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Abstract

We investigate whether changes in income distribution can explain current account developments in a sample of 20 countries for the period 1972-2007. We analyze the relationship between the personal and the functional income distribution in our sample, before disentangling their effects on the household and corporate financial balances and the current account. We find that rising (top-end) personal inequality leads to a decrease of the private household financial balance and the current account, controlling for standard current account determinants. Moreover, an increase in corporate net lending or, alternatively, a fall in the wage share leads to an increase in the current account, *ceteris paribus*. While we remain agnostic as to the underlying theoretical explanations of our findings, they are consistent with consumption externalities on the one hand and with incomplete piercing of the corporate veil or the underconsumptionist view on the other hand. We show that changes in personal and functional income distribution have contributed considerably to the widening of current account balances, and hence to the instability of the international economic system, prior to the global financial crisis starting in 2007.

Keywords: Income distribution, current account determinants, sectoral financial balances, global financial crisis.

JEL Classification: D31, D33, E21, F41, G3.

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1 Introduction

The global current account imbalances are widely considered to be an important contributing factor to the global financial crisis starting in 2007. However, it has so far proven difficult to explain the emergence and persistence of the global imbalances in a fully satisfactory manner (Phillips et al., 2013; Chinn et al., 2014). In recent years, there has also been a revival among economists in the interest for the potentially destabilizing macroeconomic effects of income distribution. Rajan (2010) argues that bottom and middle income households in the United States (U.S.) were able, prior to the financial crisis, to sustain their consumption relative to top income households despite declining relative (permanent) incomes, facilitated through government credit expansion policies. According to Rajan (2010), rising inequality thus played an important role in explaining the decrease in U.S. national saving and the unsustainable rise in personal debt and, by consequence, the rising U.S. current account deficit prior to the financial crisis. On the other hand, Pettis (2013) forcefully argues that the persistent current account surpluses of China and Germany, the two countries with the largest current account surpluses worldwide, are not primarily the result of household thriftiness, but rather of low wages and household income (relative to profits and corporate income) leading to weak aggregate consumption relative to domestic production.

In the academic literature, the macroeconomic effects of income distribution have been approached in two broad ways, focusing on either the distribution of income across households (personal income distribution) or the distribution across types of income or sectors (functional income distribution). The implications of changes in both dimensions of income distribution on saving and investment are theoretically ambiguous. According to standard models of rational household behavior, neither the personal nor the functional distribution should have an effect on aggregate saving and investment, and hence the current account balance. In models with heterogeneous households, higher income inequality can lead to either higher or lower spending on goods and services. For example, in simple Keynesian models and in life-cycle models where rich households have a higher preference for wealth (Carroll, 1998; Dynan et al., 2004), a higher inequality of lifetime incomes should lead to higher saving. By contrast, in models with positional externalities in goods and services, a rise in inequality can lead to 'trickle-down consumption', or 'expenditure cascades', *i.e.*, depress the (financial) savings of those households that see their relative incomes decline (Bertrand and Morse, 2013; Frank et al., 2014). Shifts in the distribution of income between the corporate and household sectors may also affect aggregate demand. If households are unable to fully 'pierce the corporate veil', then a rise in corporate saving will be less than offset by the decrease in household saving. A fall in the share of wages in the national income can either increase or reduce aggregate demand. According to the traditional underconsumptionist view,

capitalists (firms) have a lower propensity to spend than workers (households) so that a fall in the wage share reduces aggregate demand (Hobson, 1909; Pettis, 2013). On the other hand, higher profitability may also boost investment (Kumhof et al., 2012).

While most previous works have analyzed the effects of income inequality and the corporate veil on different measures of saving or investment based on either household or firm survey data or national time series data, very few works explicitly analyze how income distribution may affect the stability of the international economic system as a whole via its effects on current account (im)balances. A notable exception is Kumhof et al. (2012) who argue that in a number of advanced economies, including most notably the U.S. and the United Kingdom (U.K.), rising inequality and financial liberalization have contributed to a deterioration of national saving-investment balances and a rise in household leverage. However, the analysis by Kumhof et al. (2012) focuses exclusively on the personal distribution of income. This approach follows a common practice in the literature, which is to distinguish two groups of countries according to the evolution of top household income shares throughout the 20th century: a first group, largely consisting of Anglo Saxon countries where top household income shares have followed a U-shaped pattern, showing a strong secular increase since the early 1980s; and a second group of countries, including many European countries and Japan, where top income shares have followed an L-shaped pattern, *i.e.*, showing no (or a more limited) increase in recent decades (Piketty and Saez, 2006). Yet, this approach neglects the distribution of income between wages and profits, or between the private household and corporate sectors. If the corporate sector, which is predominantly owned by rich households, raises its net financial savings as a result of rising retained profits, rather than paying higher incomes to high-level executives and shareholders, this limits the rise in personal income inequality because corporate income is not accounted for in measures of personal inequality. Moreover, the rise in corporate net savings, as could be observed in such large current account surplus countries as China, Germany and Japan, may be an important leakage of aggregate demand (Gruber and Kamin, 2015).

The contribution of the present article is to analyze the current account effects of income distribution from a sectoral perspective. We extend standard panel estimation models of current account determinants by introducing measures of personal income inequality and corporate sector behavior for a sample of 20, mainly industrialized, countries for the period 1972-2007. We also analyze the relationship between personal and functional income distribution in our sample, before trying to disentangle their effects on the household and corporate financial balances and the current account. By definition, the current account balance is equal to the sum of the financial balances of the household, corporate and government sectors. Yet most previous works, while routinely testing for non-Ricardian effects by introducing the fiscal balance in current account regression analyses,

have neglected the importance of corporate sector behavior and how this is linked to income distribution. If either the corporate financial balance or personal income inequality or both are found to be relevant for explaining current account balances, we can interpret this result as evidence against the permanent income and life-cycle models with rational expectations. If households do not fully pierce the corporate veil, the corporate financial balance should be positively related to the current account balance. The underconsumptionist model in addition predicts that a fall in the wage share will lead to an increase in the corporate balance and in the current account. According to the simple Keynesian consumption function (and in more complex models with heterogeneous households and bequests or precautionary saving), a rise in income inequality is expected to raise household net lending and thereby the current account. The opposite holds in the expenditure cascades, or trickle-down consumption model, where imitation effects reduce households' (financial) savings, and hence the current account, as a result of higher inequality.

Our main findings are as follows: A rise in top-end inequality (relative to trading partners) leads to a lower current account, controlling for a set of standard determinants of current account balances, and a lower private household financial balance. A rise in the corporate financial balance, by contrast, is associated with a higher current account, *ceteris paribus*. That is, a rise in corporate net lending is not fully offset by a corresponding increase in household net lending. There is also evidence that the share of wages in the national income is negatively linked to the corporate financial balance, and to the current account. Our results are robust across a number of different model specifications and estimation methods. We show that the relative contributions of income inequality and corporate net lending to the (widening of) the current account positions of a number of large economies prior to the global financial crisis were considerable. Interestingly, the quantitatively most important current account deficit countries (U.S., U.K.) combined strongly rising top-end income inequality with relatively small changes in corporate net lending and in the wage share. By contrast, the most important surplus countries (China, Germany, Japan) experienced strong decreases in the wage share and corporate net lending, but relatively little changes in top household income shares. For the entire sample, models including measures of both functional and personal income distribution perform better than models without or including only one dimension of income distribution. While we remain agnostic as to the underlying theoretical explanations of our findings, they are consistent with consumption externalities on the one hand and with incomplete piercing of the corporate veil or the underconsumptionist view on the other hand.

The remainder of this paper is structured as follows. In Section 2, we review competing hypotheses discussed in the literature about the macroeconomic effects of income distribution and its implications for the current account. Section 3 discusses important stylized facts about income distribution, sectoral financial balances and the current account in some selected large economies.

Section 4 presents the econometric analysis. Section 5 concludes.

2 Review of competing hypotheses

In face of the widening of current account imbalances especially since the late 1990s and prior to the global financial crisis starting in 2007/8, a number of competing hypotheses have been put forward (see Chinn et al., 2011, for a survey). These include the twin deficit hypothesis that current accounts are driven by government deficits (Abbas et al., 2010; Bluedorn and Leigh, 2011; Kumhof and Laxton, 2013); the savings-glut hypothesis that high savings in emerging markets are responsible for their current account surpluses (Chinn and Ito, 2007); the demographic hypothesis that population structure and life-cycle savings dynamics have contributed to the current account imbalances (Cooper, 2008); the asset bubble explanation that wealth effects are the main force behind saving-investment imbalances (Fratzscher and Straub, 2009); the financial-development argument that countries with deeper financial markets attract foreign saving flows resulting in current account deficits (Caballero et al., 2008; Gruber and Kamin, 2007, 2009); and the structural policy hypothesis that product and labor market regulations are important drivers of current accounts (Kerdrain et al., 2010). However, there is as yet no consensus as to what explains the emergence and persistence of the global imbalances during the period leading up to the global financial crisis starting in 2007. Chinn et al. (2011, p. 18) suggest the possibility of missing variables in existing estimation models.

Few authors have approached the issue of global imbalances systematically from a sectoral financial balances perspective and with an explicit focus on income distribution. In the remainder of this Section we review the existing literature on how different changes in functional and personal income distribution may affect the financial decisions of both the private household and firm sectors, which together with the government's net lending determine the national current account balance.

We consider first the potential relationship between the functional distribution of income, corporate and household net lending, and the current account. At the theoretical level, the standard model of intertemporally optimizing households with rational expectations predicts that non-zero financial balances in the non-household sectors, *i.e.*, private corporations and the government, will have no effects on aggregate demand and the current account as rational households are assumed to fully offset any changes in the saving and investment decisions made by the corporate and government sectors that are not in accordance with households' preferences.[1] In practice, however,

[1] "Suppose a corporation decides to increase its saving - that is, to retain earnings rather than distribute them as dividends - sophisticated shareholders should understand that their net worth has increased [...] and reduce their savings

the fiscal balance is routinely included and found to be quantitatively important in current account regressions in order to account for non-Ricardian households. According to existing estimates, a 1 percentage point increase (decrease) in the fiscal balance leads to an increase (decrease)in the current account of between 0.2 and 0.5 percentage points, *ceteris paribus* (Lee et al., 2008). By contrast, the corporate financial balance has not been among the standard explanatory variables in the existing literature on the determinants of current account balances, even though the importance of the corporate veil has been widely discussed in other contexts (Atkinson, 2009). The lack of attention to corporate net lending as a potential driver of macroeconomic trends has recently been noted in the literature (Bebczuk and Cavallo, 2014; Gruber and Kamin, 2015). The existence of a corporate veil implies that the corporate financial balance is positively related to the current account balance.

There is some formal evidence for the corporate veil in the literature, although the results from previous studies are mixed. Feldstein and Fane (1973) and Feldstein (1973) found that a positive marginal propensity to consume from corporate retained earnings which was, however, lower than the marginal propensity to consume from income. Similar results were found by Sumner (2004), based on estimations of the aggregate consumption function for the U.K. Poterba (1991) and Monogios and Pitelis (2004) and Baker et al. (2007) report evidence of a significant corporate veil for different Anglo Saxon countries. More recently, the rise of corporate net lending and cash hoarding at the global level has also been identified as a contributing factor to the 'global saving glut', and hence the current account imbalances, prior to the Great Recession (IMF, 2006; Gruber and Kamin, 2015). Grigoli et al. (2014) in a panel estimation analysis for a sample of 165 countries for the period 1981-2012 find that a rise in the corporate saving-to-gross domestic income ratio by one percentage points leads to a decrease in the household saving-to-gross domestic income ratio by 0.58 percentage points, *i.e.*, households do not fully pierce the corporate veil. According to the results by Bebczuk and Cavallo (2014), the estimated negative effect of corporate saving on household saving is much smaller for a sample of 64 countries over 1990-2012. They conclude that a $1 increase in business saving raises private saving by $0.72 and private investment by $0.12.

A related question is to what extent changes in the distribution between wages and profits affect saving and investment, respectively, and hence sectoral net lending and the current account. Grigoli et al. (2014, p. 6) note that "Post-Keynesian models stress the positive effect of functional income inequality on aggregate saving based on the observation that workers save less than capitalists". But if a higher share of national income going to profits also boosts investment, the national saving-investment balance (the current account) may remain unaffected or even decrease (see also

to re-establish their optimal life-cycle consumption." (IMF, 2006, p. 137)

Kumhof et al., 2012). Pettis (2013) refers to the traditional underconsumptionist argument that a fall in the share of wages or household income in national income will reduce both consumption and aggregate demand because households have a higher marginal propensity to spend their income than firms. In Classical theories, a common fear was that a falling share of wages in national income would lead to insufficient aggregate demand and oversaving due to a lack of purchasing power of the 'consuming classes' (e.g. Hobson, 1909). The underconsumptionist hypothesis does not necessarily require the assumption of incomplete piercing of the corporate veil. If firms are owned predominantly by top income households, and if top income households have wealth in the utility function and a lower marginal propensity to spend on goods and services than low income households, a rise in the share of corporate profits can have saving and aggregate demand effects even if households are able to completely pierce the corporate veil (Kumhof et al., 2012). Gruber and Kamin (2015) find a positive effect of profit growth on investment in some of their estimations for the U.S., but the estimated effect of profit growth on financial asset accumulation by corporations is stronger. They conclude that 'corporate saving glut' is an important leakage of aggregate demand.[2]

We now consider the potential links between personal income inequality, saving and investment, and the current account balance. Standard life-cycle and permanent income models with rational expectations predict that the distribution of (the permanent component of) income and aggregate saving will be unrelated in the presence of standard preferences. By contrast, the traditional Keynesian view is that rising income inequality across households will be a drag on aggregate demand and thus lead to a higher current account, *ceteris paribus*, to the extent that high income households have a lower marginal propensity to spend than low income groups. Leigh and Possi (2009, p. 58) argue that "(i)f the rich save more than the poor, then a mean-preserving transfer from poor to rich would raise aggregate saving rates." Yet, while the view that 'the rich save more than the poor' (out of lifetime income) is both intuitively appealing and empirically relevant (Dynan et al., 2004), the effects of a change in income inequality on saving are theoretically ambiguous (see Grigoli et al., 2014 for a discussion).

Possible theoretical explanations of differential saving rates include different degrees of patience across income groups (Mankiw, 2000), bequest motives and asset-based means testing (Dynan et al., 2004), wealth in the utility function or capitalist spirit (Zou, 1995), or positional externalities in consumption (Frank, 2007). Higher inequality may lead to higher or lower house-

[2] At the policy level, the link between the wage share and corporate sector saving has also been highlighted. André et al. (2007, p. 7) argue that "corporate saving was mainly driven by increasing profit shares in most countries, possibly related to a degree of wage moderation". European Commission (2010, p. 13), looking specifically at Germany's increased export orientation during 2000-2007, argues that "corporate savings were raised by reducing the compensation of labour". IMF (2006), IMF (2013) and ILO (2012) suggest that weak domestic demand in current account surplus countries was in part due to the low labor share of national income and high corporate net lending.

hold saving. In life-cycle models with bequests, a higher income share of rich households should result in higher saving and lower consumption, because bequests are a luxury (Carroll, 1998). Income inequality may also positively affect saving through the precautionary saving motive (Carroll and Kimball, 1996) and if the poor are more risk-averse. By contrast, in the presence of strong demonstration effects, households with declining relative incomes may reduce their saving by such an extent as to overcompensate the increased saving of the richer households. In particular, the expenditure cascades model by Frank et al. (2014) which seeks to explain the rise in U.S. household expenditure-to-income ratio as a result of rising income inequality since the early 1980s is based on the notion that "people generally look to others above them on the income scale rather than to those below" (Frank et al., 2014, p. 7). Similarly to Rajan (2010), an implication of the expenditure cascade hypothesis is that growing income inequality may contribute to a lower current account via its negative effects on household net lending.

In empirical works, different measures of saving or net lending have been used. Dynan et al. (2004) derive various measures of household saving from different household surveys, namely the Consumer Expenditure Survey (CEX), the Panel Study of Income Dynamics (PSID), and the Survey of Consumer Finances (SCF). They find a strong positive relationship between personal saving rates and lifetime income for the U.S. Their results have recently been confirmed by Alvarez-Cuadrado and Vilalta (2012), using the PSID. Bertrand and Morse (2013), using the CEX, conclude that up to a quarter of the decline in the U.S. household saving rate over the last three decades could be attributed to consumption externalities (trickle-down consumption). Several analyses also find evidence of a positive relationship between income inequality and private household debt or other measures of financial distress (Iacoviello, 2008; Cynamon and Fazzari, 2008; Mian and Sufi, 2009; Frank et al., 2014).

Other studies have used data on private or national saving from national accounts data. Edwards (1996) uses panel data for 11 developed and 25 developing countries for the period 1970-92 and finds that inequality (defined as the ratio of income received by the bottom 40 per cent over income received by the top 10 per cent) is not significantly related to private savings. More recently, Alvarez-Cuadrado and Vilalta (2012), using a small macro-panel of six major economies over the period 1955 to 2007, find evidence of rising income inequality interacting with the level of financial development to reduce personal saving. Schmidt-Hebbel and Serven (2000) estimate a panel of 19 developed and 33 developing countries and find no link between the Gini coefficient and gross national saving. Leigh and Possi (2009) compile a data set over a period of more than 80 years (1921-2002) for 11 countries and analyze the effect of top 1% and top 10% household income shares on gross national saving. They find a strongly negative relationship between saving and top-end income inequality when estimating their model with pooled ordinary least squares

(POLS). This relationship disappears, however, when country and time fixed effects are added to the model. Grigoli et al. (2014) find a negative effect of a rise in the Gini coefficient on both private and household saving in a panel estimation analysis for a large panel of 165 countries for the period 1981-2012. The effect is, however, not statistically significant. Bakker and Felman (2014) estimate a marginal propensity to consume of 0.95 for households in the bottom 90% of the U.S. income distribution, against 0.65 for the top 10% of the distribution, for the period 1991-2013. Gu et al. (2015) find that the Gini coefficient affects the private consumption-to-GDP ratio positively in a panel analysis for the OECD countries for the period 2000-2007, but negatively in Asian countries for the period 1990-2007. They argue that this result is due to differences in the financial systems.

Very few studies estimate the effects of income inequality on the current account directly. Kumhof et al. (2012) use top 1% and top 5% household income shares from the World Top Incomes Database (WTID) and find a negative relationship between top-end income inequality and the current account in a panel regression analysis for 14 OECD countries for the period 1968-2008. In the Kumhof et al. (2012) model, there are two heterogeneous agents, 'investors' and 'workers'. Investors represent both the corporate sector and top income households. Investors' utility function unlike that of workers includes a wealth-in-the-utility-function term. Besides its effects on saving and credit intermediation from the rest of the world, a rise in the share of income going to investors also leads to an investment boom due to a higher return on investment and hence a current account deficit. However, the model produces substantial current account effects only when the inequality shock is coupled with a financial liberalization shock. There is no corporate veil in this model, and firms negotiate with workers over factor shares on behalf of their owners, investors. In the empirical application, investors' income share is calibrated using the top 5% household income share, *i.e.*, a measure of personal income inequality. Another important feature in Kumhof et al. (2012) is the reliance on a corporate investment boom in explaining the link between rising inequality and current account deficits. Such investment booms are, however, difficult to find in the U.S. and U.K. data which rather point to "saving droughts" (Chinn et al., 2011). A recent attempt to extend the Kumhof et al. (2012) model is Grüning et al. (2015).

3 The data

In this Section, we present stylized facts about income distribution, sectoral financial balances and current account imbalances. We focus especially on the G7 economies and China. These eight countries accounted for more than 60% of global GDP in 2007. Figure 1 shows the development of the current account balances in these eight countries for the period 1972-2007. The U.S., the

U.K., China, Germany and Japan were those countries with the largest current account balances worldwide just before the Great Recession.

Figure 2 shows the evolution of top household income shares and the wage share (left column) and of the household and corporate financial balances (right column) for these countries. As is apparent from the Figure, household net lending declined in those countries where there was a rising trend in top income shares (U.S., U.K., Canada, Italy, Japan), but not in Germany and France, where top income shares remained relatively stable before the Great Recession. There also seems to be a negative relation between the private sector wage share and the financial balance of the corporate sector. This link is apparent in all countries, but especially in Canada, Japan, and Germany where the corporate sector has even turned to a net lending position for extended periods of time. 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. By contrast, in the U.S. and the U.K. the trends in the evolution of the wage share (downwards) and the corporate financial balance (upwards) have been far less pronounced (except for the most recent period).

From Figure 3 it can be seen that the corporate financial balance was positively related to the current account balance, while there was no systematic relationship with the private household financial balance. If corporate net lending played no role for the current account, we would expect a strongly negative relationship between changes in corporate and household net lending. It is also apparent, in Figure 4, that a larger increase in top household income shares was linked to a tendency towards a decreasing current account, while a larger fall in the wage share was associated with a tendency towards an increase in the current account.

An important issue to consider before turning to the estimation analysis is the relationship between the personal and the functional distribution of income. In particular, one might ask whether an increase of personal income inequality is systematically linked to a decrease of the wage share and whether these two variables may be seen as interchangeable or complementary in the current account estimations and how the estimation results may be affected by the potential collinearity between these variables. Figure 5 plots the change in, respectively, the corporate financial balance and the private sector wage share, against the change in the top 5% income share, using four year non-overlapping averages for 1980/3-2004/7. There was no systematic relationship between changes in top household income shares and changes in the wage share or corporate net lending. However, in the most important current account deficit countries where top income shares have increased relatively strongly (U.S., U.K.), the corporate financial balance (the wage share) has increased (declined) less. By contrast, in the most important current account surplus countries, the corporate sector balance has more strongly increased and the wage share has fallen more substantially (Germany, Japan, China), while the surge in top household income shares has been relatively

minor.

Figure 6 shows coefficient estimates from regressions of top household income shares on the wage share. While the within and the between correlation between these two variables is relatively small in our sample, the time series correlation for individual countries differs considerably across the G7 economies and China. In the Anglo Saxon, or 'U-shape' countries, small decreases in the wage shares have been accompanied by large increases in top income shares, see Figure 5. By contrast, in such 'L-shape countries' as France, Germany and Japan, there has been almost no correlation between the (strongly decreasing) wage shares and the (relatively constant) top household income shares.

An economic explanation for these findings is that the explosion of top management salaries and bonuses in the Anglo Saxon countries has contributed both to the rising dispersion of household incomes and to the stabilization of the wage share. By contrast, the rising net financial savings accumulated by corporations in such countries as Germany or Japan may be seen as a consequence of the rise in profits at the expense of wages while at the same time limiting the rise in personal income inequality because corporate income is not accounted for in measures of personal inequality. The highly heterogeneous relationship between personal inequality on the one hand and the wage share and corporate net lending on the other hand, points to the necessity of considering both the personal and functional income distribution and the corporate balance as potential determinants of current account balances in the empirical analysis. This will allow us to analyze whether different patterns of income distribution are systematically related to current account surpluses or deficits.

4 Empirical analysis

4.1 Estimation strategy

Our econometric specifications build on the panel estimation literature on current account determinants, which includes amongst many others Faruqee and Debelle (1996), Chinn and Prasad (2003), Lee et al. (2008), Gruber and Kamin (2007, 2009), Chinn and Ito (2007, 2008), Ito and Chinn (2009), Phillips et al. (2013), and Chinn et al. (2014).

Our estimation strategy starts with regressing the current account on a set of standard explanatory variables plus different measures of functional and personal income distribution:

$$CA_{i,t} = \beta_0 + X_{i,t}\Gamma + \beta_1 FUNCT_{i,t} + \beta_2 INEQ_{i,t} + \varepsilon_{i,t} \tag{1}$$

where $i = 1, \ldots, N$ and $t = 1, \ldots, T$ denote the cross sectional and time dimensions, respectively.

The dependent variable $CA_{i,t}$ is the current account balance in per cent of GDP and $X_{i,t}$ is a set of standard explanatory variables that are frequently used in the literature on current account determinants, including net foreign assets, output per worker and output growth, demographics, terms of trade, private credit, and the fiscal balance. $FUNCT_{i,t}$ refers to either the corporate financial balance, $FB^{CORP}_{i,t}$, or the wage share, $WS_{i,t}$, and $INEQ_{i,t}$ refers to different measures of personal income inequality. $\varepsilon_{i,t}$ is a residual error term with zero mean.

We can inquire further into the functional chains linking income distribution and the current account by running the following regressions for the household and corporate financial balances, respectively:

$$FB^{HH}_{i,t} = \beta_0 + X_{i,t}\Gamma + \beta_1 FUNCT_{i,t} + \beta_2 INEQ_{i,t} + \varepsilon_{i,t} \tag{2}$$

$$FB^{CORP}_{i,t} = \beta_0 + X_{i,t}\Gamma + \beta_1 WS_{i,t} + \beta_2 INEQ_{i,t} + \varepsilon_{i,t} \tag{3}$$

For our purposes, focusing on the sectoral financial balances is convenient for several reasons. While the aggregate saving and investment data that are used in many current account studies are not suitable for our sectoral approach, we can exploit the fact that the sum of the financial balances of the household, corporate and government sector are by definition equal to the current account balance. We can introduce the corporate financial balance into our equations on the same level as the fiscal balance, which has been routinely used in current account regressions. If corporate net lending affects the current account, we should also expect that a rise (fall) in corporate net lending is less than fully offset by a fall (rise) in household net lending. We can also test whether a rise in inequality affects primarily the household sector, as predicted by most theories, or the corporate sector by causing an investment boom, as in Kumhof et al. (2012). Similarly, we can test whether the implications of changes in the wage share for the current account, if any, can be attributed to its effects on corporate net lending. A lower wage share may reduce corporate net lending and the current account by causing an investment boom, but it may also lead to higher corporate net lending, if investment reacts less than proportionally to the increase in corporate retained earnings. Finally, the household financial balance nests different measures of households' financial behavior that are relevant to different theories. While most models discussed in the literature review advance hypotheses about the link between inequality and saving, the expenditure cascades model refers to all kinds of household expenditure relating to positional goods, including housing. A rise in personal inequality may either increase or reduce aggregate household expenditures, with corresponding implications for the household financial balance.

We work with an unbalanced panel that includes 20 countries for which series for top income shares and wage shares were available for the period 1972-2007. The sample consists largely of advanced economies but also a few emerging economies. The following countries are included in the sample: Australia, Canada, China, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, South Africa, Spain, Sweden, Switzerland, U.K. and the U.S. Variable definitions and data sources are provided in Appendix A.

Most of the explanatory variables in the current account specifications are converted into deviations from a GDP-weighted sample mean.[3] That is, each country's variables are measured relative to a weighted average of other countries' values prevailing at the same time (see Appendix A for details). The cross-sectional demeaning accounts for the fact that a given economy's current account is by nature measured relative to other countries, so that it must be determined by both its own and its trading partners' characteristics.[4]

Since our focus is primarily on medium-term developments in current accounts, we filter the data by constructing non-overlapping four-year averages of annual observations, following Lee et al. (2008). This approach has the advantage of abstracting somewhat from current account dynamics driven by the business cycle and reducing the possibility of significant measurement error in annual data. We estimate Equations 1-3 using simple pooled ordinary least squares (OLS) applied to four-year averaged data with standard errors robust to heteroscedasticity and arbitrary forms of serial correlation. However, to test the sensitivity of our results, we also estimate the models at different frequencies.[5]

An obvious concern in our specifications is the problem of endogeneity due to potential reverse causality which yields biased and inconsistent coefficient estimates. Some of the explanatory variables such as the fiscal balance or the corporate balance are likely to be influenced by current account developments. In order to address the issue of endogeneity, Equations 1-3 are estimated with two-stage least squares (2SLS).[6] We implement a finite-sample correction of the covariance matrix estimate and correct standard errors for heteroskedasticity and arbitrary forms of serial correlation.

[3]This treatment does not apply to a few variables because it is already implicit in their definition (net foreign assets, terms of trade, own currency's share in world reserves).

[4]The estimation results are generally robust to using average foreign trade flows for the cross-sectional demeaning. For a detailed discussion on technical aspects of different demeaning procedures see de Santis et al. (2011).

[5]The estimation results are generally robust to using non-overlapping five-year averages as applied by Chinn and Prasad (2003); Chinn and Ito (2007); Gruber and Kamin (2007, 2009); Chinn et al. (2014).

[6]In the estimations with four-year averaged data, the fiscal balance is instrumented with the world fiscal balance, world GDP growth, world output gap, U.S. corporate credit spread, the polity index, the exchange rate regime, unemployment rate, and the time average of the fiscal balance. The corporate balance is instrumented with the world corporate balance, world GDP growth, world output gap, U.S. corporate credit spread, inflation volatility, stock market capitalization, stock price volatility, and the time average of the corporate balance. The first stage regression also controls for all other explanatory variables in the current account regression.

Another potential concern is the estimation bias that could arise if relevant explanatory variables explaining the cross-sectional variation in the data are not included in the specifications but are correlated with other variables. In static panel data models with unobserved heterogeneity, the fixed effects (FE) estimator provides consistent estimates when the explanatory variables are strictly exogenous. Thus, estimation results are presented for the fixed effects model. However, as noted by Chinn and Prasad (2003), including country fixed effects removes much of the cross-country variation which is problematic in the context of current account estimations since much of variation in the data stems in fact from the cross-sectional dimension.[7] Furthermore, Phillips et al. (2013) emphasize that country-specific effects may reflect the uncaptured effects of sustained distortions on current account balances.

While our preferred specifications use non-overlapping four-year averages of all variables, we also test the robustness of the results using annual data, which allows for the inclusion of a larger number of explanatory variables due to a larger sample size. For the estimations with annual observations we use pooled GLS with a panel-wide AR(1) correction to deal with autocorrelation, following Phillips et al. (2013). To mitigate endogeneity issues, we also perform estimations where the fiscal balance and the corporate balance are instrumented.[8] As a further robustness check, we add country-specific effects to the models in order to capture unobserved heterogeneity.

4.2 Results

4.2.1 Do corporate net lending and personal income distribution affect the current account?

Table 1 presents the results for different variants of Equation 1, based on pooled OLS estimation with four-year non-overlapping averages. Column 1 shows the results for a baseline model without the corporate veil and distribution variables. The set of explanatory variables is largely identical to that applied in Lee et al. (2008), but we exclude the banking crisis, Asian crisis and financial center dummies used in that study since our sample consists largely of industrialized countries.[9] Estimated coefficients are mostly statistically significant and have expected signs and plausible

[7] The variance decomposition for the data set indicates that about 45% in the sample variation of the current account balance is attributable to cross-sectional variation.

[8] In the estimations applied to annual observations, the fiscal balance is instrumented with the lagged world fiscal balance, lagged world GDP growth, lagged world output gap, lagged output gap, lagged U.S. corporate credit spread, the polity index, the exchange rate regime, lagged unemployment rate, and the time average of the fiscal balance. The corporate balance is instrumented with the lagged world corporate balance, lagged world GDP growth, lagged world output gap, lagged output gap, lagged U.S. corporate credit spread, lagged inflation volatility, lagged stock market capitalization, lagged stock price volatility, and the time average of the corporate balance. The first stage regression also controls for all other explanatory variables in the current account regression.

[9] The estimations by Lee et al. (2008) include no terms of trade and private credit variables.

magnitudes in line with previous studies (see Lee et al., 2008; Ca'Zorzi et al., 2012).

The coefficient on the fiscal balance implies that a 1 percentage point increase in the government budget balance (relative to trading partners) leads to a 0.37 percentage point increase in the current account balance in per cent of GDP. This result is broadly consistent with previous estimates, which mostly ranged between 0.2 and 0.5. A higher dependency ratio and higher population growth reduce the current account balance. Relative output per worker and relative GDP growth have no significant effect on the current account balance, as can be expected for a sample consisting mostly of developed economies where catching-up effects are small (Chinn et al., 2014). The 0.07 coefficient on initial NFA implies that an increase in NFA of 10 per cent of GDP raises the medium-term current account balance by about 0.7 per cent of GDP. The sign of the coefficient is theoretically ambiguous, but the positive sign estimated here is consistent with previous findings (Chinn and Prasad, 2003; Lee et al., 2008). The size of the coefficient is relatively large compared with that reported by Lee et al. (2008) for a sample of industrialized and emerging economies, but in line with the results by Chinn et al. (2014) for an industrialized countries sample. An improvement in the terms of trade, conditional on the degree of trade openness, raises the current account balance. An increase in the private credit-to-GDP ratio reduces the current account. This result may be interpreted as reflecting the effect of financial market depth or of financial liberalization (Kumhof et al., 2012).

When the corporate financial balance is included in the model as an additional regressor (Column 2), the adjusted R^2 increases from 0.55 to 0.72, and the root mean squared error decreases from 0.28 to 0.22. The estimated coefficient on the corporate financial balance is highly significant, and of positive sign. It implies that a 1 percentage point increase in corporate net lending (relative to trading partners) leads to a 0.5 percentage point increase in the current account. This result is consistent with incomplete piercing of the corporate veil, but also with the underconsumptionist hypothesis.

Columns 3-5 present the results for three models where different income distribution measures were added to the baseline specification, while excluding the corporate financial balance. Both the top 1% and 5% income shares and the Gini coefficient of equivalised net household income are found to be statistically significant, and in each case the fit of the model improves relative to the benchmark model in Column 1. A 1 percentage point increase of the top 5% household income share (relative to trading partners), for example, reduces the current account balance by 0.25 percentage points (Column 4). This result confirms the analysis by Kumhof et al. (2012)[10] and is also consistent with the trickle-down consumption and expenditure cascades hypotheses, but contradicts the simple Keynesian consumption function and different variants of models with

[10]The estimations by Kumhof et al. (2012) include country fixed effects.

bequests or precautionary savings.

In Columns 6-8, estimates are presented for three models including both the corporate net lending variable and one of the three personal inequality variables, respectively. In each case, both variables are highly significant and the size and magnitude of the estimated coefficients are stable throughout the different specifications. The estimates of the other coefficients are overall very similar to the baseline specification (Column 1). The fit of the model is further improved.[11]

Likelihood ratio tests (not reported) show that the differences in model fit are statistically significant, that is, the less restrictive models (the ones including either corporate net lending, personal inequality, or both) fit the data significantly better than the baseline model. Standard diagnostic tests also indicate the absence of multicollinearity problems in our estimations. We conclude that taking account of corporate net saving and personal income inequality significantly improves our understanding of the current account.

4.2.2 What are the functional chains?

While the results from Table 1 are difficult to reconcile with standard rational expectations models, we now seek to investigate further into the link between income distribution and the current account.

Columns 1-2 of Table 2 show the estimation results for two models that include alternative measures of the wage share and the top 5% income share (Equation 1).[12] Interestingly, a rise in the wage share has the opposite effect of a fall in personal income inequality, even though the effects of the wage share are somewhat smaller than the effects of personal inequality. While the estimated coefficient on the top 5% income share remains virtually unchanged compared to the previous regressions, a 1 percentage point rise in the private sector wage share (relative to trading partners) leads to a decrease of the current account of 0.11 percentage points. Similarly, a 1 percentage point increase in the manufacturing wage share reduces the current account by 0.13 percentage points (Column 2). These effects are statistically significant and reduce the root mean squared error compared to the model including only the top 5% income share (Column 4 in Table 1). These results are consistent with the underconsumptionist hypothesis (and with other models with heterogeneous households), but they cast doubt on the assumption made by Kumhof et al. (2012), that the functional distribution between 'investors' and 'workers' can be modeled empirically by focusing solely on top household income shares.

Estimation of Equations 2-3 may yield further insights into the ways in which the distribution of income affects the financing decisions of different sectors in the economy, and hence the

[11] The estimation results are robust to using the 10% top income share.

[12] The results are robust to using different measures of personal inequality.

current account. Note that the estimated coefficients are not directly comparable to those for Equation 1, because the right-hand-side variables of Equations 2-3 are not cross-sectionally demeaned. Columns 3-5 of Table 2 show estimation results for the household financial balance. According to the estimations shown in Column 1, a 1 percentage point increase in the government and corporate financial balances reduces the household financial balance by, respectively, 0.65 and 0.40 percentage points. That is, the financing decisions of the non-household sectors are not fully offset by those of the private household sector, which explains the relevance of the government and corporate net lending for the current account. A 1 percentage point increase in the top 5% household income share reduces the private household financial balance by 0.15 percentage points. As such, these results are consistent with expenditure cascades/trickle-down consumption and with the analysis by Kumhof et al. (2012). They are inconsistent with standard rational expectations models and with simple Keynesian models. Moreover, the estimated size of the effect of corporate net lending of below unity is consistent with incomplete piercing of the corporate veil. As shown in Columns 2-3, the wage share has no statistically significant effect on the household financial balance. The models shown in Columns 2-3 generally perform rather poorly.

Columns 6-7 report the estimation results for Equation 3, where the corporate financial balance is used as the dependent variable. While the model specification is likely suboptimal and most estimated coefficients are insignificant, the estimated effects of both the private sector wage share and the manufacturing wage share on corporate net lending are statistically significant and negative. Taken as such, this implies that a rise in the profit share raises corporate savings more than corporate investment, and this effect feeds through into the current account balance. The coefficient on the top household income share is negative and insignificant. Again, these findings raise doubts about the hypothesis by Kumhof et al. (2012), that a higher income share of 'investors' reduces the current account by triggering an investment boom.

Taken together, the results reported in Table 2 suggest that an increase in personal inequality leads to a decrease of the current account via its effect on the household financial balance, while a fall in the wage share leads to an increase in the current account via its effect on corporate net lending.

4.2.3 Alternative specifications

The estimations reported in Table 3 perform two sets of robustness checks. Firstly, in Columns 1-4, results of two-stage least squares (2SLS) estimations are shown with instrumented fiscal and corporate financial balances. The results are largely robust to the instrumental variable approach throughout the different models.

Columns 5-8 report estimation results with country fixed effects. In the literature, there is

no consensus as to whether fixed effects should be added to estimations of current account determinants. Our pooled estimations include no country-specific constants and therefore use the variables in the regression to explain both the between- and within-country variation in the data. Including country fixed effects has the advantage of controlling for unobserved, time-invariant characteristics such as country-specific saving norms. All our main conclusions that were made on the basis of the pooled models remain qualitatively unchanged. Compared with the results of the pooled estimation, the fixed effect estimates have the same signs but somewhat different magnitudes. While the estimated effects of the terms of trade and the private credit-to-GDP ratio are very similar in sign, the estimates for the initial net foreign assets and for population growth are somewhat smaller. On the other hand, the coefficients on the fiscal balance and the old-age dependency ratio are larger in the fixed effects estimations. This suggests that the impacts of these variables on the current account may be weakened by time-invariant country-specific factors (such as a different retirement age across countries) and hence these variables have larger effects in the time-series dimension which is mainly captured by the fixed effects models. Note that these differences in the estimated coefficients in our fixed effects and pooled models confirm the results by Lee et al. (2008).

Interestingly, the estimated effects of corporate net lending, the wage share, and top household income shares are considerably larger in absolute terms in the fixed effects models than in the pooled models. In the current account estimation reported in Column 5, the estimated coefficient of the corporate financial balance is 0.71, and that of the top 5% income share is -0.35, against the estimates from the pooled model of, respectively, 0.50 and -0.21 (Table 1, Column 7). The estimates for the private sector and manufacturing wage shares are as large as -0.41 and -0.43, respectively, in the fixed effects model (Table 3, Column 6), against -0.11 and -0.13, respectively, in the pooled model (Table 2, Column 1).

One explanation for the larger effect of the functional distribution in the fixed effects estimations is that the time-average of the private sector wage share differs considerably across countries, reflecting long-term differences in the industrial structure across countries. To take an example, the private sector wage share was higher in Japan than in the U.S. throughout the entire sample period, but while it remained relatively stable over time in the U.S., it decreased by more than 20 percentage points in Japan from the late 1970s to the mid-2000s (Figure 2). The fixed effects estimations are thus better suited than the pooled models to reflect the negative time-series correlation between the wage share and the corporate financial balance (and hence the current account) (see Columns 6 and 8 of Table 3).

Similarly, top household income shares increased strongly in such countries as Italy or the U.K., but starting from low levels compared to other countries (Figure 2). For example, the time

average of top household income shares as defined by the WTID is relatively high in Germany due to a large number of unincorporated businesses which are subject to the personal income tax. Here, it can be argued that the fixed effects models are better suited than the pooled models to account for the negative time-series correlation between the top income shares and the household financial balance (and hence the current account) (see Columns 5, 6 and 7 of Table 3). At the conceptual level, expenditure cascades/trickle-down consumption effects are likely more pronounced in countries with more consumerist social norms, easier credit access for households and a weaker precautionary saving motive. For example, the Anglo-Saxon countries have more consumerist social norms and institutions than Germany (see Belabed et al., 2013). To the extent that the fixed effects models control for such long-lasting country-specific norms and institutions, the explanatory power of personal inequality for the private household and current account balances increases.

4.2.4 A larger model with annual data

We also estimate a larger model based on annual observations. Phillips et al. (2013) recommend using pooled GLS with a panel-wide AR(1) correction. Even though they acknowledge that current account data display strong autocorrelation, they do not address the issue of non-stationarity. Similarly, Lee et al. (2008) argue that cointegration methods are not appropriate because the current account balance (in per cent of GDP) is a stationary series in most countries during most sample periods. Moreover, under certain conditions the current account needs to be stationary for the intertemporal budget constraint to hold (Taylor, 2002). In our sample, which ends in 2007 and hence, contrary to Phillips et al. (2013), does not include post-crisis re-balancing, augmented Dickey-Fuller tests indicate that unit roots may be present in the current account balances of a number of countries, even though the results are highly sensitive to the sample period. We do not pursue the issue of non-stationarity further, but suggest that the estimation results based on annual data be treated with caution.

Tables 4-5 show the results for the estimations based on annual data.[13] The estimations in Table 4 are based on pooled models. In the estimations reported in Columns 1-6 of Table 5, the government and corporate balance were instrumented (Columns 5-8), and Columns 7-12 of Table 5 show the results of models estimated with fixed effects. Compared with the previous estimations, additional regressors include the output gap, an interaction term between relative output per worker and capital openness, and an interaction term allowing for a non-linear relationship between the

[13]The choice of variables largely follows Phillips et al. (2013), but we leave out a number of variables that are relevant primarily for developing countries or that turned out to be insignificant.

initial net foreign asset position and the current account.[14] and reserve currency status. We use lagged variables in those cases where simultaneity bias may be expected. For output growth and the wage share, we construct trend variables to abstract from merely cyclical variations.

The estimations based on annual data yield overall very similar results to the estimations based on multi-year averages. The effects of the corporate balance and distribution variables are largely robust to instrumentation as well as to fixed effects estimation.

4.2.5 The contribution of income distribution to the current account imbalances

Figure 7 shows the estimated contributions of all explanatory variables to the current account balances of Canada, China, France, Germany, Italy, the U.K., Japan and the U.S., based on two different models. The graphs on the left-hand side of Figure 7 are based on the model estimates reported in Column 6 of Table 1. This model includes corporate net lending and the top 1% income share. The model accounts for large parts of the pre-crisis current account balances of the main deficit and surplus countries, *i.e.*, the U.S. (estimated current account of -4.3 per cent of GDP, against an actual current account balance of -5.6 per cent of GDP in 2004/7), the U.K. (-4.3 against -2.6), Germany (2.8 against 5.9), Japan (6.0 against 4.0) and China (2.1 against 2.0 in 2000/3). As can be seen in the Figure, the contributions of corporate net lending and top income shares to the current account balances are considerable for a number of countries.

In some cases, the contributions of personal and functional distribution (the corporate balance) point in opposite directions (Canada, 2000/3; China; U.K., 2000/3), in others the effects of the different distributional variables reinforce each other (Germany, 2004/7; Japan since 1996/9). The importance of top income shares for the current account is most clearly visible for the U.S. The estimated effects of the corporate balance are strongest in the surplus countries Canada, China, Germany and Japan. Taken together, changes in corporate net lending and top income shares account for -1.0 percentage points of the estimated total change in the current account balance of -4.1 percentage points for the U.S. For Germany and Japan, the respective numbers are +1.8 against +3.9 and +4.4 against +3.6 percentage points. For China, changes in corporate net lending and income inequality account for 3.3 percentage points of an estimated total increase of the current account of 3.6 percentage points for the period 1992/5-2000/3.

The graphs on the right-hand side of Figure 7 are based on the model estimates reported in Column 8 of Table 1. This model includes corporate net lending and the Gini coefficient. Although both models perform similarly well in terms of goodness of fit, it is instructive to compare the relative ability of the two models to account for the national account positions of specific coun-

[14] Catão and Milesi-Ferretti (2014) suggest that crisis probabilities increase when the net foreign debt is above 60 per cent of GDP.

tries. For the U.S., the estimated contribution of the top 1% income share on the current account has been negative and increasingly large since the early 1980s. This translates into an estimated current account deficit of 4.3 per cent, with a contribution of the top 1% income share of -1.2 percentage points. By contrast, the estimated contribution of the Gini coefficient has been considerably smaller (0.1 percentage points of GDP in 2004/7). The model including the Gini coefficient (Column 8 of Table 1) therefore performs considerably worse than that including top 1% income share (Column 6 of Table 1) in predicting the current account balance of the U.S. specifically. The estimated current account balance for 2004/7 is only -3.5 per cent of GDP in the model including the Gini coefficient. As such, this observation may be interpreted as being consistent with the expenditure cascades, or trickle-down consumption hypothesis, which predicts that the negative effect of rising inequality on saving will be the more pronounced, the further a shift in inequality occurs towards the top of the income distribution (Frank et al., 2014). Clearly, the expenditure cascades model appears to be especially relevant to the U.S.[15] The Gini coefficient, which is relatively insensitive to changes at the tails of the distribution, is not well suited to capture trends in top-end income inequality and the expenditure cascades that may result from upward-looking status comparisons.

In the case of China, the model including the top 1% income share also performs better than that including the Gini coefficient. Firstly, the level of the top 1% income share unlike that of the Gini coefficient is small relative to China's trading partners. This translates into an estimated positive (negative) contribution of the top 1% income share (the Gini coefficient) to the current account balance throughout the estimation period. Moreover, whereas the Gini coefficient increased strongly throughout the estimation period, the top 1% income share remained roughly constant (both relative to trading partners). That is, although overall income inequality, as captured by the Gini coefficient, increased strongly in China, the rise in top-end inequality remained relatively subdued, while corporate net lending improved. In terms of the expenditure cascades model, this may have limited the imitation effects at the top of the income distribution.

For Germany, the two models also produce somewhat different results. From a time series perspective, the model including the top 1% income share translates the decrease of the top 1% income share in Germany, relative to trading partners, into an estimated positive contribution to the improvement of Germany's current account. Again, this finding is consistent with the expenditure cascades models, which predicts that the effects of inequality on household net lending and the current account stem primarily from changes at the top of the income distribution. However, from

[15] Saez and Zucman (2014) report saving rates for different percentiles in the U.S. wealth distribution, which suggest that the decrease of the aggregate U.S. household saving rate was driven largely by the decrease in the saving rates of the top 10 to 1% of the wealth distribution.

a cross-section perspective, the model including the Gini coefficient translates the relatively low level of the Gini coefficient into an estimated positive contribution to the current account balance throughout the estimation period. By contrast, the model including the top 1% income share tends to underestimate Germany's current account. As noted above, this result may be due to the inability of the model to take into account country-specific characteristics, such as the relatively large number of unincorporated businesses that may explain the relatively high level of the top 1% income share in Germany.

The observation that corporate net lending and income inequality are important determinants of current account balances is confirmed by the estimation of so-called beta coefficients for the estimation originally shown in Table 1. Beta coefficients show by how many standard deviations the dependent variable, *i.e.*, current account balances should move if one of the explanatory variable moves by one standard deviation, *ceteris paribus*. Compared with the other explanatory variables, corporate net lending and personal income inequality are found to have a strong influence on the variation of current account balances.[16]

5 Conclusions

In this paper, we have analyzed the link between income distribution and the current account. Our results suggest the following conclusions: Firstly, rising personal inequality leads to a decrease of the private household financial balance and the current account, *ceteris paribus*. This finding is consistent with the notions of trickle-down consumption and expenditure cascades. Secondly, an increase in the corporate financial balance leads to an increase in the current account, *ceteris paribus*, because it is less than fully offset by lower household net lending. A possible explanation of this finding is that consumers do not fully pierce the corporate veil. An alternative explanation is that the owners of corporations decided to raise their financial savings within firms, in reaction to higher profits. This underconsumptionist explanation is consistent with our finding of a negative effect of a rise in the wage share on both the corporate financial balance and the current account. Thirdly, the combined effect of corporate net lending and personal income distribution account for a substantial fraction of the global current account imbalances observed prior to the Great Recession.

In the U.S. and in the U.K., strongly rising top-end household income inequality appears to have contributed to the decrease in household net lending and the current account. In Germany, Japan and China, top-end household income inequality has increased far less, but the share of

[16]The beta coefficients for the model underlying Column 6 in Table 1 are as follows. Net foreign assets: 0.56, relative income: 0.05, output growth: 0.03, dependency ratio: -0.32, population growth: -0.30, terms of trade: 0.09, private credit: -0.26, fiscal balance: 0.31, corporate balance: 0.38, top 1% income share: -0.18.

income accruing to the corporate sector has much more strongly increased than in the Anglo Saxon countries. According to our estimations, this has weakened aggregate demand and contributed to the current account surpluses of these countries.

Taken at face value, our results suggest that if firms in Germany, Japan or China had decided not to raise their profits retained within firms but to pay higher incomes to top-income households and if this had been translated into higher consumption spending by top-income households, then this may have triggered pronounced expenditure cascades/trickle-down consumption in these countries as well. However, a more comprehensive analysis of the country-specific effects of changes in income distribution would need to take account of differences in social norms and institutions. In such countries as the U.S. and the U.K., expenditure cascades may have been corroborated by easy credit access for households and consumerist social norms. In countries like Germany, Japan or China, imitation effects may have been smaller because high-income households either failed to pierce the corporate veil or actively decided, as owners of the corporate sector, to keep a higher share of their rising incomes as savings within firms. In addition, bank lending standards and social norms towards household debt may be more conservative in these countries. While such country-specific norms and institutions may be partly captured by country fixed effects in our estimations,[17] additional research is required to analyze the macroeconomic effects of income distribution in different institutional contexts (see Belabed et al., 2013; Grüning et al., 2015).

In their analysis of current account determinants, Ca'Zorzi et al. (2012) conclude that "[...] (p)rior to the financial crisis, current account positions of major economies such as the US, UK, Japan and China were not aligned with fundamentals." While our results suggest that shifts in income distribution have significant explanatory power for current account balances, they certainly do not imply that current accounts were in 'equilibrium' or 'aligned with fundamentals'.[18] Our results imply that when inequality increases permanently, for example, this causes the current account to deteriorate so that the long-run national budget constraint may be violated. Hence, the estimated effects of changes in income distribution are best thought of as partial equilibrium effects and global re-balancing will require adjustments to take place either in the distribution of income, or via the exchange rate channel. In this sense, our results are evidence that country-specific shifts in the distribution of income over time have contributed to the rising instability of the international economic system.

[17] This conjecture is consistent with our finding that the estimated effects of the distributional variables are larger in absolute value when Equations 1-3 are estimated with country fixed effects.

[18] Osberg (2014, p. 30) suggests that "from a macro-economic perspective, an ever increasing income share of the top 1% cannot be a steady state. [...] an imbalance in income growth rates compounds into rising stocks of financial wealth at the top and greater stocks of indebtedness elsewhere. Financial fragility then increases the odds of financial crises, with potentially big impacts on real economic activity."

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A Description of data

A.1 Variable definitions and data sources

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 per cent of GDP. Data for the current account balance are taken from the World Development Indicators (WDI) database provided by the World Bank (December 2012 version).

Net foreign assets: Net foreign assets are measured as total assets minus total liabilities in per cent of GDP. In order to capture possible nonlinearities in the relationship between the current account and the net foreign asset position, we include an interaction term to allow for a different slope when the net foreign asset position is below negative 60 per cent of GDP. Data are taken from the updated and extended version of the External Wealth of Nations Mark II database developed by Lane and Milesi-Ferretti (2007).

Output per worker, relative to top 3 economies: To measure a country's relative stage of economic development, we take the ratio of PPP converted GDP to working age population relative to the average productivity of three large economies (Germany, Japan, and the U.S.). We use real GDP at chained PPPs in constant 2005 U.S. Dollars from the Penn World Table (PWT, version 8.0) provided by Feenstra et al. (Forthcoming). Data on working age population are taken from the World Development Indicators (WDI) database (December 2014 version). Relative output per worker is also interacted with an indicator for capital account openness. The degree of a country's capital account openness is measured by the capital controls index developed by Quinn (1997) and Quinn and Toyoda (2008). This index measures the magnitude of capital account liberalization and is scaled between 0 (no capital controls) and 1 (full capital controls).

Output growth: We use real GDP growth in order to capture heterogeneity in the growth performance among countries. Data are taken from the World Development Indicators (WDI) database (December 2014 version).

Demographics: Demographic developments are proxied by the old-age dependency ratio, which is constructed as the ratio of the population older than 65 years to the population between 14 and 65, and population growth. Data are taken from the World Development Indicators (WDI) database (December 2014 version).

Reserve currency status: We use the share of a country's own currency in the total stock of world reserves as a proxy for the so-called 'exorbitant privilege' of reserve currency countries. Data are taken from the External Balance Assessment (EBA) Methodology developed by Phillips et al. (2013). For the period 1972-1985 we use the latest available country-specific observation which is provided by the EBA dataset.

Output gap: The output gap is measured by the Hodrick-Prescott filter (Hodrick and Prescott 1997) based on data over the period 1970-2011. This procedure removes the cyclical component from the long-term trend GDP. The smoothing parameter lambda is set to 6.25, as recommended for annual data in the literature (e.g. Ravn and Uhlig, 2002). Data are in constant 2005 U.S. Dollars and taken from the Penn World Table (PWT, version 8.0) provided by Feenstra et al. (Forthcoming).

Terms of trade gap: The terms of trade are defined as the ratio of an index of export prices to an index of import prices. We employ data from the National accounts statistics provided by the OECD. For China, we use data from the World Development Indicators (WDI) database. The terms of trade gap is then measured by the Hodrick-Prescott filter based on data over the period 1970-2014. The smoothing parameter lambda is set to 6.25. The resulting terms of trade gap series is then interacted with an indicator of a country's trade openness. Trade openness is measured as the sum of exports and imports of goods and services in per cent of GDP. Data are taken from the World Development Indicators (WDI) database (December 2014 version).

Private credit: We use private credit by deposit money banks and other financial institutions in per cent of GDP as a proxy for both "financial excesses" and financial development. The variable measures the deviation from a country's current level of credit provided to households and non-financial corporations from its own historical average. Data are taken from the Global Financial Development Database (GFDD) from the World Bank (November 2013 version). For China, Germany, and the U.K., data on private credit by deposit money banks and other financial institutions are only available since 1987, 1992, and 1889, respectively. For these countries, we therefore complement the series with data on domestic credit provided to the private sector, also taken from the GFDD. The series are similar in terms of level and dynamics with correlations coefficients ranging between 0.978 (CHN) and 0.993 (GBR).

Fiscal balance: The fiscal balance is defined as total general government revenue minus total general government expenditures in per cent of GDP. We employ several sources for the fiscal

balance. Our primary source is the Economic Outlook database (No. 96, November 2014) from the OECD. As the AMECO database of the European Commission and the World Economic Outlook (WEO) database from the IMF provide longer series for several countries, we complement the OECD series with data from these alternative sources. For France and Germany, we use series from the AMECO database. For Australia, China and Ireland, we employ data from the WEO database.

Corporate and household balance: The sectoral financial balances are defined as gross saving minus gross capital formation and other capital expenditures. Our primary source for the sectoral financial balances is the AMECO database of the European Commission. However, as the AMECO database does not provide data for several countries of interest, we complement the AMECO series with data from alternative sources. For Australia, Canada, Ireland, New Zealand and South Africa, we use data from the National accounts statistics provided by the OECD. For China, we use data from the National Bureau of Statistics (NBS).

Wage share: We use the adjusted wage share of the manufacturing sector and an adjusted wage share of the private sector to proxy the functional income distribution. The adjusted wage share of the manufacturing industry is defined as compensation per employees as percentage of nominal gross value added per person employed. Data are taken from the AMECO database of the European Commission. The construction of the adjusted private sector wage is based on the adjusted wage of the total economy as percentage of GDP at current factor cost and is also provided by the AMECO database. For China, we use data from Bai and Qian (2010). Since the wage share of the total economy is the sum of the private sector wage share and the government wage share weighted by their respective sizes, we use final consumption expenditure by the general government in per cent of GDP as a measure for the size of the government sector. Data for final consumption expenditure of general government are taken from the National accounts statistics from the OECD.

Top income shares: As proxies for income inequality we use different top income shares taken from the World Top Incomes Database (WTID). These data are collected from personal income tax returns following the methodology outlined in Piketty (2003). Income reported is typically gross total income and includes labor, business and capital income (and in a few cases also realized capital gains) before taxes and transfers. Due to data availability issues, the series on top 10% income shares from the WTID are complemented by series from the World Development Indicators (WDI) database (December 2014 version) for China and South Africa.

Gini coefficient: As an alternative measure of income inequality we use the Gini coefficient of equivalized disposable household income (after taxes and transfers) of the Standardized Income Inequality Database (SWIID, version 5.0). The SWIID dataset provides internationally comparable estimates of Gini coefficients for 174 countries over the period 1960-2013. For a detailed description of the dataset, see Solt (2014).

A.2 Demeaning of explanatory variables

Since national current account balances are influenced by both domestic and foreign economic conditions, most explanatory variables are converted into deviations from a weighted sample mean. The sample mean is calculated across all countries for which data are available for a given time period. Country-specific weighted averages of foreign variables are then constructed as follows:

$$\widetilde{X}_{i,t} = X_{i,t} - \frac{\sum_{i=1}^{J} (W_{i,t} * X_{i,t})}{\sum_{i=1}^{J} W_{i,t}} \tag{4}$$

where $X_{i,t}$ denotes the observation of the respective explanatory variable for country i and time period t, and $W_{i,t}$ stands for the weighting variable. For country-specific GDP weights we use data from version 8.0 of the Penn World Table (PWT) provided by Feenstra et al. (Forthcoming). Since calculating the cross-country average might cause jumps in the data in time periods where a large country is added to the list, we also use average foreign trade flows over the period 2000-2007 to compute country-specific weighted averages of foreign variables as a robustness check. Data on bilateral trade are taken from the IMF Direction of Trade Statistics (DOTS) database.

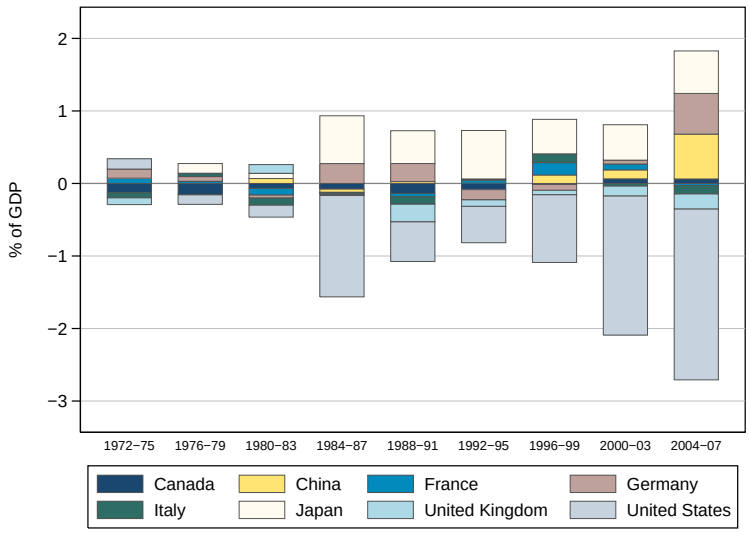
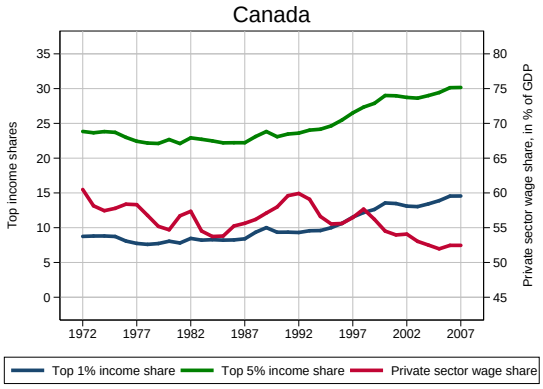
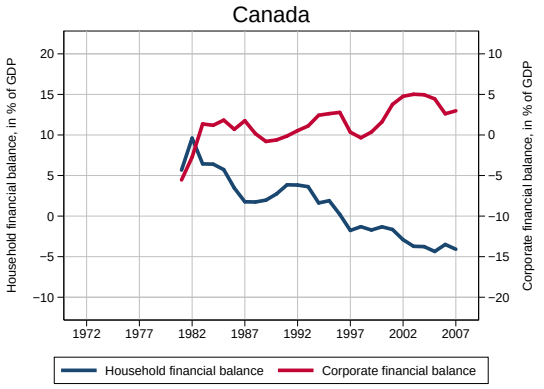
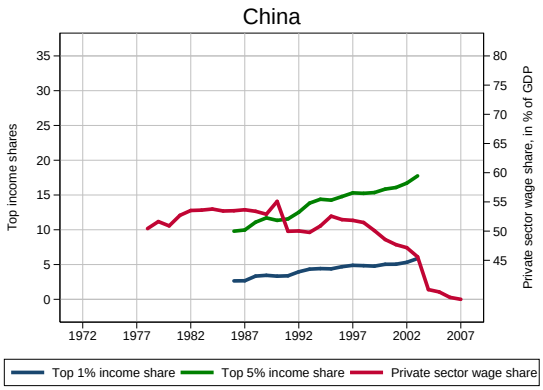
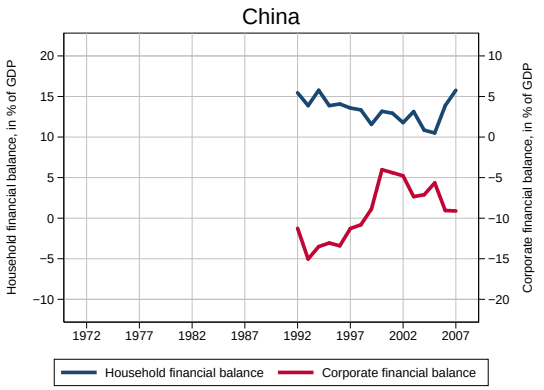


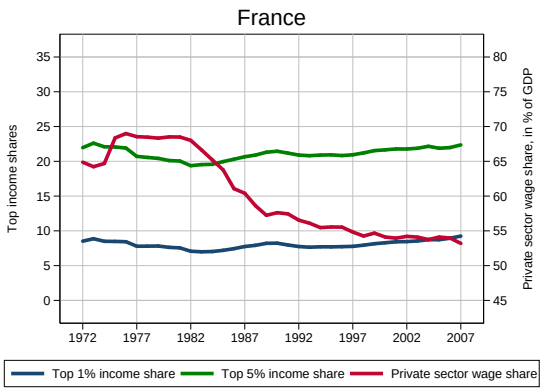
Figure 1: Current account balances, G7 and China, 1972-2007

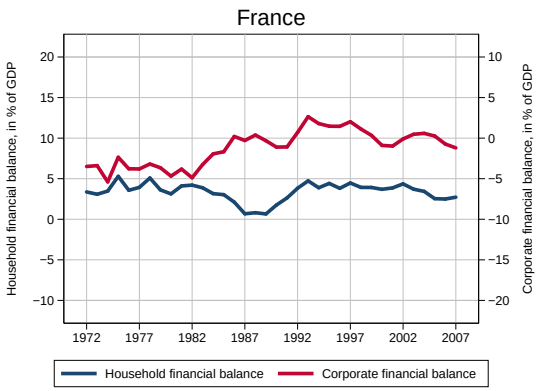

Canada
Top income shares
Private sector wage share, in % of GDP
Top 1% income share
Top 5% income share
Private sector wage share

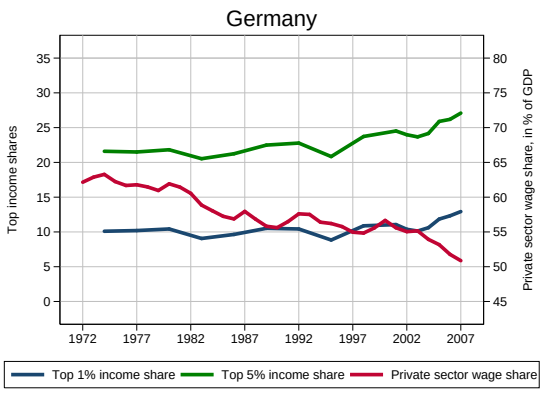

Canada
Household financial balance, in % of GDP
Corporate financial balance, in % of GDP
Household financial balance
Corporate financial balance

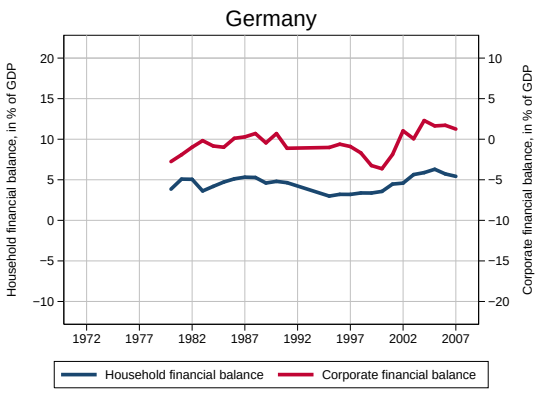

China
Top income shares
Private sector wage share, in % of GDP
Top 1% income share
Top 5% income share
Private sector wage share


China
Household financial balance, in % of GDP
Corporate financial balance, in % of GDP
Household financial balance
Corporate financial balance


France
Top income shares
Private sector wage share, in % of GDP
Top 1% income share
Top 5% income share
Private sector wage share


France
Household financial balance, in % of GDP
Corporate financial balance, in % of GDP
Household financial balance
Corporate financial balance


Germany
Top income shares
Private sector wage share, in % of GDP
Top 1% income share
Top 5% income share
Private sector wage share


Germany
Household financial balance, in % of GDP
Corporate financial balance, in % of GDP
Household financial balance
Corporate financial balance

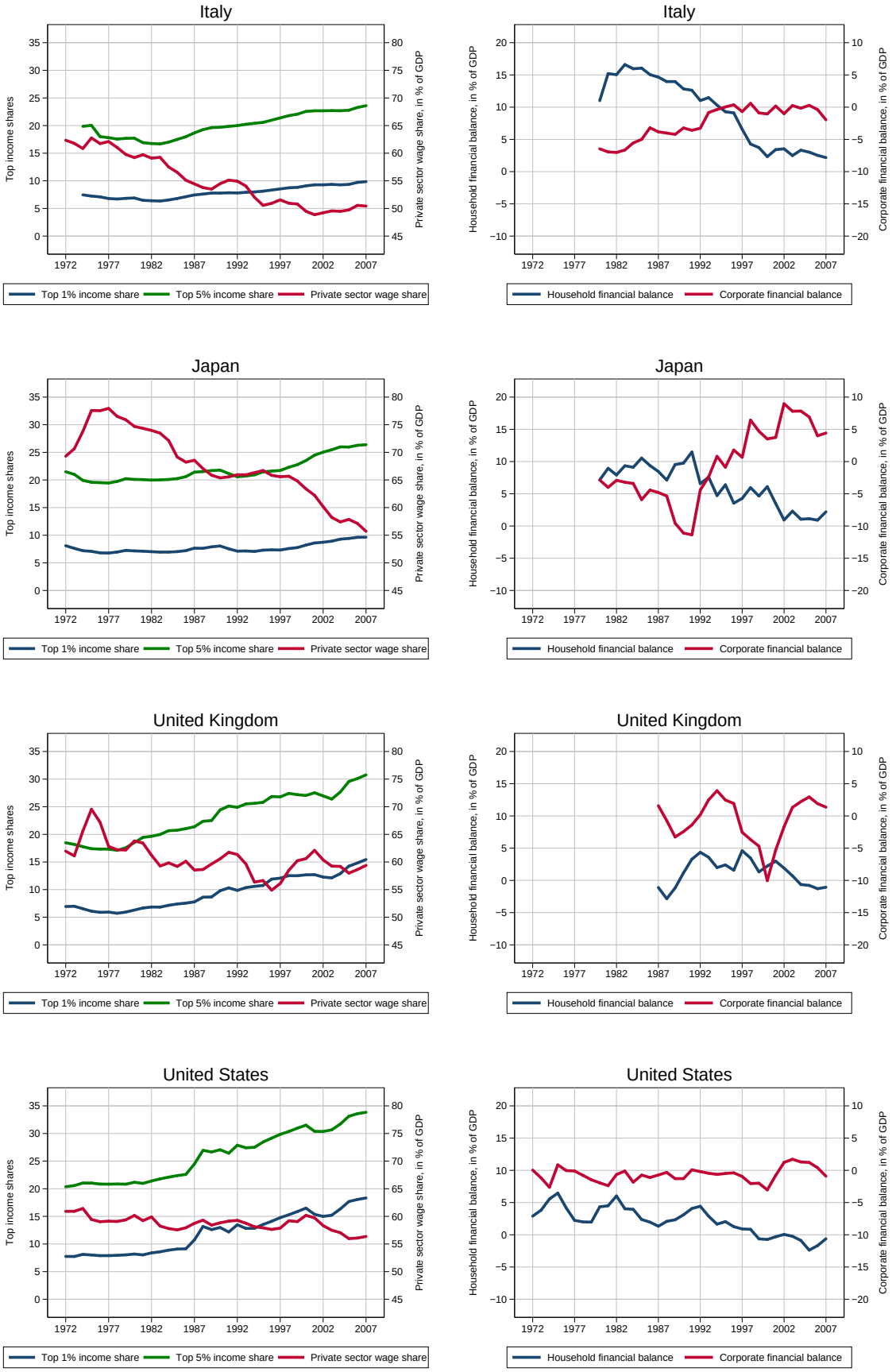
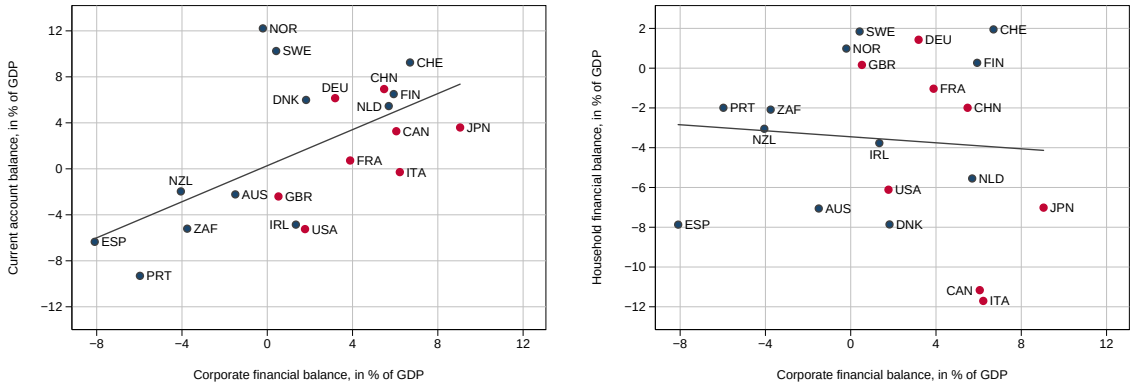
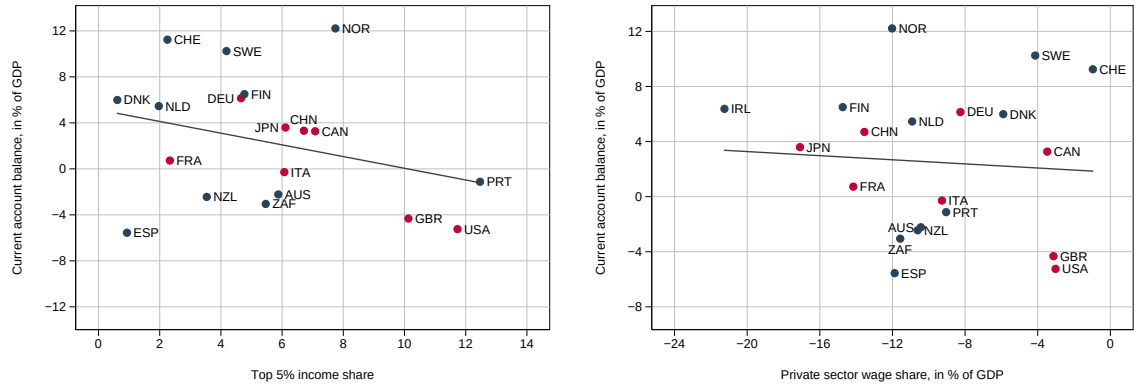


Figure 2: Income distribution and sectoral financial balances, G7 and China, 1972-2007



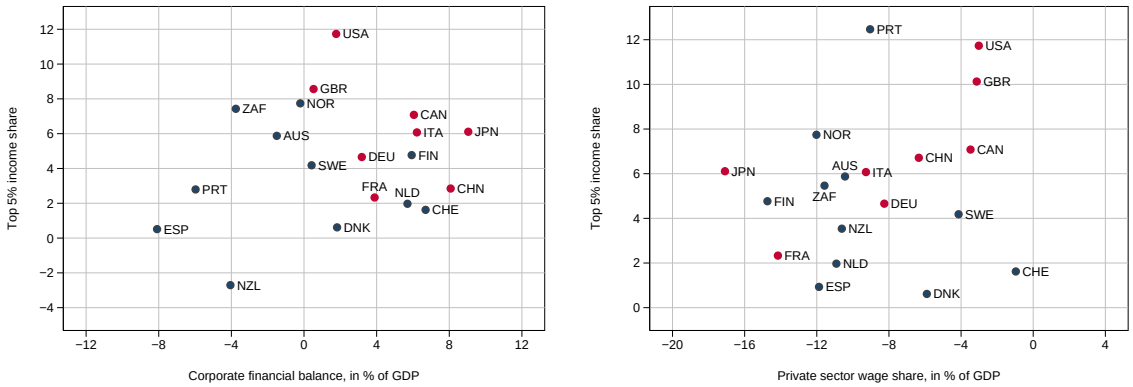
Note: The figure shows the change in the corporate financial balance in % of GDP (horizontal axis) against respectively the change in the current account balance in % of GDP and the private household financial balance in % of GDP (vertical axis), 1980/3-2004/7 (four-year averages). For the U.K. changes are shown for the periods 1984/7-2004/7. For China changes are shown for the periods 1992/5-2000/3. For all other countries, changes are calculated for the period 1980/3-2004/7 or for the longest available time span within this period.

Figure 3: Sectoral financial balances and current account balances



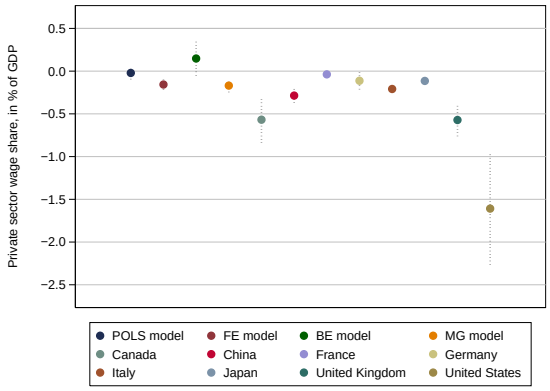
Note: The figure shows the change in, respectively, the top 5% household income share and the private sector wage share corporate (horizontal axis) against the change in the current account balance in % of GDP (vertical axis), 1980/3-2004/7 (four-year averages). For China changes are shown for the periods 1984/7-2000/3 (top income shares) and 1980/3-2004/7 (private wage share), respectively. For all other countries, changes are calculated for the period 1980/3-2004/7 or for the longest available time span within this period.

Figure 4: Income distribution and current account balances



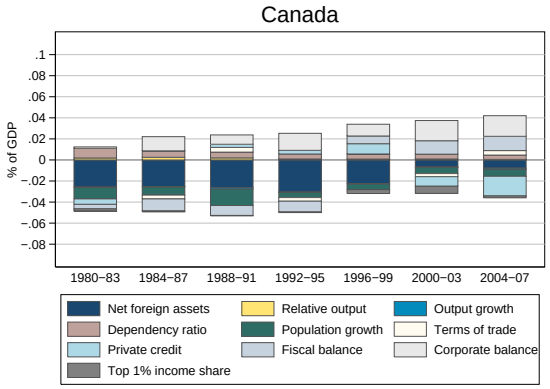
Note: The figure shows the change in, respectively, the corporate financial balance in % of GDP and the private sector wage share (horizontal axis) against the change in the top 5% household income share (vertical axis). For the U.K. changes are shown for the periods 1984/7-2004/7 (corporate balance) and 1980/3-2004/7 (private wage share). For China changes are shown for the periods 1992/5-2000/3 (corporate balance) and 1984/7-2000/3 (private wage share). For all other countries, changes are calculated for the period 1980/3-2004/7 or for the longest available time span within this period.

Figure 5: Top income shares and functional income distribution



Note: The figure shows coefficients and 95% confidence intervals of regressions of the top 1% income share on the private sector wage share for the period 1972-2007. "POLS model" indicates that the regression is estimated by pooled ordinary least squares with robust standard errors, "FE model" denotes a fixed effects estimator with robust standard errors, "BE model" denotes a between effects estimator and "MG model" refers to the mean-group estimator developed by Pesaran and Smith (1995). The other coefficient estimates refer to country-specific regressions.

Figure 6: Top income shares and functional income distribution: regression coefficients


Canada
% of GDP
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1980−83
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1996−99
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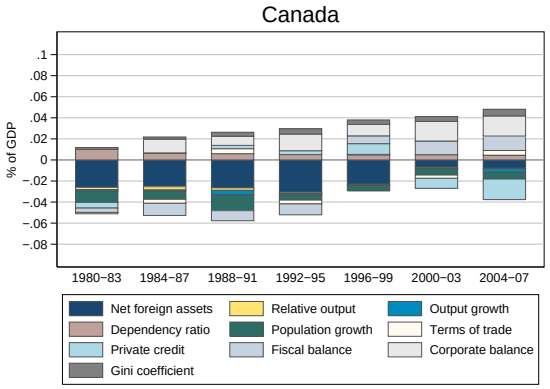
2004−07
Net foreign assets
Dependency ratio
Private credit
Top 1% income share
Relative output
Population growth
Fiscal balance
Output growth
Terms of trade
Corporate balance


Canada
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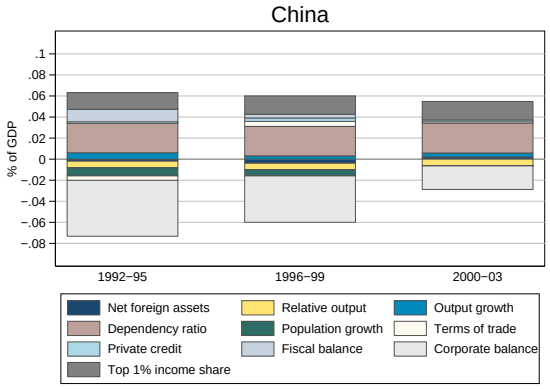
Private credit
Gini coefficient
Relative output
Population growth
Fiscal balance
Output growth
Terms of trade
Corporate balance


China
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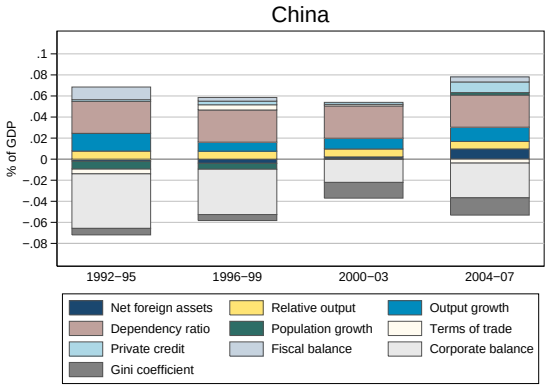
Private credit
Top 1% income share
Relative output
Population growth
Fiscal balance
Output growth
Terms of trade
Corporate balance


China
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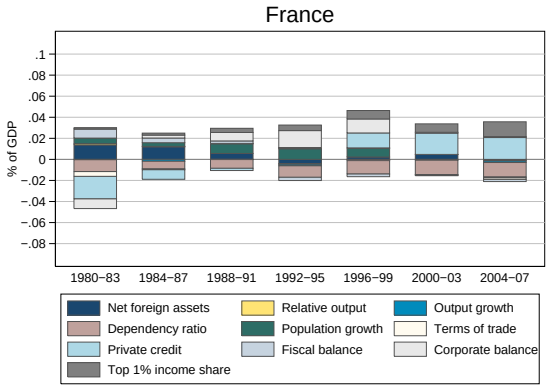
Terms of trade
Corporate balance


France
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Private credit
Top 1% income share
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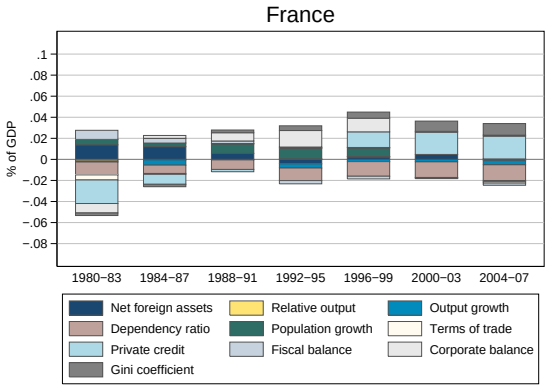
Population growth
Fiscal balance
Output growth
Terms of trade
Corporate balance


France
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Population growth
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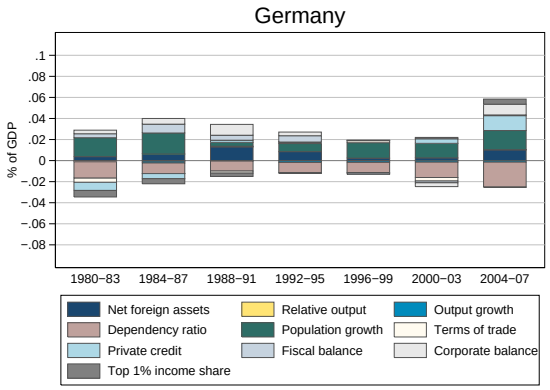
Terms of trade
Corporate balance


Germany
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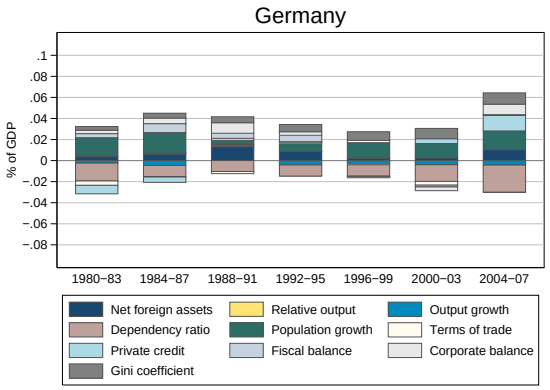
1980−83
1984−87
1988−91
1992−95
1996−99
2000−03
2004−07
Net foreign assets
Dependency ratio
Private credit
Top 1% income share
Relative output
Population growth
Fiscal balance
Output growth
Terms of trade
Corporate balance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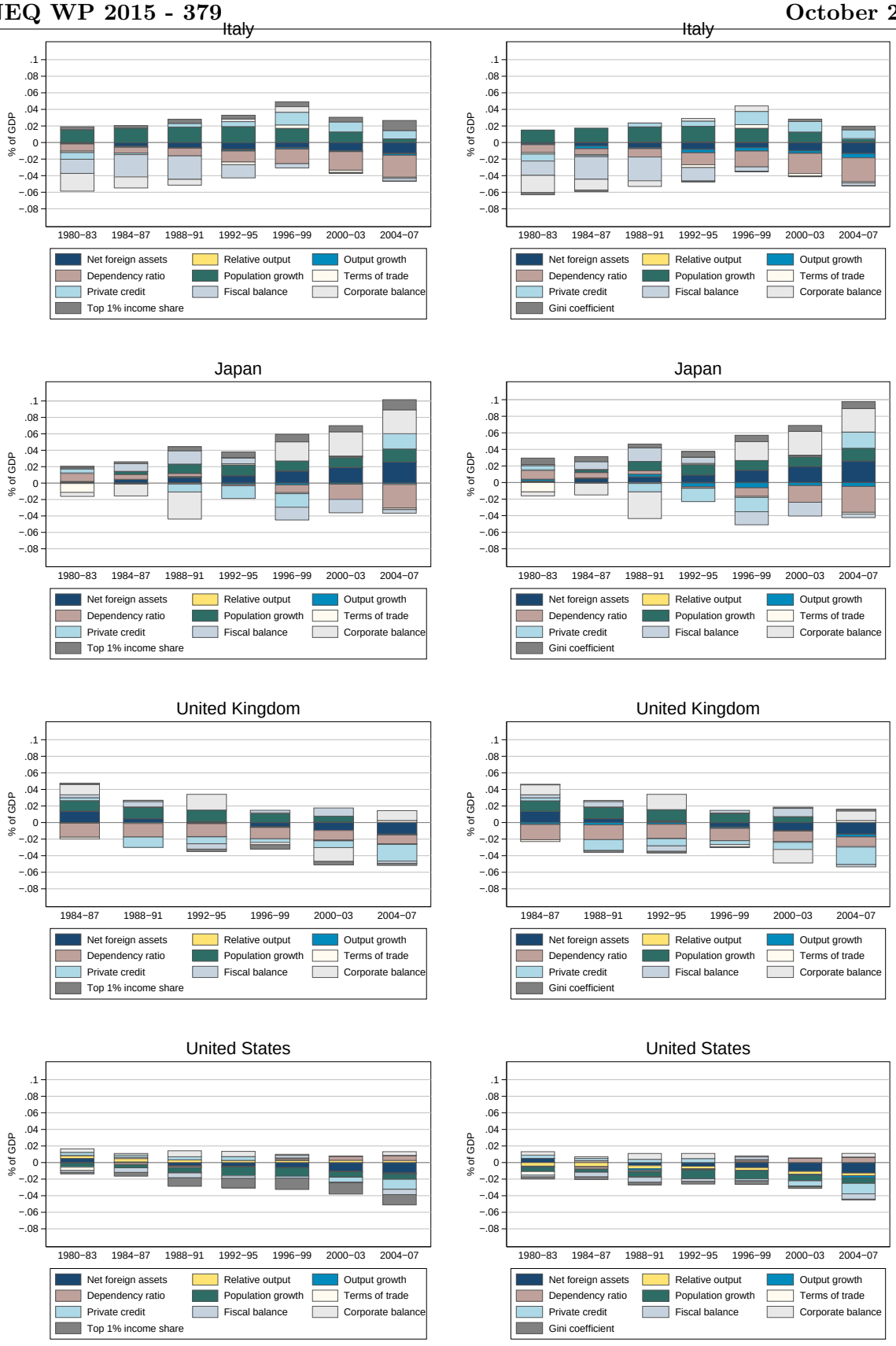
Net foreign assets
Dependency ratio
Private credit
Gini coefficient
Relative output
Population growth
Fiscal balance
Output growth
Terms of trade
Corporate balance



Note: The figure shows the estimated contribution of the explanatory variables to the current account for the period 1980/3-2004/7 (four-year averages). For the U.K. results are shown for the periods 1984/7-2004/7 (Top income share and Gini coefficient). For China results are shown for the periods 1992/5-2000/3 (top income share) and 1992/5-2004/7 (Gini coefficient).

Figure 7: Contribution analysis for national current accounts, 1980/83-2004/7, G7 and China

Table 1: Pooled OLS, non-overlapping four-year averages, 1972-2007

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Regressors	*CA*	*CA*	*CA*	*CA*	*CA*	*CA*	*CA*	*CA*
Net foreign assets (% of GDP)	0.073***	0.066***	0.076***	0.075***	0.076***	0.068***	0.068***	0.069***
	(0.010)	(0.008)	(0.010)	(0.010)	(0.008)	(0.009)	(0.009)	(0.008)
Output per worker (rel. to top 3 economies)	-0.001	-0.003	0.010	0.006	-0.009	0.008	0.003	-0.010
	(0.010)	(0.011)	(0.011)	(0.010)	(0.009)	(0.009)	(0.008)	(0.010)
Output growth	-0.198	0.215	-0.273	-0.401*	-0.193	0.065	0.108	0.178
	(0.168)	(0.192)	(0.191)	(0.219)	(0.188)	(0.150)	(0.146)	(0.190)
Dependency ratio	-0.190	-0.233**	-0.249**	-0.277**	-0.307**	-0.287***	-0.291***	-0.313***
	(0.121)	(0.090)	(0.109)	(0.114)	(0.116)	(0.079)	(0.079)	(0.083)
Population growth	-1.960**	-2.671***	-1.873**	-1.904**	-1.773**	-2.424***	-2.238**	-2.380***
	(0.716)	(0.716)	(0.661)	(0.712)	(0.750)	(0.688)	(0.817)	(0.718)
Terms of trade gap*Trade openness	0.692**	0.792**	0.734**	0.598*	0.780**	0.801**	0.837**	0.844**
	(0.300)	(0.374)	(0.288)	(0.288)	(0.298)	(0.381)	(0.337)	(0.368)
Private credit (% of GDP)	-0.067**	-0.060***	-0.061**	-0.062**	-0.062**	-0.058***	-0.056***	-0.060***
	(0.024)	(0.021)	(0.024)	(0.025)	(0.024)	(0.019)	(0.019)	(0.020)
Fiscal balance (% of GDP)	0.374***	0.431***	0.282***	0.279***	0.261**	0.357***	0.353***	0.361***
	(0.082)	(0.095)	(0.087)	(0.079)	(0.101)	(0.090)	(0.087)	(0.096)
Corporate balance (% of GDP)	-	0.503***	-	-	-	0.465***	0.499***	0.454***
		(0.121)				(0.120)	(0.122)	(0.127)
Top 1% income share	-	-	-0.373**	-	-	-0.305***	-	-
			(0.149)			(0.094)		
Top 5% income share	-	-	-	-0.253**	-	-	-0.213***	-
				(0.093)			(0.061)	
Gini coefficient	-	-	-	-	-0.187**	-	-	-0.125**
					(0.069)			(0.045)
Observations	162	128	158	151	162	127	124	128
Countries	20	20	20	20	20	20	20	20
Adjusted $R-squared$	0.548	0.724	0.579	0.578	0.587	0.752	0.765	0.739
Root mean squared error	0.028	0.022	0.027	0.027	0.027	0.021	0.021	0.022

*Note: CA is the current account balance in % of GDP. All regressions are estimated by pooled OLS. Standard errors in parantheses are corrected for heteroskedasticity and autocorrelation of the error term. All estimations include a constant term. *, **, and *** denotes significance at* 10%, 5%, *and* 1% *levels, respectively. See Appendix A for a detailed description of the data.*

Table 2: Pooled OLS, non-overlapping four-year averages, 1972-2007

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Regressors	CA	CA	FB^{HH}	FB^{HH}	FB^{HH}	FB^{CORP}	FB^{CORP}
Net foreign assets (% of GDP)	0.083***	0.075***	0.054***	0.056***	0.052***	0.021	0.007
	(0.011)	(0.018)	(0.009)	(0.010)	(0.011)	(0.013)	(0.016)
Output per worker (rel. to top 3 economies)	0.002	0.017	-0.009	-0.013	-0.001	0.013	0.046***
	(0.010)	(0.012)	(0.011)	(0.012)	(0.026)	(0.014)	(0.015)
Output growth	-0.450*	-0.390	0.375	0.570**	-0.048	-0.894***	-0.264
	(0.242)	(0.227)	(0.230)	(0.241)	(0.295)	(0.285)	(0.277)
Dependency ratio	-0.272**	-0.234*	-0.089	-0.193	-0.130	-0.006	0.174
	(0.111)	(0.115)	(0.089)	(0.121)	(0.173)	(0.130)	(0.159)
Population growth	-1.756**	-2.167***	-1.472*	-1.783	-1.452	-0.173	-1.083
	(0.661)	(0.624)	(0.760)	(1.128)	(1.450)	(1.292)	(1.430)
Terms of trade gap*Trade openness	0.545*	0.411	0.718*	0.682*	0.286	-0.489*	0.190
	(0.299)	(0.281)	(0.350)	(0.341)	(0.360)	(0.261)	(0.339)
Private credit (% of GDP)	-0.057**	-0.066**	-0.004	-0.015	-0.024***	0.009	0.013
	(0.024)	(0.025)	(0.007)	(0.010)	(0.008)	(0.016)	(0.016)
Fiscal balance (% of GDP)	0.251***	0.271**	-0.652***	-0.661***	-0.548**	-0.099	-0.166
	(0.049)	(0.102)	(0.145)	(0.153)	(0.191)	(0.158)	(0.156)
Corporate balance (% of GDP)	-	-	-0.397***	-	-	-	-
			(0.132)				
Private sector wage share	-0.106*	-	-	-0.099	-	-0.190**	-
	(0.053)			(0.100)		(0.086)	
Manufacturing wage share	-	-0.134***	-	-	-0.069	-	-0.178**
		(0.038)			(0.040)		(0.061)
Top 5% income share	-0.225**	-0.228*	-0.149**	-0.141	0.020	0.022	-0.057
	(0.091)	(0.113)	(0.062)	(0.084)	(0.091)	(0.105)	(0.134)
Observations	151	133	124	124	110	124	110
Countries	20	20	20	20	20	20	20
Adjusted $R-squared$	0.590	0.569	0.703	0.628	0.598	0.260	0.187
Root mean squared error	0.027	0.026	0.023	0.026	0.025	0.030	0.029

*Note: CA is the current account balance in % of GDP, FB^{HH} is the household financial balance in % of GDP, FB^{CORP} is the corporate financial balance in % of GDP. All regressions are estimated by pooled OLS. Standard errors in parentheses are corrected for heteroskedasticity and autocorrelation of the error term. All estimations include a constant term. *, **, and *** denotes significance at 10%, 5%, and 1% levels, respectively. See Appendix A for a detailed description of the data.*

Table 3: 2SLS and FE estimations, non-overlapping four-year averages, 1972-2007

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Regressor	CA	CA	CA	FB^{HH}	FB^{CORP}	FB^{CORP}	CA	CA	CA	FB^{HH}	FB^{CORP}	FB^{CORP}
Net foreign assets (% of GDP)	0.067***	0.083***	0.076***	0.054***	0.021	0.008	0.030	0.062**	0.057*	0.022	0.035*	0.035*
	(0.009)	(0.011)	(0.018)	(0.009)	(0.012)	(0.016)	(0.027)	(0.029)	(0.032)	(0.018)	(0.017)	(0.017)
Output per worker (rel. To top 3 economies)	0.004	0.001	0.016	-0.009	-0.001	0.036*	0.075**	-0.075*	-0.020	0.092**	-0.054	-0.028
	(0.009)	(0.010)	(0.014)	(0.012)	(0.015)	(0.017)	(0.032)	(0.041)	(0.028)	(0.035)	(0.041)	(0.038)
Output growth	0.164	-0.453*	-0.400*	0.404	-1.052***	-0.457	0.018	-0.305	-0.433	0.124	-0.336	-0.235
	(0.168)	(0.243)	(0.223)	(0.294)	(0.282)	(0.374)	(0.130)	(0.233)	(0.274)	(0.123)	(0.217)	(0.215)
Dependency ratio	-0.287***	-0.272**	-0.234*	-0.094	0.005	0.162	-0.597***	-0.352*	-0.189	-0.702***	0.239**	0.381**
	(0.077)	(0.111)	(0.115)	(0.092)	(0.139)	(0.168)	(0.141)	(0.188)	(0.174)	(0.106)	(0.109)	(0.130)
Population growth	-2.215**	-1.758**	-2.161***	-1.482*	-0.101	-0.948	-1.432*	-0.156	-1.004	-1.343*	-0.654	-1.735
	(0.818)	(0.667)	(0.611)	(0.791)	(1.201)	(1.359)	(0.732)	(1.219)	(1.003)	(0.690)	(1.434)	(1.356)
Terms of trade gap*Trade openness	0.901**	0.539	0.392	0.726*	-0.798**	-0.089	0.783**	0.578**	0.483	0.737***	0.022	0.302
	(0.346)	(0.334)	(0.314)	(0.378)	(0.294)	(0.412)	(0.300)	(0.269)	(0.303)	(0.202)	(0.324)	(0.352)
Private credit (% of GDP)	-0.054***	-0.057**	-0.066**	-0.004	-0.002	0.004	-0.054***	-0.043*	-0.064**	-0.041***	-0.009	-0.017
	(0.018)	(0.024)	(0.024)	(0.009)	(0.017)	(0.017)	(0.016)	(0.021)	(0.023)	(0.011)	(0.013)	(0.014)
Fiscal balance (% of GDP)	0.327***	0.257***	0.286**	-0.648***	0.119	-0.018	0.482***	0.325***	0.324***	-0.667***	-0.338***	-0.337**
	(0.109)	(0.075)	(0.122)	(0.187)	(0.190)	(0.200)	(0.079)	(0.089)	(0.101)	(0.083)	(0.096)	(0.118)
Corporate balance (% of GDP)	0.534***	-	-	-0.355*	-	-	0.714***	-	-	-0.268*	-	-
	(0.149)			(0.181)			(0.119)			(0.129)		
Private sector wage share	-	-0.105*	-	-	-0.167	-	-	-0.405**	-	-	-0.316***	-
		(0.055)			(0.098)			(0.172)			(0.105)	
Manufacturing wage share	-	-	-0.134***	-	-	-0.177***	-	-	-0.311***	-	-	-0.183
			(0.037)			(0.059)			(0.087)			(0.134)
Top 5% income share	-0.216***	-0.224**	-0.223*	-0.149**	0.049	-0.020	-0.351***	-0.294**	-0.454***	-0.219**	-0.049	-0.130
	(0.064)	(0.092)	(0.120)	(0.064)	(0.107)	(0.136)	(0.090)	(0.138)	(0.120)	(0.096)	(0.136)	(0.152)
Observations	124	151	133	124	124	110	124	151	133	124	124	110
Countries	20	20	20	20	20	20	20	20	20	20	20	20
Adj. R-squared	0.764	0.590	0.569	0.702	0.221	0.163	0.701	0.464	0.480	0.674	0.583	0.554
Root mean squared error	0.021	0.027	0.026	0.023	0.031	0.029	0.016	0.022	0.022	0.014	0.017	0.018

*Note: CA is the current account balance in % of GDP, FB^{HH} is the household financial balance in % of GDP, FB^{CORP} is the corporate financial balance in % of GDP. The Models (1)-(6) are estimated by two-stage least squares (2SLS) and the Models (7)-(12) are estimated by OLS and include country fixed effects. Models (10)-(12) include time fixed effects. Standard errors in parentheses are corrected for heteroskedasticity and autocorrelation of the error term. All estimations include a constant term. *, **, and *** denotes significance at* 10%, 5%, *and* 1% *levels, respectively. See Appendix A for a detailed description of the data.*

Table 4: Pooled GLS, annual data, 1972-2007

	(1)	(2)	(3)	(4)	(5)	(6)
Regressor	CA	CA	CA	FB^{HH}	FB^{CORP}	FB^{CORP}
L.Net foreign assets (% of GDP)	0.063***	0.063***	0.054***	0.051***	0.021**	0.005
	(0.007)	(0.009)	(0.010)	(0.005)	(0.010)	(0.011)
L.NFA/Y*(Dummy if NFA/Y < -60%)	-0.098***	-0.096***	-0.090***	-0.061***	-0.002	0.009
	(0.019)	(0.020)	(0.020)	(0.019)	(0.023)	(0.023)
Output per worker (rel. to top 3 economies)	-0.036*	-0.057**	-0.107**	-0.091***	0.066**	0.017
	(0.022)	(0.025)	(0.043)	(0.018)	(0.028)	(0.048)
L.Relative output per worker*Capital openness	0.088***	0.107***	0.182***	0.089***	-0.070*	0.026
	(0.031)	(0.036)	(0.052)	(0.024)	(0.040)	(0.055)
Output growth	-0.075	-0.219	-0.032	-0.224*	-0.359*	0.113
	(0.156)	(0.163)	(0.195)	(0.132)	(0.187)	(0.213)
Dependency ratio	-0.100	-0.021	0.074	-0.019	0.012	0.265***
	(0.065)	(0.075)	(0.080)	(0.055)	(0.091)	(0.082)
Population growth	-1.534***	-1.243***	-1.296***	-0.506	-0.408	-0.528
	(0.389)	(0.394)	(0.452)	(0.367)	(0.453)	(0.526)
Reserve currency status	-0.029***	-0.025*	-0.030**	0.006	-0.011	-0.016
	(0.011)	(0.013)	(0.013)	(0.010)	(0.015)	(0.014)
Output gap	-0.382***	-0.446***	-0.473***	-0.171**	-0.460***	-0.481***
	(0.086)	(0.071)	(0.075)	(0.068)	(0.072)	(0.076)
Terms of trade gap*Trade openness	0.467***	0.446***	0.478***	-0.016	0.154**	0.197***
	(0.074)	(0.064)	(0.068)	(0.063)	(0.069)	(0.073)
Private credit (% of GDP)	-0.045***	-0.042***	-0.041***	-0.023***	-0.006	0.004
	(0.008)	(0.008)	(0.008)	(0.006)	(0.009)	(0.009)
L.Fiscal balance (% of GDP)	0.165***	0.073	0.085*	-0.339***	-0.161***	-0.150***
	(0.048)	(0.047)	(0.047)	(0.046)	(0.051)	(0.050)
L.Corporate balance (% of GDP)	0.186***	-	-	-0.308***	-	-
	(0.042)			(0.040)		
Private sector wage share	-	-0.084	-	-	-0.217***	-
		(0.052)			(0.057)	
Manufacturing wage share	-	-	-0.141***	-	-	-0.190***
			(0.036)			(0.043)
L.Top 5% income share	-0.175***	-0.133**	-0.157***	-0.141***	0.055	-0.010
	(0.050)	(0.055)	(0.060)	(0.045)	(0.069)	(0.069)
Observations	454	570	503	457	470	414
Countries	20	20	20	20	20	20
$R-squared$	0.515	0.383	0.398	0.494	0.206	0.198
Root mean squared error	0.015	0.016	0.015	0.015	0.018	0.017

*Note: CA is the current account balance in % of GDP, FB^{HH} is the household financial balance in % of GDP, FB^{CORP} is the corporate financial balance in % of GDP. All regressions are estimated by pooled GLS with a panel-wide AR(1) correction. 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: Pooled GLS, annual data, 1972-2007

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Regressor	CA	CA	CA	FB^{HH}	FB^{CORP}	FB^{CORP}	CA	CA	CA	FB^{HH}	FB^{CORP}	FB^{CORP}
L.Net foreign assets (% of GDP)	0.059***	0.062***	0.053***	0.044***	0.021*	0.005	0.056***	0.041***	0.031***	0.020**	0.019*	0.019*
	(0.007)	(0.009)	(0.010)	(0.007)	(0.011)	(0.012)	(0.010)	(0.011)	(0.012)	(0.008)	(0.011)	(0.012)
L.NFA/Y*(Dummy if NFA/Y < -60%)	-0.094***	-0.088***	-0.080***	-0.060***	-0.002	0.008	-0.104***	-0.076***	-0.070***	-0.040**	-0.016	-0.026
	(0.019)	(0.020)	(0.021)	(0.016)	(0.024)	(0.025)	(0.021)	(0.019)	(0.020)	(0.016)	(0.021)	(0.021)
L.Output per worker (rel. to top 3 economies)	-0.056**	-0.062**	-0.116***	-0.078***	0.067**	0.006	-0.062*	-0.155***	-0.163***	0.029	-0.049	-0.060
	(0.022)	(0.025)	(0.043)	(0.021)	(0.030)	(0.051)	(0.035)	(0.038)	(0.045)	(0.034)	(0.045)	(0.050)
L.Relative output per worker*Capital openness	0.095***	0.105***	0.180***	0.097***	-0.080*	0.030	0.091**	0.168***	0.204***	0.028	-0.014	0.014
	(0.030)	(0.036)	(0.051)	(0.028)	(0.041)	(0.056)	(0.040)	(0.045)	(0.050)	(0.030)	(0.042)	(0.047)
Output growth	0.142	-0.276*	-0.115	-0.087	-0.267	0.240	0.130	-0.110	-0.100	-0.065	-0.322*	-0.030
	(0.172)	(0.165)	(0.197)	(0.160)	(0.221)	(0.241)	(0.160)	(0.166)	(0.178)	(0.126)	(0.179)	(0.216)
Dependency ratio	-0.073	-0.027	0.046	0.059	0.020	0.282***	-0.345***	-0.245**	-0.017	-0.599***	0.272***	0.497***
	(0.066)	(0.075)	(0.079)	(0.066)	(0.097)	(0.092)	(0.086)	(0.097)	(0.098)	(0.085)	(0.104)	(0.117)
Population growth	-1.316***	-1.325***	-1.463***	-0.736**	-0.530	-0.529	-0.927**	-0.694*	-0.769*	-0.674**	0.030	-0.391
	(0.425)	(0.399)	(0.464)	(0.361)	(0.462)	(0.545)	(0.417)	(0.401)	(0.455)	(0.342)	(0.467)	(0.543)
Reserve currency status	-0.015	-0.020	-0.022*	-0.010	-0.005	-0.013	0.050**	0.010	0.001	0.000	-0.028	-0.023
	(0.011)	(0.013)	(0.013)	(0.013)	(0.017)	(0.016)	(0.022)	(0.027)	(0.027)	(0.022)	(0.030)	(0.031)
Output gap	-0.219**	-0.523***	-0.566***	-0.170**	-0.429***	-0.434***	-0.431***	-0.462***	-0.484***	-0.391***	-0.446***	-0.466***
	(0.099)	(0.082)	(0.085)	(0.082)	(0.103)	(0.097)	(0.085)	(0.068)	(0.072)	(0.075)	(0.086)	(0.091)
Terms of trade gap*Trade openness	0.313***	0.375***	0.392***	0.258***	0.179**	0.236***	0.480***	0.456***	0.482***	-0.004	0.152**	0.218***
	(0.078)	(0.076)	(0.079)	(0.065)	(0.083)	(0.086)	(0.074)	(0.062)	(0.069)	(0.052)	(0.068)	(0.070)
Private credit (% of GDP)	-0.030***	-0.043***	-0.042***	-0.016**	-0.011	0.002	-0.044***	-0.035***	-0.044***	-0.034***	-0.008	-0.011
	(0.008)	(0.008)	(0.008)	(0.007)	(0.010)	(0.010)	(0.007)	(0.007)	(0.008)	(0.006)	(0.007)	(0.007)
Fiscal balance (% of GDP)	0.284***	0.211*	0.240**	-0.580***	-0.112	-0.134	0.137***	0.097**	0.096*	-0.284***	-0.159***	-0.138***
	(0.088)	(0.111)	(0.102)	(0.086)	(0.130)	(0.109)	(0.052)	(0.047)	(0.049)	(0.043)	(0.051)	(0.053)
Corporate balance (% of GDP)	0.546***	-	-	-0.500***	-	-	0.198***	-	-	-0.123***	-	-
	(0.077)			(0.069)			(0.047)			(0.039)		
Private sector wage share	-	-0.062	-	-	-0.224***	-	-	-0.332***	-	-	-0.339***	-
		(0.052)			(0.064)			(0.078)			(0.070)	
Manufacturing wage share	-	-	-0.134***	-	-	-0.189***	-	-	-0.244***	-	-	-0.158**
			(0.035)			(0.047)			(0.053)			(0.070)
L.Top 5% income share	-0.146***	-0.121**	-0.134**	-0.102**	0.055	-0.013	-0.172**	-0.142**	-0.208***	-0.239***	-0.094	-0.113
	(0.051)	(0.055)	(0.061)	(0.050)	(0.073)	(0.073)	(0.072)	(0.070)	(0.075)	(0.056)	(0.079)	(0.087)
Observations	445	570	503	445	470	414	454	570	503	457	470	414
Countries	20	20	20	20	20	20	20	20	20	20	20	20
$R-squared$	0.540	0.385	0.404	0.444	0.181	0.177	0.685	0.523	0.519	0.795	0.586	0.526
Root mean squared error	0.014	0.016	0.015	0.012	0.018	0.017	0.015	0.015	0.015	0.013	0.016	0.016

*Note: CA is the current account balance in % of GDP, FB^{HH} is the household financial balance in % of GDP, FB^{CORP} is the corporate financial balance in % of GDP. All regressions are estimated by pooled GLS with a panel-wide AR(1) correction. Heteroskedasticity robust standard errors are reported in parantheses. In Models (1)-(6), the fiscal balance and the corporate balance are instrumented. In Models (7)-(12), the fiscal balance and the corporate balance are lagged by one year. The Models (7)-(12) include country fixed effects, and models (10)-(12) include time fixed effects. 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.*