Journal of Economics* **129**(1), 61–103.

Koh, D., Santaeulàlia-Llopis, R. and Zheng, Y. (2018), Labor Share Decline and Intellectual Property Products Capital, Working Papers 873, Queen Mary University of London, School of Economics and Finance.

Lawrence, R. Z. (2015), Recent Declines in Labor's Share in US Income: A Preliminary Neoclassical Account, NBER Working Papers 21296, National Bureau of Economic Research, Inc.

Oberfield, E. and Raval, D. (2014), Micro Data and Macro Technology, NBER Working Papers 20452, National Bureau of Economic Research, Inc.

Opler, T., Pinkowitz, L., Stulz, R. and Williamson, R. (1999), 'The determinants and implications of corporate cash holdings', *Journal of Financial Economics* **52**(1), 3–46.

Phillips, S. T., Catão, L., Ricci, L. A., Bems, R., Das, M., Giovanni, J. D., Unsal, F. D., Castillo, M., Lee, J., Rodriguez, J. and Vargas, M. (2013), The External Balance Assessment (EBA) Methodology, IMF Working Papers 13/272, International Monetary Fund.

Piketty, T. (2014), *Capital in the Twenty-First Century*, Harvard University Press.

Piketty, T., Saez, E. and Zucman, G. (2018), 'Distributional national accounts: methods and estimates for the United States', *The Quarterly Journal of Economics* **133**(2), 553–609.

Rognlie, M. (2015), 'Deciphering the fall and rise in the net capital share: accumulation or scarcity?', *Brookings Papers on Economic Activity* **46**(1), 1–69.

Sajedi, R. and Thwaites, G. (2016), 'Why are real interest rates so low? The role of the relative price of investment goods', *IMF Economic Review* **64**(4), 635–659.

Summers, L. H. (2014), 'U.S. economic prospects: secular stagnation, hysteresis, and the zero lower bound', *Business Economics* **49**(2), 65–73.

A Description of data

This section provides a description of variable definitions and data sources. In our analysis, we use a sample of 40 countries for which data on corporate sector variables are available.

A.1 Corporate sector variables

Corporate financial balance: The corporate financial balance is defined as gross saving minus gross capital formation and other capital expenditures in percent of GDP. We employ several sources for the corporate financial balance. Our primary source is the AMECO database (November 2018 version) of the European Commission. For Brazil, Chile, China, Colombia, Mexico, New Zealand, Peru and South Africa, we use data from the national accounts statistics provided by the Eurostat database. For Australia, Canada, South Korea and the United Kingdom, we employ data from national statistical sources.

Corporate saving and investment: Gross saving of the corporate sector is defined as disposable income minus adjustments for the change in net equity of households in pension funds reserves in percent of GDP. Gross capital formation of the corporate sector consists of gross fixed capital formation, changes in inventories and acquisitions less disposals of valuables in percent of GDP. Our primary source is the AMECO database (November 2018 version) of the European Commission. For Brazil, Chile, China, Colombia, Mexico, New Zealand, Peru and South Africa, we use data from the national accounts statistics provided by the Eurostat database. For Australia, Canada, South Korea and the United Kingdom, we employ data from national statistical sources.

Corporate profit share: We use the gross operating surplus in percent of GDP as proxy for the profit share. The gross operating surplus of corporations is defined as the gross value added at basic prices minus the compensation of employees and the difference between other taxes on production and other subsidies on production. Data are taken from the AMECO database (November 2018 version) of the European Commission. For Brazil, Chile, China, Colombia, Mexico, New Zealand, Peru and South Africa, we use data from the national accounts statistics provided by the Eurostat database. For Australia, Canada, South Korea and the United Kingdom, we employ data from national statistical sources.

A.2 Non-financial corporate sector variables

Financial balance of the non-financial corporate sector: The definition of the financial balance of the non-financial corporate sector is the same as for the corporate financial balance (see Section A.1). Our primary source is the national accounts statistics provided by the Eurostat database. For Australia, Canada, Germany, South Korea and the United Kingdom, we use data from national statistical sources.

Saving and investment of the non-financial corporate sector: The definitions of saving and investment of the non-financial corporate sector are the same as for corporate saving and investment (see Section A.1). Our primary source is the national accounts statistics provided by the Eurostat database. For Australia, Canada, Germany, South Korea and the United Kingdom, we use data from national statistical sources.

Profit share of the non-financial corporate sector: The definition of the profit share of the non-financial corporate sector is the same as for the corporate profit share (see Section A.1). Our primary source is the national accounts statistics provided by the Eurostat database. For Australia, Canada, Germany, South Korea and the United Kingdom, we use data from national statistical sources.

Distributed income of the non-financial corporate sector: Distributed income is defined as distributed income paid minus distributed income received by non-financial corporations. Our primary source is the national accounts statistics provided by the Eurostat database. For Canada, Germany, South Korea and the United Kingdom, we use data from national statistical sources.

Financial accounts variables: We use several variables from the financial accounts statistics of non-financial corporations to analyze how saving is allocated across different financial assets. For this purpose, we use financial flows of long-term debt securities, loans, cash holdings and equity. Cash holdings are defined as the sum of currency and deposits, short-term securities and investment fund shares. Data are taken from the financial accounts statistics provided by the Eurostat database.

A.3 Other variables

Real GDP growth: Real GDP growth is calculated as the annual percentage growth rate of GDP at constant market prices. Data are based on 2010 reference levels and taken from the AMECO database of the European Commission (November 2018 version). For Brazil, Chile, China, Colombia, Peru and South Africa, we use data from the World Development Indicators (WDI) database provided by the World Bank (January 2019 version).

Stock price volatility: Stock price volatility is defined as the 360-day standard deviation of the return on the national stock market index. Data for stock price volatility are taken from the Global Financial Development Database (GFDD) provided by the World Bank (July 2018 version).

Five-year forecast of real GDP growth: We use the five-year growth forecast as a proxy for the underlying growth potential of an economy. Data are taken from the Historical World Economic Outlook (WEO) Forecast Database provided by the IMF (October 2018 version). We use the fall versions of the forecast data for real GDP growth between 1990 and 2016 in order to get as close to year-end data as possible. The fall version of the database is denoted as year t, so that the corresponding real GDP growth in year t is equivalent to the nowcast of real GDP growth. Then we take the forecast of real GDP growth five years ahead of time t for each country and year.

Foreign direct investment: We use net foreign direct investment flows in percent of GDP as a proxy for foreign investment activities of multinational enterprises. Net foreign direct investment flows are defined as outward flows of foreign direct investment minus inward flows of foreign direct investment in percent of GDP. Data are taken from the World Development Indicators (WDI) database (January 2019 version).

Stock market capitalization: Stock market capitalization is defined as the total value of all listed shares in a stock market in percent of GDP. Data are taken from the Global Financial Development Database (GFDD) provided by the World Bank (July 2018 version).

Relative price of investment goods: The relative price of investment is calculated as the ratio of the price deflator of gross fixed capital formation to the price deflator of GDP. Data are taken from the World Development Indicators (WDI) database (January 2019 version). For China, we use data from the August 2018 version of the WDI database.

Corporate income tax rate: The corporate income tax rate is defined as the basic central government statutory (flat or top marginal) corporate income tax rate. Data are taken from the OECD Tax Database. For the period before 2000, we use historical statutory corporate income tax rates from the OECD. For Bulgaria, Cyprus, Estonia, Lithuania and Slovenia, we use data from the European Commission. For Brazil, China, Colombia, Peru and South Africa we use data from KPMGs corporate tax rate table.

Real interest rate: Nominal long-term interest rates are defined as 10-year government bond yields. Nominal long-term interest rates are then deflated by annual changes in the GDP deflator. Data are taken from the AMECO database (November 2018 version) of the European Commission. For Australia, Canada, Iceland, Israel, Mexico, New Zealand, Norway, South Africa, South Korea and Switzerland, we use data from the Economic Outlook database No. 104 provided by the OECD. For Brazil, Chile, China, Colombia, Costa Rica, India, Indonesia, Peru and Russia, we use data from the World Development Indicators (WDI) database (January 2019 version).

Services sector value added: We use the value added of the services sector in percent of GDP as a proxy for shifts in the sectoral composition of economic production. Gross value added equals output valued at basic prices less intermediate consumption at purchasers' prices. Data are taken from the AMECO database (November 2018 version) of the European Commission. For Brazil, Bulgaria, Chile, China, Colombia, New Zealand, Peru and South Africa, we use data from the World Development Indicators (WDI) database (January 2019 version).

Investment in intangible assets: We use investment in intellectual property products in percent of total gross fixed capital formation as a proxy for the growing importance of intangible capital. Intellectual property products denote intangible fixed assets such as R&D, mineral exploration, software and databases, and literary and artistic originals, etc. Data are taken from the national accounts statistics provided by the OECD.

Current account balance: The current account balance is defined as the sum of net exports of goods and services, net primary income, and net secondary income in percent of GDP. Data for the current account balance are taken from the AMECO database (November 2018 version) of the European Commission. For Brazil, Chile, China, Colombia, Peru and South Africa, we use data from World Economic Outlook (WEO) database provided by the IMF (October 2018 version).

Household financial balance: The household financial balance is defined as gross saving minus

gross capital formation and other capital expenditures in percent of GDP. Our primary source is the AMECO database (November 2018 version) of the European Commission. For Brazil, Chile, China, Colombia, Mexico, New Zealand, Peru and South Africa, we use data from the national accounts statistics provided by the Eurostat database. For Australia, Canada, South Korea and the United Kingdom, we employ data from national statistical sources.

Government financial balance: The government financial balance is defined as total general government revenue minus total general government expenditures in percent of GDP. We employ several sources for the government financial balance. Our primary source is the AMECO database (November 2018 version) of the European Commission. For Brazil, Chile, China, Colombia, Mexico, New Zealand, Peru and South Africa, we use series from the Eurostat database. For Australia, Canada, South Korea and the United Kingdom, we employ data from national statistical sources.

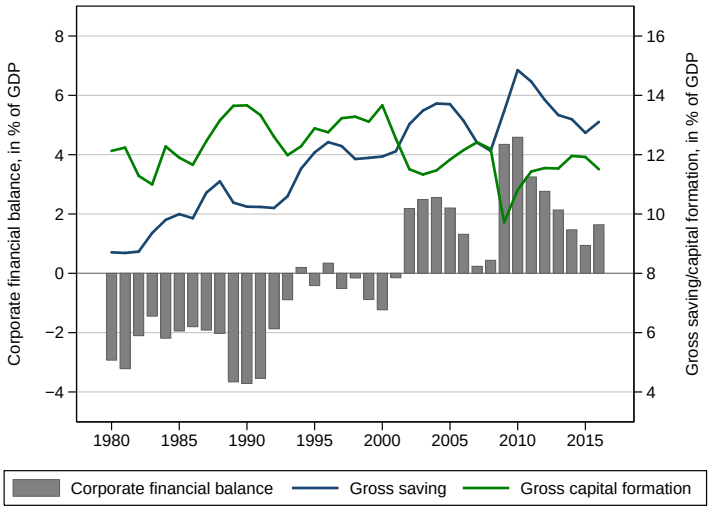


Figure 1: Saving, investment, and financial balance, corporate sector, G7, 1980-2016

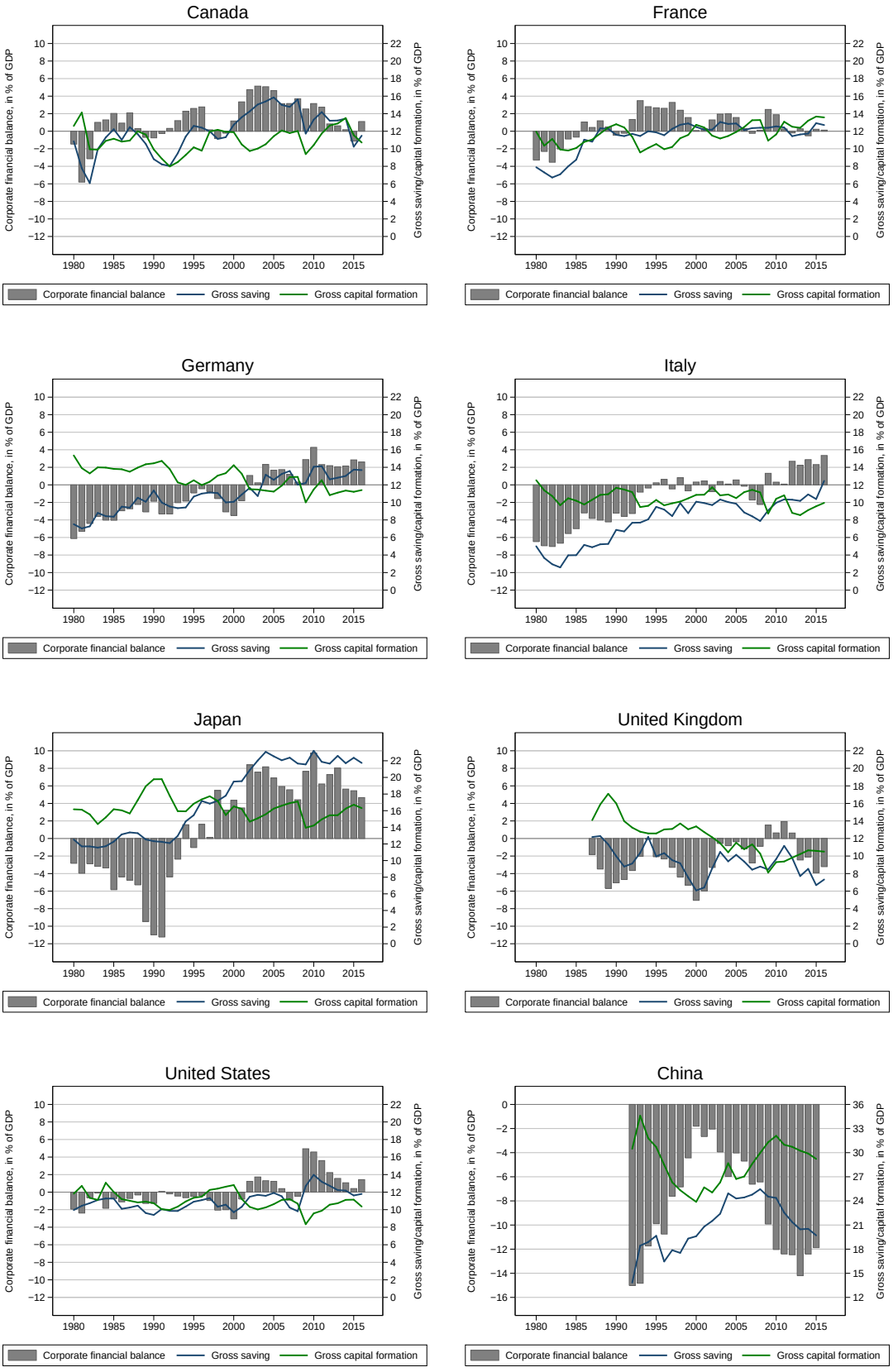


Figure 2: Saving, investment, and financial balance, corporate sector, G7 and China, 1980-2016

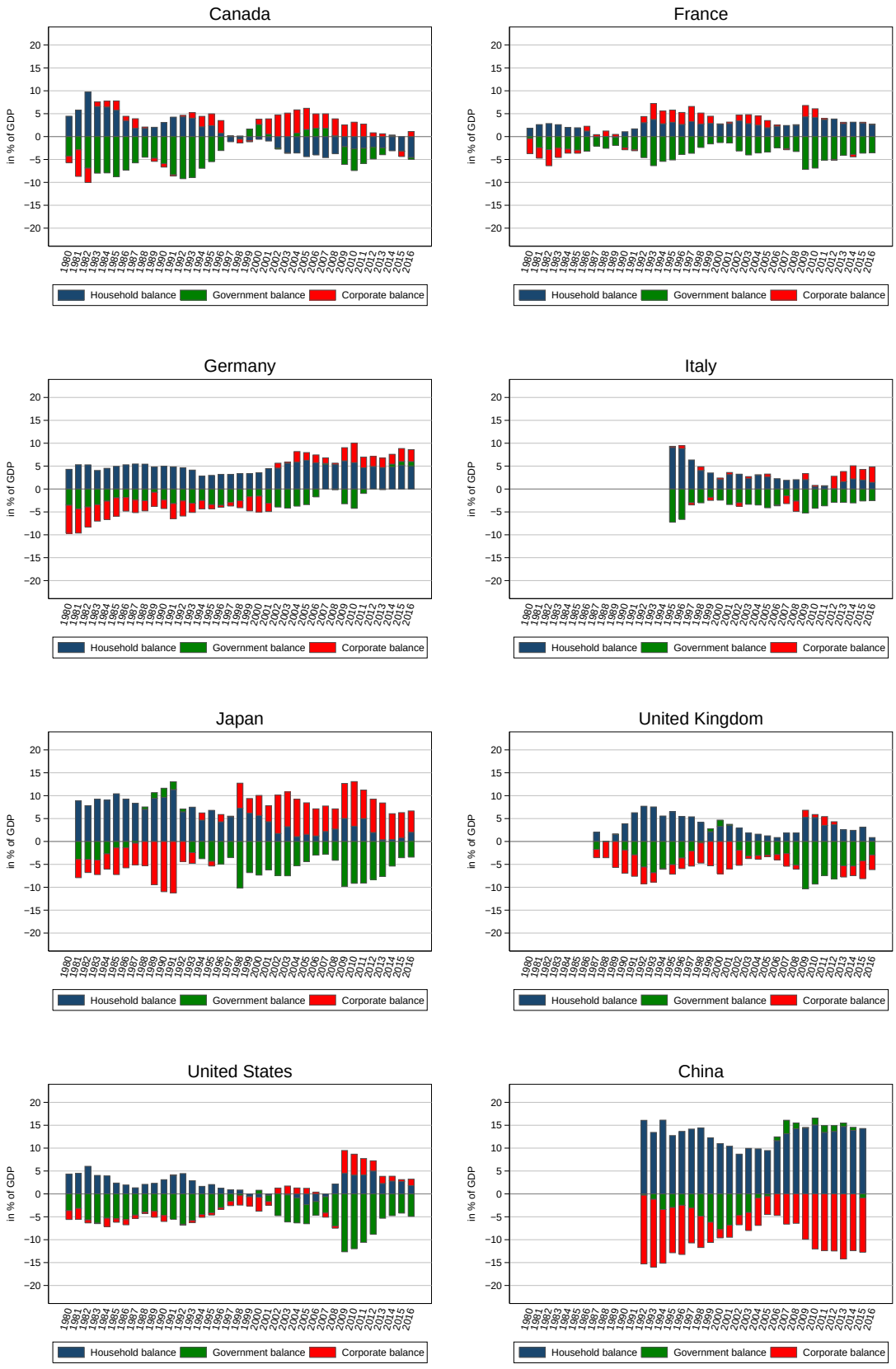
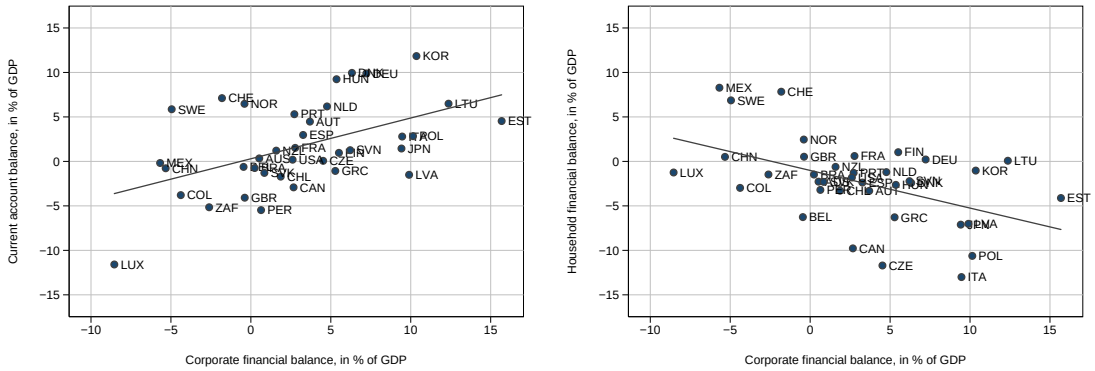


Figure 3: Sectoral financial balances, G7 and China, 1980-2016



Note: The figure shows the change in the corporate financial balance in % of GDP (horizontal axis) against the change in, respectively, the current account balance in % of GDP and the private household financial balance in % of GDP (vertical axis). Changes are calculated for the period 1980/83-2012/16 or for the longest available time span within this period.

Figure 4: Sectoral financial balances and current account balances, 1980-2016

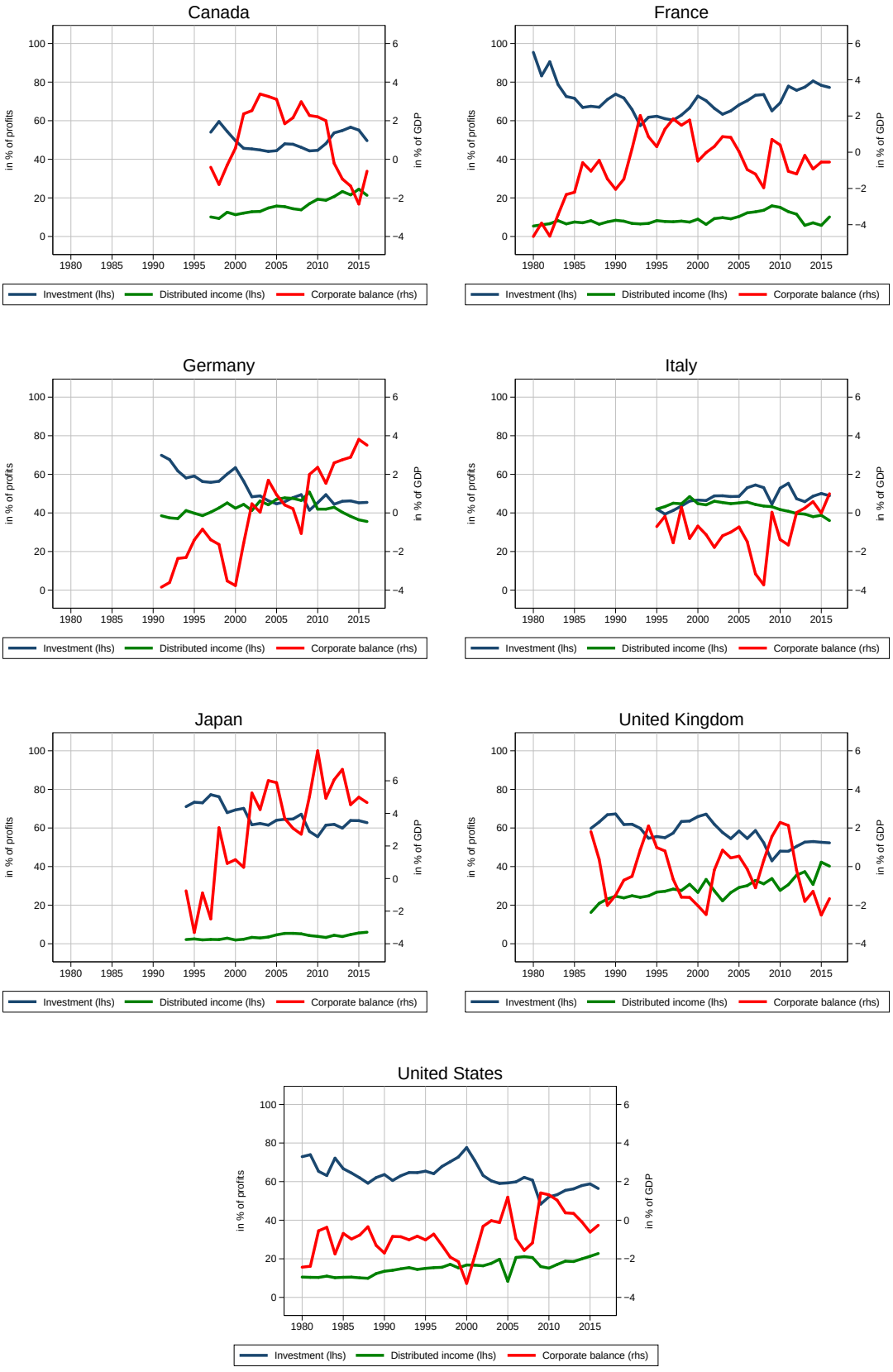
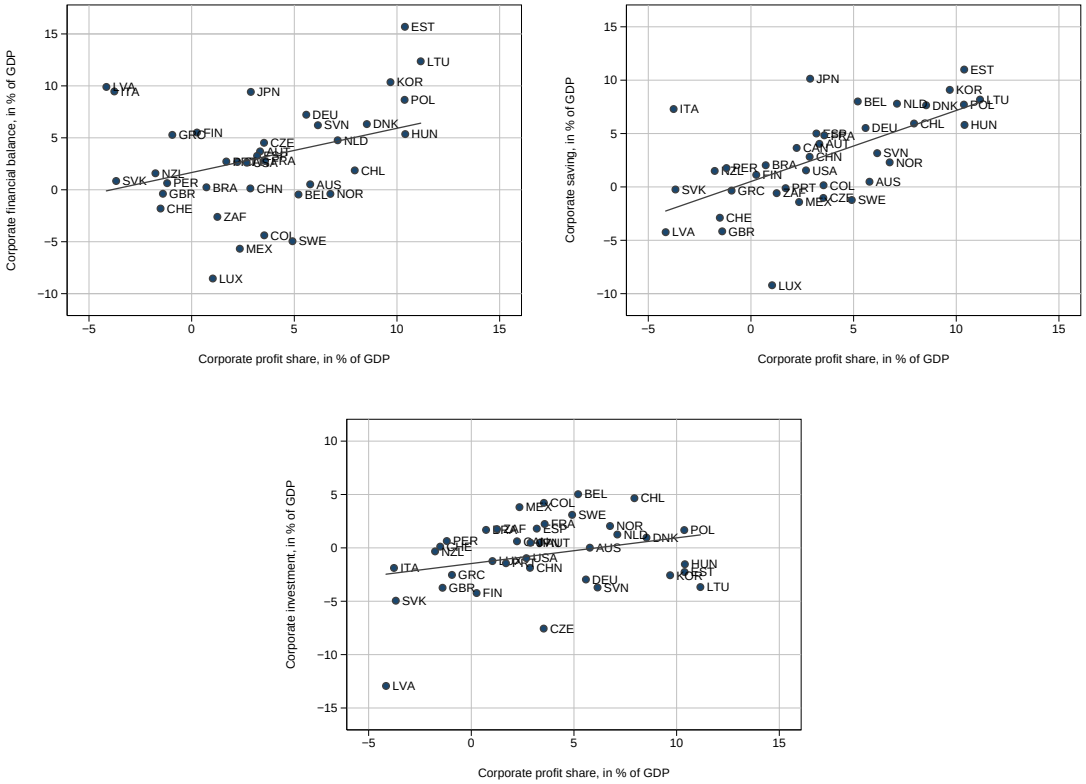


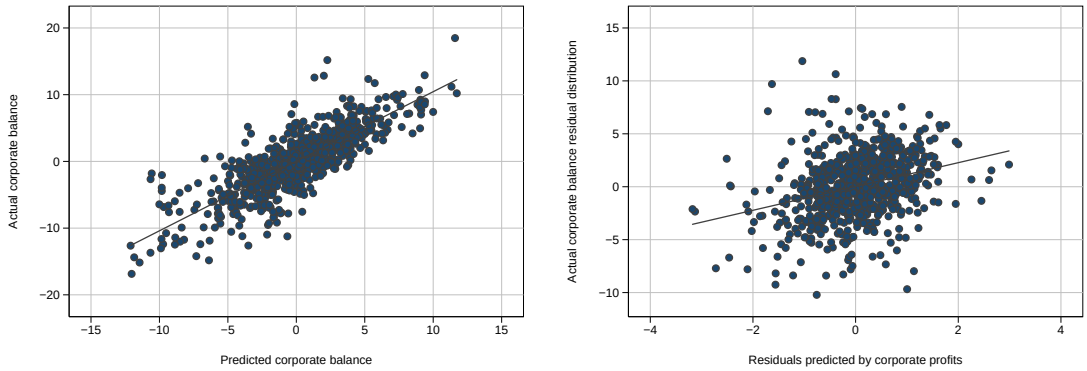
Figure 5: Decomposition of financial balances, non-financial corporate sector, G7, 1980-2016



Note: The figure shows the change in corporate profits in % of GDP (horizontal axis) against the change in, respectively, the corporate financial balance in % of GDP, corporate saving in % of GDP and corporate investment in % of GDP (vertical axis). Changes are calculated for the period 1980/83-2012/16 or for the longest available time span within this period.

Figure 6: Profit shares, saving, investment, and financial balances, corporate sector, 1980-2016

Figure 7: Uses of saving, non-financial corporate sector, G7, 1980-2016



Note: In the right graph, the vertical axis measures the actual corporate financial balance residuals from the baseline model without the profit share variable reported in Table 1, Column 4. The horizontal axis shows the corporate financial balance levels predicted by regressing corporate financial balance residuals (from the baseline model without the profit share variable) on the profit share variable.

Figure 8: Role of corporate profits: predicted and actual corporate financial balance residuals

Table 1: Trends in the corporate balance, saving and investment

PANEL A	(1)	(2)	(3)	(4)	(5)	(6)
	FB^C	FB^C	FB^C	FB^C	FB^C	FB^C
Trend	0.178**	0.175**	0.150***	0.163***	0.154***	0.135***
	(0.053)	(0.054)	(0.040)	(0.033)	(0.032)	(0.030)
Trend*GFC dummy	-	0.000	-	-	0.000	-
		(0.000)			(0.000)	
L.Real GDP growth	-	-	-0.452**	-	-	-0.443***
			(0.187)			(0.064)
Observations	276	276	276	1057	1057	1057
Countries	8	8	8	40	40	40
Adj. R-squared	0.322	0.320	0.388	0.125	0.126	0.244
PANEL B	(1)	(2)	(3)	(4)	(5)	(6)
	SAV^C	SAV^C	SAV^C	SAV^C	SAV^C	SAV^C
Trend	0.161***	0.159**	0.160***	0.147***	0.146***	0.146***
	(0.046)	(0.048)	(0.042)	(0.028)	(0.028)	(0.028)
Trend*GFC dummy	-	0.000	-	-	0.000	-
		(0.000)			(0.000)	
L.Real GDP growth	-	-	-0.020	-	-	-0.018
			(0.135)			(0.067)
Observations	276	276	276	1057	1057	1057
Countries	8	8	8	40	40	40
Adj. R-squared	0.428	0.427	0.426	0.171	0.170	0.170
PANEL C	(1)	(2)	(3)	(4)	(5)	(6)
	INV^C	INV^C	INV^C	INV^C	INV^C	INV^C
Trend	-0.029	-0.026	-0.008	-0.030	-0.023	-0.006
	(0.025)	(0.024)	(0.028)	(0.018)	(0.017)	(0.017)
Trend*GFC dummy	-	-0.000	-	-	-0.000	-
		(0.000)			(0.000)	
L.Real GDP growth	-	-	0.326***	-	-	0.372***
			(0.062)			(0.028)
Observations	276	276	276	1057	1057	1057
Countries	8	8	8	40	40	40
Adj. R-squared	0.036	0.034	0.195	0.010	0.013	0.234

*Note: FB^C is the corporate financial balance in % of GDP, SAV^C is corporate saving in % of GDP, INV^C is corporate investment in % of GDP. All regressions are estimated by OLS and include country fixed effects. Standard errors in parantheses are corrected for heteroskedasticity and autocorrelation of the error term. All estimations include a constant term. L. denotes one year lag. *, **, and *** denotes significance at* 10%, 5%, *and* 1% *levels, respectively. See Appendix A for a detailed description of the data.*

Table 2: Corporate balance regression model

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Regressor	FB^C	FB^C	FB^C	FB^C	SAV^C	SAV^C	INV^C	INV^C
L.Real GDP growth	-0.288***	-0.249***	-0.316***	-0.291***	-0.046*	-0.030	0.243***	0.232***
	(0.045)	(0.045)	(0.044)	(0.045)	(0.025)	(0.025)	(0.029)	(0.030)
Stock price volatility	0.074***	0.074***	0.084***	0.083***	0.012	0.011	-0.047***	-0.046***
	(0.017)	(0.017)	(0.017)	(0.017)	(0.012)	(0.012)	(0.010)	(0.010)
5-year growth forecast	-1.282***	-0.781***	-1.032***	-0.762***	-0.461***	-0.265**	0.544***	0.431***
	(0.206)	(0.223)	(0.200)	(0.215)	(0.119)	(0.122)	(0.123)	(0.135)
Net FDI flows (% of GDP)	0.028**	0.026*	0.025*	0.024*	0.025**	0.025*	0.000	0.000
	(0.013)	(0.013)	(0.013)	(0.014)	(0.013)	(0.013)	(0.004)	(0.005)
L.Stock market capitalization (% of GDP)	-0.018***	-0.032***	-0.028***	-0.035***	-0.011**	-0.017***	0.013***	0.016***
	(0.006)	(0.006)	(0.005)	(0.006)	(0.005)	(0.005)	(0.003)	(0.003)
Trend	-	0.161***	-	0.096***	-	0.076***	-	-0.039**
		(0.028)		(0.027)		(0.019)		(0.016)
Corporate profit share (% of GDP)	-	-	0.508***	0.456***	0.598***	0.560***	0.092**	0.114**
			(0.065)	(0.068)	(0.044)	(0.046)	(0.044)	(0.045)
Observations	803	803	803	803	803	803	803	803
Countries	40	40	40	40	40	40	40	40
R-squared	0.601	0.609	0.647	0.647	0.770	0.772	0.844	0.844
RMSE	0.032	0.031	0.030	0.030	0.020	0.020	0.018	0.018

*Note: FB^C is the corporate financial balance in % of GDP, SAV^C is corporate saving in % of GDP, INV^C is corporate investment in % of GDP. All regressions are estimated by GLS with a panel-wide AR(1) correction and include country fixed effects. Heteroskedasticity robust standard errors are reported in parentheses. All estimations include a constant term. L. denotes one year lag. *, **, and *** denotes significance at 10%, 5%, and 1% levels, respectively. See Appendix A for a detailed description of the data.*

Table 3: Corporate balance regression model: Cost of capital

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Regressor	FB^C	FB^C	FB^C	FB^C	FB^C	FB^C	SAV^C	INV^C
L.Real GDP growth	-0.236***	-0.274***	-0.221***	-0.236***	-0.213***	-0.200***	0.014	0.206***
	(0.048)	(0.048)	(0.047)	(0.047)	(0.046)	(0.044)	(0.033)	(0.030)
Stock price volatility	0.087***	0.100***	0.091***	0.087***	0.075***	0.078***	0.003	-0.052***
	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.014)	(0.010)
5-year growth forecast	-0.942***	-0.916***	-0.961***	-0.940***	-0.885***	-0.904***	-0.417**	0.486***
	(0.237)	(0.229)	(0.236)	(0.237)	(0.232)	(0.230)	(0.163)	(0.128)
Net FDI flows (% of GDP)	0.026**	0.025*	0.027**	0.026**	0.023*	0.024*	0.027**	0.002
	(0.013)	(0.014)	(0.014)	(0.013)	(0.013)	(0.014)	(0.013)	(0.004)
L.Stock market capitalization (% of GDP)	-0.032***	-0.035***	-0.035***	-0.033***	-0.031***	-0.033***	-0.014**	0.016***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	(0.006)	(0.003)
Trend	0.122***	0.067**	0.063*	0.152***	0.148***	0.116***	0.139***	0.020
	(0.028)	(0.027)	(0.032)	(0.034)	(0.030)	(0.039)	(0.030)	(0.019)
Corporate profit share (% of GDP)	-	0.431***	-	-	-	-	-	-
		(0.071)						
Relative price of investment goods	-	-	-0.103***	-	-	-0.102***	-0.033	0.045**
			(0.032)			(0.033)	(0.024)	(0.018)
Corporate income tax rate	-	-	-	0.065	-	0.057	0.034	0.011
				(0.040)		(0.039)	(0.028)	(0.023)
Real interest rate	-	-	-	-	0.138***	0.135***	0.003	-0.117***
					(0.047)	(0.045)	(0.032)	(0.028)
Observations	762	762	762	762	762	762	762	762
Countries	40	40	40	40	40	40	40	40
R-squared	0.593	0.628	0.596	0.595	0.601	0.603	0.706	0.849
RMSE	0.032	0.030	0.032	0.031	0.031	0.030	0.023	0.017

*Note: FB^C is the corporate financial balance in % of GDP, SAV^C is corporate saving in % of GDP, INV^C is corporate investment in % of GDP. All regressions are estimated by GLS with a panel-wide AR(1) correction and include country fixed effects. Heteroskedasticity robust standard errors are reported in parentheses. All estimations include a constant term. L. denotes one year lag. *, **, and *** denotes significance at* 10%, 5%, *and* 1% *levels, respectively. See Appendix A for a detailed description of the data.*

Table 4: Corporate balance regression model: Robustness

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Regressor	FB^{NFC}	SAV^{NFC}	INV^{NFC}	FB^{C}	SAV^{C}	INV^{C}	FB^{C}	SAV^{C}	INV^{C}
L.Real GDP growth	-0.314***	-0.058**	0.247***	-0.245***	-0.012	0.210***	-0.230***	-0.039	0.178***
	(0.046)	(0.027)	(0.032)	(0.046)	(0.025)	(0.031)	(0.049)	(0.025)	(0.032)
Stock price volatility	0.053***	-0.005	-0.044***	0.084***	0.002	-0.059***	0.091***	-0.001	-0.067***
	(0.015)	(0.009)	(0.010)	(0.017)	(0.013)	(0.010)	(0.016)	(0.009)	(0.010)
5-year growth forecast	-0.763***	-0.208*	0.513***	-0.700***	-0.246**	0.439***	-0.496**	-0.151	0.408***
	(0.213)	(0.126)	(0.140)	(0.214)	(0.124)	(0.133)	(0.230)	(0.117)	(0.147)
Net FDI flows (% of GDP)	0.026	0.021	-0.003	0.025*	0.025*	0.000	0.017	0.006	-0.020
	(0.023)	(0.022)	(0.005)	(0.014)	(0.013)	(0.005)	(0.033)	(0.019)	(0.020)
L.Stock market capitalization (% of GDP)	-0.022***	-0.008	0.012***	-0.034***	-0.015***	0.017***	-0.043***	-0.014***	0.021***
	(0.007)	(0.006)	(0.003)	(0.006)	(0.005)	(0.003)	(0.006)	(0.005)	(0.003)
Trend	0.028	0.048***	-0.010	-0.033	-0.018	-0.007	0.037	0.007	-0.042**
	(0.026)	(0.019)	(0.015)	(0.043)	(0.029)	(0.025)	(0.032)	(0.019)	(0.019)
Non-financial corporate profit share (% of GDP)	0.499***	0.621***	0.129**	-	-	-	-	-	-
	(0.068)	(0.047)	(0.052)						
Corporate profit share (% of GDP)	-	-	-	0.619***	0.647***	0.056	0.502***	0.575***	0.099**
				(0.080)	(0.053)	(0.051)	(0.076)	(0.048)	(0.049)
Services value added (% of GDP)	-	-	-	0.437***	0.294***	-0.108	-	-	-
				(0.107)	(0.074)	(0.066)			
Investment in intangible assets (% of total investment)	-	-	-	-	-	-	0.318***	0.184***	-0.096**
							(0.068)	(0.041)	(0.038)
Observations	768	768	768	773	773	773	642	642	642
Countries	40	40	40	40	40	40	30	30	30
R-squared	0.595	0.708	0.840	0.659	0.778	0.830	0.685	0.802	0.815
RMSE	0.032	0.023	0.019	0.029	0.020	0.018	0.031	0.019	0.019

*Note: FB^{NFC} is the financial balance of the non-financial corporate sector in % of GDP, SAV^{NFC} is saving of the non-financial corporate sector in % of GDP, INV^{NFC} is investment of the non-financial corporate sector in % of GDP. FB^{C} is the corporate financial balance in % of GDP, SAV^{C} is corporate saving in % of GDP, INV^{C} is corporate investment in % of GDP. All regressions are estimated by GLS with a panel-wide AR(1) correction and include country fixed effects. Heteroskedasticity robust standard errors are reported in parentheses. All estimations include a constant term. L. denotes one year lag. *, **, and *** denotes significance at* 10%, 5%, *and* 1% *levels, respectively. See Appendix A for a detailed description of the data.*

Table 5: Corporate balance regression model: Pre-crisis sample and global financial crisis dummy

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Regressor	FB^C	FB^C	FB^C	FB^C	FB^C	FB^C	FB^C
L.Real GDP growth	-0.330***	-0.419***	-0.290***	-0.290***	-0.292***	-0.293***	-0.291***
	(0.060)	(0.053)	(0.045)	(0.045)	(0.045)	(0.045)	(0.045)
Stock price volatility	0.049**	0.080***	0.075***	0.080***	0.083***	0.083***	0.082***
	(0.020)	(0.016)	(0.020)	(0.017)	(0.017)	(0.017)	(0.017)
5-year growth forecast	-0.300	-0.826***	-0.782***	-0.793***	-0.766***	-0.769***	-0.768***
	(0.237)	(0.214)	(0.216)	(0.221)	(0.215)	(0.217)	(0.216)
Net FDI flows (% of GDP)	0.018	0.025**	0.025*	0.025*	0.020	0.024*	0.025*
	(0.014)	(0.013)	(0.014)	(0.014)	(0.015)	(0.014)	(0.014)
L.Stock market capitalization (% of GDP)	-0.034***	-0.037***	-0.035***	-0.036***	-0.035***	-0.035***	-0.035***
	(0.008)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Trend	0.137***	0.072***	0.089***	0.091***	0.096***	0.096***	0.095***
	(0.046)	(0.027)	(0.028)	(0.028)	(0.027)	(0.027)	(0.028)
Corporate profit share (% of GDP)	0.435***	0.483***	0.458***	0.455***	0.455***	0.456***	0.456***
	(0.078)	(0.067)	(0.067)	(0.068)	(0.068)	(0.068)	(0.068)
L.Real GDP growth*GFC dummy	-	0.222***	-	-	-	-	-
		(0.063)					
Stock price volatility*GFC dummy	-	-	0.011	-	-	-	-
			(0.014)				
5-year growth forecast*GFC dummy	-	-	-	0.071	-	-	-
				(0.100)			
Net FDI flows (% of GDP)*GFC dummy	-	-	-	-	0.027	-	-
					(0.035)		
L.Stock market capitalization (% of GDP)*GFC dummy	-	-	-	-	-	-0.001	-
						(0.003)	
Corporate profit share (% of GDP)*GFC dummy	-	-	-	-	-	-	0.001
							(0.012)
Observations	518	803	803	803	803	803	803
Countries	40	40	40	40	40	40	40
R-squared	0.713	0.654	0.646	0.647	0.647	0.647	0.647
RMSE	0.035	0.030	0.030	0.030	0.030	0.030	0.030

*Note: FB^C is the corporate financial balance in % of GDP, SAV^C is corporate saving in % of GDP, INV^C is corporate investment in % of GDP. All regressions are estimated by GLS with a panel-wide AR(1) correction and include country fixed effects. Heteroskedasticity robust standard errors are reported in parentheses. The Model (1) is estimated for the period 1990-2007. The Models (2)-(7) include a dummy for the global financial crisis. All estimations include a constant term. L. denotes one year lag. *, **, and *** denotes significance at 10%, 5%, and 1% levels, respectively. See Appendix A for a detailed description of the data.*

Imprint

Publisher
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IMK Working Paper is an irregular online publication series available at:
https://www.boeckler.de/imk_5016.htm

ISSN 1861-2199