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Income inequality as a cause of the Great Recession? A survey of current debates

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The recent debates about the role of income inequality in causing the “Great Recession” are surveyed along different dimensions. First, we review the controversy about the “Rajan hypothesis” for the United States. In his widely discussed book “Fault Lines” (2010), Raghuram Rajan argues that many U.S. consumers have reacted to the decline in their relative permanent incomes since the early 1980s by reducing saving and increasing debt. This has temporarily kept private consumption and thus aggregate demand and employment high, despite stagnating incomes for many households. But it also contributed to the creation of a credit bubble, which eventually burst, and a large current account deficit in the United States. We place the Rajan hypothesis in the context of competing theories of consumption, and survey the empirical literature on the effects of inequality on household behaviour beyond the largely anecdotal evidence provided in Rajan (2010). Second, we discuss the macroeconomic effects of income distribution in China and Germany, which both experienced pronounced declines in the share of wages and household income in national income, strong increases in personal inequality, rising personal saving rates, weak private consumption demand and strong improvements in the current account in the years before the Great Recession. Specifically, we argue that the ways in which consumers react to changes in relative income depend on such institutional factors as the deepness and regulation of the credit markets, the organisation of the labour market and the education and welfare systems, and the reactivity of monetary and fiscal policy to unemployment. We conclude that reducing inequality in these countries is crucial for overcoming macroeconomic instability and the global and European current account imbalances over the longer term.

Keywords: Great Recession, crisis, income inequality, global imbalances, USA, China, Germany, literature survey

JEL classifications: E2, F31, F00, D1, D3

1. Introduction

“In the wake of the current crisis there is an emerging view about the importance of growing inequality as one of the causes of global crises past and present.” (IMF-ILO, 2010, p. 8)

Is there a link between rising inequality and the “Great Recession”? As noted by *The Economist* (22/01/2011, p. 11), “several prominent economists now reckon that inequality was a root cause of the financial crisis.” Indeed, in recent years there has been a proliferation of analyses supporting this view (e.g. UN Commission of Experts, 2009; Stiglitz, 2009; IMF-ILO, 2010; Rajan, 2010; Reich, 2010; Kumhof and Rancière, 2010; Kumhof et al, 2012; Galbraith, 2012; Palley, 2012). The explanation is straightforward: As the benefits of rising aggregate income over the past decades were confined to a rather small group of households at the top of the income distribution, the consumption of the lower and middle income groups was largely financed through rising credit rather than rising incomes. This process was facilitated by government action, both directly through credit promotion policies and indirectly through the deregulation of the financial sector. But with the downturn in the housing market and the sub-prime mortgage crisis starting in 2007, the over indebtedness of the U.S. personal sector became apparent and the debt-financed private demand expansion came to an end. We refer to this line of argument as the “Rajan hypothesis”, because of the impetus Rajan’s book “Fault Lines” (2010) has given to the renewed interest in inequality as a macroeconomic risk. In the remainder of this introduction, we will first briefly discuss the Rajan hypothesis and the debates to which it has given rise (Section 1.1). Section 1.2 then summarises the approach and main results of our literature survey.

1.1. The Rajan hypothesis and the renewed interest in inequality as a macroeconomic risk

Rajan (2010, p. 9) succinctly summarises his argument as follows:

“The political response to rising inequality – whether carefully planned or an unpremeditated reaction to constituent demands – was to expand lending to households, especially low-income ones. The benefits – growing consumption and more jobs – were immediate, whereas paying the inevitable bill could be postponed into the future. Cynical as it may seem, easy credit has been used as a palliative throughout history by governments that are unable to address the deeper anxieties of the middle class directly. [...] In the United States, the expansion of home ownership – a key element of the American dream – to low and middle-income households was the defensible linchpin for the broader aims of expanding credit and consumption. But when easy money pushed by a deep-pocketed government comes into contact with the profit motive of a sophisticated, competitive, and amoral financial sector, a deep fault line develops.” (Rajan, 2010, p. 9)

While Rajan puts a lot of emphasis on government failure and the political economy of income inequality and financial market deregulation, the central implication of his analysis is the rejection of the conventional theories of consumption, which see no link between the inequality of (permanent) income and aggregate personal consumption, and hence no need for government action stimulating consumption and jobs in response to higher inequality. Moreover, while many recent analyses of the crisis point to the crucial role of deregulated financial markets, asset bubbles and debt accumulation (e.g. Shiller, 2008; Reinhart and Rogoff, 2010), “[t]hat does not however seem to be the end of the matter, since inequality could have had an indirect effect in contributing to the asset bubble” (Atkinson and

Morelli, 2010, p. 58). Thus, in essence, the Rajan hypothesis posits that given the rise in inequality the credit expansion in the personal sector was both necessary for supporting aggregate demand and employment, and unsustainable.

To be precise, the Rajan hypothesis existed long before Rajan (2010). In his bestseller on the causes of the “Great Crash” of 1929 and the subsequent Great Depression in the United States, John K. Galbraith (1954) mentions “the bad distribution of income” as the first of “five weaknesses which seem to have had an especially intimate bearing on the ensuing disaster” (Galbraith, 1954 [1997, pp. 177 et seq.]). Similarly, the former chairman of the Federal Reserve Bank, Marriner S. Eccles, points to the rising inequality and credit-financed consumption during the 1920s when, “as in a poker game where the chips were concentrated in fewer and fewer hands, the other fellows could stay in the game only by borrowing. When their credit ran out, the game stopped” (Eccles, 1951, p. 76).¹ While these lessons from the Great Depression were largely forgotten, perhaps due to the relatively low inequality during the first three post-war decades, some economists have essentially anticipated the Rajan hypothesis since the 1980s, when inequality started to soar again in the United States (e.g. Pollin, 1988; Palley, 1994, 2002; Frank, 1999, 2007; Boushey and Weller, 2006; Dutt, 2006; Cynamon and Fazzari, 2008; Barba and Pivetti, 2009; Horn et al., 2009). But many economists either ignored the macroeconomic implications of inequality or explicitly welcomed the increasing availability of personal credit as an efficient market response to a higher demand by households for insurance against a higher dispersion of the transitory component of income (e.g. Greenspan, 1996; Krueger and Perri, 2003, 2006). Theoretically, this lack of attention to inequality seemed justified by the permanent income hypothesis, first formulated by Friedman (1957), which posits that household consumption is unrelated to the inequality of permanent income. However, recent empirical work strongly suggests that the rise in inequality over the past decades has been largely due to the permanent rather than transitory components of income (e.g. Kopczuk et al., 2010). The Rajan hypothesis, which relies on the assumption of a higher inequality in the permanent component of income, is thus of great theoretical importance, and it bears resemblance to the relative income hypothesis (Duesenberry, 1949; Frank, 1985, 2005).

The Rajan hypothesis has triggered a lively debate about inequality in the United States, and the initial reception was controversial (*Financial Times*, 01/10/2010; *The Economist*, 22/01/2011). Rajan’s critique of government policies that explicitly aimed at promoting lending to low income groups was taken up in the dissenting statement of the Republican members of the government’s Financial Crisis Inquiry Commission (FCIC, 2011, p. 486). Some thus saw it as “a Republican narrative” and have taken issue with its underlying political tone, perceived to suggest that “the poor caused the crisis” together with misguided government policies responding to their demands (Johnson, 2011). Yet, the “Democratic” majority group of the FCIC refers especially to Rajan’s (2005) earlier critique of the deregulation of the financial system, which was defended at the time by many economists and by the political establishment (FCIC, 2011, p. 17). Palley (2012) is also very critical of Rajan (2010) and argues that “according to Rajan, the only effect of worsened income distribution was to provoke populist meddling. There were no effects regarding creating a shortage of demand, which is part of the Keynesian account of income distribution” (Palley, 2012, p. 120). However, as the quote from the introduction of Rajan (2010, p. 9) shows, the Rajan hypothesis is explicitly macroeconomic. Others have noted the lack of emphasis on the explosion of incomes within the very top (5, or 1 per cent) of the income distribution in Rajan’s argument, which focuses on changes in the 90/10 and

¹ See Olney (1991) for an analysis of the expansion of personal credit during the 1920s. See Olney (1999) for an analysis of the link between personal credit and debt and the consumption collapse of 1930. See Kumhof and Rancière (2010) for a discussion of the parallels between the Great Depression and the Great Recession in terms of the link between inequality, household debt, and crisis.

90/50 income differentials due to skill-biased technological change. Top inequality in turn may have been driven by political decisions, which were facilitated by the role of the financial industry in lobbying and political party funding (e.g. Hacker and Pierson, 2010), but is also related to the deregulation of the financial markets. Thus, the concomitant rise in inequality and financial fragility may be due to coincidence rather than causality (Krugman, 2010a; Atkinson and Morelli, 2010; Acemoglu, 2011). Although more recently there seems to be increasing agreement that rising inequality, whatever its precise origins, did play a role in the specific case of the U.S. financial crisis, it is doubted whether the argument can be universally applied to other countries and crises. “Mr Rajan’s story may work for America’s 2008 crisis. It is not an iron law” (*The Economist*, 17/3/2012).

The Rajan hypothesis has a further implication, linking the debt-fuelled consumption demand in the United States to the strong increase in the U.S. current account deficit during the period leading up to the crisis:

“There are usually limits to debt-fueled consumption, especially in a large country like the United States. The strong demand for consumer goods and services tends to push up prices and inflation. A worried central bank then raises interest rates, curbing both households’ ability to borrow and their desire to consume. Through the late 1990s and the 2000s, though, a significant portion of the increase in U.S. household demand was met from abroad, from countries such as Germany, Japan, and, increasingly, China, which have traditionally relied on exports for growth and had plenty of spare capacity to make more.” (Rajan, 2010, p. 9)

This potential causal link between U.S. inequality and the global current account imbalances is noteworthy, because the latter are generally considered to be an important contributing factor to the Great Recession at the global level (e.g. Caballero et al., 2008; Obstfeld and Rogoff, 2010; Blanchard and Milesi-Ferretti, 2010; various contributions in Claessens et al., 2010; Palley, 2012). Yet there is an emerging view that growing income inequality also contributed directly to the emergence of export-led growth in other countries (e.g. Fitoussi and Stiglitz, 2009; Horn et al., 2009; Broer, 2010; IMF-ILO, 2010; ILS, 2011; Kumhof et al., 2012; Galbraith, 2012).

Kumhof et al. (2012), building on Kumhof and Rancière (2010)², argue, on the basis of an open economy, dynamic stochastic general equilibrium (DSGE) model, that in advanced, especially Anglo-Saxon, economies with highly developed financial markets, rising inequality has led to a deterioration of savings-investment balances, as the poor and middle class borrowed from the rich and from foreign lenders to finance consumption. In emerging economies, especially China, inequality has also increased, but financial markets are less developed and hence do not allow the lower and middle classes to respond to lower shares in aggregate income by borrowing. This leads to weak domestic demand and an export-oriented growth model, with wealthy creditors effectively lending to foreign rather than domestic borrowers. Similarly, Broer (2010) calibrates a theoretical model to match the observed rise in household indebtedness in the United States as a result of higher income risk and the higher precautionary saving by households in China due to increased income volatility in the context of less developed financial markets. A somewhat different but related approach is followed by the “potentials of wage-led growth” project of the International Labour Organization (ILO), with a focus on the macroeconomic implications of the functional distribution of income between labour and capital (Lavoie and Stockhammer, forthcoming). This perspective is important because in many countries with current account surpluses not only did the distribution of household incomes become more

² Kumhof and Rancière (2010) present a theoretical dynamic stochastic general equilibrium model (DSGE) where the increase in the top income share leads to higher leverage for the remainder of the population, and eventually triggers a financial and real crisis. The macroeconomic models by Palley (1994) and Dutt (2006) describe essentially similar mechanisms. See Subsection 2.3.4.

unequal, but households' incomes as a share of national income also declined, with potentially negative consequences for private consumption. In line with this perspective, IILS (2011) estimates a panel of 59 countries and finds a negative effect of a higher wage share, a higher Gini coefficient or a higher top 10 per cent income share in household income and a positive effect of a higher bottom 20 per cent income share on the current account. It is argued that:

“[A] reduction in the wage share depresses purchasing power and leads to both low domestic consumption and high export positions, as it has been the case in China, Germany and Japan. Changes in income inequality related to the disparity of disposable income, on the other hand, are being expected to lower current account balances as low-income households will start to dis-save or extend their borrowing to keep up their consumption level with the average trend.” (IILS, 2011, p. 14)

But the estimation results do not allow distinguishing the effects of different measures of income distribution between countries with current account deficits and surpluses, as suggested by the theoretical model of Kumhof et al. (2012). Kumhof et al. (2012) estimate a panel of 18 OECD countries for the period 1968-2008 and find that a rise in top (5 or 1 per cent) income shares are associated with a weaker current account, after controlling for standard fundamental variables. Therefore they posit that rising inequality contributed to both higher leverage in the advanced economies and to the global current account imbalances, which in turn fuelled the build-up of the crisis. However, the generality of these results is called into question by the findings of Bordo and Meissner (forthcoming) who estimate a panel of 14 advanced economies for the period 1920-2008 and conclude that while financial crises are typically preceded by credit booms, inequality only occasionally rises during periods of credit expansion. For example, it has been argued that in Germany, private households did not react to falling incomes and increased income dispersion by borrowing more, but by higher precautionary savings, thus contributing to the improvement of the current account since the early 2000s (e.g. Carlin and Soskice, 2007; Fitoussi and Stiglitz, 2009; Bofinger, 2012). Similarly, Atkinson and Morelli (2010, p. 66) conclude from their cross-country empirical analysis that “[o]utside the US, the history of systemic banking crises in different countries around the world does not suggest that either rising or high inequality has been adduced as a significant causal factor.”

Our paper contributes to the literature along different dimensions. First, focusing on the United States, we summarise the available empirical literature in support of the Rajan hypothesis beyond the largely anecdotal evidence provided in Rajan (2010). We also discuss some of the criticisms and, indeed, weaknesses in Rajan's own argument. Moreover, we place the Rajan hypothesis in the context of competing theories of consumption and, specifically, a recently growing body of literature that calls for a renaissance of the relative income hypothesis.

Second, we review the debates about the macroeconomic consequences of changes in the distribution of income in China and Germany. We choose these two countries because the rise in income inequality has been particularly strong in these countries during the period leading up to the Great Recession (OECD, 2010a, 2011a), and because China and Germany were the two countries with the largest current account surpluses worldwide on the eve of the crisis (Figure 1). While the bilateral trade balance between the United States and China has been widely debated, Germany plays a crucial role in the current account imbalances within the European Monetary Union. However, there is no consensus to date as to the underlying causes of the global and European imbalances, and it has proven difficult in panel regression analyses to explain the widening of current accounts during the decade or so before the Great Recession with standard fundamentals (e.g. Faruquee and Lee, 2009; Barnes et al., 2010; Ivanova, 2012). This is especially true with respect to the United States, China and Germany, which are the three quantitatively most

important countries in terms of the global imbalances. Chinn et al. (2011) perform a forensic analysis of global imbalances, especially for the period immediately before the crisis, applying standard structural variables. Their results show that: “[T]he U.S. current account deviated from the predicted path significantly in the 1996-2000 and 2001-05 periods [...]. Germany’s and China’s current accounts are well outside the confidence interval. These results suggest the possibility of missing variables that are not captured by the estimation model as far as the last period is concerned.” (Chinn et al., 2011, p. 18)

In sum, we agree with Bordo and Meissner (forthcoming) that while the Rajan hypothesis cannot simply be applied to all other economies without reference to the country-specific historical and institutional circumstances, additional narrative evidence is necessary to investigate the link between inequality and macroeconomic crises. By means of a case study-type literature survey, we seek to increase the understanding of the very different effects of rising inequality in different country-specific contexts. Because the United States, China and Germany together accounted for nearly 40 per cent of global GDP in 2010 (in current U.S. Dollars, World Bank’s World Economic Indicators), the macroeconomic trends in these three countries are of obvious importance for the past and future development of the world economy.³

1.2. Approach and summary results of this study

There are two main lines along which the distribution of income is potentially relevant in explaining patterns of aggregate demand and output: the distribution between business income and household income on the one hand, and the distribution of income between households on the other hand. To see this, consider the following basic accounting identities, which we will use to organise our discussion of the literature and to distinguish possible effects of the functional and personal distribution of income: Equation (1.2.1) defines the gross national income (Y^i) as the sum of household disposable income (Y^{HH}), business income, or cash flow (Y^F) and government taxes (T). Household income before taxes consists of wage income (W) and receipts from assets, i.e., the share of profits (P) accruing to households. Business income is thus defined as the share of profits retained by firms. Equation (1.2.2) defines the gross national income as the gross domestic product (Y^p) less net payments to the rest of the world (net primary incomes plus net transfers, NT). The total income thus defined will be spent on private consumption (C), private household investment (I^{HH}), private business investment (I^F), government consumption and investment expenditures (G), and exports (X) minus imports (M). Hence, the sum of the financial balances of the private household sector (disposable income less private consumption less household investment), the corporate sector (cash flow minus business investment), and the government (taxes minus government consumption and investment) will be equal to the current account balance (exports minus imports minus net payments to the rest of the world) (Equation 1.2.3).

$$(1.2.1) \quad Y^i = Y^{HH} + Y^F + T = W + P + T$$

$$(1.2.2) \quad Y^i + NT = Y^p = C + I^{HH} + I^F + G + (X - M)$$

$$(1.2.3) \quad (Y^{HH} - C - I^{HH}) + (Y^F - I^F) + (T - G) = (X - M - NT)$$

³ As the International Monetary Fund (IMF, 2009, pp. 32-3) puts it: “To complement efforts to repair the supply side of economies, [...] many economies that have followed export-led growth strategies and have run current account surpluses will need to rely more on domestic demand – notably emerging economies in Asia and elsewhere and Germany and Japan. This will help offset subdued domestic demand in economies that have typically run current account deficits and have experienced asset price (stock or housing) busts, including the United States, the United Kingdom, parts of the euro area, and many emerging European economies.”

We are especially interested in the link between income distribution, private household expenditure, and the current account balance. Private consumption accounts for around 70 per cent of GDP in the United States and 60 per cent in Germany, but less than 40 per cent in China, and correlates strongly and negatively with the current account. Equation (1.2.4) states that, again in a purely mechanical sense, an increase (decrease) in the share of private consumption in total income or output⁴ can be due to either an increase (decrease) in the share of household income in total income, or a decrease (increase) in the personal saving rate (s), or both:

$$(1.2.4) \quad C/Y = (1 - s) * Y^{HH}/Y$$

The distribution of income between firms and private households can be seen to affect the composition of aggregate demand in a situation where the “corporate veil”, separating businesses and their owners, has effective economic significance.⁵ In effect, although all firms are ultimately owned by individuals, the difference between accrual and realisation of capital gains is typically large and introduces a great deal of volatility in expected personal income (Atkinson, 2009, p. 9). Moreover, there may be institutional or other “distortions” that hamper the distribution of corporate profits according to individual preferences, or affect the cost and allocation of labour and capital through political factors (subsidies, taxes, bargaining power of workers and employers, etc.). Under these circumstances, changes in the distribution of income that are favourable to firms’ retained profits at the expense of household income will result in a decrease in the consumption-to-GDP ratio. Redistribution from business income to household income will have the opposite effect.

The distribution of personal income can affect private household behaviour in various ways including their saving and borrowing decisions. In particular, when households are influenced by the consumption patterns of richer households, a rise in inequality can lead to “expenditure cascades” (Robert Frank) affecting those households experiencing a decline in their relative income. On the other hand, higher income dispersion may also lead to higher precautionary saving, especially in the presence of liquidity constraints, or induce status seeking via wealth accumulation. We discuss competing theories of consumption against the background of country-specific circumstances and discuss how the nature of inequality (temporary or permanent, at the top or at the bottom) interacts with institutions and norms in the different countries. Specifically, it can be argued that the ways in which private households react to changes in relative income depend on such factors as the deepness and regulation of the credit markets, the quality of the social safety net, the functioning of the labour market (internal versus external flexibility), workers’ qualifications (specific/vocational skills versus general skills), the educational system (private versus public financing), gender relations, and the reactivity of monetary and fiscal policy to unemployment.

The main findings of this study can be summarised as follows: In the United States, the deterioration of the U.S. current account balance (or $X - M$) in per cent of GDP since the early 1980s is attributable almost entirely, disregarding cyclical developments, to the secular increase in the private consumption-to-GDP ratio (or C/Y) and the deterioration of the private household financial balance ($Y^{HH} - C - I^{HH}$). By comparison, changes in the shares of private investment (I^{HH} and I^F) and government final demand (G) in GDP have been rather small. Similarly, the financial balances of the corporate sector ($Y^F - I^F$) and the

⁴ For ease of exposition we assume $Y^i = Y^p$ in the following discussion.

⁵ The analysis of factor shares has a long tradition in economics (Atkinson, 2009), and the Classical economists were especially interested in the functional distribution of income mainly in relation to the dynamics of aggregate consumption and investment (see Atkinson, 2009, Bhaduri and Marglin, 1990; and Lavoie and Stockhammer, forthcoming, for modern expositions).

government ($T - G$), while fluctuating with the business cycle, do not show any pronounced trend over the longer term in relation to GDP. Moreover, the rise in the private consumption-to-GDP ratio since the 1980s is entirely due to the decline in the personal saving rate (s), whereas the share of household disposable income in the national product (Y^{HH}/Y) has remained roughly constant, despite a falling share of labour income (W/Y). Besides these purely accounting relationships, there is strong theoretical and empirical evidence that lower and middle income households have attempted to compensate for the decline in their relative permanent incomes by a higher labour supply, reduced saving, and higher personal debt. In particular, rising inequality at the top of the income distribution appears to have led to expenditure cascades all the way down the income ladder and hence to a higher labour supply, lower saving and higher debt at the aggregate level. The incentives for households to work more, save less and go into debt are particularly strong in the United States due not only to the easy access to credit but also to other country-specific factors such as the importance of homeownership, partly as a substitute for social policy, and the reliance of the education system on private financing in a context of low and declining intergenerational income mobility. In sum, we find substantial evidence against the “Greenspan-Krueger-Perri argument” of higher household indebtedness being merely due to increased insurance demand as a result of higher transitory income dispersion, and strong evidence for the Rajan hypothesis. In this sense, then, the rise in inequality is one of the structural causes of the Great Recession and of the rising current account deficit in the United States.

In China, the strong improvement in the current account since the early 2000s is mainly due to a strong decline in the private consumption-to-GDP ratio, which was not fully compensated for by the rise in business investment. While the corporate financial balance is strongly negative and declined somewhat further during the early and mid-2000s, both the private household sector and the government sector strongly improved their financial balances. The explanation for the decline in the private consumption-to-GDP ratio, especially since the late 1990s, is roughly one third a decline of households’ share in national income, and for the remaining two thirds a strong increase in the personal saving rate. The declining share of household and especially labour income in national income can largely be attributed to a number of distortions in the labour and financial markets. The strong orientation towards capital investment also seems to be partly attributable to the political incentives system in China, with competition between provinces in attracting capital investment leading to hidden subsidies and contributing to the distortions in various factor markets. Subdued household income growth, relative to productivity, has led to weak domestic consumption and strong reliance on exports and on investment largely financed out of retained profits. While the absence of deep and liberalised credit markets has contributed to the rise in the personal saving rate in a context of strongly rising inequality, as argued by Kumhof et al. (2012), private consumption demand was further weakened by high precautionary saving due to high income uncertainty and a weak social safety net. Moreover, there is evidence that higher income inequality has contributed to an increasing intensity of status seeking. However, as the access to credit is still highly limited for households in China, the status-seeking motive appears to have led to increased wealth accumulation, e.g. for education-related purposes, rather than higher debt-financed consumption as in the United States.

In Germany, the strong improvement in the current account since the early 2000s is reflected in a decrease in private consumption and residential investment as a share of GDP, but also in a lower share of government consumption and investment. Private equipment investment has not been weak. While the private household financial balance has improved somewhat despite the declining share of private households’ income in the national income, the improvement in the current account is reflected mainly in a very strong improvement in the corporate financial balance and the improvement in the government balance. Strikingly, real private household expenditures have almost completely stagnated in real terms after 2000. The weakness of domestic demand was in an

important way linked to changes in the distribution of income, most importantly the very weak development of real wages and household disposable income, which stagnated in absolute terms and strongly declined as a share of national income. However, the persistently high corporate excess savings are somewhat puzzling and require further investigation. At the same time, the effects of rising household inequality on personal saving have been very different compared to the United States, which cannot be fully explained within the framework of Kumhof et al. (2012), since Germany is a rich country with a developed financial system, at least in comparison with the emerging economies. Rather, we attribute the rise in the personal saving rate since the early 2000s partly to the fact that expenditure cascades have been limited as the rise in inequality has occurred not so much at the very top of the income distribution, as in the United States, but strongly in the bottom half, where households were likely liquidity constrained. However, while there was less pressure for the middle class to keep up with consumers at the very top, the implementation of reforms to make the labour market more flexible and unemployment and old-age benefits less generous has not only contributed to rising inequality but also to the higher precautionary savings of middle-class workers. The rise in precautionary saving can partly be attributed to the prevalence of vocational, i.e., firm-specific rather than general qualifications of workers, implying that policies aiming at raising the “external flexibility” of the labour market increase the perceived and actual risk of skill depreciation (Carlin and Soskice, 2007). The perceived and actual risk of status loss for middle class households is corroborated by the low female participation in the paid labour force, favoured by a tax system that subsidises the single (male) bread earner model, and a very high gender pay gap. Moreover, the low reactivity of monetary and fiscal policy to business cycle fluctuations, which is due partly to the economic policy regime of the euro area but also to the specificities of fiscal policy in Germany, further increases the risk of persistent status loss for unemployed households. Since the early 2000s large structural cuts in government spending have further contributed to both higher inequality and persistently low domestic demand. We also review current debates about the necessity of current account rebalancing within the European Monetary Union and conclude that proposals to tackle these imbalances via further structural reforms in the labour and product markets will not be successful in the case of Germany if not accompanied by a reduction of income inequality.

The remainder of this paper is structured as follows: Chapter 2 discusses the link between the Rajan hypothesis and the relative income hypothesis and summarises the theoretical and empirical literature supporting these hypotheses in the U.S. context. Chapter 3 reviews the current debates about the role of inequality for macroeconomic developments in China. In Chapter 4, we discuss the macroeconomic effects of changes in income distribution in Germany. Finally, Chapter 5 concludes.

2. Was the U.S. financial crisis caused by income inequality?

“[W]hen the debt bubble burst, most Americans woke up to a startling reality: They could no longer afford to live as they had been living; nor as they thought they should be living relative to the lavish lifestyles of those at or near the top, nor as they expected to be living given their continuing aspirations for a better life, nor as they assumed they could be living, given the improvements they had experienced during the Great Prosperity [1947-1975].” (Reich, 2010, p. 64)

This chapter is organised as follows. Section 2.1 briefly describes the evolution of income distribution and the composition of aggregate demand in the United States during the past decades. Section 2.2 shows that the Rajan hypothesis is inconsistent with the influential but largely flawed view that the rise in personal debt prior to the Great Recession responded to the increased demand by households for insuring transitory income shocks. Rather, the Rajan hypothesis can be seen as an application of the relative income hypothesis of consumption, which predicts that households will react to a decline in (permanent) relative incomes by lower saving and higher debt. Section 2.3 summarises some of the empirical evidence supportive of the relative income model. Section 2.4 concludes.

2.1. Trends in income distribution and aggregate demand

The old theories of under consumption feared that a gradual decline in the wage share in national income would lead to a shortfall of aggregate demand and over saving due to a lack of purchasing power of the consuming classes (e.g. Malthus, 1820; Hobson, 1909). At first sight at least, nothing could be further from the truth with respect to the macroeconomic trends in the United States before the Great Recession: While the share of labour income in gross domestic income decreased somewhat since the early 1980s (Figure 3), private consumption as a share of GDP increased massively by almost 10 percentage points (Figure 2). The share of private investment has, if anything, decreased over this period (with a roughly constant share of residential investment in total investment), despite the increase in the profit share in national income. However, with the ratio of government consumption and investment roughly constant, the rising consumption-to-GDP ratio has been accompanied by a deterioration of the trade balance and the current account, especially since the mid-1990s (Figure 2, Figure 4). Moreover, these changes in the composition of aggregate demand were accompanied by rather robust economic growth and low unemployment.

Interestingly, the evolution of the share of labour income in gross domestic income has become largely disconnected from that of personal and disposable income, which have slightly increased in the early 1980s and remained largely constant thereafter until the Great Recession (Figure 3). In a mechanical sense, one part of the increase in the consumption-to-GDP ratio can thus be attributed to the increase in the disposable income-to-GDP ratio, and the other (much larger) part to the increase in the consumption-to-disposable income ratio, especially since the mid-1980s.

Also note that the rise in private consumption as a share of GDP is due entirely to higher non-durable consumption spending, while the ratio of durable consumption to GDP has been flat over time. That is, the rise in the consumption-to-GDP ratio does not reflect increased saving through durables. The increase in the consumption-to-GDP ratio has not been continuous, but there are flat segments especially in the mid-1990s and in the first half of the 2000s. However, the weaker consumption dynamics during that time have been more than compensated for by private investment in housing. Partly as a result of this, household net lending, unlike personal saving, was negative in 1999-2007 (Figure 4). While the government deficit and the corporate financial balance, although highly cyclical, have been at similar levels in the mid-1980s and mid-2000s, the secular decline in the private household balance fully accounts for the weaker current account in the mid-2000s as compared to the mid-1980s.

The explosion of top incomes is certainly the most peculiar aspect of the rise in inequality in the United States. Most strikingly, the increase in the share of top incomes is driven mainly by that within the top 1 per cent, or even the top 0.5 and 0.1 per cent, of all households (Figure 5). This phenomenon is quantitatively very important: While the top 10

per cent account today for almost half of total pre-tax household income, the top 1 per cent alone account for almost one fifth. Moreover, as noted by Piketty and Saez (2006, p. 204), “top executives (the “working rich”) replaced top capital owners (the “rentiers”) at the top of the income hierarchy during the twentieth century.” Interestingly, top income shares have remained fairly stable in continental Europe over the past three decades, at least until very recently (Piketty and Saez, 2006), but the decline in the wage share especially in Germany has been much more pronounced than in the United States. We will return to this issue in Chapter 4.

But even below the top 10 per cent, the increase in income dispersion has been very substantial in the United States. Although the precise estimates of inequality differ according to different data sources,⁶ there is little controversy about the overall trends. Figure 6 shows the evolution of hourly wages at the 10th, 50th and 90th percentiles of the wage distribution for all workers (men and women combined), and Figure 7 shows real household pre-tax income for three different income quintiles and for the top 5 per cent of households. The data for both figures are from the Current Population Survey (CPS).⁷ The following major trends are noteworthy: In the bottom half of the distribution, individual wage and household income inequality have sharply increased in the early 1980s; wage inequality then has remained roughly constant since the early 1990s,⁸ while income inequality at the household level has started to increase again since the early 2000s. By contrast, wage and income inequality has steadily increased in the top half of the distribution since the early 1980s; it has been more pronounced for income than for hourly wages, partly because high income households receive a larger fraction of their income from capital. Moreover, due to government transfers the increase in inequality was less pronounced for income than for hourly wages at the bottom of the distribution (which in turn was less pronounced than for earnings, see Heathcote et al., 2010).

Figure 8 and Figure 9 show the rate of growth of real family and household incomes respectively for different definitions of income and for different time periods. As can be seen from Figure 8, also based on data from the CPS, real pre-tax income growth (excluding capital gains) has been lower in 1977-2007 as compared to 1947-1977 for all families except for those at the very top. The first period has also been called the “Great Convergence” (Goldin and Margo, 1992), as lower and middle incomes have grown faster than top incomes. Figure 9 is reproduced from Congressional Budget Office (CBO, 2010), which combines CPS data with the Statistics of Income (SOI) to produce estimates of equivalised household pre- and after-tax income, including realised capital gains, and which should better account for very high incomes than the top-coded CPS data. Again, it can be clearly seen that inequality increased especially strongly at the top of the income distribution.

⁶ See Heathcote et al. (2010) for a comparison of different data sets.

⁷ Due to top-coding, workers making more than \$150,000 in annual earnings are excluded and therefore not fully represented in the CPS, which leads to an underestimation of inequality.

⁸ The rise in wage inequality above the median has been much more pronounced for male workers than for all workers: median hourly male wages are lower in real terms today than in the 1970s. But the gap between middle and bottom wages has increased more strongly for all workers than for male workers because female workers have fared better than male workers in the middle of the distribution but almost equally poorly at the bottom.

2.2. The Rajan hypothesis and the relative income hypothesis

2.2.1. Why was the problem of inequality ignored for so long?

The permanent income and life-cycle hypotheses (Friedman, 1957; Modigliani and Brumberg, 1954) posit that aggregate personal saving is unrelated to the distribution of permanent income, while a higher transitory variance of income may lead to higher precautionary saving. Yet, when coupled with the assumption of rational expectations (Hall, 1978), the permanent income hypothesis says that even with a higher variability in the transitory component of income, consumption can be “smoothed” through lending and borrowing in the presence of efficient credit markets. Inspired by this theory, a very influential view up until the Great Recession was that the rise in measured inequality reflected mainly a higher dispersion in the transitory components of income, which households could insure against through credit markets. Hence, the idea was not that “easy credit has been used as a palliative [...] by governments” (Rajan, 2010, p. 39), but “that the structure of the credit markets in an economy is endogenous and may evolve in response to higher income volatility” (Krueger and Perri, 2006, p. 164). We refer to this view as the Greenspan-Krueger-Perri argument with reference to Greenspan (1996) and Krueger and Perri (2003, 2006). In 1996, Alan Greenspan, then chairman of the Federal Reserve Bank, noted:⁹

“[I]ncome disparities, as measured by Gini coefficients, climbed steadily through 1994 [...] But [...] there is a surprising difference between trends in the dispersion of holdings of claims to goods and services (that is, income and wealth) and trends in the dispersion of actual consumption. [...] I do not wish to disparage income as a partial antidote to insecurity. Nevertheless, some aspects of economic well-being may be more accurately discerned by examining consumption.”
(Greenspan, 1996, p. 176)

The work by Krueger and Perri (2003, 2006), though not the first to investigate the relationship between income and consumption inequality¹⁰, corresponded to Greenspan’s request for research along these lines. Krueger and Perri (2006) construct different measures of consumption using the Interview Survey (IS) of the Consumer Expenditure Survey (CEX) and find that the variance of their preferred measure of logarithmic consumption (nondurables, services, small durables and imputed services from housing and vehicles) has increased by only 5.3 per cent in 1980-2003, whereas the variance of logarithmic income (after-tax labour earnings plus transfers) has increased by 21.4 per cent. Moreover, essentially all of the increase in consumption inequality took place during the 1980s, although it was smaller than the increase in income inequality even during this period. During the 1990s and until 2003, consumption inequality remained essentially flat, according to the data used by Krueger and Perri. Furthermore, Krueger and Perri distinguish between “between-group” and “within-group” inequality. Following Katz and Autor (1999), they regress income and consumption on the following characteristics of the reference person and the spouse (if present): sex, race, years of education, experience, interaction terms between experience and education, dummies for managerial/professional occupation, and region of residence. These characteristics explain about 25 per cent of the

⁹ Greenspan elsewhere expressed rather different views about the issue of inequality: “This is not the type of thing which a democratic society – a capitalist democratic society – can really accept without addressing” (quoted from Noah, 2010).

¹⁰ See Attanasio et al. (2007) for a survey.

cross-sectional variation of income and consumption in 1980. The authors denote the cross-sectional variance explained by these characteristics as “between-group” inequality and the residual variance as “within-group” inequality. Based on these definitions, they find that for consumption, the between-group component displays an increase similar in magnitude to that of income. But for the within-group component, the increase in consumption inequality (around 3 per cent) is much smaller than the increase in income inequality (around 16 per cent). They conclude that within-group inequality is mainly transitory or somehow insurable, whereas changes in between-group inequality reflect permanent, or uninsurable, changes in distribution. Finally, based on the finding of a strong correlation between the ratio of unsecured consumer credit to disposable income and the Gini coefficient, the authors conclude that this “may suggest that consumers could, and in fact did, make stronger use of credit markets exactly when they needed to (starting in the mid-1970’s), in order to insulate consumption from bigger income fluctuations.” (Krueger and Perri, 2006, p. 187; see also Krueger and Perri, 2003, p. 15). Further analyses with roughly similar results include Blundell et al. (2008), Blundell (2011) and Heathcote et al. (2010), using data from the CEX or from the Panel Study of Income Dynamics (PSID).¹¹

These conclusions are, however, far from undisputable for both data and conceptual reasons. As recognised by Krueger and Perri (2003, p. 14) in a footnote, an important concern with the CEX data is that their total does not match up with the NIPA total. The gap between the CEX-IS and NIPA measures of aggregate consumption is disconcertingly large and has been growing considerably over time, from around 20 per cent in the mid-1970s to around 60 per cent in the 2000s (Battistin, 2003; Heathcote et al., 2010, p. 21). In fact, from 1980 to 2005, real per capita consumption has increased by almost 50 per cent, whereas the corresponding CEX measure has remained essentially flat. There do not seem to be any easy explanations for this discrepancy (Slesnick, 1992, 2001; Attanasio et al., 2007). In fact, the CEX measure of aggregate income continues to track the NIPA measure rather well (see Heathcote et al., 2010, for a discussion). Clearly, the very poor quality of the CEX consumption data does not allow any firm conclusions.

A further problem with survey-based studies on the link between income and consumption inequality is that due to the use of top-coded data, the potential effects of rising consumption at the top on the behaviour of all households below the top are not addressed at all by analyses of the Krueger and Perri-type. In principle, it is possible that the explosion of incomes at the top has led to expenditure cascades starting well above the 90th income percentile, while having only small effects on consumption inequality as measured by the 90/50 or even 90/10 income differential (see Subsection 2.2.2).

Equally important, and related to the above, the distinction between between-group and within-group inequality in Krueger and Perri (2003, 2006) is conceptually problematic if inequality is also driven by other factors apart from education, race and sex. Although Krueger and Perri (2003, p. 15) argue that these are the “most important determinants of the changes of between-group earnings inequality in the last 30 years”, the issue is clearly more complicated. The most frequently discussed candidate explanations of the rise in U.S. inequality include: skill-biased technological change (e.g. Autor et al., 1998; Acemoglu, 1999; Goldin and Katz, 2008); globalisation including increasing trade, immigration, and off-shoring (Roberts, 2010); the emergence of superstars and winner-take-all markets (e.g. Rosen, 1981; Frank and Cook, 1995); rent-seeking behaviour by top executives especially in the financial sector (e.g. Murphy et al., 1991; Piketty and Saez, 2006; Philippon and Resheff, 2009); deficiencies in the educational system (e.g. Goldin and Katz, 2008);

¹¹ The PSID is far less comprehensive than the CEX. Blundell et al. (2008) find that trends in the variance of consumption are very similar in the two datasets. Fisher and Johnson (2006, p. 16, table 3) compute a Gini coefficient for total consumption using both the CEX and imputed data for the PSID. Their numbers show a smaller increase in consumption inequality for the PSID data (1.2 per cent) than for the CEX data (4.7 per cent) for 1984-1999.

changes in labour market institutions including the erosion of the real minimum wage and the decline of the trade unions (Lee, 1999; Card et al., 2004; Gosling and Lemieux, 2004; Levy and Temin, 2007; Lemieux et al., 2009; Dube et al., 2011); changes in the tax system (e.g. Brownlee, 2004; Piketty and Saez, 2007); and social norms including, for instance, the political orientation of the government (e.g. Bartels, 2008; Hacker and Pierson, 2010). In other words, Krueger and Perri (2003, 2006) may underestimate the degree of between-group inequality.

This concern is corroborated by findings from statistical studies on income mobility. Gottschalk and Moffitt (1994), using PSID data, while emphasising their finding of rising earnings instability find that the permanent and transitory earnings component contributed roughly proportionally to the increase in earnings variance among white men from 1979 to 1987. Moffitt and Gottschalk (2002, 2008) extend this analysis to 2004. They confirm that the variance of both permanent and transitory earnings has risen in the 1980s, but the variance of transitory earnings is found to have declined or remained constant thereafter. Sabelhaus and Song (2009), applying similar statistical methods to different data sets, also find that the variance of transitory shocks unlike that of permanent shocks, has declined from the mid-1980s to the mid-1990s and since remained flat. These results seem to conflict with the view that the rise in inequality was driven by insurable temporary income shocks over the 1990s. Bradbury and Katz (2002a, 2002b), also using the PSID, analyse family income mobility by examining the percentage of families that move from one quintile to another from the first to the last year of a given time period. They find that mobility patterns were very similar in the 1970s and 1980s, but that mobility declined noticeably in the 1990s. They conclude that “while some hoped that increased mobility had offset the increased inequality in the 1980s and 1990s, these data provide no evidence of such an off setting role” (Bradbury and Katz, 2002b, p. 5).¹² The finding of little change in family income mobility between the 1970s and 1980s also confirms the results obtained by Gittleman and Joyce (1999). Auten and Gee (2009) emphasise that there was considerable income mobility in the U.S. in the periods 1987-1996 and 1996-2005, but their analysis does not suggest that higher inequality has been offset by higher mobility in the later period. For example, around 69 per cent of those taxpayers who were in the top income quintile in 1996 were still in the top quintile in 2005. The corresponding number for the period 1987-1996 was 62 per cent. Of the top 1 per cent of all tax taxpayers in 1996, around 41 per cent were still in the top 1 per cent in 2005. Roughly the same degree of mobility was observed for the period 1987-1996. Kopczuk et al. (2010), using Social Security Administration (SSA) earnings data, compare Gini coefficients based on annual earnings and 5-year to 20-year average earnings and conclude that “increases in annual earnings inequality are driven almost entirely by increases in permanent earnings inequality, with much more modest changes in the variability of transitory earnings” (p. 125). Only very long-term income mobility has somewhat increased (though not after the late 1970s), but this is entirely due to the increased labour force participation and higher wages of women. Kopczuk et al. (2010) also compute the top 1 per cent earnings share based on both annual and five-year average earnings and find that the two series have increased sharply in lock step since 1980. These conclusions are also consistent with available cross-country evidence. OECD (2008a, p. 158) finds a statistically significant positive relation between the simple poverty headcount (averaged over three years), on the one hand, and the rates of persistent and recurrent poverty, on the other.

In spite of these concerns, the results of Krueger and Perri (2003, 2006) were literally treated as accomplished facts by the press (*NY Times*, 11/07/2002; *The Economist*, 19/12/2007; *Wall Street Journal*, 12/15/2006; see also Gordon and Dew-Becker, 2008, p.

¹² Bradbury and Katz recognise, however, that the higher inequality in the 1990s has led to a larger dispersion of incomes within each quintile, which reduces the likelihood for any given family to move to another quintile.

30, for a critique), as indeed they were strongly encouraged by the political climate of the time that downplayed concerns about inequality and highlighted the importance of the availability of credit as an integral part of the American Dream.

2.2.2. The renaissance of the relative income hypothesis

While the permanent income theory of consumption theory was, largely erroneously, invoked to explain the increased household demand for credit as a result of higher income mobility, it is unable to establish a link between rising inequality on the one hand and the fall in the aggregate saving rate together with rising household indebtedness on the other hand. If anything, higher income instability should increase saving to the extent that it leads to a higher uncertainty about future earnings. Hence, the question arises as to whether other factors, affecting poor and rich households in the same way, may have caused the observed changes in consumption behaviour. Although the issue has been heavily researched immediately since the saving rate began to fall in the mid-1980s, no clear conclusions have ever been reached that could be easily interpreted within the standard theory (for extensive surveys, see Summers and Carroll, 1987; Bosworth, 1989; Bosworth et al., 1991; CBO, 1993; Gale and Sabelhaus, 1999; Parker, 1999; Guidolin and La Jeunesse, 2007). Guidolin and Jeunesse (2007, p. 512), after reviewing most of the aforementioned potential explanations, conclude: “The recent decline of the U.S. private saving rate remains a puzzle.” And Parker (1999, p. 363) remarks, somewhat disillusioned after his examination of other candidate explanations, that “prime candidates for explaining the consumption boom are factors that increase the effective discount rate of the representative agent” and that consumers have become more optimistic about future income growth. Yet, “[t]his explanation is untestable, and twenty years is a long consumption boom without yet seeing a shift to higher output growth.” (Parker, 1999, p. 363) Clearly, the Rajan hypothesis, by lifting the assumption of the representative agent, offers an alternative explanation of the decline in saving and concomitant rise in personal debt during the three decades before the Great Recession, linked to the rise in inequality.

Rajan (2010, p. 24) argues that the rising income spread between the 90th and 10th percentile, and especially between the 90th and 50th percentile of the income distribution, is primarily due to the rising “college premium”.¹³ He also argues that, as improvements in education have been falling behind the pace of technological change, the rising inequality of outcomes has been accompanied by a similar rise in the inequality of opportunity since the late 1970s (Rajan, 2010, pp. 29 et seq.; see also Goldin and Katz, 2008). In other words, the relatively high consumption path of lower and middle class households implies that these households have lived beyond their means (in terms of their permanent, not transitory incomes) for several decades.

The relative income hypothesis, initially formulated by Duesenberry (1949), provides an intuitive explanation for a number of stylised facts that competing theories of consumption have failed to account for (Frank, 2005). Technically, the relative income hypothesis states that a household’s saving rate will be independent of the absolute level of income but be an increasing function of (i) the household’s position in the income distribution within its local reference group and (ii) the relation of the household’s current to past income. As such, it is related to other non-neoclassical theories of saving (see Brown, 2008).

¹³ Rajan (2010, pp. 28-9) recognises, however, that political factors such as the reduction of the marginal tax rate on high incomes, the weakness of trade unions, labour market deregulation and a relatively stagnant minimum wage may also have contributed to higher inequality.

Firstly, with respect to income distribution, it has some similarity with the Keynesian view of a positive, cross-sectional relationship between the level of income and the saving rate.¹⁴ However, Duesenberry rejects the simple Keynesian assumption that a rise in inequality is associated with a rise in aggregate saving because “[i]n these discussions it has been assumed that the effect of a redistribution can be judged by changing the weights applied to budget study data. That procedure is legitimate only on the assumption that individual consumption preferences are independent. If that is not so a decrease in inequality might increase the average propensity to save.” (Duesenberry, 1949, p. 44) Symmetrically, higher inequality will lead to a “keeping up with the Joneses” effect.

Secondly, by taking into account the impact of past and current income on current household saving, the relative income hypothesis bears some resemblance to the “disequilibrium hypothesis” or “habit persistence” theory (see Marglin, 1984, ch. 17, for a discussion). This may help explain why the personal saving rate has declined, not only in the U.S. but in most rich countries, since the 1980s, as income and consumption growth slowed after several decades of relatively high growth (Bosworth et al., 1991). However, it would appear difficult to attribute the 30 years of an almost continuously falling saving rate since the early 1980s to the persistence of habits acquired during previous decades. In effect, one problem with the hypothesis of a growth-saving nexus as outlined above is that it does not take into account the distribution of income between households. As a matter of fact, in the United States over the past 30 years, income growth for households at the top of the income distribution has actually been higher than in previous decades, but much lower for all others. In any event, the habit persistence effect and the keeping up with the Joneses effect can be expected to have affected aggregate personal saving in the same way, i.e., negatively, since the late 1970s.

The Rajan hypothesis at times appears to rely on the assumption of irrationality among lower income consumers:

“Stripped to its essentials, the argument is that if somehow the consumption of middle-class householders keeps up, if they can afford a new car every few years and the occasional exotic holiday, perhaps they will pay less attention to their stagnant monthly paychecks.” (Rajan, 2010, p. 8)

However, when the Rajan hypothesis is coupled with the relative income hypothesis, in its modern formulation, it becomes clear that from the point of view of households below the top of the income distribution credit-financed consumption may have been a completely rational reaction in the face of rapidly increasing consumption by top income households. Indeed, as noted by Frank et al. (2010, p. 8), “being influenced by community consumption standards [...] may be a perfectly rational response on the part of consumers in pursuit of widely recognized goals.” More precisely, the model is based on what are “perhaps the two most robust findings from the behavioral literature on demonstration effects: 1) the comparisons that matter most are highly localized in time and space; and 2) people generally look to others above them on the income scale rather than to those below” (Frank et al., 2010, p. 7). Indeed, these basic features of human nature were well understood by early economists ranging from Adam Smith¹⁵ to Thorstein Veblen¹⁶. The

¹⁴ Palley (2010, p. 42) argues that the relative income hypothesis provides a “micro-founded explanation of Cambridge-Kaleckian consumption and saving behavior”. Lavoie (1992, 2012) summarises the principles of Post Keynesian consumer theory, which contain all the ingredients of the relative income hypothesis.

¹⁵ “A linen shirt, for example, is, strictly speaking, not a necessary of life. [...] But in the present times, through the greater part of Europe, a creditable day-labourer would be ashamed to appear in public without a linen shirt” [Ibid, part 2 article 4.] (Adam Smith, 1776)

¹⁶ “The motive is emulation – the stimulus of an invidious comparison [...]. [E]specially in any community in which class distinctions are quite vague, all canons and reputability and decency and all standards of

behavioural bottom line explanation is that a high status is the best way to achieve social recognition. Applied to consumption behaviour, this view gives rise to the distinction between positional and non-positional goods (Frank, 1985; Frank, 2005). Although the distinction is not clear-cut, positional goods are those goods where comparisons with others matter most, and non-positional goods are those where they matter least. For instance, saving for retirement, financial security (avoidance of high indebtedness) or leisure, tend to be perceived as non-positional goods. But the quality of education, cars, houses, clothes, jewellery etc. are positional goods. The problem, however, is that these and other forms of household expenditure are “driven by forces similar to those that govern military arms races” (Frank, 1997, p. 1840). In the extreme case, higher inequality, even if concentrated at the very top of the income distribution, can give rise to expenditure cascades all the way down the income ladder if individuals are indeed influenced by the spending patterns of others just above them in the income distribution (Frank et al., 2010). Yet, if everybody spends more on positional goods in reaction to higher inequality leading to higher relative expenditures by households at the top, nobody (below the top) will see their status improve, but everybody will be more highly indebted and more financially insecure.

The extent to which expenditure cascades are triggered by rising inequality can be expected to depend crucially on the country-specific institutional environment. For one thing, the availability of household credit depends on the specific characteristics of the credit system. Moreover, when schooling and higher education are largely financed privately or the quality of public schools is related to the material standard of living in the respective school districts, there may be strong incentives for families to reduce savings and increase debt in order to attain the best possible education for their children. More generally, in a country with strongly rising inequality, very large top income shares, and a low degree of intergenerational income mobility, the returns to education (and other forms of expenditure signalling potential for higher status) will appear especially high (OECD, 2008a, ch. 8). In the United States, intergenerational mobility is already low by international standards and further declining (see OECD, 2008a, ch. 8; Bowles and Gintis, 2002; Mazumder, 2005; Andrews and Leigh, 2009). As noted by Rajan (2010, p. 28-29): “Because the well-connected and the highly educated tend to mate more often with each other, ‘assortative’ mating has also helped increase household income inequality.” Broader cultural trends likely play an important role as well (e.g. Cynamon and Fazzari, 2008)

Finally, even though the relative income model does not imply irrational behaviour on the part of consumers, it may additionally be the case, as argued by Stiglitz (2008), that preferences evolve endogenously in response to a variety of forces including inequality, again depending on country-specific institutions and culture. It can be argued, for instance, that “in a world in which people are especially attuned to differences in income [...] the return to targeted advertising can be especially high. If one induces ‘consumer leaders’ to buy SUVs, other consumers will follow.” (Stiglitz, 2008, p. 57)

In the next section, we will review some empirical evidence supporting the consumption theory underlying the (augmented) Rajan hypothesis as outlined above. How did consumers react to higher inequality?

2.2.3. From near saturation to a new perception of need?

Figure 10 compares the growth rate of median income for families of four with the growth rate of what consumers perceive as the minimum amount of yearly income a family

consumption are traced back by insensible gradations to the usages and thoughts of the highest social and pecuniary class, the wealthy leisure class.” (Veblen, 1899 [2007, p. 71])

of four would need to “get along in your local community”. In the figure, we present survey data from a Gallup poll for yearly mean estimates of minimum income for the period 1957-1992 (Vaughan, 2004) and median estimates for the years 1947, 1967, 1987, and 2007 (Jones, 2007). Two things are noteworthy here: The first is the very different relationship between the growth rates of the two measures for the three periods for which data are available (Figure 10a). From 1947 to 1967, both the perceived minimum income and actual median income grew considerably, and the actual income growth was even somewhat higher than the growth of subjective minimum income for the median family. Interestingly, in 1987 the amount of money that was perceived as necessary to “get along” was no higher than in 1967, while median family income continued to grow quite considerably (and roughly in line with mean family income) during 1967-1987. In other words, it would seem that the typical American family of four considered their material standard of living as (more than) satisfactory during that period, despite a slowdown in growth (which is evidence against the pure habit persistence hypothesis). And yet, after 1987 the amount of income considered necessary to get along again increased strongly, by more than 40 per cent until 2007, even though median real incomes were more than 15 per cent higher in 2007 than in 1987. Notice that subjective minimum income even increased by more than actual mean income during this most recent period. As can be seen in Figure 10b, these trends lead to a U-shaped ratio of subjective minimum income to actual income, with a turning point some time in the early 1980s.¹⁷ Also notice that the shape of these graphs is not dissimilar to those of top income shares in Figure 5 above. Taken together, these data provide evidence for the relative income hypothesis, which holds that most individuals will (rationally) develop consumption norms by looking at the consumption of others above them.

The second important observation from Figure 10 is that during the period 1987-2007 median family incomes developed considerably better (+ 16.9 per cent) than either median male (-1.5 per cent) or even female (+ 13.9 per cent) hourly real wages, and also more than median individual male (+ 6.9 per cent) or household (+ 10.4 per cent) income over the period 1987-2007, while median individual female income increased by 44.5 per cent (all figures from the CPS). It is thus important to consider changes in labour supply, which are also likely linked to changes in inequality.

2.2.4. Labour supply, saving and debt: three coping mechanisms

Figure 11 recalls that there are in fact various mechanisms through which households can attempt to prevent a decline in (relative) consumption in the face of an adverse development in individual hourly wages. First, individual working hours can be increased; second, family labour supply can be raised, i.e., an additional household member can enter the paid labour force; third, taxes and transfers, although beyond the control of the individual household, provide an additional mechanism by which the effect of lower wages on consumption is alleviated; and finally, households can reduce saving and increase debt as a means of financing consumption. Reich (2010, ch. I.8) provides casual evidence for these various “coping mechanisms” at the disposal of households below the top of the income distribution who were reluctant to accept a permanent decline in relative consumption in spite of a permanent decline in relative wages, as hypothesised by Rajan (2010).

A first indication of the importance of these coping mechanisms is given in Figure 12, which shows that virtually all of the increase in median family income since the 1970s can

¹⁷ Note that in the mid-1960s the Gallup mean estimate of minimum income increases relative to the official poverty line but decreases relative to median income.

be attributed to married couples where the wife is in the labour force. This is explained, first, by the relatively positive development of median female wages and, second, by the strong increase in women's participation in the labour force. In fact, whereas the higher female participation rates were matched almost one-by-one by lower male participation rates before the late 1970s, total participation increased rather strongly starting in the late 1970s and throughout the 1980s, i.e., precisely when income inequality started to rise. Since the early 1990s, the overall participation rate remains at a roughly constant level of just less than 70 per cent. Moreover, although men's overall participation in the labour force has continued to decline somewhat after the late 1970s, annual hours worked of those remaining in the labour force did not decrease, and even increased slightly between 1979 and 2000. At the same time, women strongly increased the number of hours worked, in addition to higher participation in the labour force. Interestingly, the number of hours worked increased most in the second and third income quintiles. It increased also in the highest and lowest quintile, but to a lesser degree. Taken together, these developments imply a higher average family labour supply and have contributed to a large extent to the overall increase in hours worked per capita in the U.S. over the past decades. As highlighted by Blanchard (2004), both the strong increase in the participation rate and the only very small decrease in hours worked per worker in the U.S. are rather exceptional by international standards. In the European Union (EU-15) and especially in France, for instance, where income inequality has not increased as much (it has actually declined in France), the hours worked by the population of working age have rather strongly decreased in 1970-2007.

Two other developments more relevant for financial instability were the dramatic drop in personal saving and the surge in personal debt that also started precisely at the time when inequality began to rise (Figure 13 and Figure 14). It is perhaps worth noting that both the saving rate and the aggregate personal debt-to-income ratio correlate more strongly with top (10 or even 5 per cent) income shares than with the Gini (Figure 14). This is also consistent with the findings in Figure 15, based on the Survey of Consumer Finances (SCF), which shows that all households except the top 10 per cent have become more strongly indebted since the late 1980s (see also Kumhof and Rancière, 2010, figure 5). In 1989, the debt-to-income ratio was around 60 per cent for the top 10 per cent of household incomes and around 80 per cent for all other groups. In 2007, the respective ratios were around 80 per cent for the top 10 per cent, 250 per cent for the bottom quintile, and between 150 and 180 per cent for those groups in the middle. Wolff (2010) reports that the debt-to-equity and debt-to-income ratios have declined from 1983 to 2007 for the top 1 per cent of the wealth distribution, but increased for the next 19 per cent and the middle quintiles.

2.2.5. Evidence for the effects of rising inequality on household behaviour

Beyond the descriptive statistics, more formal empirical evidence also supports the view that labour supply, saving and financial decisions were indeed strongly influenced by changes in income distribution in the United States during the decades prior to the crisis. It seems reasonable for our purpose to consider these coping mechanisms together because it is probable that households respond to rising inequality in a variety of ways, and the excessive use of credit may imply that other, seemingly less problematic coping mechanisms have become overstretched.

Considering first the link between inequality and labour supply, Bowles and Park (2005), after estimating a panel data model for 10 European and Northern American countries for the period 1963-1998, conclude that greater inequality is indeed associated with longer work hours, controlling for other factors typically included in labour supply models, such as the real wage, real GDP per capita, union density, the unemployment rate,

and the female proportion in employment. According to their estimates, a standard deviation change in inequality raises annual hours worked by 1.8 to 3.4 per cent, depending on the measure of inequality. Interestingly, the effect is larger for the 90/50 income differential than for either the Gini or the Theil index, a finding that is consistent with the expenditure cascades hypothesis discussed in the previous section. They interpret their findings as evidence of “Veblen effects”, taking into account that in Veblen’s work the reference group is the rich.¹⁸

These results are confirmed by findings in Bell and Freeman (2001) who use the National Longitudinal Survey of Youth (NLSY) and estimate the effect of the dispersion of hourly wages on hours worked. It is argued that workers choose current hours of work to gain promotions and advance in the distribution of earnings. Bell and Freeman (2001) also compare labour supply decisions in the United States and Germany and contribute the longer working hours in the United States to the more unequal earnings distribution. Freeman (2007, p. 63) also points to the fact that more Americans than Europeans say that they want to increase rather than decrease hours worked at given wage rates and that they work hard even if it interferes with the rest of their life. This phenomenon may indeed be linked to higher inequality in the U.S., leading to a “tournament style economic system that gives the person who puts in an extra hour of work a potentially high return” (Freeman, 2008a, p. 137).

Neumark and Postlewaite (1998), also using data from the NLSY, find that women whose sister’s husband had a higher income than their own husband were between 16 and 25 per cent more likely to participate in the paid labour force. The comparison of labour supply decisions of relatives is interesting because it can be expected that relatives are typically members of a person’s social reference group.

Importantly, working time statistics do not capture those hours that are not spent at the workplace but are clearly work-related and certainly cannot be considered as leisure, i.e., in particular, commuting time. Frank (2007) quotes evidence that traffic delays for rush-hour commuters in major U.S. cities roughly tripled between 1983 and 2003. There is also evidence that individuals in the United States sleep considerably less today than in past decades – by some estimates as much as one to two hours per night less than in the 1960s (McCoy, 2004). Similarly, Americans spend less time with families and friends today than in the past (Putnam, 2000; Neumark-Sztainer et al., 2003).

There may also be self-reinforcing processes at work as far as the relationship between hours worked and consumption is concerned. Stiglitz (2008) argues that on the one hand, consumers work more to “keep up with the Joneses”, but on the other hand, the fact that higher working hours for all make it more difficult to coordinate one’s leisure time with friends and family may further increase the relative demand for goods at the expense of leisure time. The reason is that leisure time becomes less valuable when it has to be spent alone rather than with members of one’s family or community. As a consequence, consumers may see consumption as a palliative not only against mediocre monthly paychecks, as argued by Rajan, but also against the fact that they spend less time with their families and friends. Moreover, in a society where individuals work a lot and spend less leisure time in community with friends and family, specific types of “culture” which require learning, repetition, trust, etc. (rather than the purchase of marketable goods)

¹⁸ As argued by Stiglitz (2008, p. 549): “Those who, because of lower productivity, inevitably consume less, still strive to reduce the observed gap between their consumption and that of their richer neighbors. It is the rich that define the aspirations of the rest of society. At the same time, those at the top struggle to separate themselves from those below. It is only by working hard and conspicuously consuming the fruits of that work that they can demonstrate their superiority. There is, in effect, an arms race, a race to consume more and more, working harder and harder, in which no one is the winner.”

are less likely to develop. For instance, as emphasised by Stiglitz (2008), the “slow food movement” is more popular in Europe than in the United States.

Some studies have tested the relative income hypothesis of saving econometrically. Focusing on household saving of a sample of U.S. workers, Schor (1998) asked workers how their “financial status” compared to that of those in their reference group (as defined by respondents themselves, consisting primarily of co-workers, friends, relatives and persons of the same religion). She found that, after controlling for a measure of permanent income as well as a set of other variables such as sex, age, race or occupation and education, the financial status compared to the self-defined reference group had a significantly positive impact on household saving. This effect was substantial, as each step up in financial status (on a scale from 1 to 4) raised annual saving by almost \$3,000.

Bertrand and Morse (2011) use CEX data to estimate the effects of the expenditures of rich households (above the 80th income percentile) on those of non-rich households. They find clear evidence of “top-down consumption spillover effects” and argue that their results are “most consistent with the view that visible increased consumption by the rich induces status-seeking or status-maintaining consumption by the less rich.” (Bertrand and Morse, 2011, p. 1) Interestingly, higher expenditures by the rich have a larger effect on the middle class than on the lower and poverty classes. This is evidence in support of the expenditure cascades hypothesis.

Frank et al. (2010) provide indirect evidence for the expenditure cascades hypothesis. To begin with, they point to the fact that the median size of newly constructed houses in the U.S. has increased more than twice as rapidly as the increase in the median family earnings from 1980 to 2001 (from approximately 1,600 to more than 2,100 square feet), although at the same time one in five households had zero or negative net worth.¹⁹ Using data for the 50 U.S. States and 100 most populous counties²⁰ from the 1990 and 2000 installments of the U.S. Census, they estimate a series of regressions and find that income inequality, after controlling for standard explanatory variables, is positively related to various measures of financial distress. Frank et al. (2010) also quote evidence suggesting that median house prices were substantially higher in school districts with higher levels of income inequality, as measured by the 95/50 ratio, even after controlling for median income.

In Figure 16, we apply a simple variant of the expenditure cascades model developed by Frank et al. (2010) to two different data sets, as used in Figure 7 and Figure 9 above, for U.S. household income by quintile. Interestingly, despite the crudeness of the model, the simulated saving rates match the NIPA series rather well, until the Great Recession, for plausible parameter values.

The main point of the Rajan hypothesis is that consumers have used credit to compensate for the lack of income growth. In earlier contributions, Pollin (1988, 1990) made essentially the same point, concluding from his extensive analysis of the Survey of Consumer Finances for 1970, 1977, 1983, and 1986, that “[f]or those [households] in the lower 80 per cent of the income distribution, borrowing is largely a result of the need to

¹⁹ Gordon (2008, p. 39) finds that American households occupy roughly double the internal square feet of area and roughly four times the external square feet of area as Europeans. Gordon and Dew-Becker (2008, p. 31) argue, therefore, that the consumption of housing quantity and quality by Americans might be more equal than income, but add that the benefits of large ex-urban houses may be partly mitigated by longer commuting times.

²⁰ The decision to focus on the most populous counties is consistent with Thorstein Veblen’s observation that “consumption claims a relatively larger portion of the income of the urban than of the rural population... [because] the insistence on [consumption] as an element of decency is at its best [...] where the human contact of the individual is widest and the mobility of the population is greatest.” (Veblen, 1899 [2007, p. 61])

maintain living standards in the face of the stagnation in real incomes since the early 1970s and the corresponding rise in real living costs, especially for housing” and that “household indebtedness [...] is the financial mirror of the widely-noted trend in the real economy over this period toward greater inequality.” (Pollin, 1988, p. 1) Similar descriptive evidence for more recent years was provided by Barba and Pivetti (2009).

There is also some econometric evidence suggesting that the rise in income inequality and household debt in the United States are directly related. Pollin (1988) uses aggregate time series for the period 1953-1985 to investigate the demand-side influences on the rise in personal debt since the mid-1970s. Regression results provide tentative evidence that increased necessitous demand in the face of declining real median incomes have been an important cause for the trend rise in household credit since the mid-1970s. Christen and Morgan (2005) use aggregate times data for the period 1980-2003 and find a strong positive effect of income inequality on household debt relative to disposable income, while controlling for a set of other variables. They also find that ignoring income inequality leads to a much lower estimate of the “wealth effect”. They conclude that “[m]ost important for marketers, the income inequality effect is strongest for non-revolving debt, which is used to finance consumer durable purchases” (Christen and Morgan, 2005, p. 148). Boushey and Weller (2006), also using aggregate time series for the period 1980-2003, estimate the effects of various measures of inequality on different types of household debt and find some evidence that higher inequality is related to higher debt, while controlling for other determinants of debt.

Iacoviello (2008) constructs a model in which credit serves as a substitute for income growth in the financing of consumption. In particular, the model simulation matches the observed trend rise in personal debt since the 1980s which in the model “reflects the increased access of households to the credit market in order to smooth consumption in the face of more volatile incomes.” (Iacoviello, 2008, p. 931) Although this wording makes the interpretation sound rather akin to that described by Krueger and Perri (2006), Iacoviello’s model produces not only a small increase in consumption inequality, compared to income inequality, and a strong rise in personal debt, but also a strong increase in wealth inequality relative to income inequality, a result that conforms with the empirical facts but contradicts the permanent income model and the Krueger and Perry analysis of merely higher transitory income variability. Consequently, Iacoviello (2008, p. 957) emphasises that in his paper “the mechanism through which consumption inequality rises less than income inequality is an expansion of credit from the rich to the poor.”²¹ The similarities with the Rajan hypothesis are obvious.

2.2.6. Demand or supply, immoral debtors, predatory lenders, or coward politicians?

Before concluding this chapter, a further digression on the Rajan hypothesis may be in order. In the previous Subsection we discussed the effects of rising inequality in terms of the behaviour by households below the top. Yet, there is a heated political debate about whether “the poor caused the crisis” by borrowing excessively (see Johnson, 2011), and whether the main causes of excess credit are to be found in the corporate governance and risk management of financial institutions or in government policies aiming at promoting credit to middle class voters (see FCIC, 2011). In the academic literature, there is a related debate as to whether the expansion of personal credit was driven by demand

²¹ In the working paper version, Iacoviello (2005, p. 23) stressed that “the model here is not able to generate steady states in which consumption inequality is lower than income inequality, as in Krueger and Perri (2005): rather, the purpose of my exercise is to show how the smaller increase in consumption inequality that we have seen in the period under exam can be rationalized through a larger access to the credit market.”

or by supply and, therefore, about the precise channels through which income inequality has affected aggregate demand.

As discussed above, Kruger and Perri (2006) interpret the rise in personal debt as a demand-side phenomenon, linked to higher transitory income dispersion and an endogenous development of credit markets. While this interpretation is largely contradicted by the empirical evidence, others have pointed to the more direct negative aggregate demand effects of rising permanent inequality, due to a lower propensity to consume of high income households, and the offsetting effect of a higher credit demand of households below the top (e.g. Palley, 2002, 2012; Dutt, 2006; Barba and Pivetti, 2009). By contrast, Rajan (2010) highlights developments on the supply side (together with higher permanent income dispersion). Similarly, Kumhof and Rancière (2010) emphasise the notion that agents derive direct utility from the social status conferred by wealth, so that the higher leverage of non-rich consumers results from the higher credit supply resulting from increased saving of the rich as a result of higher inequality. A similar point is made, in a different theoretical framework, by Lysandrou (2011), who argues that the driving force behind the structured credit products that triggered the financial crisis was a global excess demand for securities, and that key to the build-up of this demand was the huge accumulation of private wealth. A related debate is about the extent to which changes on the supply side were driven by political support for household credit, as emphasised by Rajan (2010), and the extent to which they were market-driven. Fitoussi and Stiglitz (2009) argue that monetary policy was endogenous to the structural disequilibrium in income distribution in the sense that without a continuously expansionary monetary policy aggregate demand deficiency would have affected economic activity. Another popular debate is whether it is primarily lenders that must be blamed for predatory lending practices, or whether immoral debtors have lied about their creditworthiness and borrowed irresponsibly beyond their means. As part of this debate, some authors have harshly criticised the view that American households “overspent” (Schor, 1998) and were infected by a sort of “luxury fever” (Frank, 1999). Warren and Warren Tyagi (2004), for instance, have called this the “over-consumption myth”, and denounce the view that frivolous consumption was financed by debt as the “immoral debtor myth”.²²

In our view, there are no clear answers to these questions as demand-side and supply-side influences on consumer borrowing are difficult to disentangle. To begin with, it should be noted that there are serious empirical doubts as to whether households’ demand for credit is even remotely in line with the rational expectations assumption of standard consumption models, as implied by the Greenspan-Krueger-Perri argument. For instance, as a Gallup poll (Moore, 2003) showed, 31 per cent of the total population and 51 per cent of adults below the age of 29 expected to become “rich” (Table 1). However, only 2 per cent of the overall population considered themselves to be “already rich”. For the age groups 50-64 and 65+, the percentage of households considering that they are “already rich” were 4 and 2 per cent, respectively. Yet, the percentage of households who found it “very/somewhat likely to be rich” was still as high as 22 and 8 per cent, respectively. The median subjective estimate of what it requires to be rich was \$1,000,000 in assets, or \$122,000 in annual income. This was, of course, much higher than, respectively, actual median and mean net worth and actual median and mean household income in 2003. Interestingly, the optimism of U.S. households does not seem to have been negatively

²² Warren and Warren Tyagi (2004, p. 16) argue that “[t]he Over-Consumption Myth rests on the premise that families spend their money on things they don’t really need.” They then use data from the Current Expenditure Survey (CEX) to examine whether “today’s families are spending more on [...] frivolous items than ever before” (p. 16). They conclude that real per capita consumption has hardly increased for most items and most households. Given the limitations of the CEX consumption data discussed above, this conclusion is to be judged with great caution. But more fundamentally the critique by Warren and Warren Tyagi (2004) seems to miss the main point of the “overspending” or “luxury fever” hypotheses, which is that the individual perception of material needs is highly sensitive to context.

affected by actual trends in median income growth over the years. As Table 2 shows, the perceived likelihood of getting rich has remained roughly constant from 1990 to 2003.

While, in light of these numbers, the very harsh critique by some authors of the “luxury fever” hypothesis appears exaggerated, they do not in any sense validate the “immoral debtor myth” (Warren and Warren Tyagi, 2004). Rather, these results are consistent with the well-known “better-than-average effect” from the psychology and behavioural economics literature (Alicke and Govorun, 2005). There is, moreover, ample empirical evidence suggesting that consumers lack the cognitive capability to solve the intertemporal optimisation problem required by the life-cycle hypothesis. Clearly, when a very large fraction of households believe that they will be millionaires in the future, taking on large amounts of debt may seem justified from an individual perspective. In fact, it seems quite likely that income expectations are at least in part driven by the supply of credit. For instance, Soman and Cheema (2002, p. 32) find that consumers use information such as the credit limit as a signal of their future earnings potential: “Specifically, if consumers have access to large amounts of credit, they are likely to infer that their lifetime income will be high and hence their willingness to use credit (and their spending) will also be high.” This is also consistent with the conclusion of an extensive survey by Senik (2005) that perceived (rather than actual) mobility explains the link between other people’s income and individual satisfaction, as it determines individual opportunities and risks and, therefore, consumption and saving behaviour. It therefore seems to us that Rajan’s (2010) categorical endorsement of a supply-side explanation of credit expansion is somewhat exaggerated, given the apparent interaction of the supply and demand for credit.

Similarly, Rajan’s strong emphasis on the role of government in promoting credit also seems somewhat unbalanced. Hyman (2011), in his detailed history of borrowing in the United States, argues that consumers simply continued to borrow since the 1980s as they had done in earlier decades, in spite of lower income growth, and the credit system largely accommodated this:

“In the 1970s, unpaid debt skyrocketed not because consumers began to borrow, but because they continued to borrow as they and their parents had done since World War II, but without the postwar period’s well-paying jobs. Consumers of the 1980s increasingly borrowed to deal with unexpected job losses and medical expenses as much as to live the good life, returning to a credit world that had more in common with the 1920s than with the 1950s. [...] Though credit could be used to grapple with short-term unemployment and decreased income, in the long-term loans still had to be repaid. [...] Buoyed by a long boom in housing prices, Americans used asset-growth to substitute for wage-growth, which worked fine as long as house prices continued to rise.” (Hyman, 2011, p. 4)

Note that this explanation is almost the exact opposite of the conclusion by Krueger and Perri (2006, p. 187) that consumers started to make stronger use of credit markets “exactly when they needed to”. Rather, it would seem that consumers did not stop making strong use of credit markets when they needed to, i.e., they continued to consume heavily despite smaller income gains. In another dimension, however, Hyman’s analysis differs from the Rajan hypothesis and is closer to Krueger and Perri (2003, 2006) in that it emphasises the endogenous response of credit markets to rising inequality which was in large part independent of government intervention. A very similar case is made by Brown (2008, ch. 3) who argues that private lenders themselves developed strategies to cope with the slower income growth and reduced financial solidity of their clients. Examples of these strategies are the extension of loan maturities, captive finance, and securitisation.

Another debate is whether it can really be said, as in the Rajan hypothesis, that by promoting credit politicians have responded to the demands of lower and middle-income voters (see Acemoglu, 2011, for a critique). Rajan (2010, p. 39) argues that this is at least

indirectly the case: “Even if no politicians dreamed up a Machiavellian plan to assuage anxious voters with easy loans, their actions – and there is plenty of evidence that politicians pushed for easier housing credit – could have been guided by the voters they cared about” (Rajan, 2010, p. 39). Yet, it has been noted that the U.S. political system is mainly responsive to high-income voters (e.g. Gilens, 2005; Bartels, 2008). One explanation for this may be lobbying and the dependence of political parties on fund-raising (e.g. Hacker and Pierson, 2010). A direct response to this critique would be that high-income voters can be expected to prefer credit promotion to the social instability that may result from high (consumption) inequality but also to outright “soak the rich” policies. Rajan (2010, p. 31), in fact, makes precisely this point: “Government-supported credit does not arouse as many concerns from the Right at the outset as outright income redistribution would.” Bratt (2008) provides ample evidence that the concept of “homeownership as social policy” has indeed a long tradition in the United States and that it has become increasingly market-oriented since the Reagan government.

In sum, these debates while interesting do not seem to call into question the fundamental macroeconomic implication of the Rajan hypothesis. The bottom line is that the “market presented consumers with sub-optimal choices that they took” (Green, 2008, pp. 262-263) and that this expansion of personal debt helped to temporarily solve the aggregate demand problem caused by rising inequality.

2.3. Summary and conclusions

In the United States, private consumption has strongly increased as a share of GDP since the mid-1980s, and the current account deficit has worsened significantly especially during the 2000s. The following findings are noteworthy:

1. Changes in the functional distribution between wages (household income) and profits (corporate cash flow), as defined by the National Accounts, do not seem to have played an important role in explaining the increase in the private consumption-to-output ratio.
2. The secular rise in inequality has been falsely interpreted by influential economists and policymakers as an increased dispersion of the transitory component of income.
3. There is substantial evidence that the rising inter-household inequality has importantly contributed to the fall in the personal saving rate and the rise in personal debt (and a higher labour supply). Aided by the easy availability of credit, lower and middle income households attempted to keep up with the higher consumption levels of top income households.

In sum, there is substantial evidence in support of the Rajan hypothesis beyond the anecdotal evidence presented by Rajan (2010) and the tentative evidence from cross-country panel regressions. Rising income inequality seems to have contributed to the emergence of a credit bubble which eventually burst and triggered the Great Recession. We conclude this chapter by quoting a prescient analysis by Palley (2002), who was one of the few economists to foresee “the inevitable bill” (Rajan, 2010, p. 9) of rising inequality already ten years ago:

“[T]he U.S. economy confronts deeper seated problems concerning the aggregate demand generation process. For two decades, these problems have been obscured by a range of demand compensation mechanisms – rising consumer debt, a stock market boom, and rising profit rates. Now, these mechanisms are exhausted. [...] exits from this impasse [...] must be accompanied by measures rectifying the income distribution

3. Export-led growth in the emerging superpower: the case of China

“The internal imbalance – reflected in the decreasing share of consumption in GDP relative to investment and export-driven growth – is basically linked to China’s widening income inequality.” (Lu and Gao, 2011, p. 103)

3.1. The debate about China’s role in the global imbalances

There is a broad consensus among economists, international organisations and the Chinese government that China’s export- and investment-led growth model is unsustainable and therefore needs to become more balanced.

The policy debate in the United States is especially concerned with the large bilateral trade deficit with and capital inflows from China. It has been argued, in particular, that China, along with other emerging economies, has contributed to the “global savings glut” and, by consequence, to the low long-term interest rate in the United States which may have fuelled the real estate bubble leading up to the Great Recession (e.g. Bernanke, 2005; Caballero et al. 2008; Obstfeld and Rogoff, 2010; Rajan, 2010; see Palley, 2012, for a critique). In the public debate it is often argued that exchange rate manipulation in China is the primary cause of the massive trade imbalances with the United States (e.g. Goldstein and Lardy, 2006; Krugman, 2010b, 2011). High ranked U.S. politicians openly support special tariffs on imports from China, while U.S. President Barack Obama publicly criticised the Chinese exchange rate policy in front of China’s President Hu Jintao. There is no consensus, however, about the extent to which the Renminbi is actually undervalued, with estimates ranging from close to zero (Cheung et al., 2007, 2011) to up to 20 or even 50 per cent vis-à-vis the U.S. dollar (e.g. Goldstein and Lardy, 2006; Cline and Williamson, 2011; Ferguson and Schularick, 2011). Questions have also been raised about the notion that more exchange rate flexibility would significantly decrease China’s current account surplus (McKinnon, 2006; Reisen, 2010; Benassy-Quere et al., 2011; Song et al., 2011), at least if not accompanied by structural changes in social and economic policy boosting consumption. In sum, although exchange rate policy is likely to play a significant role, there is clearly more to the Chinese export-led growth model than merely an undervalued currency.

Kuijs and Wang (2005, p. 8), for example, conclude that “[t]he current pattern of growth and resulting consequences for resource intensity and income inequality could be linked to the growth strategy the government has pursued in the past.” In line with this assessment, there is a broad consensus that structural measures need to be taken in order to increase consumption as a share of output (Kuijs and Wang, 2005; Blanchard and Giavazzi, 2006; Yongding, 2007; Prasad, 2009; Guo and N’Diaye, 2009; Huang and Tao, 2010; Reisen, 2010; Song et al., 2011; Lu and Gao, 2011), to reduce overcapacities in the industrial sector (Prasad, 2009; Zhu and Kotz, 2011), address the problems of environmental degradation (Huang and Tao, 2010; Piovani and Li, 2011), internal political tensions as a result of high income inequality especially between rural and urban areas (Kuijs and Wang, 2005), and external macroeconomic imbalances (Blanchard and Giavazzi, 2006; Yongding, 2007; Prasad, 2009; Guo and N’Diaye, 2009; Huang and Tao, 2010; Razmi, 2010; Lu and Gao, 2011; Muto and Fukumoto, 2011; IMF, 2011; Huang, Chang and Yang, 2011a).

In particular, there is an emerging consensus that China's large and rising current account surplus and weak consumption demand is linked to the rise in both functional and personal inequality. A joint IMF-ILO working paper notes that "in China, lagging household income and large corporate profits have resulted in high national savings and a strong export orientation to compensate for relatively weak domestic demand" (IMF-ILO, 2010, p. 8). Kumhof et al. (2012) focus more on the rising personal inequality in emerging economies including China and argue that "their large surpluses can also be explained by increases in income inequality, but in this case against the background of domestic financial markets that do not allow the poor and middle class to respond to lower incomes by borrowing" (Kumhof et al., 2012, p. 5).

The Chinese government is well aware of the challenge of having to rebalance the economy to promote higher domestic demand through measures aimed at increasing household income as a share of national income and reducing inequality between households. This is especially the case since the Great Recession of 2008 has made it apparent that the United States will no longer play the role of "consumer of last resort" in the longer term. Therefore, in its latest Five Year Plan (2011-2015), the Chinese government explicitly announced a set of structural measures with the aim of promoting domestic demand:

"The government wants to transform the pattern of growth towards more emphasis on consumption and services to address imbalances with regard to the income distribution, the consumption share, the environment, energy consumption, and external balance. It also focuses on livelihood issues and regional rebalancing, with more emphasis on urbanization in inland regions and smaller cities." (World Bank, 2011, p. 18-19)

In the next section we will first describe, to the extent permitted by data availability, the evolution of functional and personal income distribution together with the composition of aggregate demand in China over the past decades. In Section 3.3 we discuss the role of institutional distortions in the labour and financial markets in the low share of personal disposable income in national income and, by implication, the falling consumption-to-GDP ratio. We then review, in Section 3.4, the literature that seeks to explain the rise in household saving and discuss its relation to rising personal inequality, with special reference to precautionary and status-seeking motives in a context of weak social safety net and very limited access to credit for private households. We also briefly consider the importance of government spending for aggregate consumption in Section 3.5. Finally, Section 3.6 summarises and concludes.

3.2. Trends in income distribution and aggregate demand

In the late 1970s China started a process of economic reforms and it has since impressed the world with high and sustained growth. From 1979 to 2010 the average rate of GDP growth (per capita) was as high as 9.9 (8.8) per cent, compared to 3.6 (1.2) per cent in low-income countries, and a world average of 3.0 (1.5) per cent. Although its per capita GDP is still relatively low, China has become the world's second largest economy in the year 2010, measured in current U.S. Dollars (all figures taken from the World Development Indicators). This strong growth for more than three decades helped to sharply reduce absolute poverty.

However, since the 1990s China's growth relied increasingly on investment and net exports (Figure 17). Between 2002 and 2007 alone, gross national saving increased by more than 10 per cent of GDP, and since then the gross national saving rate was persistently higher than 50 per cent of GDP, "far surpassing the rates prevailing in Japan,

South Korea, and other East Asian economies during the years of their miracle growth” (Yang et al., 2011, p. 1). Private consumption fluctuated around 50 per cent of GDP from 1978 to 1990 then fell to 41 per cent in 1994 before recovering to 47 per cent in 2000. Since then, private consumption has been in steady decline and reached an extremely low plateau at around 35 per cent in 2006. Government consumption has also fallen during the past decade to around 13 per cent of GDP since 2008, after fluctuating around 15 per cent of GDP from 1979 to 2003. The massive decline in consumption went hand in hand with rising investment and, especially since 2005, rising net exports. Investment as a share of total output amounted to 48 per cent in its peak year 2009, which is one of the highest investment shares worldwide. All of the increase in investment came from the enterprise sector, while the ratio of private household investment to GDP even fell slightly from 2002 to 2007 (OECD, 2010a, p. 31). The trade surplus was close to 9 per cent in 2008.

As can be seen in Table 3, the decline in the private consumption-to-GDP ratio in the 2000s was accompanied by a decline in personal disposable income as a share of GDP, which is in turn almost entirely explained by the decline in labour income, and by an increase in households’ saving rate which peaked at the extremely high level of 38 per cent in 2007. For the period 2002-2007, the rise in the personal saving rate accounts for almost 70 per cent, and the decline in household income for the remaining 30 per cent of the total decline in the private consumption-to-GDP ratio (see also Guo and N’Diaye, 2010, p. 3). Personal saving as a share of GDP has continued to increase after 2002, despite the falling share of household income in GDP (Table 4). The strong improvement in the current account balance is reflected in strong increases in the financial balances of both the personal and the government sector, even overcompensating for the strong deterioration of the corporate saving-investment balance (Figure 18).

Figure 19 shows an alternative measure of the wage share and confirms the picture obtained from the official statistics. The largest part of the strong trend decline in the wage share since the 1980s is likely the result of a sectoral shift from agricultural employment, with a higher labour income share, to industrial employment (Bai and Qian, 2010). However, labour income also declined as a share of value added in the industry sector since the late 1990s. According to Bai and Qian (2010, p. 667) this is mainly a result of the restructuring of state-owned companies and the increase in monopoly power. Qi (2011) presents a measure of the wage share for the period 1990-2007, excluding the agricultural and self-employed sectors, which play a significant role in China. According to these estimates, the wage share shows a declining trend over the whole period.²³

Personal income inequality has strongly increased over the past decades.²⁴ While China was characterised by very low inequality three decades ago, today inequality is relatively high in China by international standards (OECD, 2010a, p. 147). The Gini coefficient is even higher than in the United States. One reason for this is the very pronounced rural-urban income gap (Figure 20). However, urban inequality has also been steadily increasing since the 1980s, and in 2007 the Gini coefficient for urban incomes in China was nearly as high as the Gini for total household income in the United States (OECD, 2010a, figure 5.1, p. 130). It seems that the secular rise in inequality eased from 2005 to 2007, which is likely due in part to policy measures aiming at reducing inequality, such as tax reform, the abolishment of school fees, the introduction of welfare assistance programs, etc. (see OECDa, 2010, ch. 5, for a discussion).

²³ Note however that self-employment data are very limited, and that calculations of adjusted wage shares are therefore not very reliable.

²⁴ There is some debate about how to accurately measure income inequality in China given issues such as data reliability, rural vs. urban inequality, migration, shadow income, etc. Yet, there is a broad consensus in the literature that income inequality increased drastically in China during the last decades.

The rising urban inequality is also evident in the development of top income shares (Figure 21). The available data show relatively low top income shares for China, e.g. as compared to the United States. Yet, since the top income shares shown in Figure 21 are calculated from survey data, they are not readily comparable with international data from income tax statistics, and “there is some presumption that top incomes are underestimated in the survey data” (Piketty and Qian, 2009, p. 55). These concerns were fuelled by a widely debated study of the National Economic Research Institute of the China Reform Foundation, arguing that official income statistics do not capture “shadow income”, which is predominantly acquired by top-income households. Hence, the study concludes that “China’s income gap is much wider than what authorities have acknowledged”.²⁵ In any event, the available data show that the share of total household income going to the top 10 per cent of households has continuously increased since the 1990s.

3.3. Overinvestment and low household income as an outcome of distortions

This section discusses how distortions in the allocation of physical inputs (capital and natural resources) and in the labour market have contributed to the export-dependence and sluggish development of household income in China.

Bai et al. (2006, p. 74) argue that contrary to a widely held belief, “despite China having one of the highest rates of investment in the world, the return to capital in China does not appear to be significantly lower than that in the rest of the world”. The combination of high growth, high profitability of investment and a high and growing current account surplus is somewhat surprising according to conventional theory: A high investment rate should either lead to a fall in profitability and higher inflation, or to high capital inflows. According to a broadly held view, therefore, the declining share of household incomes together with the strong reliance of economic growth on business investment is linked to a number of institutional distortions affecting the allocation of capital, labour, and natural resources. Prasad (2009, p. 106) argues:

“[A] substantial fraction of this investment in China has been financed by credit provided by state-owned banks at low interest rates. Indeed, cheap capital has played a big part in skewing the capital-labor ratio and holding down employment growth [...]. In addition, local governments provide subsidized land in order to encourage investment. And energy prices continue to be administered and made available to enterprises at prices below international levels. Hence, the prices of the factors of production that serve as complementary inputs to physical capital – land and energy – are also cheap.”

Yang et al. (2011, p. 9) mention the “suppression of wages, low interest payments on loans, and low land rentals” as reasons for the Chinese saving and investment puzzle, while Dooley et al. (2005) argue the Chinese government influences wages, interest rates, and international financial transactions so as to boost export-led growth. According to Huang and Tao (2010, p. 4) various “subsidies” on capital, labour, energy, land and environment “artificially increase producer incentives, raise investment returns, and improve the international competitiveness of Chinese products. [...] In addition, they also distort the broad income distribution pattern in favor of the government and the corporate sector, but at the expense of household income. This weakens consumption and further boosts external sector surplus.”

²⁵ <http://english.caixin.com/2010-08-12/100169983.html>

These tendencies are supported by the political reward system in China. Li and Zhou (2005) note that local officials in China play a strong pro-business role as a result of fiscal decentralisation and the specificities of the political incentives system. They present empirical evidence that the provincial leaders are rewarded and punished by the central government according to their economic performance, which motivates them to promote the local economy. This incentives system increases competition to attract capital at the local level and results in low tax rates, hidden subsidies in energy use, and low or negative rents on land use (Yongding, 2007).

Financial distortions are another oft-mentioned explanation of overinvestment and low household incomes. A few decades ago, the role of state-owned and state-controlled banks was mainly to deliver credits to state-owned enterprises. As economic reforms proceeded and a private sector developed, the state-owned sector has been given priority by these banks (e.g. Aziz, 2006; Aziz and Cui, 2007; Prasad, 2009; Ferri and Liu, 2010; Knight and Ding, 2010; IMF, 2011; Song et al., 2011). Bank lending rates are low in China, easily available for state-owned firms, and there is no obvious penalty for non-repayment of loans by state-owned enterprises. These financial sector weaknesses are likely to contribute to the investment-oriented growth pattern and slow employment growth (Prasad, 2009, p. 106; see also Aziz and Cui, 2007, Guo and N'Diaye, 2010). Kujis and Wang (2005, p. 3) report that in the period 1978-1993 labour productivity rose by 7.0 per cent annually, while employment grew by 2.5 per cent. By contrast, during 1993-2004, labour productivity rose by 7.8 per cent per annum on average while employment growth declined to just over 1 per cent a year. A similar point is made by Blanchard and Giavazzi (2006, p. 2), who argue that “the country’s capital stock is misallocated: too much in manufacturing, too little in the domestic service industry – in particular in the provision of health services.”

Many small and medium-scale firms, often in the private sector, were forced to fund investment mainly through retained profits. According to Aziz (2006, p. 20), surveys and studies show that private firms are constrained in their access to credit. But state-owned enterprises also financed investment more through retained earnings, as they were not required to pay dividends to its owner, the state, until very recently. This made investment in certain industries very easy to finance, even where rates of return could be expected to be rather low (Prasad and Rajan, 2006; Prasad, 2009). The importance of retained profits also helps to explain the already high and in recent years further increasing corporate savings (Yang et al., 2011). A further result of these financial market distortions is that households willingly hold bank deposits despite very low interest rates because of few alternatives (of which real estate is an important one) and the rising need to save for health, education and pensions. This further reduces household incomes, and therefore consumption (IMF, 2011). Aziz (2006, p. 30) concludes that “financial distortions may be quantitatively large and that focusing on reforming [the financial] sector may be quite important in rebalancing growth towards greater dependence on consumption.”

Significant changes in the labour market since the 1990s also likely contributed to the low growth in wage and household income. Especially since the mid-1990s state-owned enterprises were restructured, leading to massive lay-offs. The number of employees in urban state-controlled firms fell by 14 million or 25 per cent from 1998 to 2003 (OECD, 2010a, p. 158), while the share of employment in private urban enterprises increased significantly (Figure 22; also see Lu and Gao, 2011). At the same time employment in agriculture declined, and as the *hukou* registration system was relaxed, there was an inflow of more than 200 million people into urban areas through official or unofficial migration (Herd et al., 2010).

Institutionally, the Chinese labour market was not prepared for this new situation:

“Many of the workers newly employed in the private sector were not given contracts, so they were not covered by social security, and their labour costs were therefore

lower. Such poor labour protection is partly a consequence of fiscal decentralization and performance competition between local governments which promote short-term economic growth by attracting both domestic and foreign investment, while overlooking workers' interests.” (Lu and Gao, 2011, p. 106)

OECD (2010a, p. 154) argues that “[t]he labour law that was in place during this transition [...] has proved ineffective in many basic areas such as ensuring that workers are actually paid and that employers join social security.”²⁶ Long working hours are the norm in many industries, with very limited payments for overtime; nearly half of urban employees had no written labour contracts in 2005, and this number rises to nine out of ten for migrant workers in domestic private companies; although minimum wages exist (set at the regional level), they are low by international standards and not generally enforced (OECD, 2010a). The problems of enforcement of labour law are made worse by the fact that there is no freedom of association for workers. All unions and many grass-root initiatives are under the control of the All-China Federation of Trade Unions which is, more or less, controlled by the Communist Party (Zhu et al., 2011; OECD, 2010a). Further, migrant workers officially registered as rural workers are generally not entitled to enter the social security system (Wang 2011). Fan (2001) presents evidence that labour market returns, especially in the form of medical and retirement benefits, are heavily influenced by state-controlled institutional status. Huang and Tao (2010) conclude that the institutional deficits of the Chinese labour market weaken the bargaining power of labour and benefit particularly the export industry while restraining wage and consumption growth.

In addition to the distortions discussed above, a host of further, and in part related, factors are likely to contribute to the unbalanced growth pattern of the Chinese economy. These include, amongst others, the tax system favouring exports (e.g. Yongding, 2007; Yang et al., 2011), China's joining of the World Trade Organization (WTO) in 2001 (e.g. Knight and Ding, 2010), exchange rate manipulations (see Section 3.1), and rapidly rising real estate prices in some cities fuelling construction investment (e.g. IMF, 2011; World Bank, 2011; Huang et al., 2011b). However, there is no doubt that, as Aziz and Cui (2007, p. 29) conclude, “improving the distribution of national income between profit and household income appears to be a quantitatively important factor” when it comes to rebalancing the Chinese economy away from its reliance on investment and net exports towards greater contributions of private consumption to overall output growth.

3.4. What explains the high and rising household saving rates in China?

In 2007, household saving amounted to more than 20 per cent of GDP and thus contributed the largest fraction to China's national saving rate (Table 4). In OECD countries, the bulk of national saving is attributable to business saving, although the private household sector appropriates a larger share of national income in OECD countries than in China. Hence, the high and rapidly rising personal saving rate plays a very important role in explaining the weak development of private consumption as a share of GDP in China, especially during the 2000s. Kraay (2000) reports that household saving was only about 7 per cent of GDP in the late 1970s, making cultural norms appear as an unlikely explanation of the currently high saving rate. Below, we summarise some of the more recent attempts to explain the high and rising personal saving rate in China.

²⁶ In 2008 a new set of labour laws was introduced in response to these problems, but it remains to be seen to what extent this new legislation will be enforced (see Herd et al., 2010).

3.4.1. Life-cycle and demographic effects

On the basis of the permanent income hypothesis, it is hard to explain why Chinese households continued to save more in an environment of steadily and strongly growing household incomes, instead of smoothening lifetime consumption (e.g. Chamon and Prasad, 2010). Modigliani and Cao (2004), estimating single equations for the period 1950s to 2000, interpret their results as evidence in favour of the life-cycle hypothesis, while others conclude that the life-cycle hypothesis does not account for household saving in China (e.g. Chao et al., 2011). Chamon and Prasad (2010), in the first study using household data for a longer timespan (1990-2005), show that the age-saving profiles of households gradually turned into a U-shaped pattern, whereby young and old households have the highest saving rates (Figure 23).²⁷ This is inconsistent with the hump-shaped profile implied by the life-cycle hypothesis, whereby young workers are assumed to save very little and saving rates peak around age 40, when potential earnings are highest.

Another oft-mentioned potential contributing factor are demographic changes due to the one-child policy. Wei and Zhang (2011) suggest that the rising sex ratio imbalance made it progressively more difficult for men to get married. Therefore, families with sons increase saving in order to improve their relative attractiveness for marriage. They show that the local sex ratio is a significant predictor for savings in households and regions. By contrast, Chamon and Prasad do not find demographic shifts and the one-child policy to provide a convincing explanation as the cohorts most affected by the one-child policy are not among the highest savers. Hence, they conclude that “the rising savings rates must be the result of economy-wide changes affecting all households.” (Chamon and Prasad, 2010, p. 95)

3.4.2. Income uncertainty and precautionary saving

Another potential explanation invokes the presence of habit persistence in a context of fast income growth, which can entail some uncertainty about future consumption opportunities. Using aggregate provincial level data for 1995-2004, Horioka and Wan (2007) find strong evidence of habit persistence. However, Chamon and Prasad (2010) find little empirical support for this factor when applying household data.

Following Chamon and Prasad (2010), most promising in explaining high and rising household saving in recent years are the rapid privatisation of the housing stock (combined with very limited availability of household credit), and the rising private burden of education and health expenditures, together with precautionary motives stemming from the reforms of state-owned enterprises and market-oriented reforms more generally.²⁸ These issues are further pursued by Chamon et al., 2010, who use household data for the period 1989-2006 to explain household saving rates of workers. They show that income uncertainty increased strongly since the 1990s: The transition rate from employment to unemployment and from state owned companies to non-state owned companies increased sharply. Further, a pension reform in 1997 reduced the pension replacement rate, leading to higher saving by households approaching retirement. They proceed by arguing that “greater uncertainty in earnings at the microeconomic level can have macroeconomic implications. One important channel is the impact of greater household-specific

²⁷ The data set used by Chamon and Prasad (2010) only covers urban households, who account for about two thirds of total household income.

²⁸ They report that “[t]he proportion of households that own or partially own their homes increased dramatically from 17 per cent in 1990 to 86 per cent in 2005 [...], largely as a result of the housing reforms that took place over the last decade” (Chamon and Prasad, 2010, p. 114). Further, “[t]he fraction of households in our sample for which health expenditures exceed 20 per cent of total consumption expenditures (a reasonable threshold for measuring the risk of large private health expenditures) has risen from 1 per cent in 1995 to 7 per cent in 2005” (Chamon and Prasad, 2010, p. 113).

uncertainty on precautionary savings. In the absence of a strong social safety net and an underdeveloped financial system, this could lead households to self-insure by increasing their savings” (Chamon et al., 2010, p. 13).²⁹ Chamon et al. (2010) regress household income on several household characteristics, and use the residuals to estimate the permanent and transitory components of income. They then calibrate a precautionary savings model to quantify the effect of rising income uncertainty. They find that their simulation results are well able to explain the increase of the household saving rate over time, as well as the U-shaped age-saving profile of savings. According to their results, for younger households, the rise in the saving rate is explained by saving for precautionary purposes due to rising income uncertainty and for housing purchases. For older households, on the other hand, pension reforms and rising medical expenditures account for much of the rise in the saving rate.

3.4.3. Status-seeking through wealth accumulation

While the finding by Chamon et al. (2010) of higher precautionary saving are consistent with others (e.g. Kraay, 2000; Kuijs, 2006; Qi and Prime, 2009), doubts remain as to whether the strong rise in income inequality, reported in Section 3.2 above, merely reflects higher income uncertainty. Chamon et al. (2010, p. 11) report that none of their income measures shows evidence of a clear trend in the variance of permanent shocks, while they find a clear upward trend in the variance of transitory shocks. But Gong et al. (2010) provide evidence that intergenerational mobility in China is very low by international standards. However, it is well-known that countries with a more unequal distribution of income at a given point in time typically also exhibit lower income mobility across generations (OECD, 2008a, ch. 8). One reason for this is the self-reinforcing positive relationship between inequality and the private returns on education. On the one hand, education gives access to relatively well-paid jobs and, on the other hand, the ability to take advantage of the high returns on education will typically be limited to children of richer households (OECD, 2008a, p. 214). Moreover, as already discussed in Section 2.2 above, it is a rather difficult task to distinguish changes in transitory and permanent income inequality. This is all the more true in the Chinese context of strongly rising inequality, high intergenerational inequality and rapid overall income growth. Due to its relation with educational success, an initial increase in transitory earnings dispersion can quickly turn into higher individual lifetime inequality and further reduced intergenerational mobility.

Jin et al. (2011), using household data for 1997 to 2006, present direct econometric evidence that rising inequality has positively affected household saving even when controlling for other potential explanatory factors discussed above. Their estimations explain consumption (net of education expenditures) and the average propensity to consume (ratio of consumption to disposable income) with household income, a set of control variables (such as age, family size, province and year dummies, time trends, house prices, the estimated returns on education) and a measure for income inequality (their preferred measure is the Gini coefficient within the reference province and age group, but their results do not depend on the inequality measure). Overall they find a strong, robust and statistically significant negative impact of a rise in the Gini on consumption. They also control for the increase of income risk (proxied by the proportion of families in a province-age group that experienced a decrease in income for families that are two years in a row in the sample). However, the inclusion of this variable does not show the expected sign and

²⁹ Chamon and Prasad (2010, p. 113) report that “[t]otal consumer loans issued by all financial institutions in China increased from near zero in 1997 to about 2.2 trillion yuan by the end of 2005 (12 per cent of GDP). Real estate loans account for about 80 per cent of total consumer loans outstanding and auto loans account for about 7.5 per cent of total consumer loans outstanding. Household consumption (from the national accounts) amounted to 7 trillion yuan in 2005.”

the coefficient of the Gini is even higher for this specification. Jin et al. (2001) further include two measures for the quality of the provincial social security net. These variables are both statistically significant and stimulate consumption, but do not affect the coefficient and significance of the Gini variable. They further experiment with the variable for the sex-ratio as used by Wei and Zhang (2011), but do not find a significant effect on either consumption or the coefficient of the Gini variable.

Jin et al. (2011) derive further testable hypotheses from their theoretical framework of status-seeking and present supportive empirical evidence. For example, inequality has stronger negative effects on the expenditures of younger consumers, as the younger will benefit longer from a higher status. Inequality has a positive effect on education expenditures, as education is an indicator of social status and is correlated with higher income and wealth. Finally, income inequality has no negative effect on the consumption of basic food. Jin et al. (2011) attribute these results to status-seeking motives. Due to the limited access of private households to credit, social status depends to a large extent on the family's position in the wealth distribution and related indicators which are closely associated with wealth when credit markets are imperfect:

“As a result, in order to ascend in the status hierarchy or keep the social status in the ‘Rat Race’, families try to accumulate wealth by increasing savings. When income inequality increases, the benefit gap between the high-status and low-status groups widens, which in turn strengthens the incentives of status-seeking savings. [...] Furthermore, rising income inequality also raises the entry wealth level for the high-status group, which means that more savings are needed for one to enter the high-status group.” (Jin et al., 2011, p. 192).

Further evidence for the likely impact of income inequality on household saving is presented in Figure 24. It shows saving rates of households ranked by income deciles in 1995, 2000 and 2005 from Chamon and Prasad (2010, p. 99, figure 2). Interestingly, households with high incomes not only save much more as a percentage of their income, their saving rate has also increased over time. Chamon and Prasad (2010, p. 99) report that the top two deciles alone accounted for over half of total savings in 2005, and that these results do not change if households are sorted by an estimated measure of permanent income. In line with these findings, Baldacci et al. (2010) present estimates that average propensities to consume out of lifetime income are much higher for low income households.

In Chapter 2, we have reviewed evidence that showed how rising income inequality, in a context of low income mobility but highly deregulated credit markets and targeted credit promotion through government, fuelled the private consumption boom and the falling personal saving rate in the United States. In China, by contrast, access to personal credit is very limited. There is a consensus that, partly as a consequence, high income growth and rising income dispersion due to income uncertainty and a weak social safety net has induced households to save more for precautionary motives. Moreover, there is evidence that higher income inequality has contributed to an increasing intensity of status seeking, which in turn appears to have resulted in higher personal saving relative to household income, as households cannot easily use credit to compete in the “rat race”.

3.5.A key role for government spending

As can be seen in Figure 17, government consumption decreased as a share of GDP during the 2000s. The government's financial balance improved significantly in the years before the crisis, which is mainly the result of the fiscal reform of 1994, a rapidly rising tax base due to high nominal and real growth, and very low public spending, especially on social transfers. While the general government sector had a financial surplus of as high as

5 per cent of GDP in 2007 (Figure 18), China's public finance position deteriorated in 2008, but rebounded soon after the downturn, so that the OECD (2010a, p. 37) estimates that China "can readily accommodate a permanently higher level of government spending."

There seems to be a broad consensus in the literature that rising government spending, especially with respect to health, education and pensions, could play a key role in increasing consumption in China (e.g. Blanchard and Giavazzi, 2006; Qi and Prime, 2009; Baldacci et al., 2010; Barnett and Brooks, 2010; OECD, 2010a). Higher government consumption is found to have a positive impact on consumption via three channels: First, through its direct effect; second, through its mediating effect on households precautionary savings (Qi and Prime, 2009, Barnett and Brooks, 2010); and third, through income redistribution to low income households, due to their higher propensity to consume (Baldacci et al., 2010; Yang et al., 2011).

Qi and Prime (2009) use panel data across provinces for the period 1979 to 2004 to explain household consumption as a share of GDP. Private consumption is according to their estimates positively influenced by government spending on health and by financial development, and negatively by proxies for income uncertainty such as the size of the state sector or the variance of income across time for each province. While rejecting the life-cycle model, their "most significant and robust discovery is that [...] higher government spending on education and health has the biggest impact on increasing household consumption" (Qi and Prime, 2009, p. 399). This result is in part confirmed by Barnett and Brooks (2010), using pooled provincial data from 1994 to 2007. They find a large impact of government spending on health, but not education, on household consumption in urban but not rural areas. According to Barnett and Brooks (2010, p. 11), "each additional yuan in government health spending boosts urban consumption by 2 yuan" due to the reduction of precautionary saving.

Baldacci et al. (2010), on the basis of a panel of 24 OECD countries for the period 1990-2008, estimate the impact of government social expenditures on household saving, controlling for standard explanatory variables. They find that "a 1 per cent of GDP increase in total social spending is likely to reduce household saving by 0.14–0.24 per cent of GDP" (p. 9). These estimation results were matched with estimated propensities to consume (out of lifetime income) for different household groups in China (urban or rural residence, age, income quintile), to simulate the impact of an increase in government expenditures on health, education and pensions. Their simulations suggest that the impact of government social spending is higher in rural than in urban areas, and that spending on pensions and health has the biggest effect on consumption: An increase in pension or health expenditure by one percentage point of GDP increases consumption by 1.6 or 1.3 per cent of GDP respectively. If these additional government expenditures were financed through higher income taxes, the net effect on consumption would be partly offset, but would still be clearly positive (1.0 per cent for pensions and 0.7 per cent for health).

3.6. Summary and conclusions

In China, the share of consumption as a percentage of GDP dropped strongly since 1990, and especially since 2000, from already low levels by international comparison. According to the literature reviewed in this chapter, the primary reasons for this development are:

1. Low and decreasing household income (in relation to total income), especially wage income, due to distortions in the financial and labour markets.
2. High and rising household saving rates due to high income uncertainty in a period of economic transition, a weak social safety net, and high and rising income

inequality. The latter has increased the incentives for status seeking via wealth accumulation against the background of limited access of households to credit. The contribution of the rising saving rate to the fall in the private consumption-to-GDP ratio during the 2000s and until the Great Recession was about twice as large as that of a lower household share in aggregate income.

3. Low and decreasing government consumption.

The shift in the functional distribution of income towards profits, together with an increase in personal income inequality, had substantial macroeconomic effects. As Justin Yifu Lin, Chief Economist and Senior Vice President of the World Bank, notes:

“We know from the national accounts and from industry data that a large share of Chinese national income accrues to large corporations, and we also know that an increasing share of income accrues to rich people. Both groups have higher propensities to save than the middle-income and low-income households. [...] This pattern of income distribution increases investment and the accumulation of productive capacity while repressing domestic consumption, leading to a large current account surplus. Shifting more income towards workers can rebalance income between rich and poor and between the corporate sector and households. This redistribution would also reduce external imbalances.” (Lin, 2011, p. 9)

We therefore conclude from our analysis thus far that rising income inequality and slow wage growth (except for top wages) were not only a driving force of the financial crisis and current account deficit in the United States (Chapter 2), but they are also an important factor behind the investment- and export-led growth in China, thereby contributing to the global imbalances. In particular, consistent with the relative income hypothesis, the different degrees of development and liberalisation of the financial sector in these two countries are crucial for explaining the simultaneous emergence of credit-financed expenditure cascades leading to financial fragility in the United States, and of status-seeking oversaving contributing to the rising current account surplus in China. This conclusion is also broadly consistent with the theoretical model in Kumhof et al. (2012).

4. Growing inequality and domestic stagnation in the heart of Europe: the case of Germany

“The redistribution to higher incomes resulted in an increase in national savings and depressed growth. In the past fifteen years the institutional setting, notably the deficit constraints embedded in the Maastricht criteria and in the Stability and Growth Pact, resulted in low reactivity of fiscal policies and restrictive monetary policy. Together with a financial sector less prone to innovation, this limited consumer borrowing. The shift in distribution resulted in soft growth.” (Fitoussi and Stiglitz, 2009, p. 4)

4.1. The debate about Germany's role in the European imbalances

According to standard estimates, the strong improvement of Germany's current account during the 2000s was not due to changes in standard fundamental variables.³⁰

³⁰ Following the standard practice in the literature (see Chinn and Prasad, 2003), the European Commission (2010b) estimates current account norms, taking into account such factors as relative income per capita, the (cyclically adjusted) fiscal balance, the initial net foreign assets position, current and expected dependency

There is, thus, wide agreement, at least outside Germany, that the German economy has been overly export-dependent during the past decade, and that stronger domestic demand in Germany would help to reduce the current account imbalances in Europe and globally (e.g. IMF, 2009; OECD, 2010b, 2012; European Commission, 2010a; GCEE, 2011; ILO, 2012). There is less agreement as to how Germany's large current account surplus relates to the very weak development of wages and the rapid increase in inequality since the early 2000s. In policy debates pertaining to the European imbalances, there are at least three different views.

The first perspective, promoted, for instance, by the Deutsche Bundesbank and the European Central Bank, is that wage restraint in Germany was necessary to counteract previously misaligned labour costs, which had led to high unemployment, whereas "improving price competitiveness vis-à-vis other euro-area countries was not a central consideration" (Deutsche Bundesbank, 2010, p. 25). The weak domestic demand is thus, if anything, a temporary problem, as "[t]he foremost consequence of labour market reforms and of the moderate wage developments that they promote is a medium and long-term strengthening of domestic activity" (Deutsche Bundesbank, 2010, p. 25). Germany is also seen as a role model for other (euro area) countries, especially those with current account deficits:

"Germany's success is due to three things. First, the moderation in unit labour costs: salaries and nominal wages have risen less quickly than the euro area average and productivity has risen. [...] Second, major structural reforms were concluded several years ago, in particular of the labour market [...] Finally, German companies have been skilful in adjusting rapidly to globalization. The way in which Germany has kept a very close eye on production costs and implemented reforms to increase the flexibility of the economy can serve as an example to all of its neighbours." (Jean-Claude Trichet, Le Figaro, 03/09/2010)

Consequently, "as the deficit countries bear the brunt of the adjustment burden, the respective adjustment requirements are distributed asymmetrically between deficit and surplus countries" (Deutsche Bundesbank, 2010, p. 26). Several influential German economists propound the view that the German trade surplus has not been excessive (see Horn et al., 2010, for a review of the debates).

A second line of thought is that the German economy still suffers from structural problems and that further deregulation of labour and product markets is necessary to strengthen domestic demand, and in particular private investment activity:

"While many of the recently elected government's initiatives address the right issues in a sensible way, some might have gone in the wrong direction. The lack of a specified strategy for fiscal consolidation and remaining deficiencies of product and labour market regulation need to be tackled in order to boost potential growth. Improving economic dynamism and increasing the attractiveness of Germany as a location for investment through structural reforms would also contribute to a reduction of external imbalances." (OECD, 2010b, p. 12)

ratios, population growth or oil prices. For Germany, the estimated current account norm for 2008 was -1.2 per cent of GDP, against the actual current account of 6.6 per cent. Barnes et al. (2010) put the current account norm for Germany at 2.5 per cent of GDP for the period 2004-2009, against an actual current account of 6.2 per cent. Decressin and Stavrev (2009) report an estimated fundamental current account for Germany of 2.5 per cent for 2007.

The (majority of the) German Council of Economic Experts gives a similar assessment:

“Germany has a great deal of ground to make up in this respect as its investment ratio has been lagging way behind that of other countries for quite some time now. To put this right, measures must be taken to boost domestic investment, which in turn means improving the attractiveness of doing business in Germany. In the field of economic policy this requires reforming the corporate tax code and labour market regulations, while wage bargainers need to prioritise the need to preserve existing jobs and create new ones. [...] By pursuing a policy actively geared to the goal of higher investment, Germany could simultaneously make a contribution of its own to reducing global imbalances in the form of high current account surpluses and deficits.” (GCEE, 2010, pp. 16, 21)

Since the mid-2000s a similar view has been expressed by Hans-Werner Sinn, perhaps the most influential economic policy adviser in Germany during the 2000s, who published two bestselling books (Sinn, 2007 (German version 2003), 2005) on the alleged structural deficiencies of the German economy and the resulting “pathological export boom” due to high wages and an overregulated labour market.³¹

While this analysis would imply, amongst other things, that despite a decade of wage restraint, German labour costs are still too high, a third view is that the stagnation of unit labour costs together with the decline in real wages and the strong increase in income inequality during the 2000s have led to a real undervaluation boosting exports, while at the same time contributing to weak private consumption and overall domestic demand in Germany. This debate was prompted by, amongst others, Christine Lagarde, former French finance minister and currently managing director of the IMF:

“Germany has done an awfully good job in the last 10 years or so, improving competitiveness, putting very high pressure on its labour costs. [...] I’m not sure it is a sustainable model for the long term and for the whole of the [euro] group. Clearly we need better convergence.” (Christine Lagarde, *Financial Times*, 14/03/2010)

Jean-Claude Juncker, prime minister of Luxemburg and president of the Euro Group, even talked of “wage and social dumping” by Germany (*Luxemburger Wort*, 11/08/2010). ILO (2012, p. 46) expressed similar concerns:

“These wage deflation policies have not only impacted private consumption, which lagged behind that of other euro area countries [...]. They have also led to widening income inequalities, at a speed unseen even in the aftermath of reunification, when several million people lost their jobs in East Germany.”

In the remainder of this chapter, we first describe the evolution of functional and personal income distribution together with the composition of aggregate demand in Germany over the past decades (Section 4.2). In Section 4.3 we briefly discuss arguments according to which the rising current account surplus in Germany can be explained by overly rigid labour and product market regulations leading to low potential growth and weak investment activity. An alternative view, discussed in Section 4.4, is that

³¹ Sinn (2006, p. 1157-1158) summarised the argument as follows: “Export boom and weak domestic growth are not separate events, but are economically closely fitting parts of a development process which is caused by labour market rigidities. International low-wage competition of the Asian and ex-communist countries defines a new labour market equilibrium with lower wages, but unions as well as the fixed replacement incomes provided by the welfare state prevent domestic wages from adjusting. The economy reacts by moving from labour-intensive to capital-intensive sectors, by investing capital abroad and by replacing manpower by machine power. These reactions cause high exports, a large export surplus and mass unemployment at the same time.”

deregulation policies have had adverse effects on income inequality, aggregate demand and, ultimately, potential growth, due in part to the specificities of the German labour market, which has traditionally relied on internal, rather than external flexibility.

4.2. Trends in income distribution and aggregate demand

After unification in 1990, the German economy experienced two very different decades. During the 1990s, the composition of aggregate demand did not change much, and the trade balance was roughly balanced throughout the period (Figure 25). The private consumption-to-GDP ratio was fairly stable at around 58 per cent. At the same time, the shares of wages and household disposable income in GDP decreased moderately by around 2 percentage points (Figure 26), while the personal saving rate decreased by a little less than 4 percentage points (Figure 27).³² But since the downturn starting in 2001, the picture changed dramatically, and the trade balance moved from a small deficit in the year 2000 to a surplus of as high as 7 per cent of GDP in the peak year of 2007 (Figure 25). The share of non-residential investment in GDP declined by 3 percentage points in 2000-2002 but recovered after 2005, when the trade balance was still improving. Private residential investment declined by 2 percentage points of GDP in 1999-2005, government consumption and investment by 1.6 percentage points of GDP in 2003-2007, and private consumption by 2.9 percentage points in 2005-2007. During 2001-2007, the wage share declined by more than 5 percentage points. The share of disposable income in GDP only started to decline after 2003, with the drop of 4 percentage points in 2003-2007 being much larger than that of the drop in the wage share during the same period (Figure 26). The personal saving rate increased by roughly 2 percentage points during 2000-2004. Yet, the procyclical behaviour of the saving rate following the downturn after 2000 was very striking in historical comparison (Deutsche Bundesbank, 2007a). Figure 28 shows the sectoral financial balances for the period 1991-2010. It can be seen that the rise in household saving contributed to the improvement of the current account only in 2000-2003. After this, the private household financial balance remained roughly constant as a share of GDP. By contrast, the financial balance of non-financial corporations improved very strongly until 2004 and has remained positive ever since. The government balance also improved strongly during 2003-2007. Due to very strong cyclical effects during the “Great Recession”, wages, disposable income and private consumption increased relative to GDP, but during 2010-2011 there has been a partial return to the pre-crisis pattern.

At first sight, it might seem that the German economy developed rather similarly during the 1980s and 2000s. Yet, on closer investigation the two periods were in fact rather different. As can be seen in Figure 29, the period after 2000 is exceptional in historical comparison due to the long-lasting stagnation of real private consumption and real disposable income in absolute terms. When GDP growth finally regained some dynamism in 2005-2007 and again since 2010, private consumption played only a very limited role (Figure 29b).³³ By contrast, the decrease in the private consumption-to-GDP ratio over the entire decade of the 1980s (Figure 25) occurred in spite of the rather substantial and regular contributions of private consumption to real GDP growth. Another difference between the two periods is that the weak private consumption demand after 2000 was accompanied by a long slump in housing investment. As a result of this sudden stop in

³² There is evidence that the falling saving rate during the 1990s can be explained almost entirely by the changing saving behaviour of households in the east after re-unification and that this adjustment process has come to an end in the late 1990s (Fuchs-Schündeln, 2008).

³³ Notice that even the (relatively) strong consumption growth of 2006 was short-lived as it was in large part due to the announcement of a three percentage point increase in the value added tax in 2007 and was followed by negative consumption in 2007, i.e., at the height of the cyclical expansion.

domestic growth at the turn of the century, Germany was the country, behind Italy, with the lowest average growth rate within the euro area during 1999-2007. It was also the only country where net exports contributed more to overall growth than domestic demand (according to Eurostat data).

Personal income inequality has very strongly increased in Germany over the past decade or so. OECD (2008b) found, for the period until 2005, that “[s]ince 2000, income inequality and poverty have grown faster in Germany than in any other OECD country.”

In the discussion below, we shall focus on data from the German Socio-Economic Panel (GSOEP), which provides the unique possibility to track the evolution of incomes from hourly wages, via gross and net earnings, to disposable income, similar to the CPS in the United States. Note, however, that the GSOEP data may underestimate the rise in wage inequality especially during the 1980s.³⁴

Disposable income inequality at the household level was very stable in Germany throughout the 1980s and 1990s, and started to rise only from the early 2000s onwards. Strikingly, household market incomes had already become considerably more unequally distributed during the 1990s, but the government tax and transfer system was extremely effective in keeping disposable income inequality stable (Figure 30). In the following discussion we shall focus on the period from 2000 onwards. Full-time earnings have developed more positively than total earnings, due to a trend towards (marginal) part-time employment (Figure 31). In the bottom half of the distribution, the very sharp decline in real wages has been mitigated by the transfer system. For deciles 6 to 9, both real earnings and disposable income have essentially stagnated (Figure 32), and the rather strong income growth in the highest decile has been largely due to the increasing non-wage component of income (self-employer income and receipts from assets). As a result, the 5/1 decile ratio for disposable income has dramatically increased during the past decade, while the 9/5 decile ratio has remained roughly constant. In fact, only the top income decile experienced noticeable real disposable income growth, and all households below the median saw their disposable incomes decline in real terms.

Top income shares are much lower than in the United States. The top 1 per cent income has been very stable until the early 2000s, but increased by about one third from 2004 to 2007 (Figure 33; see also Bach et al, 2009). This seems to be to a large extent the result of tax reforms (see Bach et al., 2011).

There is evidence that both the permanent and the transitory component of earnings inequality have increased (Biewen, 2005; Daly and Valletta, 2008; Myck et al., 2008; Bartels and Bönke, 2010). A recent study by Bönke et al. (2011) strongly suggests that there has been a secular rise of intra-generational inequality in male lifetime earnings. Importantly, the dispersion of disposable incomes reacted far more to the increase in unemployment during the first half of the 2000s than during earlier periods of rising unemployment and rising dispersion of market incomes (Figure 30). Moreover, the rise in

³⁴ Most early studies, based on data from the GSOEP, found that, in contrast to the United States, the wage distribution remained highly stable during the 1980s in Germany (Steiner and Wagner, 1998; Prasad, 2004). The use of the GSOEP was recently criticised by Dustmann et al. (2009), who instead use information from the social security records (IABS). Dustmann et al. (2009) find that wage inequality in Germany already increased in the 1980s, but mostly at the top of the distribution. At the bottom of the distribution, wage inequality started to rise only during the 1990s. These observations hold for both men and women, although the rise in upper-end inequality was somewhat more pronounced among men. GSOEP and IABS have different strengths and shortcomings. IABS, which is based on social security statistics, may capture wage data more accurately than the survey-based GSOEP, but the IABS does not include employees who do not pay social security contributions (self-employed and low-wage employment). The GSOEP contains information on all sources of income, whereas the IABS only includes income from employed workers.

the Gini coefficient did not reverse itself during the upturn in 2004/5-2008, when unemployment strongly declined.

4.3. Can structural factors explain the weak domestic demand?

In this section, we assess the views, outlined above, that weak domestic demand is primarily due to low (business) investment (Subsection 4.3.1) and that the low investment and domestic demand is in turn due to excessive product and labour market regulation restraining in particular the development of the services sector (Subsection 4.3.2).

4.3.1. Low investment as a cause of weak domestic demand?

The OECD (2010b, 2012) recently argued that investment activity, and by consequence domestic demand, is constrained in Germany by a high degree of product and financial market regulation, which limits innovation and leads to unfavourable financing conditions:

“Specifically, the challenge is to consolidate and broaden the past success of the export sector to the whole economy by implementing long-needed structural reforms. [...] Even though anti-competitive product market regulation (PMR) has been considerably reduced in recent years, Germany remains more heavily regulated than many other OECD countries. In the latest edition of the OECD’s economywide PMR indicator, it ranks 16th out of 28 countries. The government should continue to ease product market regulation as an overly strict regulatory framework may hamper structural change and competition.” (OECD, 2010b, pp. 17-18)

OECD (2012, pp. 13-14) attaches great significance to the finding that “investment spending as a share of GDP remains one of the lowest among OECD countries” and argues that “the long-run decline in the investment ratio also reflects structural deficiencies that make Germany less attractive as an investment location”. The emphasis on product market regulation as a determinant of the current account is also shared by the German Council of Economic Experts (GCEE, 2011). Deutsche Bundesbank (2010, p. 29), by contrast, argues that “structural reforms in surplus countries [are] not likely to have notable effect on deficit countries.”

Figure 34 shows different components of gross investment as a share of GDP for the G 7 countries, Spain and the Netherlands, and for the euro area excluding Germany. As can be clearly seen in Figure 34a), the total investment-to-GDP ratio in Germany was historically at a similar level as in other high-income economies. But after 2000, up until the Great Recession, Germany had the weakest investment dynamics of all the countries under consideration, except Japan, and by 2003 it had the lowest investment-to-GDP ratio except for the United Kingdom. This phenomenon, however, was not at all due to lower business equipment investment. As can be seen in Figure 34b), while equipment investment is subject to significant cyclical variations, as a share of GDP it has been rather stable in Germany over the longer term. When compared to investment dynamics in the most important advanced economies, it has even developed rather positively since the mid-1990s. The weak overall investment activity in Germany can, however, be explained to a very large extent by the weakness of public and residential investment (also see Figure 25). Yet, while it may be argued that equipment investment is sensitive to corporate profitability, public and residential investment is certainly not. It is also very likely that the

weak development of non-residential construction investment has mainly been caused by the slump in residential and public investment (Dullien and Schieritz, 2011a).³⁵

In its analysis of the long-term trends of corporate investment, Deutsche Bundesbank (2007b, p. 29) also finds no evidence of weak investment in Germany in historical comparison: “If the effects of reunification are taken into account, the relationship between investment behaviour and production activity in the corporate sector does not seem to have undergone any lasting change in the past few years.” In particular, the investment-to-GDP ratio of the corporate sector has fluctuated around a constant trend in both periods 1970-1990 and 1991-2006, with a structural break due to unification.

4.3.2. Excessive product and labour market regulations?

Several recent empirical studies investigate the effects of labour and product market regulation on the size and speed of adjustment of the current account.

Berger and Nitsch (2010) are amongst the contributions with the most clear-cut results. Using the OECD indicators of employment protection legislation and product market regulation for a panel of 18 European countries, they estimate that “higher relative levels of labor or product market flexibility are associated with higher bilateral trade surpluses (or lower deficits). Also, the association has apparently become stronger over time, especially for country pairs in which both partner countries adopted the euro” (Berger and Nitsch, 2010, p. 12). While for Germany this conclusion certainly does not point in the direction of further product and labour market regulation, Berger and Nitsch (2010, p. 14) also conclude that “structural reforms that smooth the business cycle (e.g., by increasing growth contributions from domestic sources in very open trade surplus economies) can help reduce precautionary savings and thereby lower trade surpluses.” But it remains unclear in how far these structural policies should differ from those recommended to countries with current account deficits.

Most recent studies are unable to find any robust effects of product and labour market regulations on the current account. In a recent contribution, Ivanova (2012, p. 5) summarised the current state of the literature as follows:

“[T]he role of the structural factors in the emergence of these imbalances remains an open question. The overall impact of the commonly recommended package of structural policies such as liberalization of product, services and credit markets, reduction in employment protection, removal of other labor market rigidities as well as reduction in business taxation remains unclear.”

Kennedy and Sløk (2005) do not find any robust effects of labour and product market policies on the current account for a sample of 14 OECD countries. Ivanova’s (2012) analysis, using a large panel of advanced, emerging and developing countries, is also largely inconclusive. She notes that “structural factors changed little over time or changed in the same direction in the surplus and deficit countries. Thus these can also explain very little of the emergence of imbalances prior to the crisis.” (Ivanova, 2012, p. 4) She also finds overall weak effects of labour market policies on current accounts. However, the ratio of the minimum to mean wage and the degree of employment protection are

³⁵ Data for net investment by category are not available on an international basis. Dullien and Schieritz (2011b) show, however, that the results are likely to remain qualitatively unchanged for plausible assumptions about the rates of capital consumption for different categories of capital goods. OECD (2012) also develops its argument in terms of gross investment.

negatively related to the current account, while the generosity of unemployment benefits positively so. She notes that these effects could be due to resulting changes in labour costs and price competitiveness or to the demand effects of higher household income. Bornhorst and Ivanova (2011) explicitly “place Germany in international perspective and find that structural causes explain very little of the emergence of imbalances prior to the recent crisis, and even with regards to the levels of the current account, the links with the structural measures are rather imprecise.” Jaumotte and Sodsriwiboon (2010), using a sample of 49 advanced and emerging economies with special focus on the effects of the European Monetary Union, find that a higher minimum wage lowers the current account. By contrast, no direct relationship between the levels of employment protection and unemployment benefits and the current account was found. Ju and Wei (2007), while finding some evidence that rigid labour markets reduce the speed of adjustment of the current account to the long-run equilibrium, argue that large economies such as the United States, Japan, and Germany should be excluded from such an analysis.

Kerdrain et al. (2010), on the other hand, conclude on the basis of estimations for a panel of 30 OECD countries and 117 advanced, emerging and developing countries, that higher social spending is associated with lower (precautionary) household saving and lower current accounts. Moreover, stricter employment protection is associated with lower saving rates if unemployment benefits are low.³⁶ On the basis of the findings by Kerdrain et al. (2010), OECD (2011b, p. 2) further concludes that “[m]ore developed social welfare systems would reduce the need for precautionary saving among households, which would moderate current account surpluses in external surplus countries”, while “[p]ension reforms that lead to cuts in replacement rates would have the opposite effect.” Product market deregulation and financial market reforms “that raise the sophistication or depth of financial markets” may also reduce current account surpluses (p. 2). Further OECD (2011b, p. 5) argues that “less stringent job protection should overall strengthen a country’s current account position” due to its effect on precautionary saving. Baldacci et al. (2010), on the basis of a panel of 24 OECD countries for the period 1990-2008, conclude that a 1 per cent of GDP increase in total social spending reduces household saving by 0.14 to 0.24 per cent of GDP. Applying these results to Germany, it would seem that higher social spending and employment protection legislation and less stringent product market regulation may help reduce the current account surplus.

As an illustration of the institutional “rigidities” in Germany, in Figure 35 we report various measures of product and labour market regulations together with current account data for 28 OECD countries. The OECD publishes a measure of aggregate product market regulation (PMR), and three indicators for non-manufacturing sector regulation (NMR). These are the network sectors energy, transport and communication, the retail trade sector, and the professional services sector (see Wölfl et al., 2009). We also report the net unemployment replacement rate for the long-term unemployed, employment protection legislation, union density, and the tax wedge as indicators of labour market regulation.

First, when looking at the labour market institutions, no clear pattern emerges. The correlation of the current account is weakly positive with the indicators of union density and the unemployment net replacement rate, largely non-existent with the tax wedge, and weakly negative with employment protection legislation. The German labour market can hardly be described as rigid with respect to these indicators, at least if compared with the other euro countries. When considering the change of these variables during the years before the Great Recession, the relationship with the current account becomes negative for union density and the net replacement rate. Germany is regularly among those euro area

³⁶ Kerdrain et al. (2010) find little evidence that structural policies affect the speed of adjustment of the current account to equilibrium.

countries which deregulated the most, during a period when its current account surplus drastically improved. This makes it indeed rather unlikely that further labour market flexibility would help reduce Germany's current account surplus.

Second, when looking at the product market regulation indicators, it seems that Germany's product markets either are already rather flexible or have been substantially deregulated during the period of a strongly rising current account surplus. Moreover, there does not seem to be any clear correlation between product market regulation and the current account either across countries or over time for the entire sample. OECD (2010b, pp. 117 et seq.) places heavy emphasis on the relatively high value of the professional services regulation indicator for Germany. However, deregulation in this sector has been very pronounced since the mid-1990s. The network services sectors are even the second-least regulated of the entire OECD in Germany, behind the United Kingdom. While these simple plausibility checks could be multiplied, they raise additional doubts that (further) product market deregulation is the key to reducing Germany's export dependence.

4.4. Export dependence as a result of stagnating wages and rising inequality?

4.4.1. *An alternative view of the German labour market*

A large literature analyses the medium-term impact of labour market institutions on unemployment. Yet, while a prominent view is that "broad movements in unemployment across the OECD can be explained by shifts in labour market institutions" (Nickell et al., 2005, p. 1), this view has been challenged in numerous contributions (e.g. Blanchard and Katz, 1997; Fitoussi et al., 2000; Howell et al., 2007; Baccaro and Rei, 2007; Freeman, 2007; Bell and Blanchflower, 2009; Stockhammer and Klär, 2011). The OECD recently reassessed its employment strategy, noting that "some European countries appear to achieve equally good employment outcomes with extremely different policy settings" (OECD, 2006, p. 190). Importantly for our purposes, two of the best-known empirical studies find that the development of unemployment in Germany is not satisfactorily explained by labour market institutions. Nickell et al. (2005, p. 20) conclude: "They [changing labour market institutions] explain very little in Finland, Germany, New Zealand". And Bassanini and Duval (2006, p. 13) find: "In particular, the gradual pick up in unemployment in Germany since unification is not properly explained by either policy or control variables included in the analysis." These results clearly suggest that a more detailed look into the institutional setting of the German economy is warranted.

Streeck (1991) and Soskice (1997), for instance, argue from a "varieties of capitalism" perspective that the German model of "diversified quality production", characterised by high quality industrial production, incremental innovation and product differentiation and long-term customer relations, requires a high level of firm- or industry-specific skills. Relatively strict employment protection legislation thus helps to reduce labour turnover and hence the devaluation of skills during cyclical downturn. Relatively high unemployment benefits are a further incentive for workers to accept the risk of highly specific human capital. The availability of these firm- and industry-specific skills in turn rewards firms with high quality, skill-intensive production. In this sense, employment and income protecting institutions are favourable for both employees and employers (for cross-country evidence, see Estevez-Abe et al., 2001, and Bassanini and Ernst, 2001). Therefore, even if the German labour market were found to be "rigid" as defined by the standard indicators, it is not clear whether labour market deregulation would lead to an improvement in the employment performance.

Rather, the literature on neo-corporatism suggests that there is a certain trade-off between external flexibility (weak employment protection, low replacement rates) and internal flexibility (adjustment of working hours according to cyclical conditions, overtime during booms, labour hoarding and advanced vocational training during downturns). OECD (2010c, p. 63) points out that there is evidence for a cross-country trade-off between low employment protection regulation and high internal flexibility. Eichhorst et al. (2009) incorporate measures of internal flexibility in their analysis of labour market flexibility across 16 European countries in 2003. On this account, the German labour market is one of the most flexible in the euro area and even more flexible than the labour market in the United Kingdom.³⁷ Further, in coordinated market economies or corporatist countries like Germany, employer associations and unions negotiate over wages and working time, and influence labour market and social policy (see Aidt and Tzannatos, 2001, for a survey of the literature). Social partners consider the situation of the whole economy in decision-making, and may respond to rising unemployment due to macroeconomic shocks with social pacts and other arrangements to fight unemployment (e.g. Visser, 1998; Baccaro, 2003).

While it is true that the model of “diversified quality production” is most successful in the export-oriented sector, there are good reasons to doubt that a deregulation of the labour market and the establishment of a low-wage sector will result in higher domestic demand and a lower export orientation (see Carlin and Soskice, 2007). In fact, although Germany has implemented the prescribed reforms with great care, and although real wages have declined and wage dispersion strongly increased during the past decade, the current account has further improved during the upswing of 2004/5-2008, i.e., after the labour market reforms, and there are so far few signs of a sustained boom of domestic demand. It can, on the contrary, be argued that the deregulation of the labour market has contributed to a large extent to the widening of income inequality and reinforced the aggregate demand problem that may have caused the rise in inequality and low growth in the first place:

“Almost inevitably, the rise in unemployment fell on less skilled workers. [...] Legislation that creates flexible labour markets in the context of inadequate demand leads to limited increases in employment and falling wages [...]. Thus the danger of introducing flexible labour market legislation in Germany in the context of depressed aggregate demand is that income distribution becomes more inegalitarian and poverty increases. These effects are then amplified by welfare state cutbacks, which fall primarily on those with low skills and low incomes so that redistribution becomes more limited.” (Carlin and Soskice, 2007, p. 2)

4.4.2. A macroeconomic explanation of the long stagnation after 2000

It is unlikely that structural factors suddenly reduced the potential growth of the German economy at the turn of the century (e.g. Hein and Truger, 2005; Horn et al., 2007; Solow, 2008; Carlin and Soskice, 2007). In 2001-2002 economic growth in Germany, as in any other advanced economy, was adversely affected by the burst of the New Economy bubble. Yet, while the downturn was rather short-lived in most economies, Germany entered a long period of stagnation and only started to grow again noteworthy in 2006

³⁷ The German experience in the Great Recession, where GDP dropped by 4.7% in 2009 but employment remained constant, while working hours were reduced drastically, illustrates the importance of internal flexibility. While the good employment performance during the Great Recession showed that the German labour market is in an important sense flexible compared to e.g. the labour markets in Anglo-Saxon countries, this “labour market miracle” is a result of the high internal flexibility, and has therefore little to do with the reforms of the 2000s which increased external flexibility (see Herzog-Stein et al., 2010, for a discussion).

(Figure 29, Figure 36). Initially, the failure of the German economy to overcome the downturn after 2001 was in part due to the high real interest rates especially during 2001-2004, associated with low inflation compared to the euro area average (Figure 37) and the pro-cyclical fiscal policy especially during 2002-2004 (Figure 36; see Hein and Truger, 2007; Dullien and Schwarzer, 2009).³⁸ Moreover, whereas in other countries the subsequent upswing was driven by rising house prices and strong residential investment, in Germany construction investment was a drag on economic growth, as the construction boom following re-unification had come to an end. In such a context of depressed aggregate demand, the political debates about and subsequent implementation of labour market and welfare state reforms, such as the semi-privatisation of the old-age pension system, led to both rising inequality, increased uncertainty and, thereby, a rising personal saving rate which further depressed private consumption. Even more importantly, the stagnation of real wages resulted in a sharp decline in the share of household income in total national income, with obvious consequences for household spending on consumption and housing. Firms accumulated large excess profits which also depressed domestic demand. However, while business equipment investment was not particularly weak, as seen above, a somewhat higher nominal and real wage growth, both absolute and relative to productivity growth, would likely have contributed to more dynamic private consumption demand. Moreover, with higher household incomes and with lower real interest rates (at higher inflation), aggregate investment activity, and especially residential and non-residential construction investment, would have likely been more dynamic. The very weak contributions of both government consumption and public investment to real GDP growth have become structural in Germany after 2002. The decline in spending on public goods has directly contributed to higher inequality, and so have the repeated and very substantial tax cuts on high incomes and corporations throughout the 2000s. Additionally, lower government consumption, which is mostly comprised of non-tradable goods and services, typically leads to a depreciation of (broad measures of) the real exchange rate (Ruscher and Wolff, 2009, pp. 14-15). The extremely weak development of government consumption in Germany has thus also contributed to the rising current account surplus.³⁹

In the following subsections, we will discuss in more detail the potential effects of wage stagnation (Section 4.4.3) and rising personal inequality (Section 4.4.4) on domestic demand and the current account in Germany.

4.4.3. Stagnating wages and the current account surplus

In a fixed exchange rate regime like the European Monetary Union, nominal unit labour costs are strongly related to real effective exchange rates. An argument that is sometimes made in the public debate is that the wage restraint of the 2000s was a reaction

³⁸ There is substantial cross-country evidence suggesting that higher long-term real interest rates lead to higher medium-term unemployment (e.g. Fitoussi et al., 2000; Nickell et al., 2005; Bassanini and Duval, 2006; Baccaro and Rei, 2007). There is also some evidence that a restrictive fiscal policy during downturns increases medium-term unemployment (IMF, 2010, Chapter 3; Sturn, 2010; DeLong and Summers, 2012).

³⁹ Ruscher and Wolff (2009, p. 14) apply a panel co-integration framework consisting of EU 15 countries plus a number of rich industrial countries. The result of a positive effect of government consumption on the real effective exchange rate is obtained for the case where government consumption is fully financed by taxes. In the absence of strict Ricardian equivalence, the effect of lower government consumption on the current account will be stronger to the extent that it reduces the government deficit. Chinn and Ito (2007) estimate a panel for 19 industrial and 70 developing countries covering the period 1971 to 2004. They find that a 1 percentage point increase in the budget balance would increase the current account balance by 0.10 to 0.49 percentage points for industrialised countries (see also Chinn and Prasad, 2003, and Chinn et al. 2011).

to the loss of international competitiveness and the strong real appreciation of the Deutsche Mark after re-unification (e.g. ILO, 2012, p. 46). But standard estimates, e.g. by the German Council of Economic Experts (2004, Para. 840ff.) find that Germany's real effective exchange rate was in line with its fundamental value in 1999 (also see Boss et al., 2009). Similarly, the price competitiveness indicator of the Deutsche Bundesbank suggests that international competitiveness was already high by historical standards in 1999, and further improved thereafter (Figure 38). The persistently low real effective exchange rate after 2002, despite the substantial appreciation of the euro, is due to the continuing real depreciations vis-à-vis the other euro area member countries, linked to the divergence of unit labour costs (Figure 39). Estimations by the European Commission (2010a, p. 29) suggest that the real effective exchange rate of Germany was undervalued by more than 11 per cent in 2008.⁴⁰ And yet, as nominal unit labour costs stagnated completely in Germany before the Great Recession, firms were able to increase their profit margins, resulting in a strong decline in real compensation per employee (Figure 40), which in turn depressed private consumption.

ILO (2012, p. 46) argues that the wage deflation policies in Germany during the 2000s have contributed in an important way to the rising inequality and weak domestic demand in Germany and put pressure on the other member countries of the European Monetary Union which “increasingly see only even harsher wage deflation policies as a solution to their lack of competitiveness.” Similarly, the European Commission (2010b, p. 23) estimates that “although foreign demand has been the main driver of euro-area countries’ exports since 1999, the differences in export performance across Member States have been caused mainly by divergent developments in price competitiveness.” The Commission also argues that broad price/cost indicators such as the Consumer Price Index, unit labour costs or the GDP deflator are better able to explain current account balances than narrow, export-price based measures of the real effective exchange rate. This suggests that non-tradable prices play a significant role for current account developments (European Commission, 2009; see also Ruscher and Wolff, 2009). Therefore, although it is sometimes noted that hourly wage costs remain among the highest in German manufacturing (ILO, 2012, p. 46), the extremely weak wage growth in the non-tradable/services sector in Germany appears to have contributed significantly to the increasingly one-sided orientation of the German business sector towards the external market. However, it is in the services sector where the labour market reforms of the 2000s and the absence of a legal minimum wage matter most. Jaumotte and Morsy (2012, p. 15) conclude that “[i]n contrast to high-inflation countries, Germany benefitted from its more efficient labor market institutions, [...] which contributed to keep inflation low, explaining ¼ percentage point of the negative 0.6 percentage point differential with the euro area.”

An intriguing issue that clearly requires more research are the very large excess corporate savings in Germany. European Commission (2007) tentatively suggests that the German corporate sector had to undergo a process of balance sheet consolidation during the first half of the 2000s due to a somewhat larger financing deficit in 1998-2000 compared to the euro area average (see also Koo, 2009). However, the European Commission (2007, p. 65) already interpreted the “slight increase in the debt to GDP ratio in 2005” as tentative evidence that “overall balance sheet positions have significantly improved and corporations are now in a good position to embark on new ventures.” Yet, the corporate financial balance has remained positive ever since 2004 (Figure 28).

⁴⁰ When price competitiveness had last been at such a high level in 1983/4, the Deutsche Mark subsequently underwent a rather long period of pronounced nominal appreciation, and the indicator of price competitiveness worsened by more than 20 per cent even before re-unification.

It has also been noted that the German corporations have strongly increased their foreign direct investments (FDIs) during the 2000s (OECD, 2012, pp. 13-14). While there has been much discussion in Germany about the “flight of capital and talent” (Hans-Werner Sinn, *Wirtschaftswoche* 22/06/2009, p. 38), the Deutsche Bundesbank has always emphasised the fact that the overwhelming majority of all German FDIs are directed towards other rich industrialised countries and that sales-oriented motives dominate cost-saving motives (Deutsche Bundesbank, 2007c, p. 33, 2008, p. 31). It may therefore simply be the case that investment decisions are primarily driven by relative demand.

4.4.4. Income inequality and the rise in the household saving rate

As briefly discussed above, the increase in the personal saving rate during 2000-2004 was clearly exceptional in historical comparison. In previous cyclical downturns, private consumption developed more positively than income, consistent with the habit persistence hypothesis (see Deutsche Bundesbank, 2007a). There seems to be a general consensus that the rise in the saving rate after 2000 can be to a large extent attributed to precautionary saving in the face of higher income insecurity, policy uncertainty and a widespread fear of status loss (Deutsche Bundesbank, 2007a; Bartzsch, 2008; Giavazzi and McMahon, 2008).

It is perfectly conceivable that the same cause, rising inequality, has led to very different reactions by private households in Germany as compared to the United States due to various country-specific institutions. Whereas many Americans continued to have very optimistic income expectations and went increasingly into debt despite strongly rising inequality (see Section 2.3), in Germany the decline in real median income, together with the widening of income dispersion in the lower half of the distribution led to a widespread feeling of insecurity even within the upper-middle and lower-upper classes (e.g. Groh-Samberg, 2009). This was reflected in public discussions about the “erosion of the middle class” and increasing income polarisation (see Grabka and Frick, 2008; Grabka, 2011). Social norms and myths (“from dishwasher to millionaire” versus “German angst”) are important in this respect, but they also correspond to institutional realities.

First, given the specificities of the German labour market, discussed in Subsection 4.4.1, the mid-career job market is traditionally thinner in Germany than in countries whose production models rely less on vocational, firm-specific skills and hence have higher rates of labour turnover. As argued by Carlin and Soskice (2009, p. 68), “the implementation of reforms to make the labour market more flexible may have interacted with the behaviour of workers with specific skills to increase precautionary savings and therefore contributed to depressed domestic demand.” The higher precautionary savings motive can be attributed both to the worries about expected future income from the public pension system⁴¹ (e.g. Meinhardt et al., 2009) and to “widespread uncertainty about the effects of labour market reforms” (Deutsche Bundesbank, 2007a, p. 50; see also Carlin and Soskice, 2007, 2009). A further explanation of the higher precautionary saving as a result of the labour market and welfare state reforms are the relatively low female participation rate⁴² and especially the very large gender pay gap in Germany, which is amongst the highest in the OECD (OECD, 2008c). As noted by Carlin and Soskice (2009, p. 86):

⁴¹ Corneo et al. (2010), who analyse the specific effects of the semi-privatisation of the pension system (“Riester Rente”), find, however, that the reform has mainly affected the portfolio decisions of higher income households, without stimulating saving by lower income households.

⁴² Interestingly, in the early 2000s there was a positive (though not statistically significant) relationship between the fertility rate and the female employment rate across OECD countries. In the early 1980s, the relationship was negative (see Freeman, 2008b; Carlin and Soskice, 2007).

“The dramatic growth in the prevalence of marginal part-time jobs [...] has taken place in the context of a tax and benefit regime in which spouses acquire access to social security through their husband and face a very high marginal tax rate if they exceed a limited number of hours of work. This structure undermines the development of a potentially important insurance mechanism within the household for families with risk-averse male workers who have specific skills.”

Moreover, there are reasons to believe that, in addition to the pro-cyclical fiscal policy even in times of high unemployment (Subsection 4.4.1), the more structural retrenchment of the (welfare) state has also contributed to higher precautionary saving. For instance, Fuchs-Schündeln and Schündeln (2005), using household survey data from GSOEP, suggest that self-selection of risk-averse individuals into the civil service plays an important role in explaining saving behaviour and significantly decreases aggregate precautionary wealth holdings in Germany. However, this may also imply that a reduction of jobs in the civil service (or similarly secure jobs in the private sector) below the number of risk-averse individuals will have a positive effect on aggregate precautionary saving.

It has also been argued that higher income inequality has directly contributed to the rise in aggregate saving, as a result of differential household saving rates (Klär and Slacalek, 2006; Deutsche Bundesbank, 2007a; Meinhardt et al., 2009). Brenke (2011, p. 10) reports evidence from the GSOEP that households in the bottom half of the distribution have actually slightly reduced their saving rates after 2000. Households in the bottom decile have even reduced their saving rate by half from the early 2000s until 2007, although it always remained positive. Households in the upper half of the distribution have slightly increased their saving rates, especially within the top decile, and this has overcompensated for the constant or falling saving rates in the lower parts of the distribution. In terms of the relative income model, as discussed in Chapter 2, it would seem that the increase of inequality at the top exhibited only limited pressure on the expenditure decisions of households below the top. While this phenomenon warrants additional research, one likely contributing factor, in addition to the income uncertainty discussed above, is the organisation of the education system. For instance, private schools do not play an important role in Germany, and higher-education tuition fees are very limited in comparison with the United States. Note also that there were only very limited changes in relative household incomes between the fifth and ninth income deciles, and hence limited scope for “keeping up with the Joneses” effects, while the extent to which households at the bottom were able to reduce their saving and go into debt was likely limited by credit constraints. As a result, both the percentage of households with positive consumer or mortgage debt holdings and the average amount of debt outstanding have remained remarkably constant since the mid-1990s (see Karl and Schäfer, 2011). Yet, the mortgage and other credit markets are actually rather developed in Germany, although certainly not as “innovative” as in the United States (Green and Wachter, 2005).

4.5. Summary and conclusions

Domestic demand in Germany, and especially private household and government demand, suddenly ceased growing at the turn of the century. Hence, economic growth became strongly dependent on rising net exports. There is little evidence that these developments reflect either an optimal response of private saving and investment decisions to changes in standard fundamentals or structural deficiencies in the product or labour markets. Rather, our survey of the literature suggests the following conclusions:

1. Stagnating nominal unit labour costs have contributed to sustained real undervaluation due to the fixed exchange rate regime of the European Monetary Union and thus stimulated exports from Germany.

2. Firms have taken advantage of stagnating nominal unit labour costs to strongly increase their profit margins. This has, in turn, reduced household incomes relative to GDP, thereby weakening private consumption demand. The large net savings of the German corporate sector are not well explained and clearly require further research.
3. The rising income inequality and uncertainty of private households, partly the result of labour market and welfare state reforms, have contributed to higher precautionary saving in a context of a labour market traditionally based on internal rather than external flexibility, a high gender pay gap and passive macroeconomic stabilisation policies.

While the different reactions of private households to rising inequality in the United States and China seem to be to a large extent due to differences in the credit market, our discussion of the German case suggests that other institutional factors, such as labour market institutions (internal vs. external flexibility, gender relations) and macroeconomic stabilisation policies have also played an important role. Moreover, the specificities of the euro area's fixed exchange rate regime are also important in understanding the effects of wage deflation on both real effective exchange rates and firms' profit margins.

In line with this conclusion Gert Wagner, president of the German Institute for Economic Research (DIW), argues with respect to the implications of the German model for the European and global imbalances:

“At the heart of the problem are [...] the enormous imbalances in international trade. Thus, at the last G20 Summit Germany and China promised to boost their domestic demand. [...] Especially the German economic model has contributed substantially to the instability of the euro zone. It has followed an excessive export strategy, which was backed by stagnant real wages. If the incomes of the broad masses of the population develop only weakly, domestic demand does not expand either. [...] But if a country produces more goods than it uses domestically, other countries necessarily have to increase their debt. [...] This could only work for some time, and this time is over now.” (Wagner, 2011, p. 32, authors' translation)

5. Concluding remarks

“Policy responses designed to ensure a robust and sustainable recovery from this crisis must address the question of how growing inequality of income and wealth might be reversed.” (UN Commission of Experts, 2009, p. 27)

In this literature review, we have discussed the macroeconomic effects of rising income inequality in three very different countries which have experienced a strongly widening income inequality and substantial macroeconomic imbalances before the Great Recession. While the three countries under investigation differ considerably in terms of both the average standard of living and the financial, product and labour market institutions, there are also several similarities when it comes to the macroeconomic effects of rising inequality. Most importantly, perhaps, labour supply, saving and financing decisions of private households are to a considerable extent affected by changes in income distribution, although the precise household responses depend on such factors as the deepness and regulation of the credit markets, the functioning of the labour market (internal versus external flexibility), workers' qualifications (specific/vocational skills versus general skills), the educational system (private versus public financing), gender relations, the quality of the social safety net and the reactivity of monetary and fiscal policy to cyclical unemployment. For example, education-related expenses, in relation with higher inequality, appear to give rise to higher debt in the United States but higher saving

in China, due to differences in the credit market. And precautionary savings, related to labour market deregulation and rising income uncertainty, appear to play more of a role in Germany (due in part to the specific skills of workers and more passive macroeconomic stabilisation policies) and China (due to a very weak social safety net) than in the United States. It is likely that country-specific social norms play an important role as well.

While the rise in the private consumption-to-GDP ratio in the United States is almost exclusively due to the lower personal saving rate, in China and especially in Germany changes in the functional distribution between business income, or profits, and household income, or wages, also have important effects on overall macroeconomic trends.

As an overall policy conclusion, the governments of these countries will have to “address the deeper anxieties of the middle class directly” (Rajan, 2010, p. 9), rather than rely on seemingly easy solutions such as the promotion of credit for households below the top of the income distribution or export-led growth. As noted by Kumhof et al. (2012, p. 5):

“A short-sighted response to global imbalances might therefore be to reduce these ‘financial market imperfections’ in surplus countries. However, if this policy is administered without addressing the underlying income inequalities, it will result in a global rather than a regional increase in domestic indebtedness of the poor and middle class. While this would reduce cross-border financial fragilities, it would exacerbate domestic financial fragilities. In the long run there is therefore no alternative to directly addressing the income inequality problem.”

While it seems obvious that reducing inequality is crucial for more macroeconomic stability on a global scale, the appropriate measures are currently still an issue of heated political discussion. As noted by Saez, (2012, p. 5) for the U.S. context:

“The labor market has been creating much more inequality over the last thirty years, with the very top earners capturing a large fraction of macroeconomic productivity gains. A number of factors may help explain this increase in inequality, not only underlying technological changes but also the retreat of institutions developed during the New Deal and World War II – such as progressive tax policies, powerful unions, corporate provision of health and retirement benefits, and changing social norms regarding pay inequality. We need to decide as a society whether this increase in income inequality is efficient and acceptable and, if not, what mix of institutional and tax reforms should be developed to counter it.”

It would seem that, in this respect, the political discussions in China are already somewhat ahead. Overcoming the excessive export dependence and rising inequality has been, at least officially, the declared intention of the Chinese government for several years. But only recently were significant reforms in the labour market as well as in the health care, pension, education and tax systems, brought under way. These are potentially capable of contributing to reducing inequality, between households and regions, and boosting private consumption (OECD, 2010a).

While the current debates about inequality as a cause of the Great Recession focus primarily on the United States and the emerging economies, particularly China, the crisis of the European Monetary Union was also triggered by the Great Recession of 2009 and poses a large threat to global economic stability. Moreover, there is little doubt that the euro area will achieve long-term stability only if the pre-crisis current account imbalances are overcome. Yet, without structural changes to the current growth model in Germany including lower inequality, it is doubtful that sufficient aggregate demand will be generated to sustain robust economic growth for the euro area as a whole.

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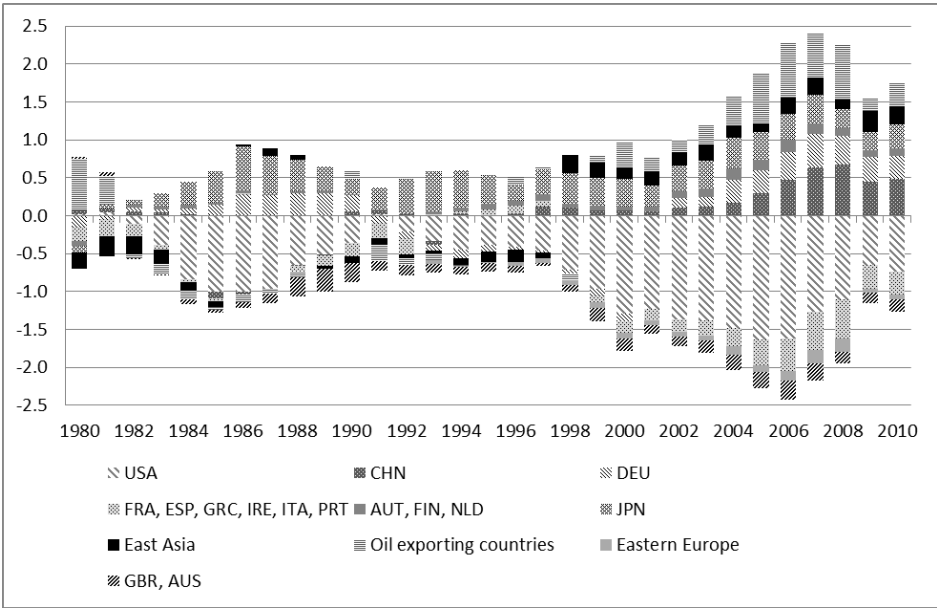
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Figures and Tables

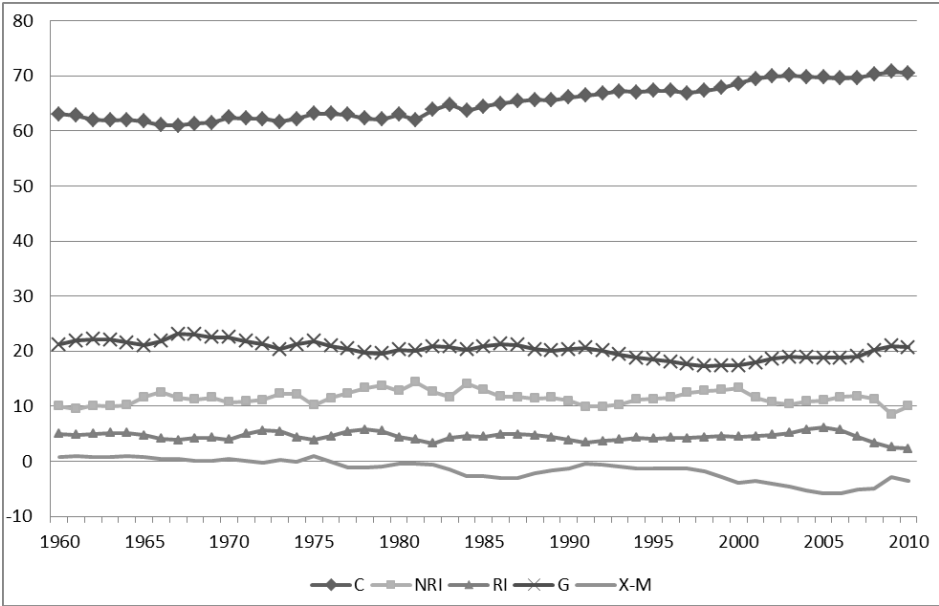
Figure 1: Current account balances, in per cent of world GDP, selected countries, 1980-2010



Note: Eastern Europe (since 1993): Poland, Czech Republic, Slovak Republic, Slovenia, Hungary, Bulgaria, Latvia, Lithuania, Estonia and Romania; Oil exporting countries: Arab countries, Russia (since 1994), Nigeria and Venezuela; East Asia: East Asian and Pacific countries excluding China and Japan

Source: World Bank – Global Development Finance; authors’ calculations

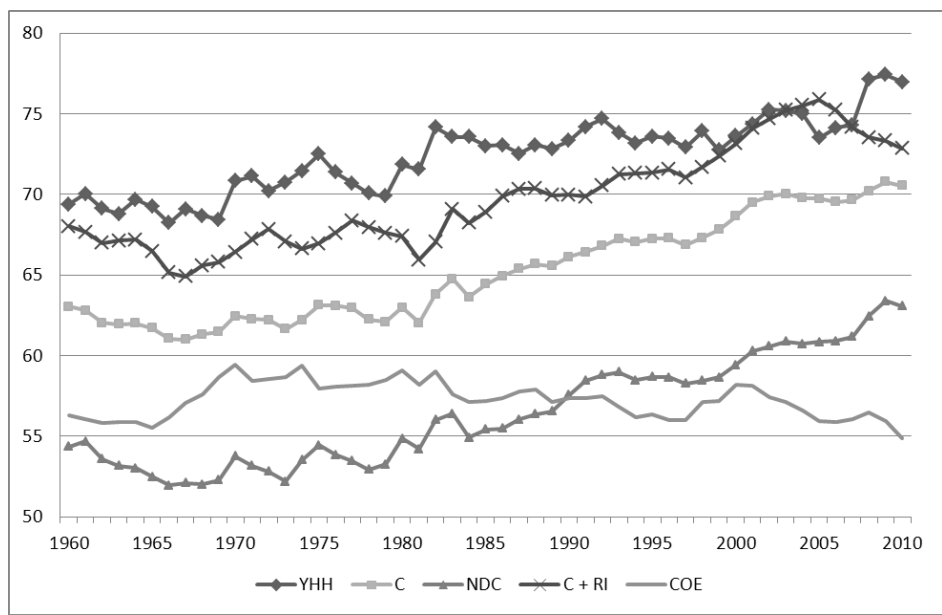
Figure 2: The composition of GDP, in per cent, United States, 1960-2010



Note: C = private consumption, NRI = private non-residential investment, RI = private residential investment, G = government final demand; X – M = net exports

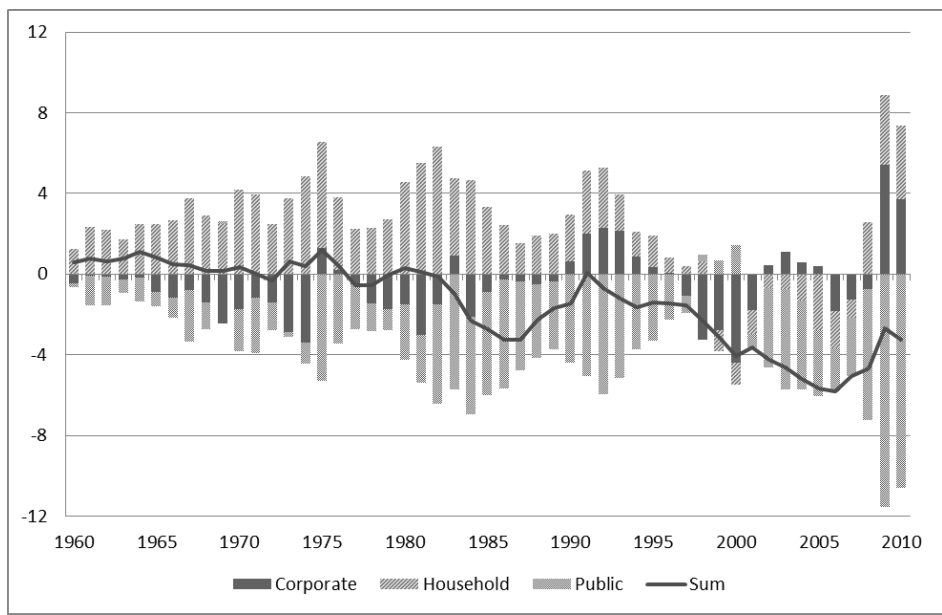
Source: Bureau of Economic Analysis (BEA); authors’ calculations

Figure 3: Compensation of employees, personal income and disposable income, in per cent of GDP, United States, 1960-2010



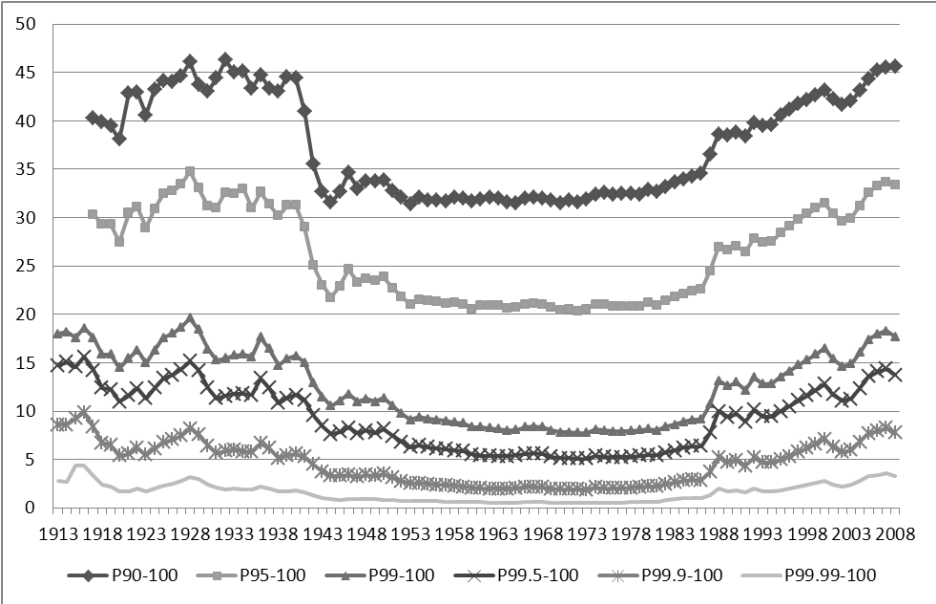
Note: YHH = household disposable income, C = private consumption, RI = private residential investment, COE = compensation of employees
Source: BEA; authors' calculations

Figure 4: Sectoral financial balances, in per cent of gross national income, United States, 1960-2010



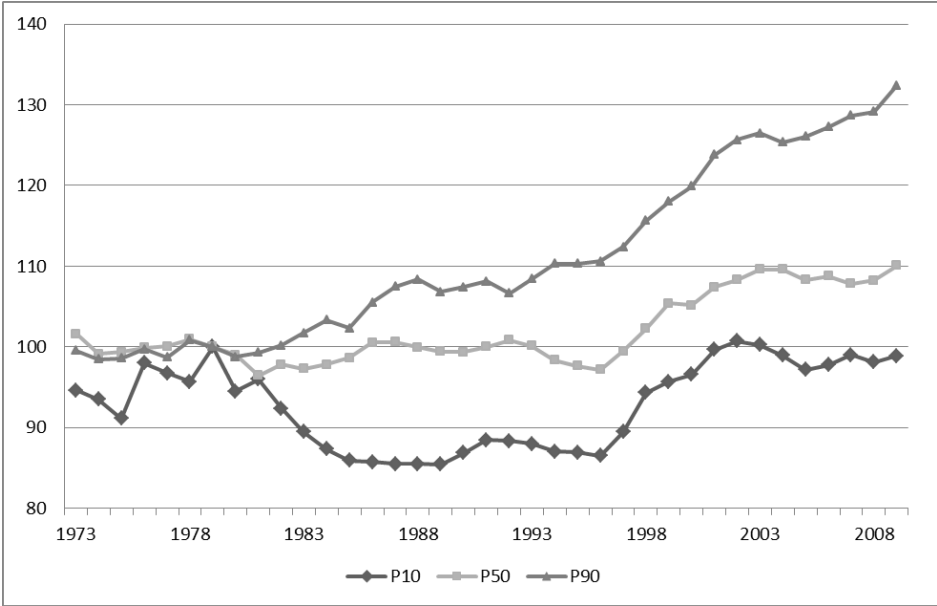
Source: BEA; authors' calculations

Figure 5: Top income shares, excluding realised capital gains, in per cent of total household pre-tax income, United States, 1913-2008



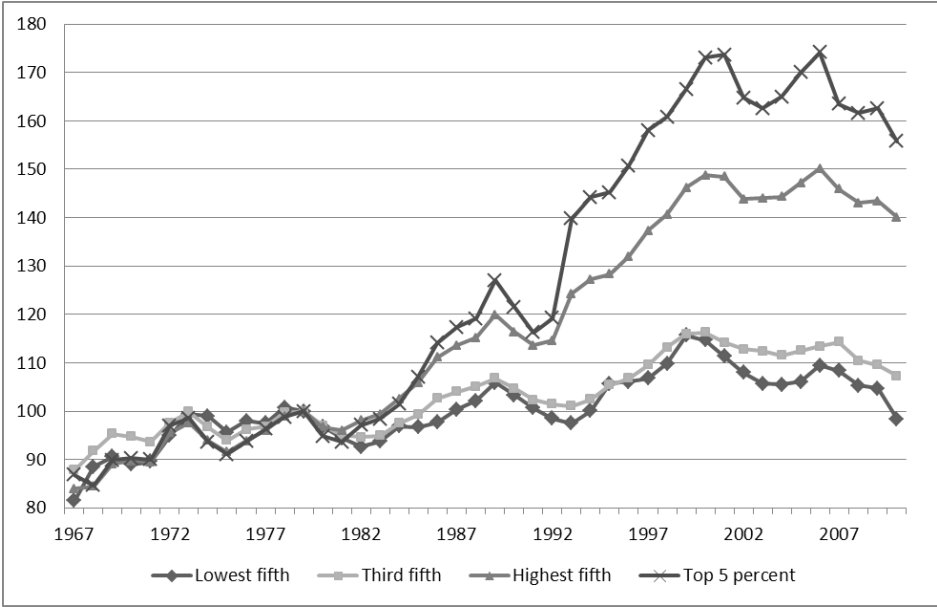
Source: <http://elsa.berkeley.edu/~saez/TabFig2008.xls>, based on IRS; authors' calculations

Figure 6: Real hourly wages, United States, 1973-2009, 1979 = 100



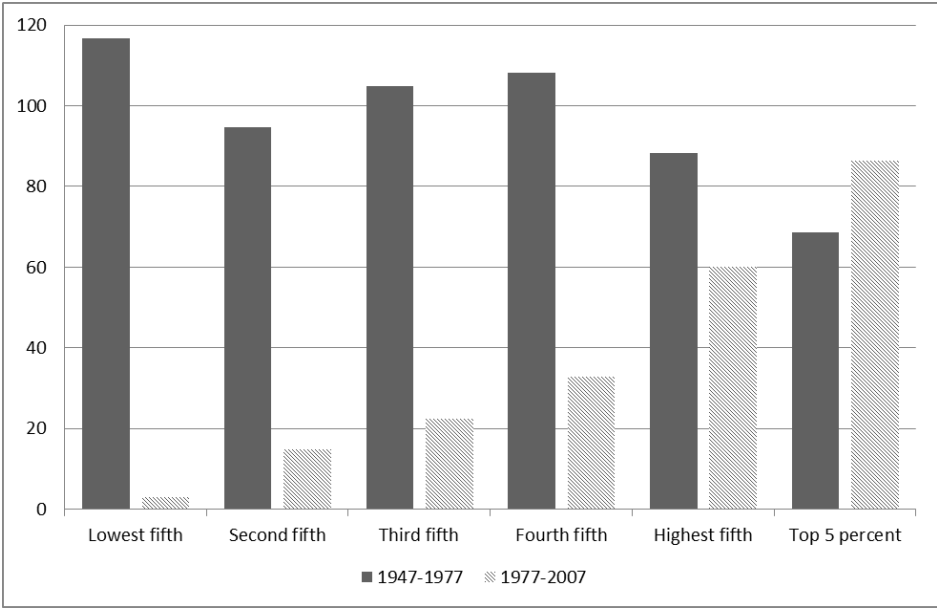
Source: <http://www.stateofworkingamerica.org>, based on CPS; authors' calculations

Figure 7: Real household pre-tax income, excluding realised capital gains, United States, 1967-2010, 1979 = 100



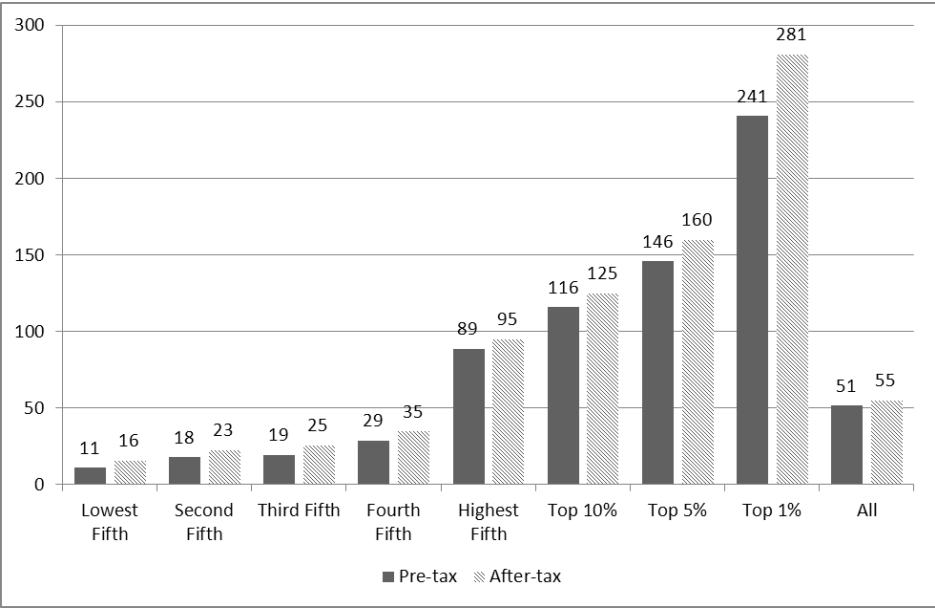
Source: http://www.census.gov/hhes/www/income/data/historical/household/2010/H03AR_2010.xls, based on CPS; authors' calculations

Figure 8: Growth of real pre-tax family income, excluding capital gains, United States, 1947-1977 and 1977-2007



Source: http://www.stateofworkingamerica.org/files/family_income_growth.xlsx based on U.S. Census Bureau, Historical Income Tables, tables F.2, F.3, F.5 (CPS)

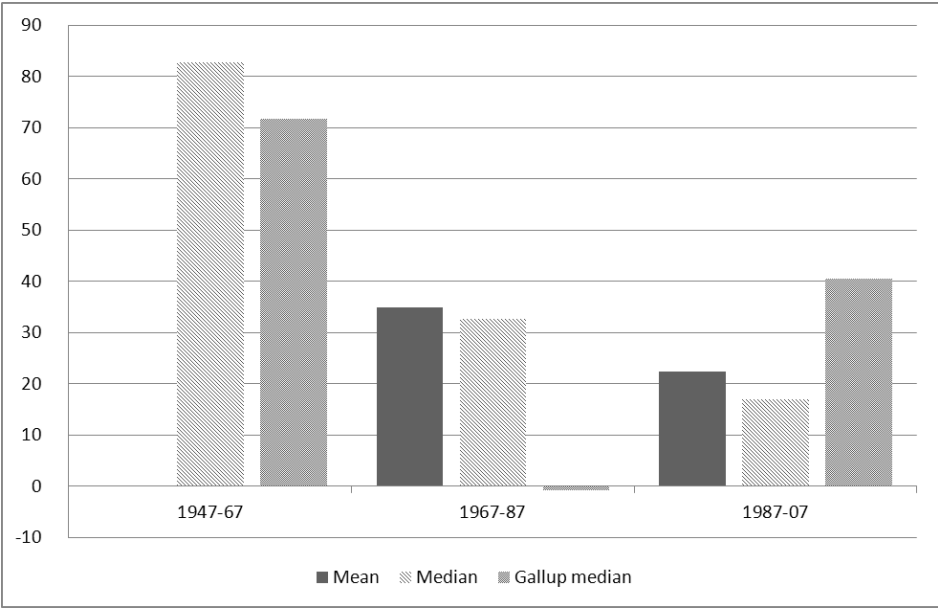
Figure 9: Growth of equivalised household pre- and after-tax income, including realised capital gains, United States, 1979-2007



Source: http://www.cbo.gov/publications/collections/tax/2010/all_tables.xls, based on CPS and SOI; authors' calculations

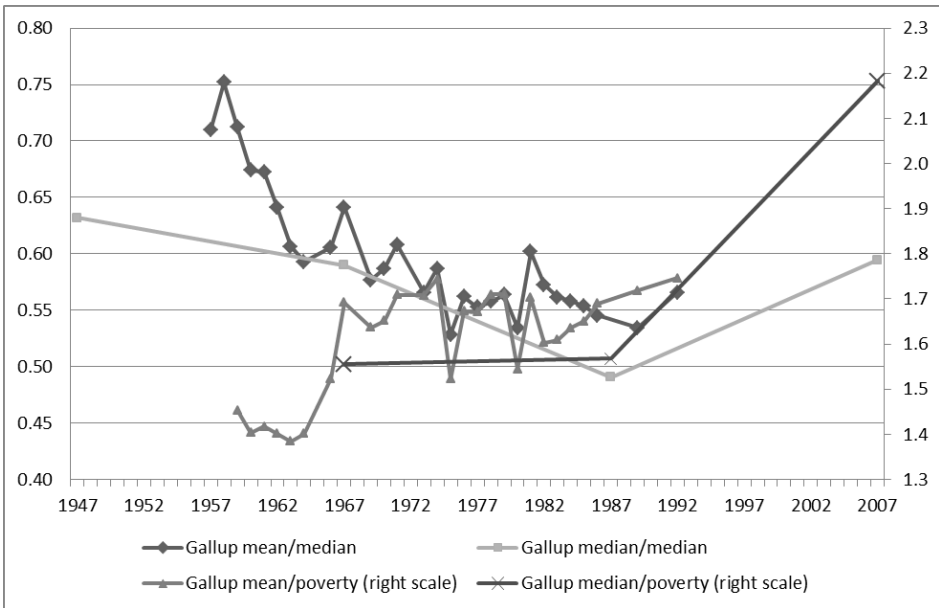
Figure 10: Subjective minimum income and actual income for families of four, United States, 1947-2007

a) Rates of growth of mean, median and subjective median minimum income



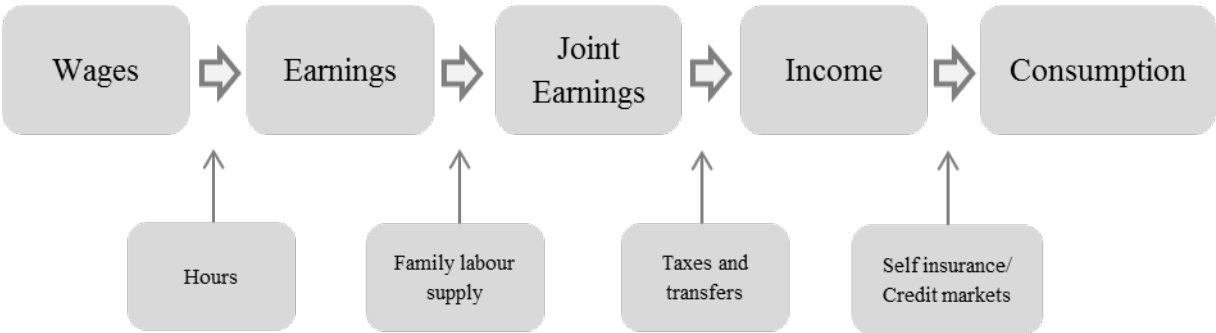
Note: Minimum income is based on responses to Gallup poll question: "What is the smallest amount of yearly income a family of four would need to get along in your local community?" Mean and median income are calculated from CPS, Historical Tables, F-8

b) Ratio of mean and median subjective estimates of minimum income to actual median income and official poverty line



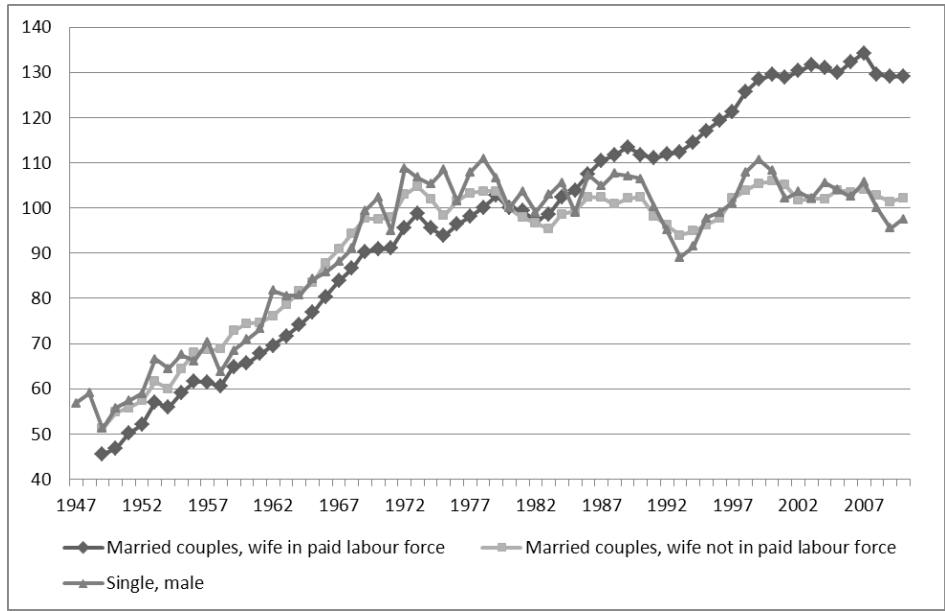
Source: Jones, 2007; OECD (2009); authors' calculations

Figure 11: “Insurance”, or “coping” mechanisms?



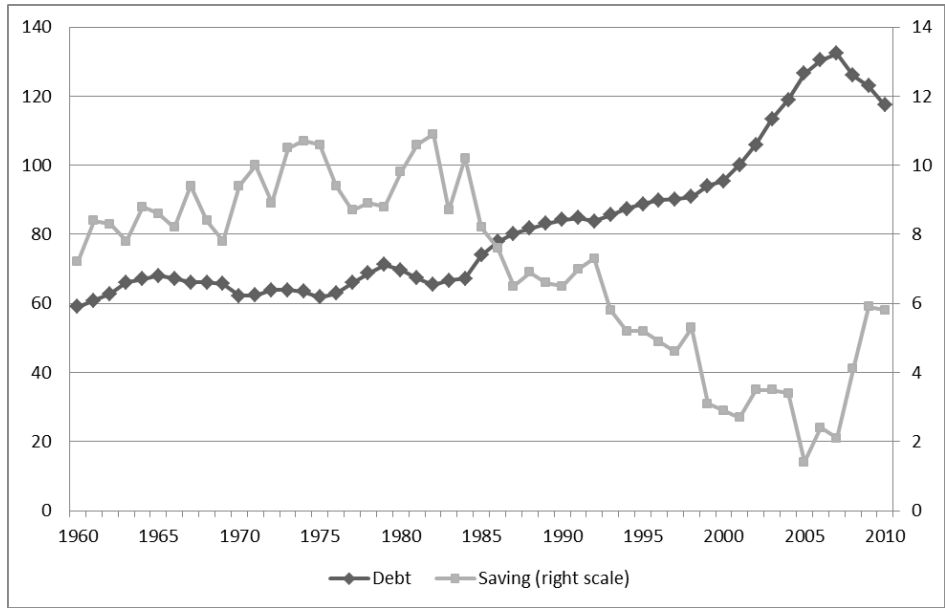
Source: Adapted from Blundell (2011, p. 23)

Figure 12: Median family income by family type, 2009 dollars, United States, 1973-2009, 1999 = 100



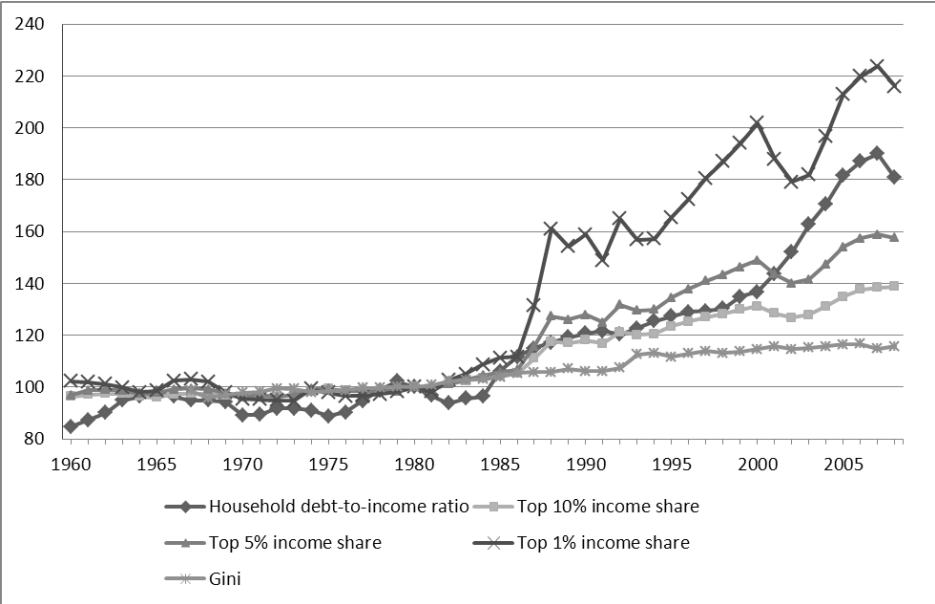
Source: CPS, Historical Tables, F-7; authors' calculations

Figure 13: Personal savings and debt as per cent of disposable income, United States, 1960-2010



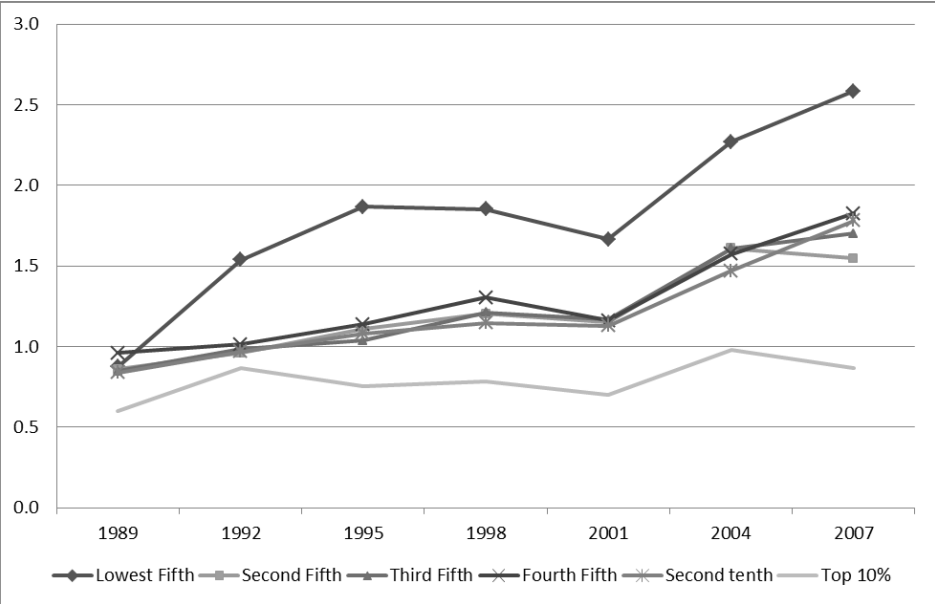
Source: NIPA, Flow of Funds; authors' calculations

Figure 14: The personal debt-to-income ratio, in per cent, and different measures of income inequality, United States, 1960-2008, 1979 = 100



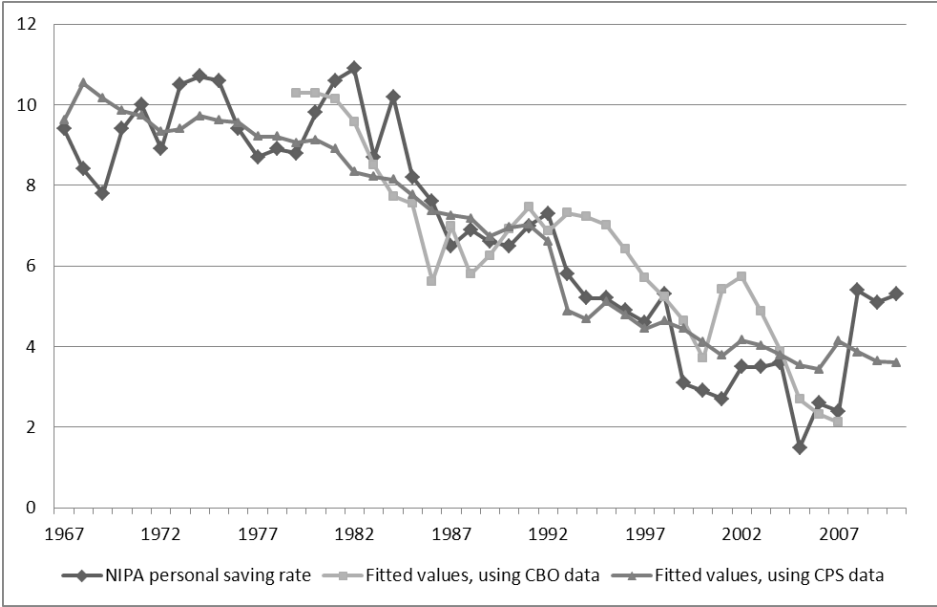
Source: Piketty and Saez (<http://elsa.berkeley.edu/~saez/TabFig2008.xls>); Kopczuk et al. (2010); Flow of Funds; NIPA; authors' calculations

Figure 15: Mean household debt, in per cent of disposable income, United States, 1989-2007



Source: Survey of Consumer Finances; authors' calculations

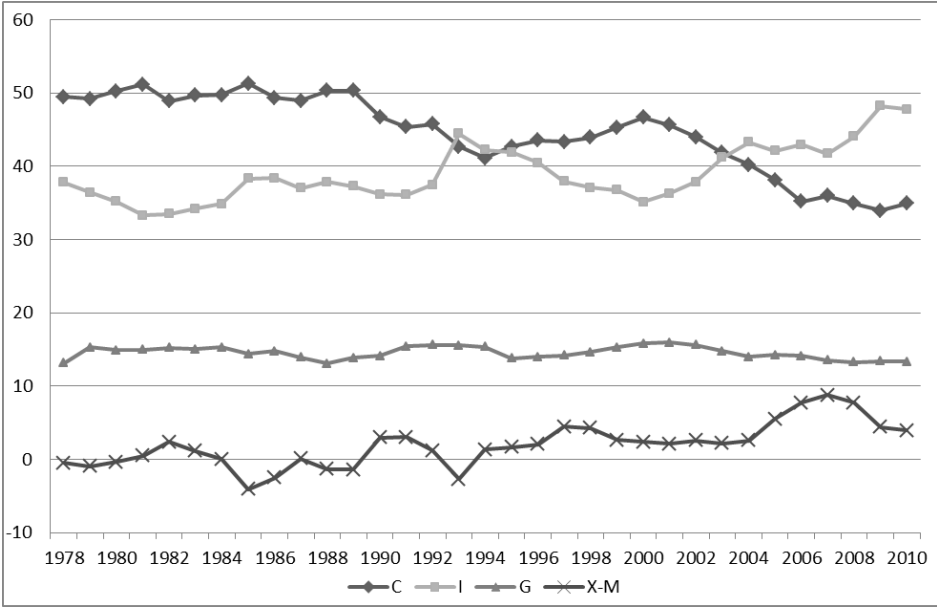
Figure 16: Simulated household saving rates for a simple variant of the “expenditure cascades” model, United States, 1967-2010



Note: We use data for household incomes by quintile taken from CBO (2010) and from U.S. Census, CPS, Table H-03, to fit the equations $c_i = k(1 - a)(y)_i + a c_{i+1}$, for $i = 1, 2, 3, 4$, and $c_5 = k y_5$, with c_i = consumption of household quintile i and y_i = income of quintile i . We choose $k = 0.7$ and $a = 0.5$ for the CBO data, and $k = 0.65$ and $a = 0.55$ for the CPS data.

Source: Authors’ calculations

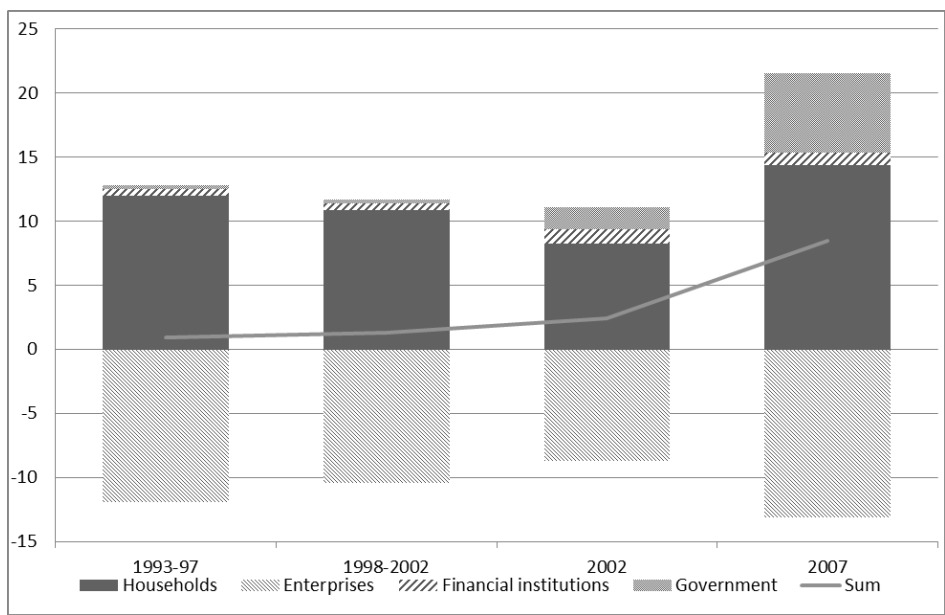
Figure 17: Household consumption, government consumption, investment, and net exports, in per cent of GDP, China, 1978-2010



Note: C = private consumption, I = investment, G = government final consumption; X – M = net exports.

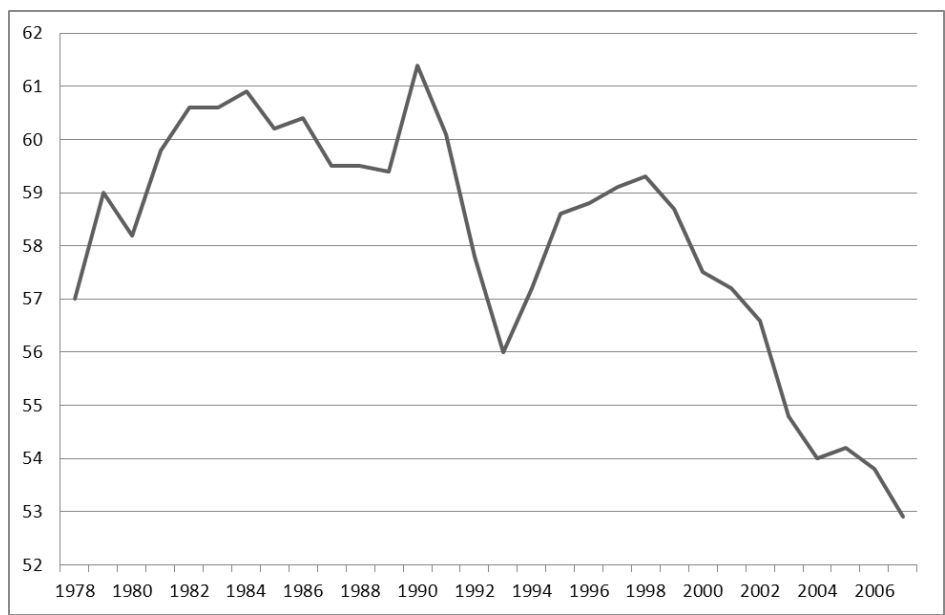
Source: World Development Indicators, December 2011, authors’ calculations

Figure 18: Sectoral financial balances, in per cent of GDP, China, 1993-2007



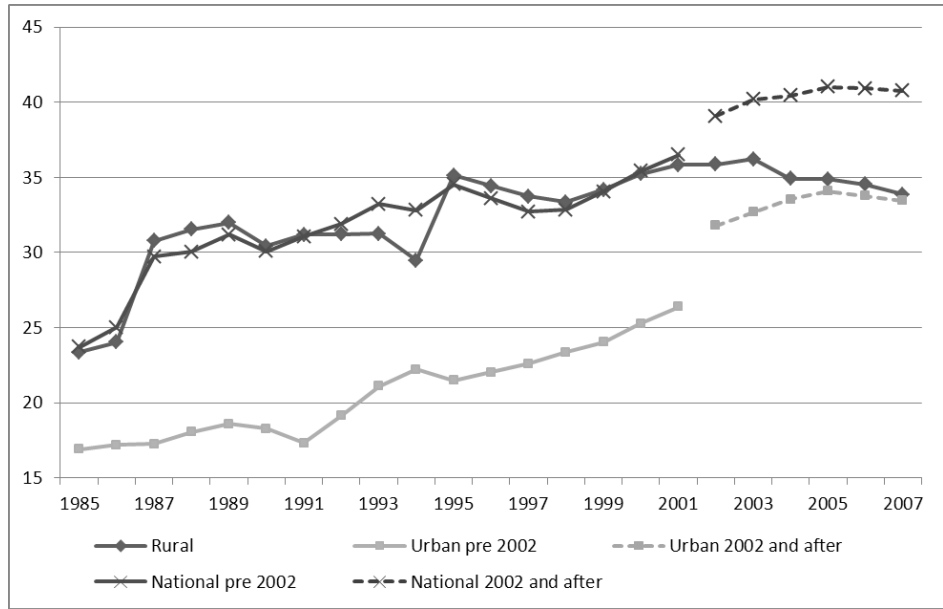
Source: National Bureau of Statistics, cited in OECD (2010, p. 31, table 1.6); authors' calculations

Figure 19: Wage share, in per cent of GDP, China, 1978-2007



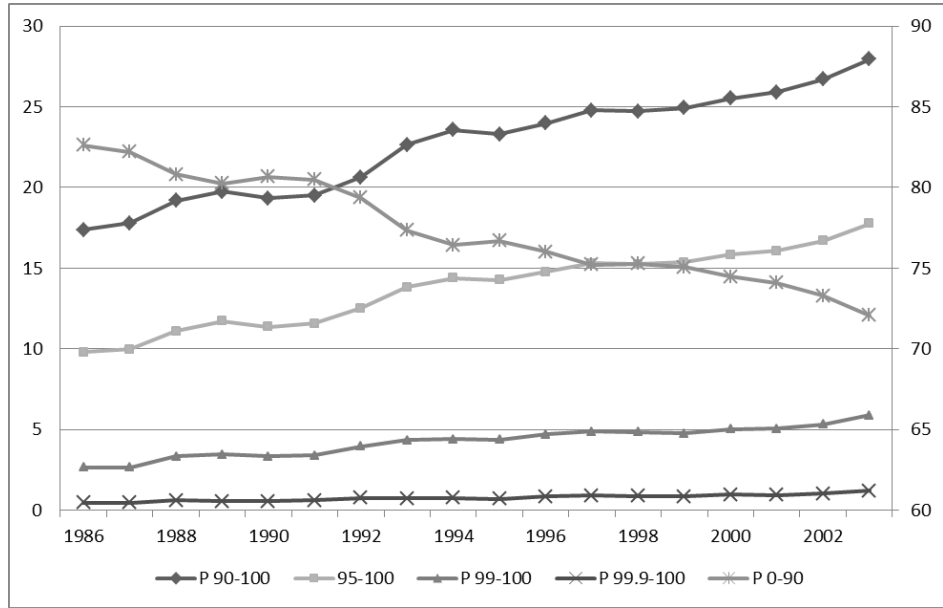
Source: Zhou, Xiao, and Yao, 2010, adjusted for statistical break 2004

Figure 20: Gini coefficient, real yearly disposable income, China, 1985-2007



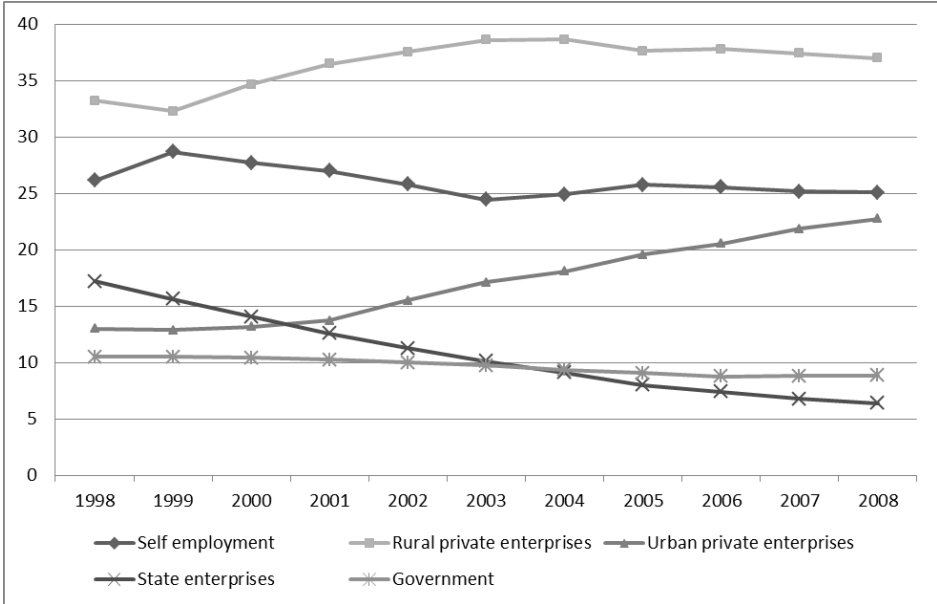
Source: NBS, OECD estimates, cited in OECD (2010a, p. 139, figure 5.6)

Figure 21: Top income shares, China, 1986-2003



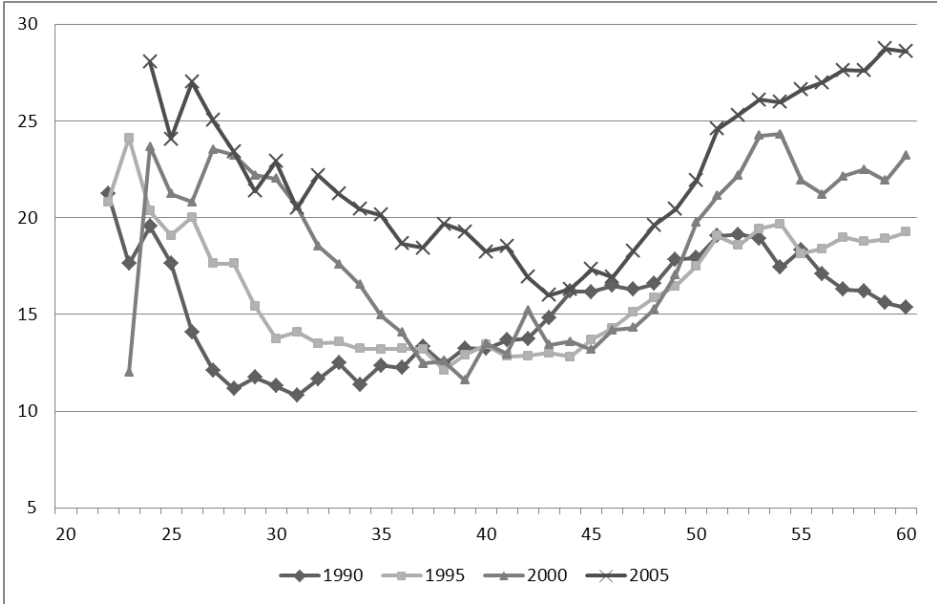
Source: Piketty and Qian (2009), based on China's National Statistical Bureau (NSB) urban household income surveys, data downloaded from The World Top Incomes Database

Figure 22: Composition of non-agricultural employment, in per cent of total rural and urban no-agricultural employment, China, 1998-2008



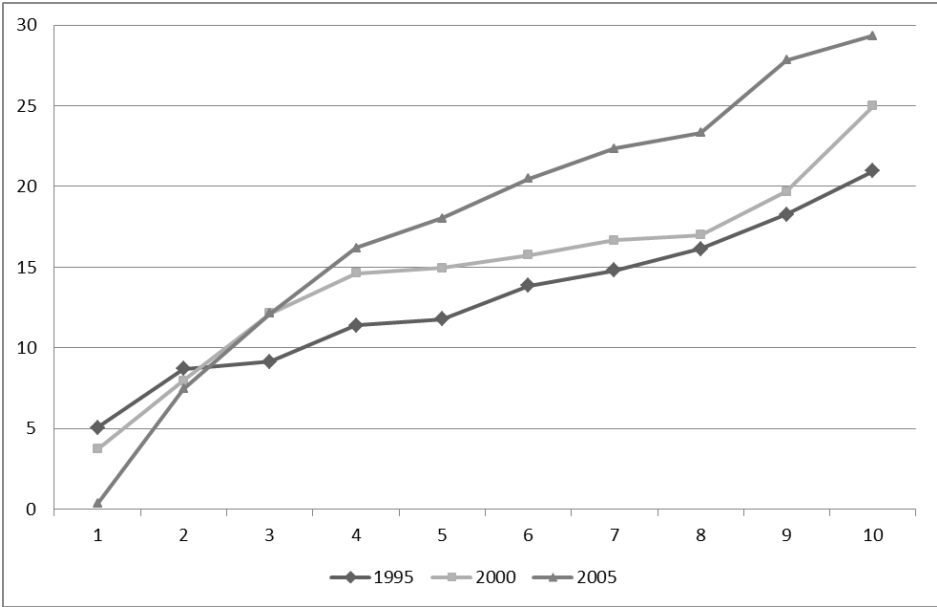
Source: China Statistical Yearbook and CEIC, cited in OECD (2010a, p. 160, figure 6.3)

Figure 23: Urban household saving rates, by age of household head, China



Source: Chamon, Cui and Prasad (2010, p. 32, figure 3), based on a 10 province/municipality subsample of the Urban Household Survey, National Bureau of Statistics

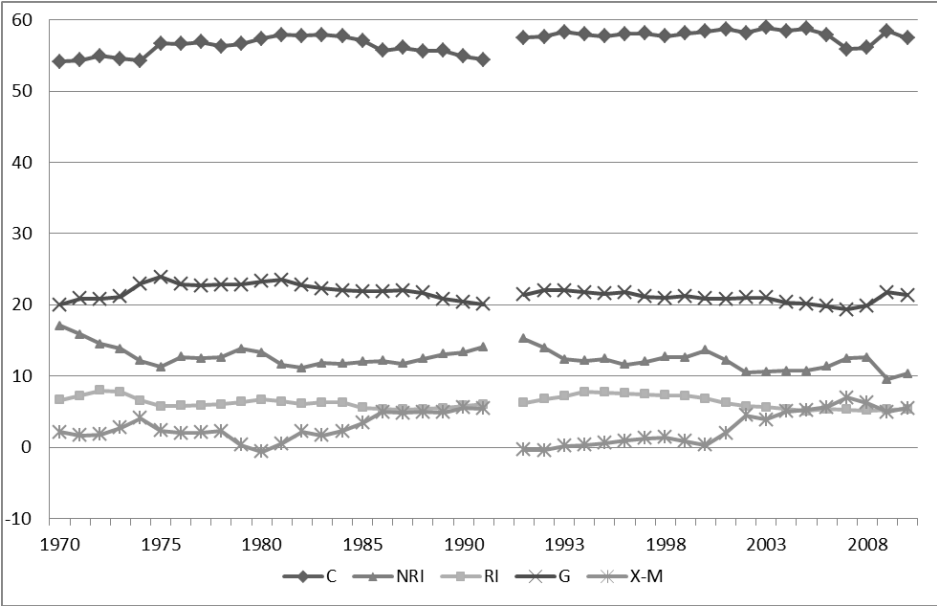
Figure 24: Urban household saving rates, by income deciles, China



Note: Self-employed households excluded

Source: Chamon and Prasad (2010, figure 2, p. 99), based on Urban Household Survey

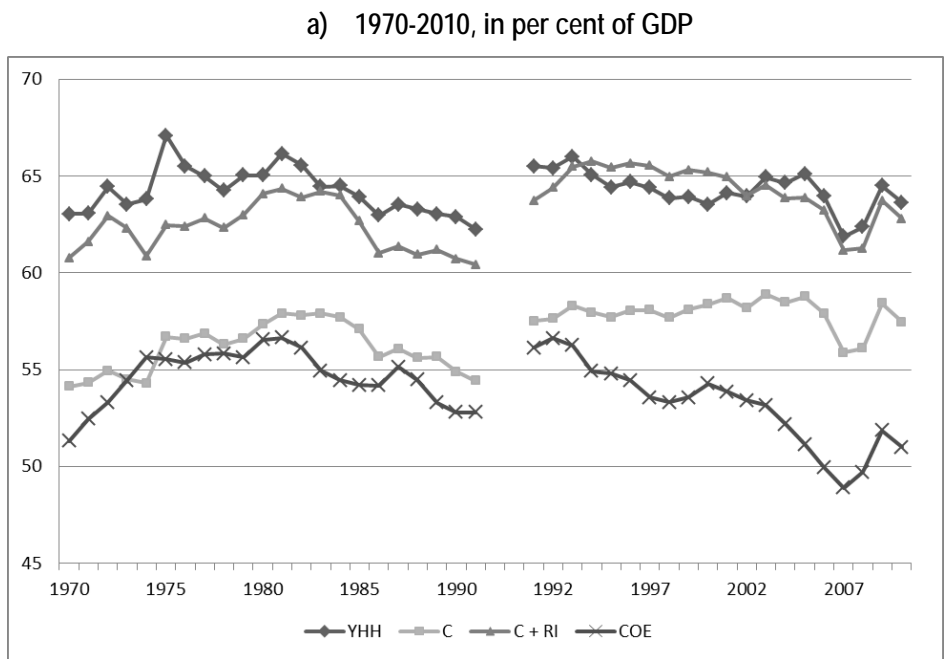
Figure 25: The composition of GDP, Germany, 1960-2010



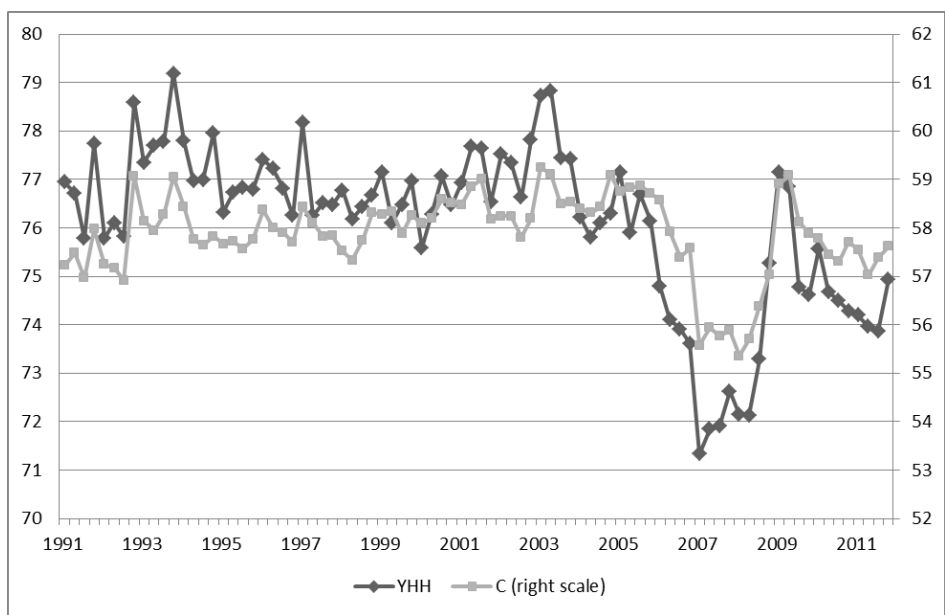
Note: C = private consumption, NRI = private non-residential investment, RI = private residential investment, G = government final demand; X – M = net exports

Source: AMECO; authors' calculations

Figure 26: Compensation of employees, household disposable income and private consumption expenditure, Germany

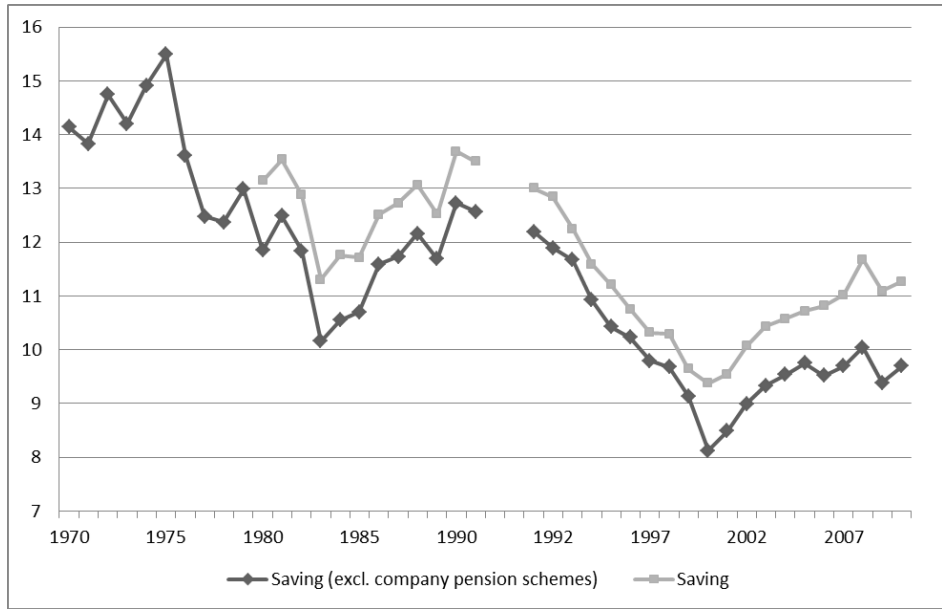


b) Household disposable income in per cent of national disposable income (left scale), private consumption in per cent of GDP (right scale), 1991:1-2011:4



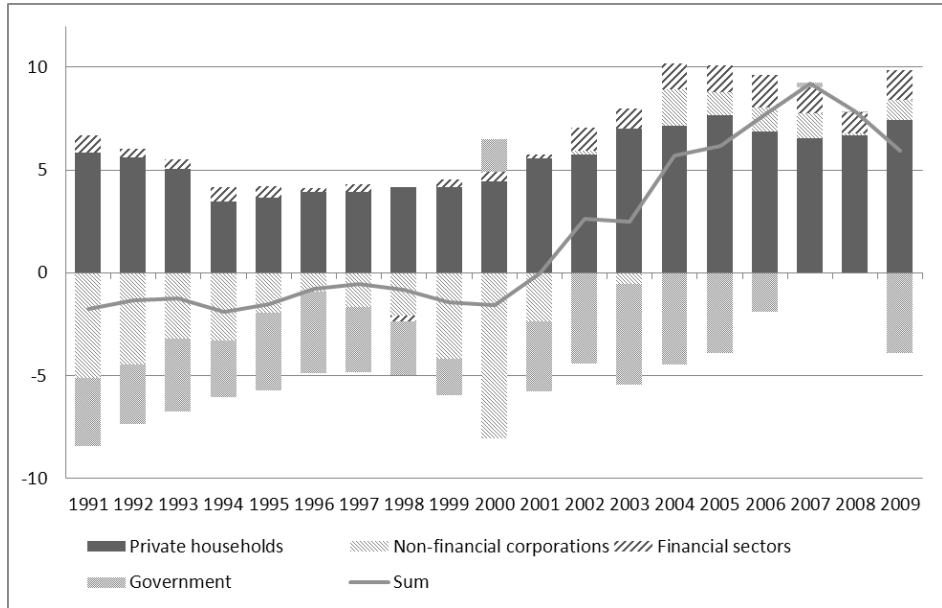
Note: YHH = household disposable income, C = private consumption, RI = private residential investment, COE = compensation of employees.
Source: Federal Statistical Office; authors' calculations

Figure 27: Household saving, in per cent of household disposable income, Germany, 1970-2010



Source: Federal Statistical Office; authors' calculations

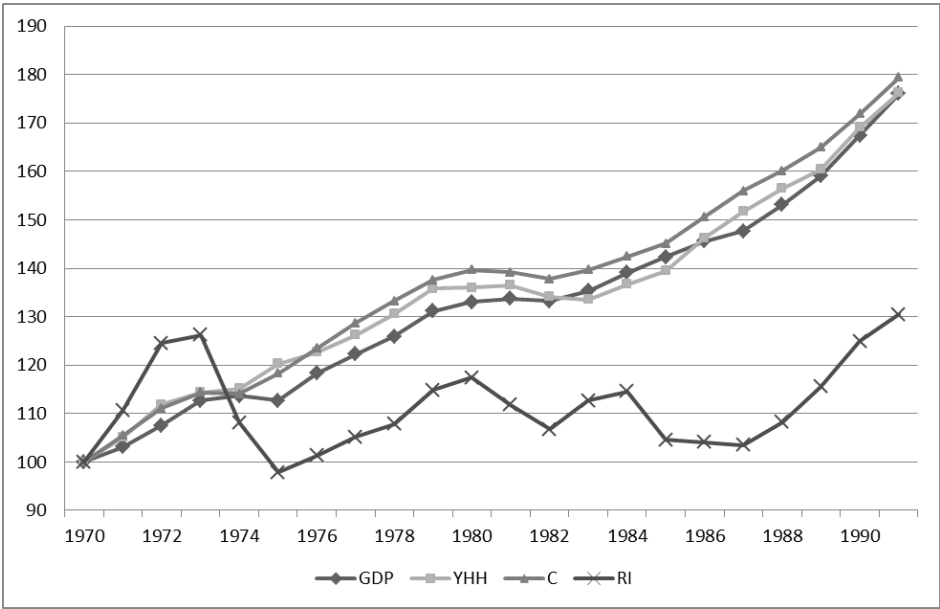
Figure 28: Sectoral financial balances, in per cent of national disposable income, Germany, 1991-2009



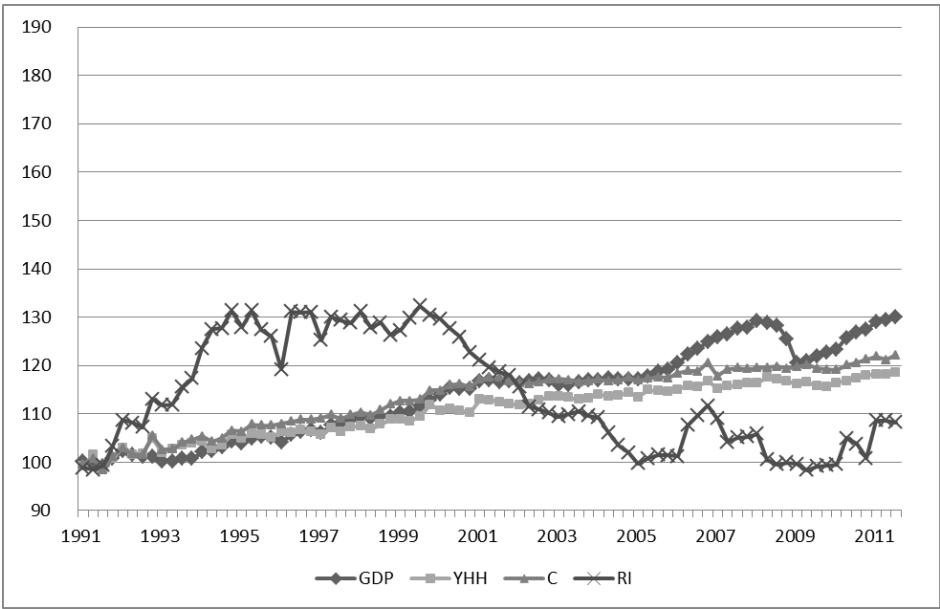
Source: Deutsche Bundesbank; authors' calculations

Figure 29: Real disposable income, real consumption, and real residential investment, Germany

a) 1970-1991

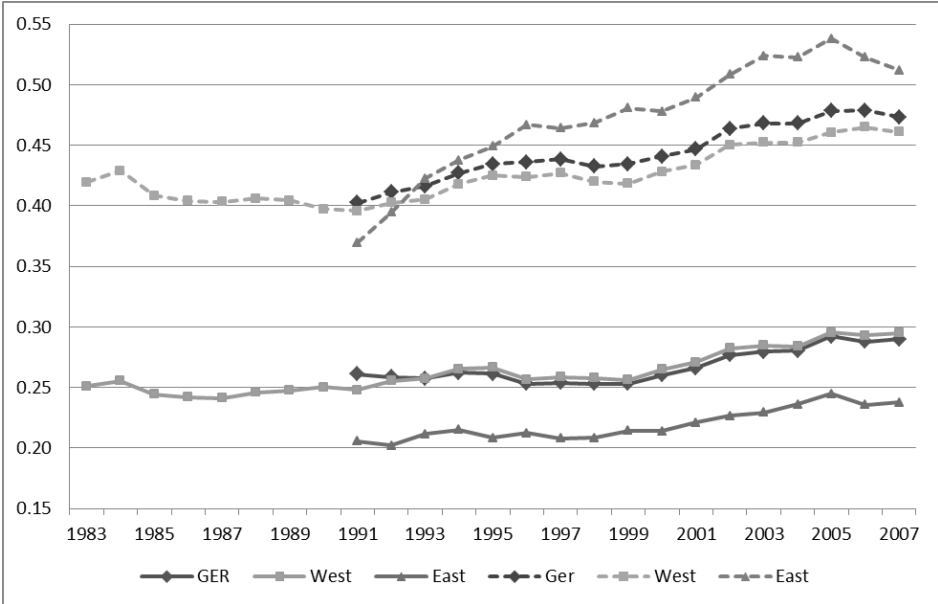


b) 1991:1-2011:3



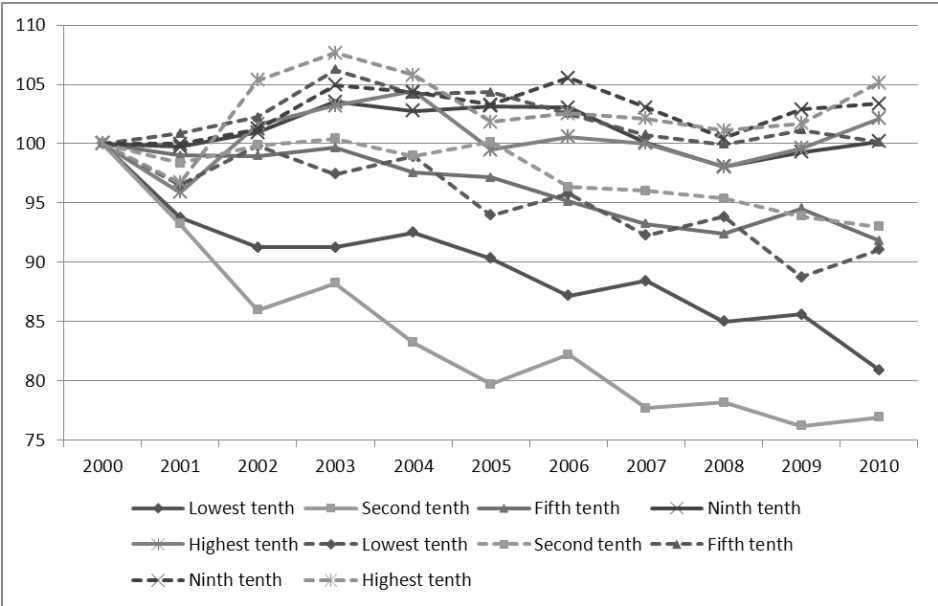
Note: YHH = household disposable income, C = private consumption, RI = private residential investment, COE = compensation of employees.
Source: Federal Statistical Office; authors' calculations

Figure 30: Gini coefficients for real yearly equivalised market income (dotted lines) and disposable income (solid lines), Germany, 1983-2007



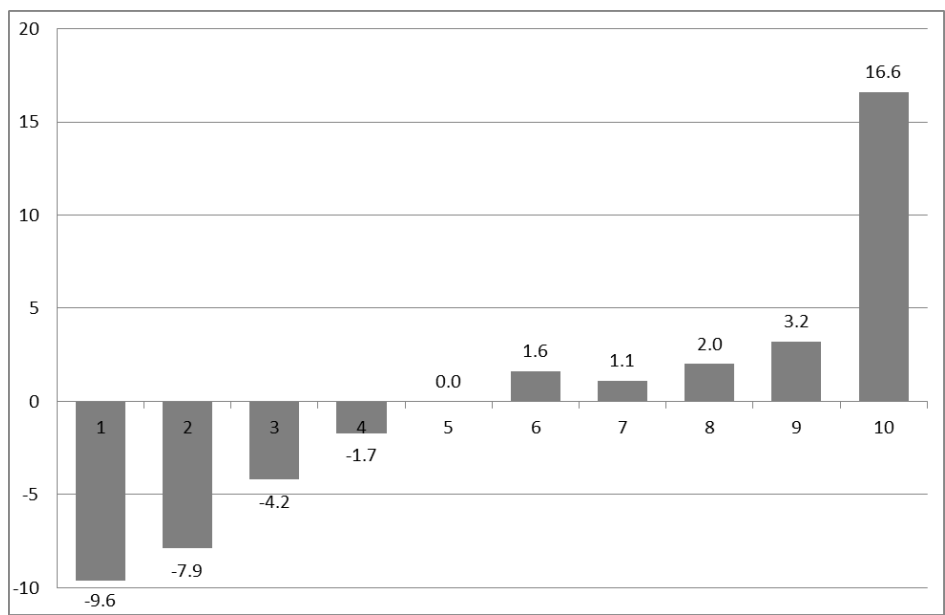
Source: German Council of Economic Experts, based on GSOEP

Figure 31: Gross real monthly earnings, all employees (solid line) and full-time employees (dotted line), Germany, 2000-2010



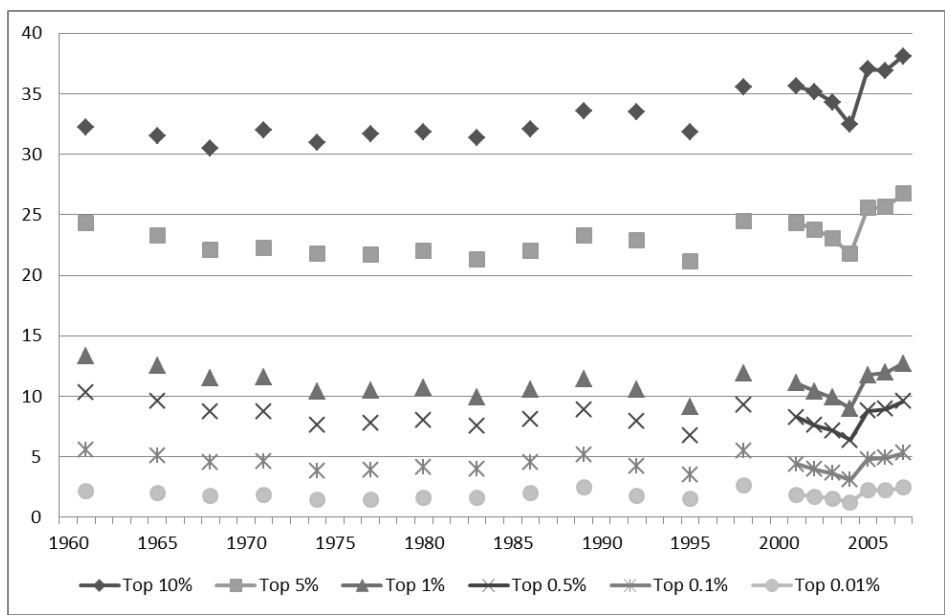
Source: Brenke (2011), based on GSOEP; authors' calculations

Figure 32: Growth of real yearly equivalised disposable income, by income deciles, Germany, 1999-2009



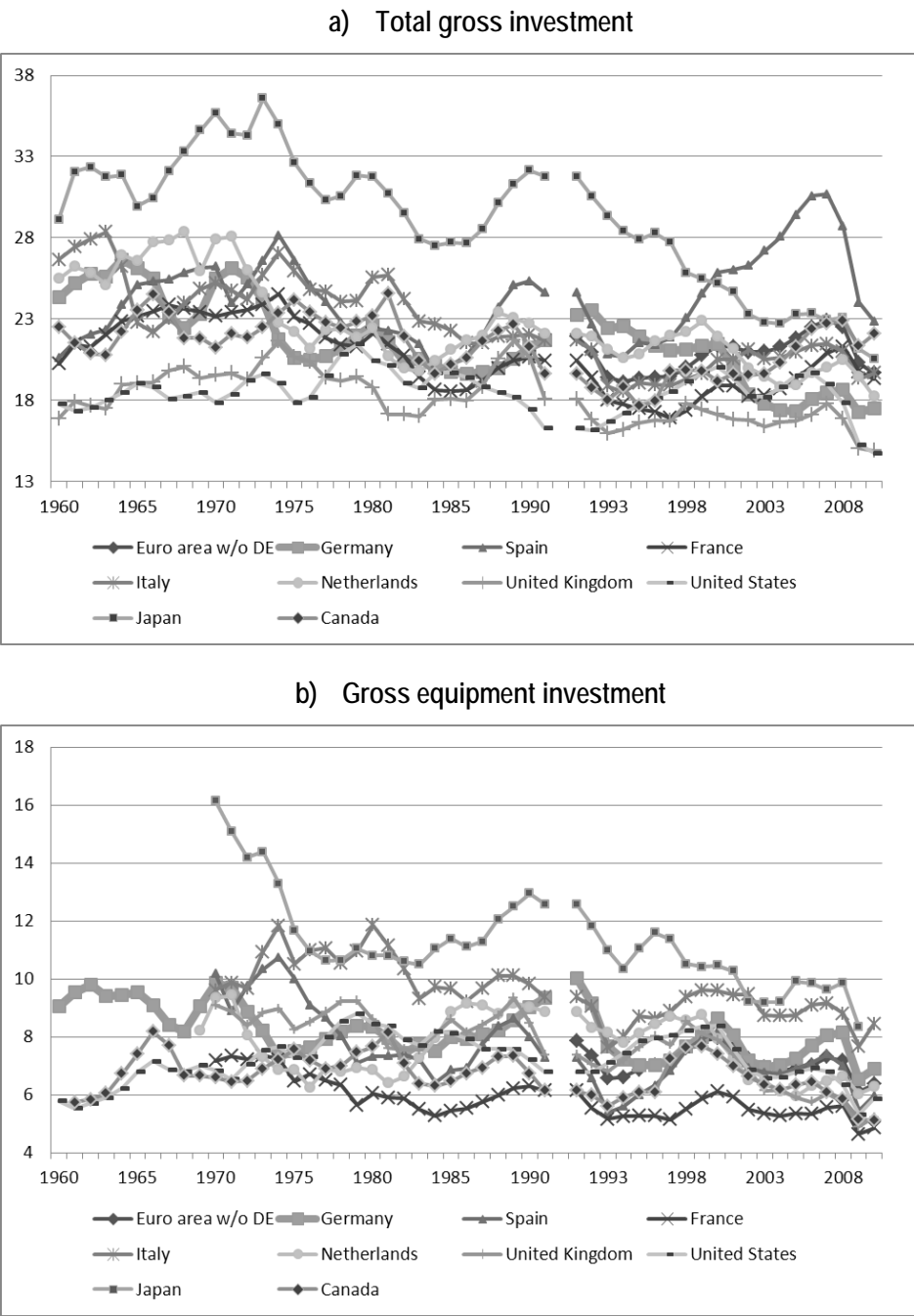
Source: Grabka (2011), based on GSOEP

Figure 33: Top income shares, including realised capital gains, Germany, 1960-2007



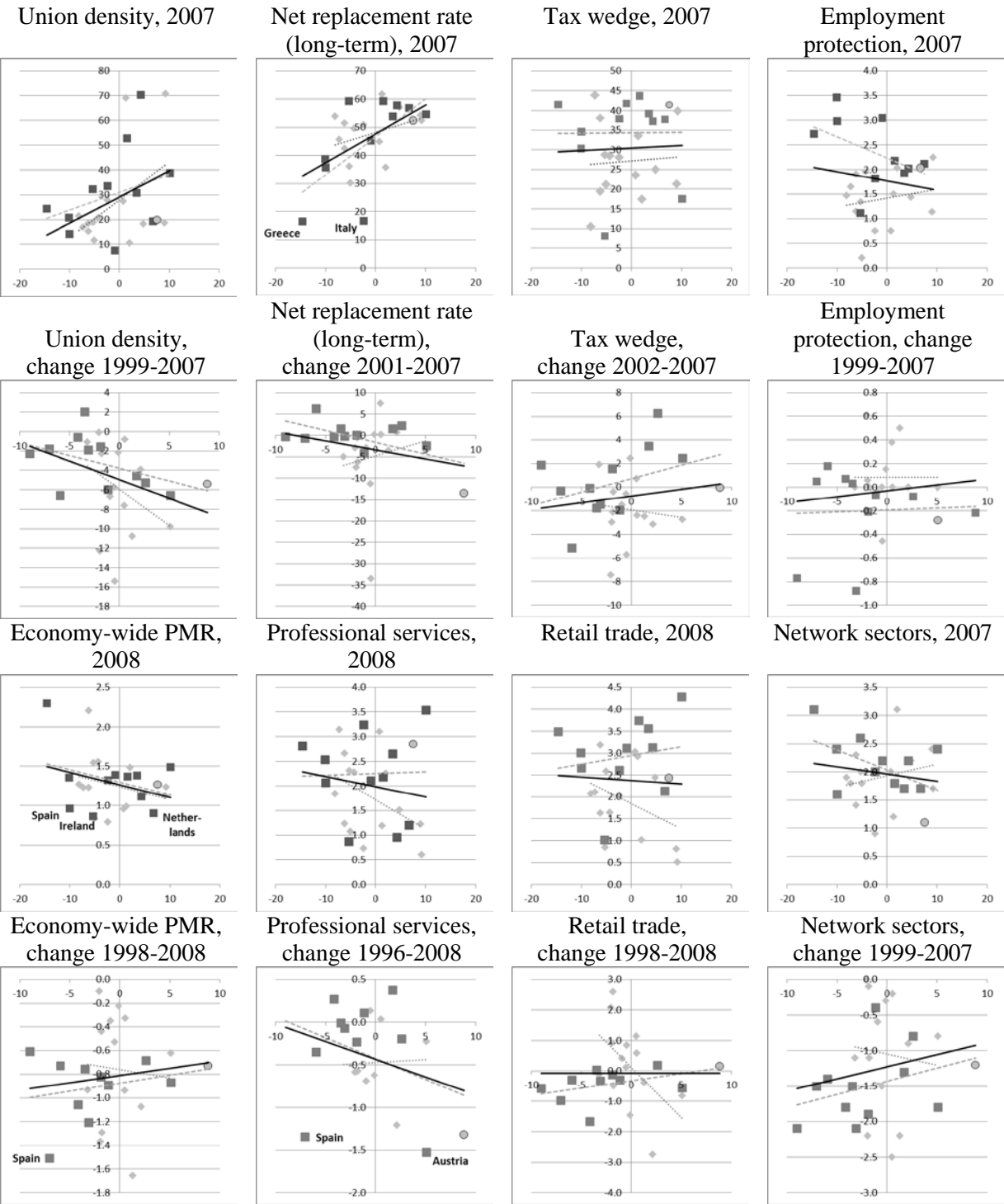
Source: The world top incomes database

Figure 34: Different components of gross investment, in per cent of GDP, G7 countries, Spain and Netherlands, in per cent, 1960-2010



Source: AMECO; authors' calculations

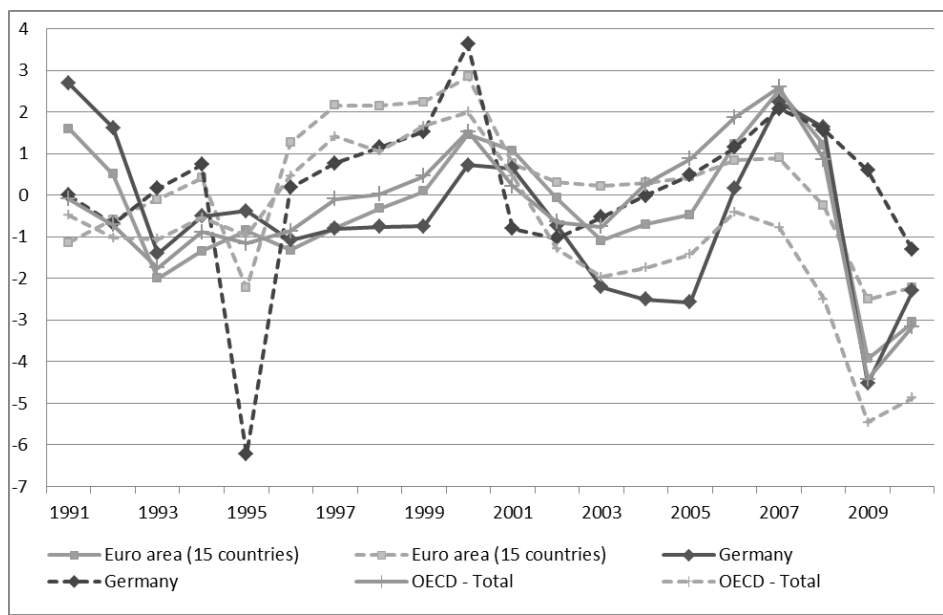
Figure 35: Current account against various indicators of labour and product market regulation, OECD countries



Note: (Change of) indices for labour market institutions and product market regulation plotted against (change of) current account in per cent of GDP for 2007 (1999-2007). Where data are not available for this period, the next closest period was chosen for which data are available as noted in the figure; Euro area countries are represented by dark-coloured cubes, Germany is represented by a circle.

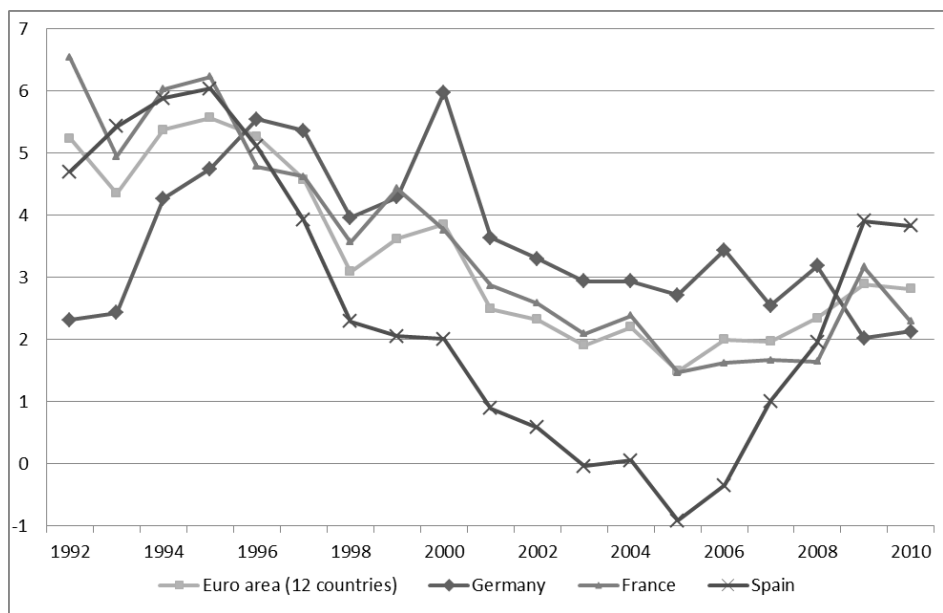
Source: OECD; authors' calculations

Figure 36: Output gap (solid line) and cyclically adjusted government primary balance (dotted line), in per cent of GDP, Germany, 1991-2010



Source: OECD Economic Outlook, No. 90; authors' calculations

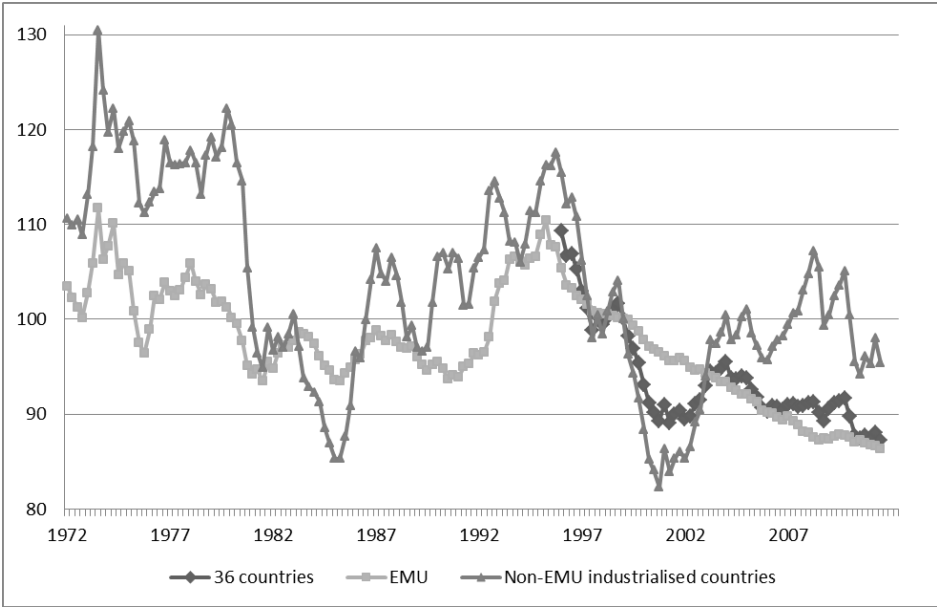
Figure 37: Long-term real interest rates, Euro area, Germany, France, Spain, 1992-2010



Note: Based on GDP Deflator

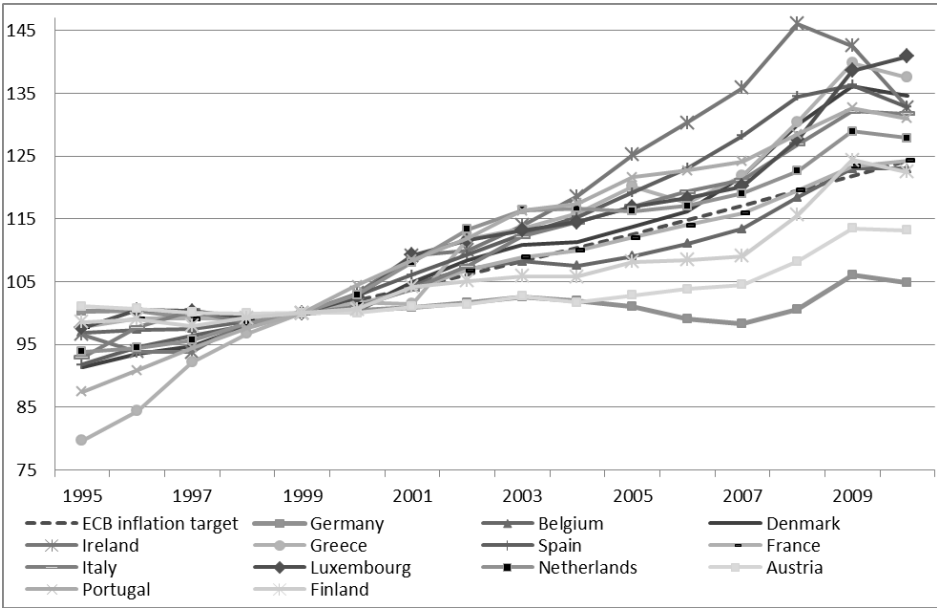
Source: AMECO, authors' calculations

Figure 38: Indicator of the German economy’s price competitiveness, total demand deflator, 1972-2011



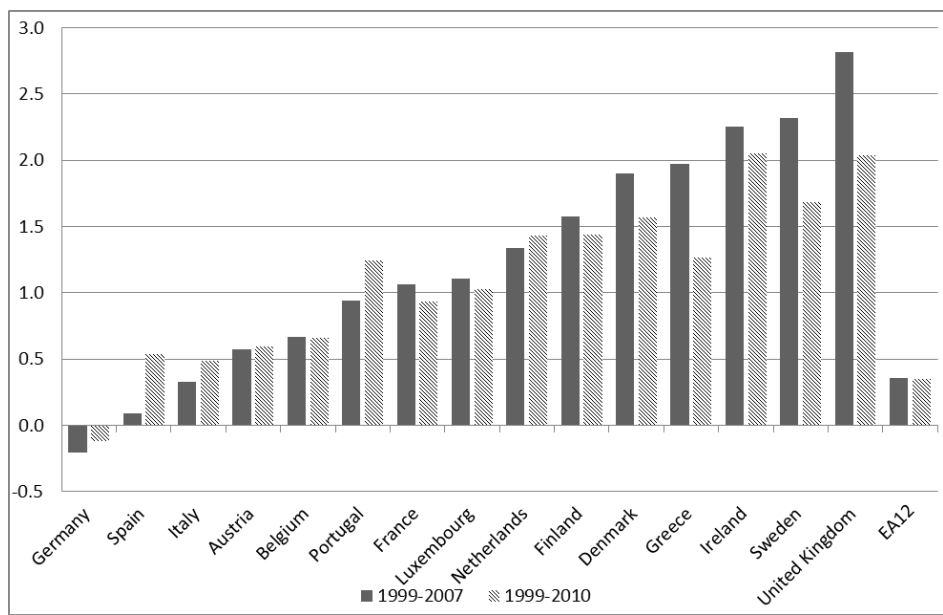
Source: Deutsche Bundesbank

Figure 39: Nominal unit labour costs, 13 Euro area countries, 1995-2010, 1999 = 100



Source: AMECO; authors' calculations

Figure 40: Real compensation per employee, average annual growth rate, selected countries



Note: Deflated with price deflator for private final consumption expenditure.

Source: AMECO; authors’ calculations

Table 1: Per cent who expect to be rich, compared by age, United States, January 2003

	Very/somewhat likely to be rich (%)	Already rich (%)	Amount of assets to be rich (median dollars)	Amount of household income to be rich (median dollars)
Overall	31	2	1,000,000	122,000
Aged 18-29	51	0	463,000	100,000
Aged 30-49	36	1	1,000,000	200,000
Aged 50-64	22	4	764,000	100,000
Aged 65+	8	2		
Income <\$30K	21	1	500,000	74,000
Income \$30K-\$50K	21	0	500,000	100,000
Income \$50K-\$75K	38	3	1,000,000	200,000
Income >\$75K	51	3		

Note: Note: The table reports answers to the following question: *Looking ahead, how likely is it that you will ever be rich? Would you say it is – very likely, somewhat likely, not very likely, or not likely at all?* Median and mean net worth in 2004 were, respectively, \$85,500 and \$472,500, and the number of households with net worth of \$1,000,000 or more was 6,466, i.e., 5.8 per cent of all household (see Wolff, 2010, p. 43, based on the Survey of Consumer Finances). Median and mean household income in 2003 were, respectively, \$43,318 and \$59,067 (see U.S. Census, Table H-5). The mean income of the highest quintile of all households in 2003 was \$147,078 (see U.S. Census, Table H-3).

Source: Moore (2003)

Table 2: Perceived likelihood of getting rich, United States, 1990, 1996, 2003

	Very likely	Somewhat likely	Not very likely	Not at all likely	Already rich	No opinion
2003 Jan	10	21	36	30	2	1
1996 Apr	10	23	37	27	1	2
1990 May	9	23	32	35	*	1

Note: The table reports answers to the following question: *Looking ahead, how likely is it that you will ever be rich? Would you say it is – very likely, somewhat likely, not very likely, or not likely at all?*

Source: Moore (2003)

Table 3: Compensation of employees and personal disposable income, in per cent of GDP, and household saving, in per cent of personal disposable income, China, 1993-2007

	Personal disposable income	Compensation of employees	Saving rate
1993-1997	63.7	50.0	29.9
1998-2002	63.7	50.8	30.7
2003-2007	58.2	48.0	30.4
2007	57.3	47.6	37.9
Change 2002-2007	-3.6	-2.8	9.7

Source: OECD (2010a, p. 38, table 1.9), based on National Bureau of Statistics

Table 4: Sectoral saving, in per cent of GDP, China and OECD average

	Gross domestic saving	Household saving	Corporate saving	Government saving
1993-1997	37.0	19.6	14.1	3.2
1998-2002	37.3	18.6	15.3	3.3
2003-2007	46.9	20.0	19.6	7.4
2007	50.7	21.7	18.4	10.6
Change 2002-2007	10.4	4.5	0.4	5.5
OECD average 2003-2008	23.2	6.7	13.7	2.8

Source: OECD (2010a, p. 31, table 1.5 and 1.6), based on National Bureau of Statistics