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VARIETIES OF CAPITALISM AND GROWTH REGIMES: THE ROLE OF INCOME DISTRIBUTION

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ABSTRACT

This article brings together the varieties of capitalism and the growth model approaches to comparative political economy to analyse the macroeconomic implications of changes in income distribution. In the decades before the financial crisis, coordinated market economies (CMEs) and liberal market economies (LMEs) developed different but unsustainable growth models which resulted in global current account imbalances. We analyse the relative importance of wage coordination and income distribution in explaining the emergence of global imbalances. We argue that strongly rising top income shares contributed to the decline in household saving and current account balances in major LMEs, whereas pronounced falls in the wage share contributed to the weakness of domestic demand and rising current account balances in CMEs. Wage coordination affected current account balances both directly and, more importantly, indirectly through its effects on income distribution. We test the argument for a sample of 18 industrialized countries over the period 1981-2007.

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Varieties of Capitalism and growth regimes: the role of income distribution[*]

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Abstract

This article brings together the varieties of capitalism and the growth model approaches to comparative political economy to analyze the macroeconomic implications of changes in income distribution. In the decades before the financial crisis, coordinated market economies (CMEs) and liberal market economies (LMEs) developed different but unsustainable growth models which resulted in global current account imbalances. We analyze the relative importance of wage coordination and income distribution in explaining the emergence of global imbalances. We argue that strongly rising top income shares contributed to the decline in household saving and current account balances in major LMEs, whereas pronounced falls in the wage share contributed to the weakness of domestic demand and rising current account balances in CMEs. Wage coordination affected current account balances both directly and, more importantly, indirectly through its effects on income distribution. We test the argument for a sample of 18 industrialized countries over the period 1981-2007.

Keywords: Functional income distribution, personal income distribution, wage coordination, varieties of capitalism, growth models

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1 Introduction

Since the global financial crisis of 2008, macroeconomists and comparative political economists have rediscovered a common interest in understanding the determinants of income distribution, as well as the implications of income distribution for economic efficiency and stability. It is now widely agreed that the rise of inequality in many countries since the 1980s poses a threat to not only political but also macroeconomic stability (e.g. Ostry et al., 2016). For instance, Kumhof et al. (2015) show how rising income has contributed to the rise in household debt which triggered the financial crisis in the United States in 2007 (see also Rajan, 2010, Reich, 2010). However, it is not well understood why different countries developed different patterns of income inequality and how these are related to national growth models. This article argues for the importance of income distribution to macroeconomic stability by analyzing the links between functional and personal income distribution, varieties of capitalism, and macroeconomics growth models.[1]

Proponents of the varieties of capitalism (VoC) approach to comparative political economy (CPE) have long argued that coordinated market economies (CMEs) such as Germany or Japan tend to combine lower income inequality and current account surpluses, whereas liberal market economies (LMEs) such as the United States or the United Kingdom typically produce higher income inequality and current account deficits (e.g. Hall and Gingerich, 2009; Hall, 2014; Hope and Soskice, 2016). It is also recognized that such global imbalances contribute to macroeconomic instability (Iversen and Soskice, 2012). However, according to the VoC perspective, shifts in income distribution typically are not seen as being causally linked to aggregate demand and the current account. Rather, the more coordinated wage bargaining institutions in CMEs essentially explain both why the wage structure is more compressed and income inequality is lower in CMEs than in LMEs and why Central Banks and governments in CMEs have stronger incentives to conduct conservative monetary and fiscal policies. The latter, rather than income distribution, explain why CMEs tend to run current account surpluses, whereas LMEs tend to rely much more heavily on domestic demand (see Iversen and Soskice, 2010).

In a recent contribution, Baccaro and Pontusson (2016) criticize the VoC approach to CPE on two main grounds. Firstly, "the CPE literature to date has been far too preoccupied with building typologies and classifying countries" (Baccaro and Pontusson, 2016, p. 177). Secondly, according to Baccaro and Pontusson (2016, p. 181), "the questions [...] how distributional shifts affect growth models and the role and interaction of different components of aggregate demand [...] have not featured prominently in the CPE literature to date". As an alternative, Baccaro and Pontus-

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[1]It thus seeks to contribute to recent attempts at "bringing macroeconomics back into Comparative Political Economy (CPE)" (Baccaro and Pontusson, 2016, p. 181).

son (2016) propose to seek inspiration from neo-Kaleckian and, more generally, Post Keynesian, macroeconomics, while they see the VoC approach as being more compatible with New Keynesian macroeconomics. In line with the neo-Kaleckian concept of wage-led growth (see Lavoie and Stockhammer, 2012; Stockhammer, 2015), Baccaro and Pontusson (2016) argue that the decrease of the wage share and the rise in income inequality observed in most advanced economies since the early 1980s could *prima facie* be expected to reduce consumption and aggregate demand and hence economic growth. The macroeconomic argument behind this is the notion that workers have a higher propensity to spend than capitalists, and low-income households have a lower saving rate than high-income households so that either a fall in the wage share or a rise in personal income inequality reduces aggregate demand. Yet, according to Baccaro and Pontusson (2016) (and an extensive Post Keynesian literature), two new growth models emerged since the 1980s that have replaced mass consumption financed by mass incomes by new drivers of aggregate demand growth. These two growth models go under the labels "consumption-led growth financed by credit" and "export-led growth". Baccaro and Pontusson (2016) argue that both growth models are unstable and that the resulting global imbalances have contributed to the outbreak of the global financial crisis in 2008. However, Baccaro and Pontusson (2016) offer no theoretical explanation of why different growth models have developed in particular countries. Rather, they emphasize that distributional trends in various countries during recent decades have gone contrary to the conventional wisdom of traditional CPE. For instance, by some measures the income distribution has become particularly more unequal in a number of core CMEs, such as Germany, in spite of their being characterized by stronger wage coordination and higher union membership, compared with LMEs.

In the present article, we seek to contribute to this important emerging debate at the intersection of macroeconomics and CPE. While we agree with Baccaro and Pontusson (2016) that trends in income distribution are crucial for understanding the emergence of national growth regimes and global imbalances, the rejection of "classifying countries" is conceptually unsatisfactory in our view. Moreover, we argue that the "growth model perspective" proposed by Baccaro and Pontusson (2016), like most of the neo-Kaleckian literature, fails to clearly distinguish between the potential macroeconomic implications of the functional distribution of income (wages versus profits) on the one hand, and the personal distribution of income (top-end income inequality in particular) on the other hand. While the VoC literature predicts that CMEs produce lower wage dispersion and lower personal income inequality than LMEs, it has no explicit theories about the determinants of functional income distribution and about the implications of income distribution (personal and functional) for aggregate demand and external imbalances. The present article starts from the observation that different groups of countries, despite confronting similar paths of

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technological change and globalisation as well as financial and labour market liberalisation, experienced rather different patterns of income distribution, with top-end personal income inequality increasing much more strongly in LMEs and wage shares decreasing considerably more strongly in CMEs (see Figure 1). We ask, firstly, how are these differences in income distribution related to the emergence, since the 1980s, of different growth models that have been characterised by current account surpluses in CMEs and current account deficits in LMEs (see Figure 1)? And secondly, what has been the role of differences in the coordination of wage bargaining across countries and over time in bringing about the different growth models by impacting either directly on the current account balance or indirectly on the distribution of income?

We contribute to answering these questions using a macro panel of 18 industrialized countries over the period 1981-2007. In particular, we estimate current account regressions in which measures of personal and functional income distribution as well as of wage coordination are included alongside a number of standard control variables. We find that a rise in top-end inequality (relative to trading partners) leads to a lower current account, *ceteris paribus*. By contrast, a fall in the wage share is associated with a higher current account, *ceteris paribus*. We can relate these findings to recent debates in the macroeconomics and CPE literature. While different theoretical explanations of our results are possible, we argue that the finding of a negative effect of top-end income inequality on household saving and the current account is broadly consistent with theories of consumption grounded in the notion of upward-looking status comparisons, in the tradition of the relative income hypothesis (Duesenberry, 1949; Frank, 2005). These theories can explain why the middle and upper-middle classes in such countries as the United States and the United Kingdom have reacted to their falling incomes (relative to households at the top of the income distribution) by reducing their financial savings in an attempt at keeping up with households above them in the income distribution ladder, who have increased their expenditures on positional goods in line with their strongly rising incomes. Such consumption externalities can be expected to be especially pronounced in LMEs, where such important positional goods as housing or education are allocated via competitive markets (Hall and Gingerich, 2009), where the precautionary saving motive of households is relatively low due to fluid labor markets with relatively short job tenures and workers with general (rather than industry-specific) skills (Hall and Gingerich, 2009; Carlin and Soskice, 2009), and where, prior to the financial crisis, largely deregulated credit markets have allowed households to maintain their consumption despite falling incomes (van Treeck, 2014). In CMEs, by contrast, relative income effects on consumption owing to upward-looking status comparison were less pronounced because top household incomes increased far less, workers with specific skills have a higher demand for precautionary saving, credit markets are more regulated, and important positional goods are provided through government funding. Meanwhile, the firm

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sector in such countries as Germany and Japan, while paying lower dividends and top management salaries to the household sector than its counterparts in the United States or the United Kingdom, reacted to rising corporate profits with higher corporate saving, thereby limiting household incomes and consumption demand.

Our current account regressions also suggest that the coordination of wage bargaining has only a limited direct effect on the current account balance, at least for countries outside the European Monetary Union and when the effect of income inequality is controlled for. We hypothesize, however, that wage coordination may affect both the aggregate wage share and personal income distribution, and hence indirectly the current account. We estimate a number of panel regression models in which changes in, respectively, the wage share, top household income shares and the Gini coefficient of household market incomes are explained by technological change, globalization, and financial and labor market reforms. We show that including interaction terms accounting for the degree of coordination of wage bargaining may help explain the different patterns of income distribution in individual countries. Borrowing from the extensive VoC literature on wage coordination (e.g. Iversen and Soskice, 2010; Iversen and Soskice, 2012), we argue that in countries with a higher degree of wage coordination, trade unions in the face of weakening bargaining power accepted aggregate wage restraint leading to a strong fall in the wage share but managed to prevent a strong rise in top-end wage and income inequality. Despite the fall in union density and bargaining power, the institutional capacities of wage coordination have largely persisted in a number of major CMEs and hence unions have retained a larger influence on corporate decisions, including those related to top executive compensation. By contrast, countries with less centralized wage bargaining, referred to as LMEs in the VoC literature, rely more on market forces to reset wages and prices. In these countries, and especially in the United States and the United Kingdom, the decline in unionization has been accompanied by the emergence of a competitive market for managers, giving rise to an explosion of top executive compensation. The latter have contributed both to rising top-end income inequality and, somewhat paradoxically, to the stabilization of the wage share.

The remainder of this article is organized as follows. Section 2 offers a descriptive account of the evolution of income distribution in our sample. In Section 3, we present theoretical considerations and empirical evidence on the implications of income distribution and wage coordination for national current account balances. We then investigate further into the links between wage bargaining institutions and different measures of income distribution in Section 4. Section 5 concludes with a discussion of our findings in light of the existing macroeconomics and comparative political economy literature.

2 Personal and functional income distribution

Baccaro and Pontusson (2016, p. 179) criticize the "conventional wisdom of the CPE literature (which) holds that market forces, associated with technological change and globalization, have been a source of rising earnings inequality in OECD countries, but institutional arrangements characteristic of coordinated market economies have muted or deflected these pressures. By and large, the existing literature conceives rising earnings inequality as an LME-specific phenomenon." However, they report that the 90-10 earnings ratio of full-time employees increased more strongly in a number of core LME countries, including Germany, than in such LME countries as New Zealand, Canada, the United Kingdom during the period 1995-2010. On this basis, they criticize the VoC literature for having "celebrated Germany's coordinated market economy as a 'worker-friendly' and egalitarian alternative to the neoliberal model of stock-market capitalism" (p. 178). Indeed, part of the conventional wisdom promoted by the VoC literature is that CMEs tend to be better protected against rising inequality. For example, Hall and Gingerich (2009, p. 477), argue that "LMEs respond to economic challenges by relying more heavily on competitive markets to reset wages and prices, we should see more rapid increases in income inequality there in response to the recent experiences of globalization." To substantiate this view, they show that the Gini coefficient of disposable household income has increased stronger in LMEs than in CMEs in the period 1980-1995.

In our view, the 90-10 earnings ratio and the Gini coefficient of household income are not ideal measures for comparing patterns of income distribution across countries. Firstly, they provide no indication as to whether any given rise in inequality is due to changes in the upper or in the lower part of the earnings or income distribution. Secondly, they ignore trends in inequality at the top of the distribution. By definition, top incomes are not captured in the 90-10 earnings ratio. They are also underestimated in the Gini coefficient which is typically constructed on the basis of household surveys, in which top income groups are notoriously underrepresented. Moreover, due to its mathematical construction, the Gini coefficient is rather insensitive to changes at the tails of the distribution. Top incomes are by no means negligible from a macroeconomic perspective: According to the World Top Incomes Database (WTID), the incomes of the top 10, 5, and 1 per cent of households to date account for respectively more than 40, 30, and 15 per cent of total household income in the United States and in the United Kingdom. Thirdly, in our view measures of household income inequality need to be analyzed jointly with measures of the functional distribution of income. In this regard, we agree with the criticism by Baccaro and Pontusson (2016) of CPE scholars for having been "strikingly oblivious to the distribution of income between labor and capital". Baccaro and Pontusson (2016) report wage shares, adjusted for self-employment,

for a number of countries since the 1960s, and point to the "striking feature" that the wage share has held up better in the United Kingdom than in several other countries including Germany and Sweden, "all characterized by more coordinated systems of wage bargaining and by less dramatic declines of union membership". We would argue, however, that the relative stability of the wage share in the United Kingdom is surprising only at first sight. In fact, it can at least in part be seen as a reflection of the strong increase in top management compensation, counted as wage income in the national accounts, that has also driven the rise in top household income shares.

In Figure 2, we propose an alternative summary of distributional shifts across 18 OECD countries in the period 1981-2007, taking into account changes in both the functional and the personal income distribution. The functional distribution is captured by the share of wages in the gross national product at current factor costs, adjusted for self-employment. Top-end personal income inequality is given by the share of the top 5% households in aggregate pre-tax household income. Unfortunately, comprehensive data for top-end earnings inequality are not available on a cross-time, cross-country level. Yet, we know that the phenomenal rise of top-end income inequality since the 1980s in many countries has been driven to a considerable extent by rising earnings inequality, driven to a large degree by winner-take-all markets for top corporate executives present in especially in the Anglo Saxon economies (Piketty and Saez, 2006; Atkinson et al., 2011). As can be clearly seen in Figure 2, it is by no means the case that countries with a larger fall in the wage share have also experienced a stronger increase in top-end income inequality. On the contrary, there is a negative correlation between changes in wages shares and top household income shares. The United States, the United Kingdom and, to a lesser extent, Canada, *i.e.*, the three largest LMEs, stand out with very pronounced increases in the top household income share but rather limited falls in the wage share. By contrast, Germany and Japan, the two largest CMEs, saw much smaller changes in the top income share but much more significant falls in the wage share. As can also be seen in Figure 2, a number of smaller countries typically classified as LMEs and CMEs show somewhat different patterns of income distribution. Both Denmark, a classic case of a CME, and New Zealand, typically considered an LME, experienced relatively weak increases in top household income shares and relatively weak decreases in the wage share. Nevertheless, the overall pattern that is apparent in Figure 2 especially for the largest LMEs and CMEs which have been mainly responsible for the global current account imbalances, is interesting. Rising earnings and income inequality in general is not an LME-specific phenomenon, as rightly emphasized by Baccaro and Pontusson (2016). For instance, the Gini coefficient of household market income has increased more strongly in Germany than in the United States and the United Kingdom since the early 1980s (see Figure 6). Yet, no CME has experienced a similar explosion of incomes at the very top of the income distribution that has characterized the U.S. and the U.K. economies over

the past decades. And, with top executive wages increasing less in CMEs, the share of aggregate wages in the national income has decreased more strongly than in the large LMEs. In Section 4, we will return to the question of how changes in income distribution may be related to different degrees in wage coordination.

Before turning to the question as to how income distribution affects national growth models in terms of current account balances, we emphasize the important distinction of functional and personal income distribution conceptually with a hypothetical numerical example. Figure 3 shows the national income of a private economy, which is distributed between wages and profits (functional distribution) and between bottom and top household income (personal income distribution) and corporate income. In Scenario 1, the wage share is 60 per cent of national income, and the profit share is 40 per cent. Half of the profits, i.e., 20 per cent of national income, are retained by corporations (corporate income), so that 80 per cent of the national income accrue to the household sector. The top household income share is 37.5 per cent (top household income accounts for 30 per cent of the national income). In Scenario 2, which could be called the LME scenario, the wage share remains constant, but personal income inequality increases, compared with Scenario 1. Top household income increases from 30 to 40 per cent of national income, i.e., the top household income share increases from 37.5 per cent to 50 per cent. In Scenario 3, which may be considered the CME scenario, the wage share decreases from 60 per cent to 50 per cent, and the profit share increases from 40 per cent to 50 per cent. The rise in profit translates into a fall of bottom household income from 50 per cent of national income to 40 per cent, while retained profits increase from 20 per cent to 30 per cent of national income. In this Scenario, the top income share only increases to 43 per cent, compared with 37.5 per cent in Scenario 1 and 50 per cent in Scenario 2. Yet, it can certainly not be said that either Scenario 2 or Scenario 3 is more "worker-friendly" and "egalitarian" in any comprehensive sense, given the stronger rise in the top household income share in Scenario 2 and the stronger fall in the wage share in Scenario 3. Clearly, the rise of corporate income in Scenario 3 mainly benefits top income households who largely own the corporate sector, whereas bottom income households hardly own any corporate wealth.

3 Macroeconomic imbalances

3.1 The role of income distribution

Next, we discuss the possible implications of different patterns of income distribution for national growth models and current account balances. Figure 4 shows bivariate plots of changes in national current account balances on the one hand and changes in, respectively, top household income

shares and wage shares on the other hand. The negative correlation between changes in top income shares and the current account, *i.e.*, the national saving-investment balance, runs counter the traditional Keynesian and post-Keynesian argument that higher inequality reduces aggregate demand because "the rich save more than the poor". However, it is consistent with the notion of relative income effects with upward-looking status comparisons. In particular, the expenditure cascades, or trickle-down consumption hypothesis 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). One may therefore expect that the negative effect of a rise in top household income shares on the current account is larger than the effect of a rise in the Gini coefficient of household income, as suggested by Figure 4. When middle and upper-middle income groups reduce their saving in an attempt to maintain their relative consumption of positional goods relative to the top income groups, the effects on the aggregate household saving rate, and hence the current account, will be relatively large because of the large share of the middle and upper-middle class in aggregate household income. This is why top income shares, rather than broad measures of inequality such as the Gini coefficient of household incomes, are the more instructive measure in this context. Notice that the relative income hypothesis with upward-looking status comparisons also predicts that "the rich save more than the poor". But, in contrast to traditional Keynesian reasoning, a rise in inequality may reduce the aggregate saving rate when the gap between the group-specific saving rates of high- and low-income households increases as a result of low-income groups reducing their saving rates with a view to limiting the decline in their relative consumption levels.

Clearly, the expenditure cascades model appears to be especially relevant to the United States and the United Kingdom during the period prior to the financial crisis of 2008 when these two countries ran large current account deficits. During that period, the increase of top income shares was especially dramatic, and households had easy access to credit in a context of largely deregulated credit markets. There is considerable evidence that middle and upper-middle class households have traded off their retirement savings for the purchasing of positional goods such as education, housing, or health care, which are allocated through largely unregulated markets in the United States and the United Kingdom.[2] 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. While this is consistent with the notion of consumption externalities with upward-looking status comparisons, it is also evidence against the alternative explanation

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[2]See van Treeck and Sturn (2012), van Treeck (2014), and Frank et al. (2014) on the link between rising top-end income inequality, household debt and the U.S. financial crisis.

of the decline in saving being driven by a pure wealth effect with a homogenous propensity to consume out of wealth across income or wealth groups. Kumhof et al. (2012) and Behringer and van Treeck (2015) also find a negative link between top income shares and the current account balance, controlling for other determinants of the current account.

It is, however, quite likely that the trickle-down consumption hypothesis has ceased to be an accurate description of the saving behavior of households in the United States and the United Kingdom since the outbreak of the financial crisis in 2008. The rise in household debt that has accompanied the decline in the relative incomes of the bottom 95% or so of the population since the 1980s has turned out to be unsustainable, and it seems unlikely that private consumption will once again become the main driver of aggregate demand growth without a stronger growth of middle-class incomes (Kumhof et al., 2015; Cynamon and Fazzari, 2016). As noted by Baccaro and Pontusson (2016, p. 176), growth regimes are "numerous and unstable" and contingent on specific historical circumstances.

The negative relation between changes in current account balances and wage shares is certainly less surprising from both the growth model perspective endorsed by Baccaro and Pontusson (2016) and the VoC perspective. As noted by Baccaro and Pontusson (2016, p. 183) in their summary of neo-Kaleckian macroeconomics: "a wage-share increase will boost aggregate consumption, and possibly boost investment as well, but it will most likely lead to a deterioration of the current account balance." In our view, the mechanisms by which a fall in the wage share can contribute to a rise in the current account are the following. Firstly, a lower wage share can increase export competitiveness if it is linked to a lower real exchange rate (see Iversen and Soskice, 2010; Lavoie and Stockhammer, 2012; Baccaro and Pontusson, 2016). This will be the case whenever a fall in nominal unit labor costs leads to a fall in price inflation, both relative to trading partners, that is not fully offset by an appreciation of the nominal exchange rate. Note, however, that a fall in the wage share (real unit labor costs) may also go hand in hand with a stable or higher exchange rate, when it occurs in a context of strong nominal unit labor costs growth but even higher price inflation.[3] Secondly, and more importantly, a lower wage share may reduce imports by weakening domestic demand. The underlying mechanisms can be succinctly summarized as follows. A fall in the wage share implies that a higher share of the national income goes to profits. Higher profits will typically be associated with higher profits retained by corporations, which translates into lower household income. Lower household income in turn reduces consumption demand because households tend to have a higher propensity to consume out of wages and distributed

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[3]For example, the wage share (real unit labor costs) developed in a very similar fashion in Germany and Spain from the late 1990s through the mid-2000s, but nominal unit labor costs rose strongly in Spain but stagnated in Germany, so that Germany's export price competitiveness developed much more favorably than Spain's.

profits than out of wealth (higher retained profits by corporations increase shareholders' wealth). While this reduces domestic demand, a higher profit share may also give a boost to investment either by signaling an increase in the profitability of investment or by easing corporate financing constraints. In a wage-led growth regime, the positive effects of a higher profit share on investment are relatively small compared to the negative effects of the associated fall in the wage share on consumption.[4]

Notice that the macroeconomic effects of a fall in the wage share are conceptually very different from those of a rise in personal income inequality (see Belabed et al., 2017 for a discussion). A fall in the wage share tends to reduce the distribution between household income and corporate income, with negative effects on consumption and, typically, overall domestic demand. As discussed above, an increase in income inequality, i.e., the distribution of household income across households, may increase households' demand for consumption, if consumption externalities due to upward-looking status comparisons are large and top income groups increase their consumption expenditures with rising incomes. A rise in profits, by contrast, tends to boost corporate saving rather than top household incomes. Because the propensity to consume from income tends to be higher than from wealth, a rise in corporate profits tends to weaken private consumption.[5] Perhaps paradoxically, an increase in top-end income inequality resulting from the explosion of top management salaries may both trigger a decline in middle-class savings, when top earners raise their consumption of positional goods in response to their rising incomes, and stabilize the aggregate wage share. We hypothesize that this was precisely the case of the United States and the United Kingdom during the period before the global financial crisis.

3.2 Regression analysis

We estimate the implications of changes in functional and personal income distribution on national current account balances. The specifications of the current account equations build on the panel estimation literature on current account determinants, which includes amongst others Chinn and Prasad (2003), Lee et al. (2008), Phillips et al. (2013). We regress the current account on a set of standard explanatory variables plus different measures of functional and personal income

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[4]In a profit-led growth regime, a higher profit share can be linked to higher aggregate demand and a higher current account deficit, if the rise in profits has a strong positive effect on investment spending by firms.

[5]In our view, Baccaro and Pontusson (2016) provide an inaccurate representation of the mechanisms by which a fall in the wage share affects aggregate demand and the current account in neo-Kaleckian models. They argue that a fall in the wage share affects consumption negatively if and only if "the propensity to consume varies negatively with income, such that rich individuals (or households) consume less and save more than poor individuals" (p. 182). Yet, in the seminal article by Bhaduri and Marglin (1990, p. 377), on which much of the neo-Kaleckian literature on "wage-led growth" is based, it is clearly stated that the wage share impacts consumption by affecting the distribution between corporate and household income, while it is assumed that households have a unique propensity to consume out of wages and distributed profits.

distribution:

$$CA_{i,t} = \beta_0 + X_{i,t}\Gamma + \beta_1 WS_{i,t} + \beta_2 INEQ_{i,t} + \beta_3 CENT_{i,t} + \varepsilon_{i,t} \tag{1}$$

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, demographics, terms of trade, private credit as a share of GDP, and the fiscal balance as a share of GDP. $WS_{i,t}$ refers to the wage share, $INEQ_{i,t}$ refers to different measures of personal income inequality, and $CENT_{i,t}$ is a summary measure of centralization of wage bargaining . $\varepsilon_{i,t}$ is a residual error term with zero mean. We work with an unbalanced panel that includes 18 countries for which series for top income shares and wage shares were available for the period 1981-2007: Australia, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, U.K. and the U.S. Variable definitions and data sources are provided in Appendix A.

The index of wage centralization is based on the methodology proposed by Iversen (1999) and combines data on the concentration or fragmentation of trade unions with information on the intra- and inter-organizational degree of unity (or cohesiveness), and the degree of authority of confederations over their affiliates, and of affiliates over their (workplace or company) members (see Visser, 2016). As discussed above, the VoC literature suggests that higher union centralization, or at least cross-sectoral coordination in wage bargaining, causes a higher current account by providing incentives to the trade unions to implement nominal wage restraint, with the result of lower price inflation and higher export price competitiveness, and by providing incentives to, respectively, the Central Bank and the government to conduct conservative monetary and fiscal policies. Our own hypothesis, which is not necessarily inconsistent with but may complements the VoC argument, is that the functional and personal distribution of income affects the current account. By including both, wage centralization and income distribution, in the current account regression, we can estimate the relative importance and potential interrelatedness of these different channels.

Most of the explanatory variables in the current account specifications are converted into deviations from a GDP-weighted sample mean.[6] That is, each country's variables are measured relative to a weighted average of other countries' values prevailing at the same time (see Appendix

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[6]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).

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.[7] The estimations are performed with annual observations. We use pooled GLS with a panel-wide AR(1) correction to deal with autocorrelation, following Phillips et al. (2013). The choice of control 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.

Table 1 presents the results for different variants of Equation 1. The estimates for a standard model without wage centralization and income distribution are shown in Columns 1. Estimated coefficients are mostly statistically significant and have expected signs and plausible magnitudes in line with previous studies (see Lee et al., 2008; Phillips et al., 2013). Let us briefly go through the various control variables, before turning to the discussion of the effects of income distribution. The 0.06 coefficient on lagged net foreign assets implies that an increase in NFA of 10 per cent of GDP raises the medium-term current account balance by about 0.6 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). In line with previous literature, we include an interaction term allowing for a non-linear relationship between the initial net foreign asset position.[8] Relative output per worker is included in order to capture catching-up effects, suggesting that economies with a relatively low capital stock tend to be net importers of capital. The catching-up term is small and marginally statistically significant when interacted with capital openness. In our sample of industrialized economies, it is unsurprising that catching-up effects are small (Chinn et al., 2014). The output gap is included to control for business cycle effects. In our regressions, the output gap is highly statistically significant, reflecting the counter-cyclical movement of the trade balance and the current account. Demographic effects are proxied via inclusion of the dependency ratio and population growth as explanatory variables. Countries with reserve currency status tend to have more negative current accounts. The terms-of-trade, interacted with trade openness are a further conventional control variable and are positively linked with the current account. Private credit is a proxy for financial development and is negatively linked with the current account. The positive coefficient on the fiscal balance implies that an increase in the government budget balance (relative to trading partners) leads to an increase in the current account balance in per cent of GDP. This result is typically interpreted as evidence against the concept of Ricardian equivalence. In the case of strict Ricardian equivalence, an increase in the government

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[7]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).

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

deficit will be fully offset by rational consumers immediately raising their savings in preparation for higher anticipated tax payments in the future.

Column 2 of Table 1 presents the result for a model in which wage centralization was included as an additional regressor. The positive and significant coefficient on that variable is consistent with the VoC view that higher wage centralization contributes to an export-led model (Iversen and Soskice, 2010; Hope and Soskice, 2016). In Columns 3-7, wage centralization is excluded from, and various measures of income distribution are included in the estimation. Columns 3 and 4 present the results for two models where different measures of personal income inequality were added to the baseline specification. While the Gini coefficient has a negative but not statistically significant effect on the current account, (Column 3), the top 5% income share is highly significant. A 1 percentage point increase of the top 5% household income share (relative to trading partners) reduces the current account balance by 0.18 percentage points, *ceteris paribus* (Column 4). This result is consistent with the trickle-down consumption and expenditure cascades hypotheses, but is difficult to square with the simple Keynesian consumption function. Columns 5-7 of Table 1 show the estimation results for three different models that include a measure of the wage share, either separately or in combination with the Gini coefficient or the top 5% income share. Interestingly, a rise in the wage share is estimated to have the opposite effect of a fall in personal income inequality.[9] In our preferred specification (Column 7), the estimated coefficient on the top 5% income share remains rather stable compared to the regression in Column 4, and a 1 percentage point rise in the sector wage share (relative to trading partners) leads to a decrease of the current account of 0.20 percentage points. This latter effect is consistent with the notion of wage-led growth.

In Columns 8-12 of Table 1, wage centralization and the various income distribution variables, either separately or jointly, are included in the model. Interestingly, wage centralization ceases to be a statistically significant predictor of the current account when included together with the top household income share (Columns 9 and 12), whereas it remains statistically significant when included together with the Gini coefficient and/or the wage share (columns 8, 10, 11). This finding suggests that at least part of the link between stronger wage coordination and a higher current account is due to the former being associated with lower top-end income inequality. In fact, the estimated coefficient on the top household income share is slightly smaller when wage centralization is added to the model (Columns 9 and 12) than when it is not (Columns 4 and 7). The estimated coefficient on the wage share, by contrast, remains virtually unchanged throughout all the different specifications.

In Table 2, we interact the index of wage centralization with a dummy for eurozone membership in regressions that are otherwise identical to those presented in Table 1. The coefficient

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[9]The results are robust to using the manufacturing wage share as well as different measures of personal inequality.

on the interaction term is positive and statistically significant, suggesting that wage centralization has has a stronger positive effect on the current account in eurozone countries. This result is intuitively appealing, as wage restraint within the monetary union cannot be offset by an appreciation of the national currency. Moreover, when interacted with eurozone membership, wage centralization remains a significant explanatory factor for the current account even when the various income distribution variables are included in the model.

Figure 5 shows the estimated contributions of changes in income distribution and wage centralization to the changes of current account balances for the 18 countries of our sample for the period 1981-2007, based on the model from Column 12 in Table 1. As can be seen in the Figure, the contributions of changes in the wage share and top income shares are considerable for a number of countries. Taken together, changes in income distribution account for, respectively, -1.63 and -1.34 percentage points of the total change in the current account balances of, respectively, -5.26 and -5.24 percentage points for the United Kingdom and the United States, the two main current account deficit countries prior to the global financial crisis. For Germany and Japan, the two countries with the largest current account surpluses before the crisis, the respective numbers are +1.61 against +8.17 and +1.70 against +4.46 percentage points.

4   Determinants of income distribution

4.1   The role of wage coordination

According to our estimations, the effect of wage coordination on the current account is at least partly an indirect one. Differences in the degree of wage coordination may be linked to different patterns of income distribution in different countries. Indeed, Figure 6 suggests that countries with more coordinated wage bargaining systems have tended to produce smaller increases of top household income shares, but larger falls in wage shares. In both figures, the United States and the United Kingdom clearly stand out as the two countries with an especially pronounced increase in top household income shares and a rather limited fall in the wage share. By contrast, more coordinated economies have not fared any better in constraining the rise in the Gini coefficient of gross household income.

We can interpret Figure 6 as *prima facie* evidence that trade unions in economies featuring centralized wage bargaining have managed to limit the rise in (top-end) income inequality. While this finding is in line with the broad theoretical argument by Iversen and Soskice (2010), it is interesting to note that the negative link between wage coordination and income inequality applies in particular to the top end of the income distribution. Clearly, even in CMEs top executive remu-

neration cannot be influenced directly by trade unions through wage coordination because such compensation schemes are not formally subject to collective bargaining agreements. Therefore, we hypothesize that wage coordination affects top income shares in an indirect way. Indeed, the subdued rise in top income shares provides some indication that unions have continued to exploit institutions and norms of coordination in a way as to achieve "wage solidarism" in the upper part of the distribution. As Hassel (2014), for example, argues with respect to recent developments in the German political economy, firms seek tighter co-operation with core workers in the face of tighter competitive pressures in a view to exploit institutional advantages of co-ordination. While this form of labor co-operation sharpened insider-outsider divisions and were built upon service sector cost cutting through liberalization, as argued by Hassel (2014), it is clearly incompatible with excessive earnings inequality at the very top of the distribution. Moreover, to the extent that centralized wage bargaining systems are often complemented by proportional-representative electoral systems, which in turn are biased towards center-left coalitions (Iversen and Soskice, 2010), more coordinated economies are also more likely to tackle top-end income inequality through other means than the wage bargaining process, e.g., labor market regulations and tax policy. On the other hand, the Gini coefficient of household market income is unrelated to wage coordination, i.e., the growth of income inequality over the entire distribution could not be restrained more in more coordinated economies. Hence, income inequality in many countries has strongly increased in the lower segments of the distribution, against the background of globalization, technological change and the zeitgeist of deregulation.

Similarly, the negative link between wage centralization and the wage share seems to confirm a recurrent argument in the VoC literature that union centralization is necessary for wage restraint (Iversen and Soskice, 2010) and that CMEs may have engaged in wage restraint since the 1980s with a view to developing their comparative advantage in export-oriented industrial production. In a nutshell, unions in countries with more strongly coordinated labor markets have managed to prevent rising top-end income inequality, but they accepted, or had to accept, the decline in the share of national income going to aggregate wages. On the other hand, countries with a lower degree of wage coordination developed winner-take-all labor markets which contributed to both the explosion of top-end income inequality and the stabilization of the wage share.

4.2 Regression analysis

Different strands in the literature have analyzed the determinants of income distribution from different angles. Most works have focused either on the functional or on the personal distribution. In the mainstream macroeconomics literature, important contributions have been made by the research departments of the IMF and the OECD in the form of panel regression analyses for a wide

range of countries over several decades. In this strand of the literature, there is a strong emphasis on skill-biased technological change as the main cause of rising personal income inequality, with trade and financial globalization being regarded as additional explanatory factors (e.g. Jaumotte et al., 2013). In recent works, the role of trade unions, labor market, tax policies and financial deregulation in affecting inequality have been highlighted more prominently than previously (Dabla-Norris et al., 2015; Jaumotte and Osorio-Buitron, 2015). Income inequality is typically measured by the Gini coefficient of household market income, but the recent study by Jaumotte and Osorio-Buitron (2015) also uses the top 10 per cent household income share as the dependent variable in a regression analysis. Interestingly, analyses inquiring into the determinants of the wage share typically consider a very similar set of potential explanatory factors as those concerned with personal income inequality (e.g. EC, 2007; Jaumotte and Tytell, 2007; OECD, 2012; IMF, 2017).

The CPE and the economic sociology literature have laid a stronger focus on the political and institutional determinants of income distribution. As noted above, the CPE literature has been mainly preoccupied with the personal distribution of income. For a long time, a widely accepted notion emanating from the CPE literature was that trade unionism and centralized wage bargaining have an equalizing effect on earnings dispersion and income inequality (e.g. Wallerstein, 1999; Pontusson et al., 2002; Koeniger et al., 2007; Pontusson, 2013 for an overview). More recently, however, there is a growing consensus that especially since the 1990s cross-country differences in and within-country time-series evolutions of wage and income inequality are no longer as accurately explained by unionization and the level at which wages are bargained collectively as in previous periods. Quantitative evidence of this hypothesis is presented by Golden and Wallerstein (2011) and Pontusson (2013) for the p90/p10 wage differential, and by Baccaro (2011) for the Gini coefficient of household market income. To the best of our knowledge, however, no studies so far in the CPE literature have made use of the top household income shares provided by the World Top Incomes Database (WTID).

Only a few studies have looked at the functional distribution of income with a focus on political and institutional factors. Stockhammer (2017) and Köhler et al. (2016) highlight the importance of financialization and workers' bargaining power to the decline in the wage share. Kristal (2010) and Bengtsson (2014) conclude that the fall in the wage share in many countries has been the result of distributional struggle, with welfare state retrenchment and the decline of the unions playing important roles. Interestingly, Bengtsson (2014) finds that although overall there is a positive relationship between union density and the wage share, the relationship is weak or non-existent in the Nordic countries, perhaps owing to increased incentives of trade unions in corporatist countries for wage moderation policies in a context of increased global competition and conservative monetary

policy.

We are not aware of any studies that have analyzed the determinants of the functional and the personal distribution in conjunction with each other for the same country sample and time period. Therefore, in the present paper, we estimate the following three equations, using the same panel of 18 countries as in the current account regressions:

$$TIS_{i,t} = Z_{i,t}\Gamma + X_{i,t}\Lambda_1 + X_{i,t} * CENT_{i,t}\Lambda_2 + \varepsilon_{i,t} \tag{2}$$

$$GINI_{i,t} = Z_{i,t}\Gamma + X_{i,t}\Lambda_1 + X_{i,t} * CENT_{i,t}\Lambda_2 + \varepsilon_{i,t} \tag{3}$$

$$WS_{i,t} = Z_{i,t}\Gamma + X_{i,t}\Lambda_1 + X_{i,t} * CENT_{i,t}\Lambda_2 + \varepsilon_{i,t} \tag{4}$$

where $i = 1, \ldots, N$ and $t = 1, \ldots, T$ denote the cross sectional and time dimensions, respectively. $\varepsilon_{i,t}$ is a residual error term with zero mean. The dependent variables are, respectively, the top 5 per cent household income share ($TIS_{i,t}$), the Gini coefficient of gross equivalized market income ($GINI_{i,t}$) and the adjusted wage share ($WS_{i,t}$). $Z_{i,t}$ and $X_{i,t}$ are a set of common explanatory factors that are frequently used in the literature on the determinants of both personal inequality and the labor income share. While these underlying factors are standard in the literature, our choice of proxy variables is inspired by Jaumotte and Osorio-Buitron (2015). They include: technology (the share of information and communications technology capital in the total capital stock); globalization (the share of China in world exports interacted with the country's lagged level of income per capita); financial reform (using the financial reform index constructed by Abiad et al., 2008); union density; the top marginal personal income tax rate; and the minimum wage expressed as per cent of median wage. In some regressions, we interact technological change, globalization, financial reform and union density with the degree of centralization of wage bargaining. As discussed above, we hypothesize that in countries with centralized wage bargaining, unions, faced with the challenges technological change and globalization, have strategically engaged in wage moderation policies while also trying to limit the rise in top-end income inequality. We experiment with different interaction terms because it has proven difficult in previous studies to disentangle empirically and conceptually the respective effects of different explanatory variables on income distribution. For example, while union density can be seen as a direct measure of workers' bargaining power,

the latter is also influenced by technological change, globalization and financial deregulation. The variable $CENT_{i,t}$ measures the deviation of the degree of wage centralization in a given country in a given year from the cross-country, cross-period sample mean. Variable definitions and data sources are provided in Appendix A. The equations are estimated by three-stage least squares (3SLS), a technique that improves the efficiency of the estimates by taking account of the correlation between the equations' residuals.

The results for Equations 2-4 are shown in Tables 3-5. As can be seen in Tables 3 and 4, the model without interaction terms performs overall quite well for the different distribution variables. According to the estimations, technological change and globalization have contributed to the rise in top household income shares and the Gini coefficient, and to the fall in the wage share. Moreover, additional explanatory factors for the rise in personal income inequality are financial deregulation, decreasing union density, lower top income tax rates and lower minimum wages.

Adding interaction terms to the regressions yields interesting results, confirming our conjectures based on the descriptive analysis presented in Subsection 2. The degree of centralization of wage bargaining interacts negatively with technological change, globalization and financial reform, and positively with union density in the regressions for both personal income inequality (Tables 3 and 4) and the wage share (Table 5). In other words, in countries with relatively strong wage coordination personal income inequality has increased less than in countries with more liberal labor markets, even when faced in similar ways with the challenges of technological change, globalization, financial reform and de-unionization. On the other hand, the share of wages in national income fell more strongly in countries with more coordinated labor markets.

5   Discussion

By way of conclusion, in what follows we briefly discuss our findings against the background of previous, related literature. To begin with, the growth model perspective as proposed by Baccaro and Pontusson (2016) rightly emphasizes the importance of income distribution for macroeconomic outcomes and that adverse distributional shocks in many countries put an end to the wage-led growth model of the Fordist period. They explicitly integrate the neo-Kaleckian concept of wage-led growth, which focuses on the aggregate demand effects of changes in the functional distribution of income (aggregate wages versus aggregate profits). But they cannot explain why different countries developed different growth models since the end of the Post Fordist period. We show how different growth regimes are linked to different patterns of (functional and personal) income distribution, and how differences in wage bargaining institutions contribute to explaining these different patterns of income distribution, in spite of most countries confronting similar paths

of technological change and globalization as well as financial and labor market liberalization.

Secondly, our analysis confirms a number of insights of the VoC literature which explicitly addresses the question why different sets of countries, i.e., LMEs and CMEs, developed different growth models by strengthening their respective comparative institutional advantages. This literature also predicts that LMEs have higher wage dispersion and personal inequality than CMEs. While the VoC literature emphasizes that wage restraint can be more easily organized in countries with coordinated labor market, the channel through which wage centralization affects aggregate demand and the trade balance is not income distribution but export price competitiveness and conservative monetary and fiscal policies. For instance, Höpner and Lutter (2014) show that wage centralization is related negatively with nominal unit labor cost growth. Iversen and Soskice (2012) cite a number of studies suggesting that wage centralization is associated with conservative monetary and fiscal policy. Chang et al. (2010, p. 40) have argued that in countries with proportional representation electoral systems, which also tend to feature higher wage centralization, policies are less likely to favor consumers and more likely to favor producers, since the competition for the median voter is diminished. In line with this argument, Arabzadeh (2016) presents empirical evidence that higher wage centralization is typically associated with a lower budget deficit, and hence with a lower current account. While our results are not inconsistent with these hypotheses, we show that, over the period 1981-2007 and for a sample of 18 industrialized countries, higher wage centralization has contributed to lower wage shares and lower top income shares, and that lower wage shares and lower top income shares have led to higher national current accounts independently of the direct effects of wage centralization on the current account.

Finally, the joint analysis of the personal and the functional distribution of income that we propose in this paper can also be related to current debates in the macroeconomics literature on inequality. In this literature, it has become common practice 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, amongst others, 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, Kumhof et al., 2012). In our view, the relation between different measures of personal income inequality and the functional distribution of income is often not accurately dealt with in the more recent literature. Leigh (2007), for example, argues that top income shares are closely related to other measures of personal inequality such as the Gini coefficient of household income and recommends the use of top income shares in panel regression analyses when other measures of inequality are not available for a sufficient number of countries

and over long enough time spans. However, as noted above, in terms of the expenditure cascades model, this recommendation is clearly not warranted, because an increase in, e.g., the Gini coefficient, which is relatively insensitive to changes at the tails of the distribution, will have very different (less strongly negative) effects on household saving and hence on the current account than a rise in top income shares. Kumhof et al. (2015) and Kumhof et al. (2012) argue that the rise in top-end income inequality has contributed to the rise in household debt and current account deficits in the Anglo Saxon countries, thereby contributing to the global financial crisis after 2007. A pitfall of their models is that no distinction is made between the personal and the functional distribution of income. Our analysis complements these works by emphasizing the importance of high corporate profits and low wages and household income in explaining the weakness of domestic demand of a number of non-Anglo Saxon countries such as Germany and Japan with persistent current account surpluses prior to the global financial crisis.

Two important avenues for future research are highlighted by Baccaro and Pontusson (2016). Firstly, how do national growth models evolve over time? To the extent that both the debt-led growth models of the United States and the United Kingdom and the export-led growth models of Germany and Japan have proven unsustainable with the global financial crisis, an intriguing question to ask is what will be the new drivers of aggregate demand in the post-crisis period? Can aggregate demand recover sustainably over the medium to long term without there being a reversal of the adverse distributional shifts of the past three or four decades? Secondly, and related, how can politics be introduced more explicitly into the macroeconomic analysis of the determinants and consequences of income distribution? While we highlight the importance of wage centralization and the distinction of personal and functional income distribution for the emergence of different growth models, the latter should also be analyzed within the context of broader institutional factors and political power relations (see also Belabed et al., 2017). In particular, different institutions in the areas of social security, education and housing likely play an important role in explaining why adverse distributional shifts have had different effects on household saving and debt in particular countries.

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A   Description of data

A.1   Variable definitions and data sources

| Variable	Definition	Source
Section 3.1/3.2		
Top 5% income share	Top 5% income share of pre-tax personal income	WTID
Gini coefficient	Gini coefficient of equivalized household market income	SWIID
Adjusted wage share	Adjusted wage share of the total economy in % of GDP at current factor cost	AMECO
CENT	Summary measure of centralisation of wage bargaining	Visser (2015)
Section 3.1		
ICT share in capital stock	Share of information and communications technology capital in total capital stock	Jorgenson/Vu (2011)
Income per capita	Ratio of GDP at chained PPPs (const. 2011 U.S. Dollars) to population	PWT
China export share	Share of China in world exports	WDI
Financial reform index	Financial reform index	Abiad et al. (2008)
Union density	Trade union density	OECD
Top tax	Top marginal personal income tax rate	OECD
Minimum wage	Mimimum wage in % of median wage	OECD
Section 3.2		
Current account balance	Current account in % of GDP	WDI
Net foreign assets	Total assets minus total liabilities in % of GDP	Lane/Milesi-Ferretti (2007)
Relative output per worker	Ratio of GDP at chained PPPs (const. 2005 U.S. Dollars) to working age population	WDI
Capital account openness	Capital controls index	Quinn/Toyoda (2008)
Dependency ratio	Ratio of the population older than 65 years to the population between 14 and 65	WDI
Population growth	Population growth	WDI
Reserve currency status	Share of a country's own currency in the total stock of world reserves	Phillips et al. (2013)
Output gap	Real GDP in constant 2005 U.S. Dollar (HP filter)	PWT
Terms of trade	Ratio of an index of export prices to an index of import prices	OECD
Trade openness	Exports and imports of goods and services in % of GDP	WDI
Private credit	Private credit by deposit money banks and other financial institutions in % of GDP	GFDD
Fiscal balance	Total government revenues minus total government expenditures in % of GDP	OECD, AMECO, WEO

Note: WTID=World Top Incomes Database; SWIID=Standardized World Income Inequality Database; AMECO=AMECO database of the European Commission; PWT=Penn World Table; WDI=World Development Indicators (World Bank); OECD=OECD Statistics; GFDD=Global Financial Development Database (World Bank); WEO=World Economic Outlook Database (IMF).

A.2   Demeaning of explanatory variables in Section 3.2

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:

$$\widetilde{X}_{i,t} = X_{i,t} - \frac{\sum_{i=1}^{J} \left(W_{i,t} * X_{i,t} \right)}{\sum_{i=1}^{J} W_{i,t}} \tag{5}$$

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).
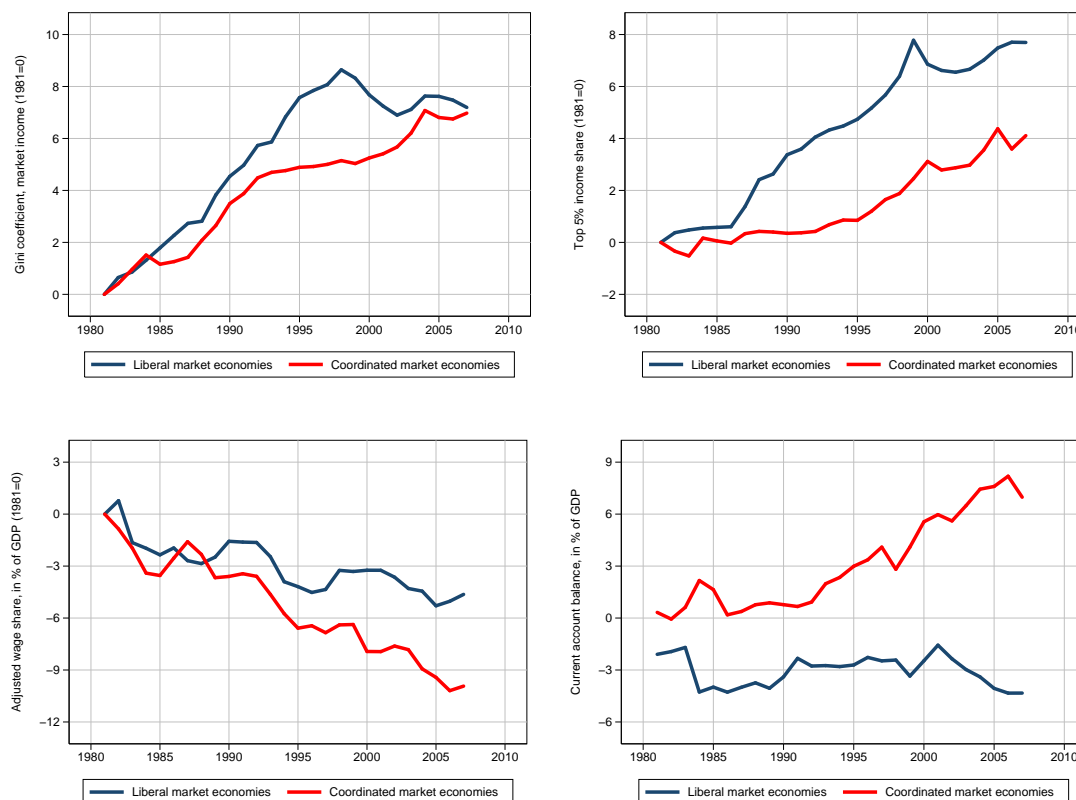
Note: The figure shows the average change in, respectively, the top 5% household income share, the Gini coefficient of market income, the adjusted wage share, and the current account balance in % of GDP, 1981-2007. The Liberal Market Economies (LME) include Australia, Canada, New Zealand, the United Kingdom, and the United States. The Coordinated Market Economies (CME) include Denmark, Finland, Germany, Japan, the Netherlands, Norway, Sweden, and Switzerland. For the adjusted wage share, New Zealand (LME) and Switzerland (CME) are excluded due to missing data over part of the 1981-2007 period.

Figure 1: Different measures of income distribution and current account balances
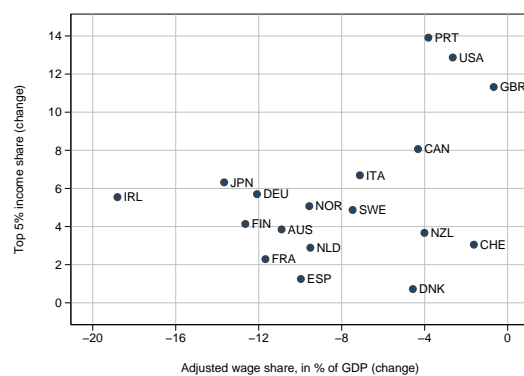
Note: The figure shows the change in the adjusted wage share (horizontal axis) against the change in the top 5% household income share (vertical axis), 1981-2007. For New Zealand changes are shown for the period 1986-2007. For Portugal changes are shown for the period 1981-2005. For Switzerland changes are shown for the period 1991-2007. For all other countries, changes are calculated for the period 1981-2007.

Figure 2: Functional and personal income distribution

Functional and personal income distribution
Scenario I
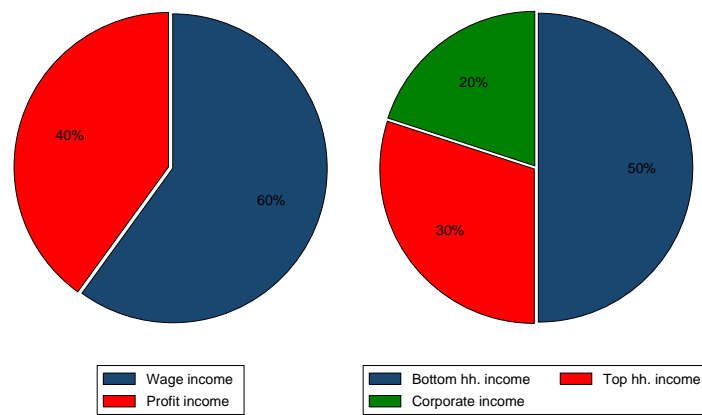
Functional and personal income distribution
Scenario II
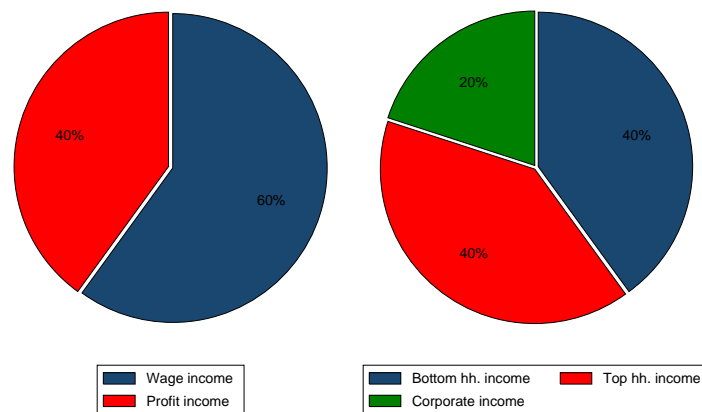
Functional and personal income distribution
Scenario III
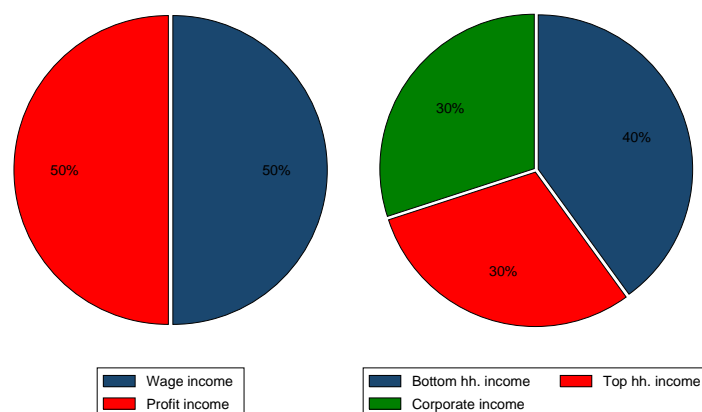
Figure 3: A numerical example of changes in functional and personal income distribution
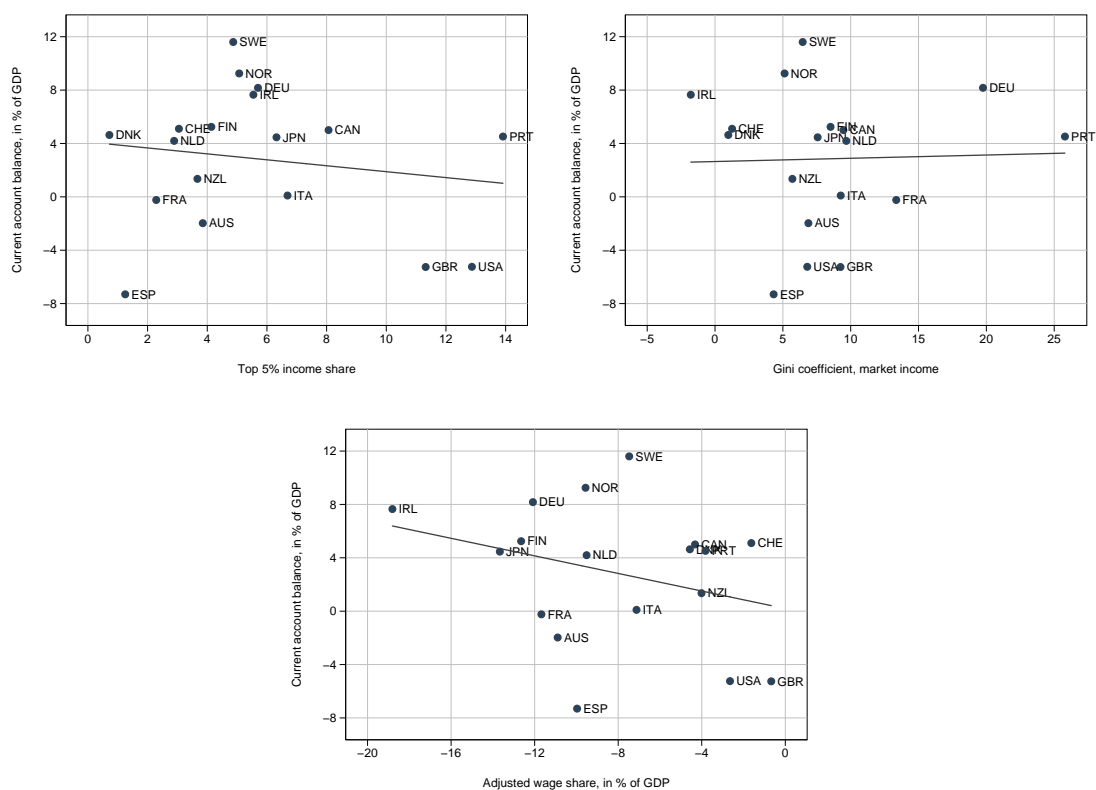
Note: The figure shows the change in, respectively, the top 5% household income share, the Gini coefficient of market income, and the adjusted wage share (horizontal axis) against the change in the current account balance in % of GDP (vertical axis), 1981-2007. For New Zealand changes are shown for the period 1986-2007. For Portugal changes are shown for the period 1981-2005. For Switzerland changes are shown for the period 1991-2007. For all other countries, changes are calculated for the period 1981-2007.

Figure 4: Income distribution and current account balances

Note: The figure shows the estimated contribution of the change in the centralisation of wage bargaining and the income distribution to the change in the current account for the period 1981-2007. For Norway results are shown for the period 1981-2006. For New Zealand results are shown for the period 1987-2007. For Portugal results are shown for the period 1981-2006. For Spain results are shown for the period 1982-2007. For Switzerland results are shown for the period 1991-2007.

Figure 5: Contribution of change in distribution variables to change in current account balances
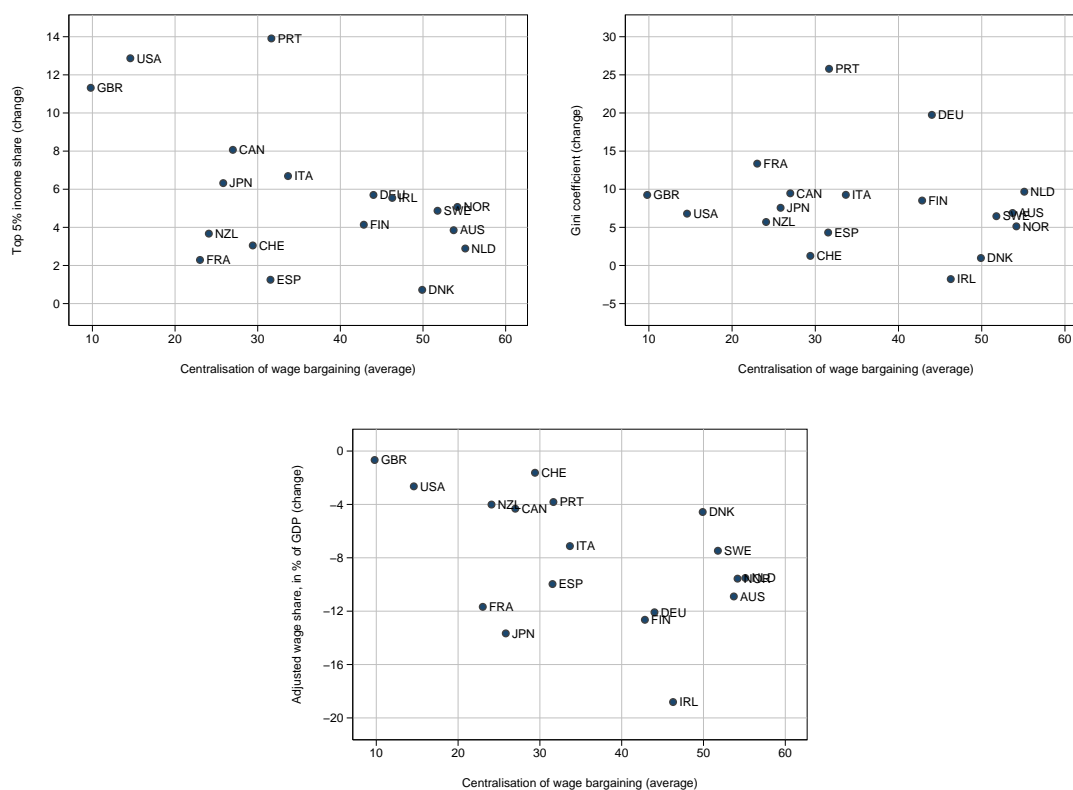
Note: The figure shows the average of the centralisation of wage bargaining (horizontal axis) against the change in, respectively, the top 5% household income share, the Gini coefficient of market income, and the adjusted wage share (vertical axis), 1981-2007. For New Zealand changes are shown for the period 1986-2007. For Portugal changes are shown for the period 1981-2005. For Switzerland changes are shown for the period 1991-2007. For all other countries, changes are calculated for the period 1981-2007.

Figure 6: Income distribution and centralisation of wage bargaining

Table 1: Pooled GLS, annual data, 1981-2007

Regressor	(1) CA	(2) CA	(3) CA	(4) CA	(5) CA	(6) CA	(7) CA	(8) CA	(9) CA	(10) CA	(11) CA	(12) CA
L.Net foreign assets (% of GDP)	0.058***	0.061***	0.056***	0.061***	0.062***	0.060***	0.064***	0.060***	0.062***	0.065***	0.063***	0.066***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
L.NFA/Y*(Dummy if NFA/Y < -60%)	-0.089***	-0.097***	-0.087***	-0.095***	-0.087***	-0.084***	-0.091***	-0.095***	-0.098***	-0.093***	-0.090***	-0.094***
	(0.020)	(0.020)	(0.020)	(0.020)	(0.019)	(0.019)	(0.018)	(0.020)	(0.020)	(0.019)	(0.019)	(0.019)
Output per worker (rel. to top 3 economies)	-0.014	-0.027	-0.016	-0.012	-0.022	-0.024	-0.021	-0.028	-0.019	-0.035	-0.037	-0.029
	(0.043)	(0.044)	(0.043)	(0.044)	(0.042)	(0.042)	(0.043)	(0.043)	(0.044)	(0.043)	(0.043)	(0.043)
L.Relative output per worker*Capital openness	0.082*	0.089*	0.083*	0.078	0.078	0.079*	0.075	0.090*	0.082	0.086*	0.086*	0.079
	(0.049)	(0.050)	(0.049)	(0.050)	(0.048)	(0.048)	(0.049)	(0.049)	(0.050)	(0.048)	(0.048)	(0.049)
Dependency ratio	-0.098	-0.110	-0.067	-0.136*	-0.114	-0.081	-0.145*	-0.083	-0.137*	-0.121	-0.092	-0.146*
	(0.075)	(0.075)	(0.077)	(0.076)	(0.075)	(0.077)	(0.077)	(0.076)	(0.076)	(0.076)	(0.077)	(0.077)
Population growth	-2.309***	-2.282***	-2.331***	-2.326***	-2.351***	-2.364***	-2.349***	-2.308***	-2.317***	-2.295***	-2.311***	-2.333***
	(0.447)	(0.448)	(0.449)	(0.453)	(0.442)	(0.446)	(0.450)	(0.449)	(0.453)	(0.445)	(0.448)	(0.450)
Reserve currency status	-0.043***	-0.033***	-0.039***	-0.030**	-0.039***	-0.034***	-0.026**	-0.029**	-0.027**	-0.028**	-0.024*	-0.023*
	(0.011)	(0.012)	(0.012)	(0.012)	(0.011)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Output gap	-0.393***	-0.399***	-0.398***	-0.394***	-0.412***	-0.416***	-0.411***	-0.404***	-0.397***	-0.415***	-0.419***	-0.414***
	(0.087)	(0.088)	(0.087)	(0.087)	(0.085)	(0.085)	(0.085)	(0.087)	(0.087)	(0.085)	(0.085)	(0.085)
Terms of trade gap*Trade openness	0.451***	0.456***	0.446***	0.453***	0.392***	0.387***	0.396***	0.451***	0.455***	0.396***	0.391***	0.398***
	(0.074)	(0.074)	(0.075)	(0.074)	(0.070)	(0.071)	(0.070)	(0.075)	(0.074)	(0.070)	(0.071)	(0.070)
Private credit (% of GDP)	-0.048***	-0.046***	-0.048***	-0.046***	-0.042***	-0.042***	-0.041***	-0.047***	-0.046***	-0.040***	-0.040***	-0.040***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
L.Fiscal balance (% of GDP)	0.149***	0.142***	0.144***	0.126***	0.135***	0.128***	0.114***	0.138***	0.127***	0.125***	0.121***	0.114***
	(0.048)	(0.048)	(0.048)	(0.048)	(0.046)	(0.046)	(0.046)	(0.048)	(0.048)	(0.046)	(0.047)	(0.046)
Centralisation of wage bargaining	-	0.037**	-	-	-	-	-	0.036**	0.019	0.037**	0.035**	0.021
		(0.015)						(0.015)	(0.017)	(0.015)	(0.015)	(0.017)
L.Gini coefficient	-	-	-0.068	-	-	-0.071	-	-0.060	-	-	-0.061	-
			(0.047)			(0.047)		(0.047)			(0.047)	
L.Top 5% income share	-	-	-	-0.178***	-	-	-0.163***	-	-0.147**	-	-	-0.128**
				(0.057)			(0.057)		(0.066)			(0.065)
Adj. wage share	-	-	-	-	-0.206***	-0.208***	-0.202***	-	-	-0.210***	-0.211***	-0.203***
					(0.053)	(0.053)	(0.053)			(0.053)	(0.053)	(0.053)
Observations	467	467	467	467	467	467	467	467	467	467	467	467
Countries	18	18	18	18	18	18	18	18	18	18	18	18
R-squared	0.455	0.465	0.459	0.464	0.471	0.473	0.477	0.470	0.469	0.475	0.477	0.480

Note: CA is the current account 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 2: Pooled GLS, annual data, 1981-2007

Regressors	(1) CA	(2) CA	(3) CA	(4) CA	(5) CA	(6) CA	(7) CA
L.Net foreign assets (% of GDP)	0.061***	0.059***	0.058***	0.060***	0.063***	0.062***	0.064***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
L.NFA/Y*(Dummy if NFA/Y <-60%)	-0.097***	-0.092***	-0.091***	-0.094***	-0.090***	-0.089***	-0.092***
	(0.020)	(0.020)	(0.020)	(0.019)	(0.019)	(0.019)	(0.018)
Output per worker (rel. to top 3 economies)	-0.027	-0.023	-0.024	-0.017	-0.032	-0.033	-0.026
	(0.044)	(0.044)	(0.043)	(0.044)	(0.043)	(0.042)	(0.043)
L.Relative output per worker*Capital openness	0.089*	0.094*	0.095*	0.088*	0.089*	0.090*	0.083*
	(0.050)	(0.050)	(0.049)	(0.050)	(0.048)	(0.048)	(0.048)
Dependency ratio	-0.110	-0.101	-0.081	-0.127*	-0.116	-0.093	-0.140*
	(0.075)	(0.074)	(0.076)	(0.075)	(0.075)	(0.077)	(0.076)
Population growth	-2.282***	-2.307***	-2.331***	-2.345***	-2.325***	-2.344***	-2.362***
	(0.448)	(0.448)	(0.448)	(0.451)	(0.445)	(0.448)	(0.449)
Reserve currency status	-0.033***	-0.055***	-0.052***	-0.048***	-0.045***	-0.041***	-0.039***
	(0.012)	(0.012)	(0.012)	(0.013)	(0.012)	(0.013)	(0.013)
Output gap	-0.399***	-0.401***	-0.405***	-0.400***	-0.416***	-0.419***	-0.415***
	(0.088)	(0.087)	(0.087)	(0.087)	(0.085)	(0.085)	(0.086)
Terms of trade gap*Trade openness	0.456***	0.459***	0.455***	0.458***	0.404***	0.399***	0.404***
	(0.074)	(0.073)	(0.074)	(0.073)	(0.071)	(0.072)	(0.071)
Private credit (% of GDP)	-0.046***	-0.048***	-0.048***	-0.047***	-0.041***	-0.042***	-0.041***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
L.Fiscal balance (% of GDP)	0.142***	0.126***	0.124***	0.115**	0.116***	0.112**	0.107**
	(0.048)	(0.048)	(0.048)	(0.048)	(0.046)	(0.046)	(0.046)
Centralisation of wage bargaining	0.037**	-	-	-	-	-	-
	(0.015)						
Centralisation of wage bargaining*Euro (Dummy = 0)	-	0.021	0.020	0.007	0.025	0.024	0.013
		(0.015)	(0.015)	(0.017)	(0.016)	(0.016)	(0.017)
Centralisation of wage bargaining*Euro (Dummy = 1)	-	0.098***	0.096***	0.077***	0.083***	0.080***	0.065**
		(0.025)	(0.025)	(0.027)	(0.026)	(0.026)	(0.028)
L.Gini coefficient	-	-	-0.049	-	-	-0.053	-
			(0.047)			(0.047)	
L.Top 5% income share	-	-	-	-0.125*	-	-	-0.113*
				(0.065)			(0.064)
Adj. wage share	-	-	-	-	-0.192***	-0.193***	-0.187***
					(0.053)	(0.054)	(0.053)
Observations	467	467	467	467	467	467	467
Countries	18	18	18	18	18	18	18
R-squared	0.465	0.474	0.479	0.479	0.483	0.486	0.489

Note: CA is the current account 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 3: Top 5% income share, 3SLS, annual data, 1981-2007

Regressors	(1) TIS	(2) TIS	(3) TIS	(4) TIS	(5) TIS
Ln(ICT share in capital stock)	0.038**	0.035**	0.045***	0.028*	0.029*
	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)
Ln(L.Income per capita)	-0.200***	-0.216***	-0.151***	-0.206***	-0.219***
	(0.045)	(0.045)	(0.047)	(0.044)	(0.044)
Ln(L.income per capita)*China export share	0.063***	0.068***	0.066***	0.065***	0.068***
	(0.008)	(0.009)	(0.008)	(0.008)	(0.008)
Ln(Financial reform index)	0.040**	0.042**	0.040**	0.042**	0.049**
	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)
Union density	-0.564***	-0.600***	-0.518***	-0.551***	-0.622***
	(0.074)	(0.074)	(0.074)	(0.073)	(0.075)
Top tax	-0.209***	-0.185***	-0.190***	-0.175***	-0.184***
	(0.056)	(0.057)	(0.056)	(0.057)	(0.056)
Minimum wage	-0.023	-0.031	-0.044	0.007	-0.038
	(0.034)	(0.034)	(0.034)	(0.035)	(0.034)
Ln(ICT share in capital stock)*CENT	-	-0.034***	-	-	-
		(0.013)			
Ln(L.income per capita)*China export share*CENT	-	-	-0.004***	-	-
			(0.001)		
Ln(Financial reform index)*CENT	-	-	-	-0.229***	-
				(0.075)	
Union density*CENT	-	-	-	-	0.497***
					(0.145)
Country fixed effects	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	469	469	469	469	469
Countries	18	18	18	18	18

Note: TIS is the top 5% income share. All regressions are estimates by three-stage least squares (3SLS) and include country and time fixed effects. Standard errors are reported in parentheses. All estimations include a constant term. Ln denotes the natural logarithm and 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.

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Table 4: Gini coefficient of market income, 3SLS, annual data, 1981-2007

Regressors	(1) GINI	(2) GINI	(3) GINI	(4) GINI	(5) GINI
Ln(ICT share in capital stock)	0.088***	0.089***	0.091***	0.079***	0.092***
	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
Ln(L.Income per capita)	-0.311***	-0.305***	-0.286***	-0.316***	-0.301***
	(0.038)	(0.039)	(0.041)	(0.038)	(0.039)
Ln(L.income per capita)*China export share	0.036***	0.034***	0.038***	0.038***	0.034***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Ln(Financial reform index)	0.065***	0.064***	0.065***	0.067***	0.060***
	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
Union density	-0.245***	-0.231***	-0.222***	-0.234***	-0.215***
	(0.064)	(0.065)	(0.065)	(0.063)	(0.065)
Top tax	-0.192***	-0.202***	-0.183***	-0.164***	-0.205***
	(0.049)	(0.049)	(0.049)	(0.049)	(0.049)
Minimum wage	-0.175***	-0.172***	-0.186***	-0.151***	-0.167***
	(0.030)	(0.030)	(0.030)	(0.030)	(0.030)
Ln(ICT share in capital stock)*CENT	-	0.013	-	-	-
		(0.011)			
Ln(L.income per capita)*China export share*CENT	-	-	-0.002*	-	-
			(0.001)		
Ln(Financial reform index)*CENT	-	-	-	-0.192***	-
				(0.065)	
Union density*CENT	-	-	-	-	-0.259**
					(0.126)
Country fixed effects	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	469	469	469	469	469
Countries	18	18	18	18	18

*Note: GINI is the Gini coefficient of market income. All regressions are estimates by three-stage least squares (3SLS) and include country and time fixed effects. Standard errors are reported in parentheses. All estimations include a constant term. Ln denotes the natural logarithm and 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: Adjusted wage share in % of GDP, 3SLS, annual data, 1981-2007

Regressors	(1) WS	(2) WS	(3) WS	(4) WS	(5) WS
Ln(ICT share in capital stock)	-0.022**	-0.024***	-0.015*	-0.025***	-0.025***
	(0.009)	(0.009)	(0.008)	(0.009)	(0.009)
Ln(L.Income per capita)	-0.084***	-0.094***	-0.033	-0.086***	-0.092***
	(0.026)	(0.026)	(0.026)	(0.025)	(0.026)
Ln(L.income per capita)*China export share	-0.019***	-0.016***	-0.016***	-0.018***	-0.017***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Ln(Financial reform index)	0.008	0.009	0.008	0.009	0.011
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Union density	-0.026	-0.048	0.022	-0.022	-0.047
	(0.042)	(0.043)	(0.042)	(0.042)	(0.043)
Top tax	-0.045	-0.030	-0.025	-0.034	-0.036
	(0.032)	(0.032)	(0.031)	(0.033)	(0.032)
Minimum wage	-0.053***	-0.058***	-0.076***	-0.044**	-0.059***
	(0.020)	(0.020)	(0.019)	(0.020)	(0.020)
Ln(ICT share in capital stock)*CENT	-	-0.021***	-	-	-
		(0.007)			
Ln(L.income per capita)*China export share*CENT	-	-	-0.004***	-	-
			(0.001)		
Ln(Financial reform index)*CENT	-	-	-	-0.076*	-
				(0.043)	
Union density*CENT	-	-	-	-	0.184**
					(0.084)
Country fixed effects	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	469	469	469	469	469
Countries	18	18	18	18	18

Note: WS is the adjusted wage share in % of GDP. All regressions are estimates by three-stage least squares (3SLS) and include country and time fixed effects. Standard errors are reported in parentheses. All estimations include a constant term. Ln denotes the natural logarithm and 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.

Impressum