

M.A. Political Economy

*A Comparison of Growth Regimes:
an econometric inquiry on the effects of financialization
and distribution on growth*

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Abstract

In the last three decades, the rise of neoliberalism as the new dominant ideology, combined with the changes brought by the process labelled as financialization, has led to the emergence of a new set of growth models. To overcome stagnant domestic demand due to wage-suppression policies, some Anglo-Saxon countries (UK, US, Ireland) and some southern European countries (Greece, Italy, Portugal, Spain) relied ever more on a debt-led model for economic growth, while others, like Germany, on an export-oriented regime.

We develop a Post-Kaleckian dynamic growth and distribution model to analyse the effects of changes in functional distribution on growth for our set of countries. Our research will evaluate the impact of income distribution, controlling for the effects of property prices, debt and wealth on consumption and investment, and thus growth, from the mid-1990s to present. We finally evaluate what are the differences, if there exist, among the countries under analysis.

Acknowledgements

It has been difficult to walk through this work. I must thank Professor Stockhammer for the help, the patience and the interest he always showed.

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Hoping that this will just be the start.

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Introduction

“The outstanding faults of the economic society in which we live are its failure to provide for full employment and its arbitrary and inequitable distribution of wealth and incomes.”

(Keynes, 1973 [1936]:372)

While writing this work, it is clear that in most advanced economies, notably the southern (or, as some say, “peripheral”) European countries, growth has not fully recovered yet since the Great Recession of 2007-08. Unemployment remains sky-high while Europe can feel the fear of a prolonged deflation.

It is now well established, both in the orthodox and the heterodox¹ community, that excesses in the financial sector, in the form of securitized debts, financial innovations such as repos’, CDOs’ and CDSs’, excessive risk-taking behaviour from financial institutions, banks and rating agencies were a major source of the Crisis.

An increasing number of authors however, particularly in the Post-Keynesian school, have highlighted that some deep changes of the economic system in the last thirty years, in particular the rise in inequality and the redistribution of income from labor to capital, have had profound macroeconomic effects, which form a big portion of the picture (Hein 2012, Palley 2013, Stockhammer 2012, Van Treek 2012).

The policy recommendations coming from the Troika (IMF, EU Commission and ECB) to overcome the Crisis in the Eurozone periphery, however, still lie in the boundaries of orthodox economics, calling for cuts in public spending and public debt, labor market deregulation and liberalizations to boost productivity, expectations and investment. The EU commission, since the launch of the Lisbon agenda, aimed at ensuring in the member states “employment-friendly labour cost developments and wage setting mechanisms” (European Commission 2006, p.40) which is no more than a wage moderation strategy.

In this work, we will build a Post-Kaleckian growth and distribution model inspired by the seminal paper of Bhaduri and Marglin (1990), which analyses the effects of changes in income distribution on output and employment, and by the now rich literature on financialization, which focuses on the links between the real and the financial sectors of the economy. Our empirical research will focus on how income distribution, wealth, in both real and financial terms and the flows of credit affected consumption and investment, and thus growth, from the mid-1990s to present, for the countries under analysis. Our assumption is that both wealth and credit constrain have played a major role as a source of consumption and investment financing in the years preceding the crisis.

¹ The division between orthodox and heterodox schools, which we will use throughout the work, follows Lavoie (1992, 2007, 2014), who primarily distinguishes the main schools with regards to methodology, epistemology and the treatment of rationality. Resting upon instrumentalism, individualism and substantive rationality, orthodox theories analyse the economy as supply driven, at least in the long-run, and characterized by an atomistic world of rational agents. Of course, the broader division between schools that we are using allows for varying degrees of flexibility for the core proposition in the single works, with the introduction in their framework of imperfect competition, imperfect information and non-rational behaviours, while remaining within the boundaries we have defined.

The rest of the work will be organized as follows. The rest of Part 1 will discuss the reasons for the decline of the wage share (Section 1.1.), the rise of financialization (Section 1.2.) and of the 2007-08 Crisis (Section 1.3.). In Part 2, we will present the post-Kaleckian model we will use for the empirical investigation. Section 2.1. will highlight the Kaleckian framework while Section 2.2. will present the basic Bhaduri and Marglin model of 1990. Finally, in Sections 2.3. and 2.4., we will present our extension to the basic model and the literature to which is related. In Part 3, after a brief description of our chosen variables, in Section 3.2., some stylized facts emerging from the dataset regarding consumption and investment will be presented while, in Section 3.3., we will describe the econometric methodology for the empirical investigation. In Part 4, we will test our models on Germany, Greece, Italy, Ireland, Portugal, Spain, the U.K. and the U.S., using the quarterly Sector Accounts data taken from the OECD database ranging from the late 1990s to today. Finally, in the Conclusions, we will highlight our findings and pose the basis for future research.

Part 1. Neoliberalism, income distribution and the Great Recession

In this first part of our work, we will pose the historical foundations of our analysis. Walking through the events of the last decades, using the narratives proposed by historians and economists, as well as the publications of international policy institutions, we will try to give an account of the changes occurred to the global economy in the last thirty years. The advent of Neoliberalism, which caused a political shift in favour of profits that opened the doors to the rise of Financialization, and which posed the basis for the up-coming Great recession of 2007-08, will be reviewed.

Section 1.1. The decline of the wage-share

After the destruction brought by World War II and the Great Depression of the 1930s, to revitalise the advanced economies a new compromise between capital and labor was put in place, where the State acted, beside democratic institutions, to assure peace, stability and a more equal growth. In almost all the advanced countries, one of the core requisite was to put some boundaries for the economic power of high-income classes, thus rebalancing the system in favor of labor.

Since the late 1970s, this accumulation regime, labelled as *embedded liberalism* by Harvey (Harvey, 2005) or *paternalistic-state* stage of capitalism, as the late Minsky (Minsky, 1993) calls it, that assured growth and stability between the 1950s and 1960s and, for this reason, has been called the *Golden Age of Capitalism*' (Krugman, 2008), entered in a deep crisis, due to a number of underlying causes. The breaking down of the Bretton Woods system, raising oil prices in response to the US imperialistic behaviour in the Middle East and the subsequent stagflation, a mix of high unemployment and high inflation, that characterized the 1970s, are all good culprit for the collapse of the system.

Since the usual Keynesian recipes to overcome this phase of the economic cycle seemed to be inapplicable, the seventies constituted a period of heavy clashes, ideological and social tensions, which put on its knee the social-democratic model of development.

Starting with Thatcher and Reagan in the UK and the US (elected in 1979 and 1980 respectively) and rapidly followed by many other western governments, a new policy regime emerged as the new dominant paradigm: Neoliberalism (Harvey, 2005). Directly descending from the orthodox theories of Hayek and Friedman, the new paradigm led to labor market deregulation, the suppression of unions, cuts on top-income taxes, financial deregulation, liberalization of markets and privatization of whole sectors of the economy. In a recent overview of wage-led theories, Stockhammer and Lavoie calls this set of policies as "capitalists-friendly" (ILO, 2012), in contrast to "employment-friendly".

It was argued that the "trickle-down" dynamics for growth (since growth is driven by investment and investment are made by capitalists, higher income for capitalists means higher investment, and higher investment lead to faster growth) would have had beneficial effect for all. That was the prediction of orthodox theories. As often happens in social sciences, however, theories do not fit reality.

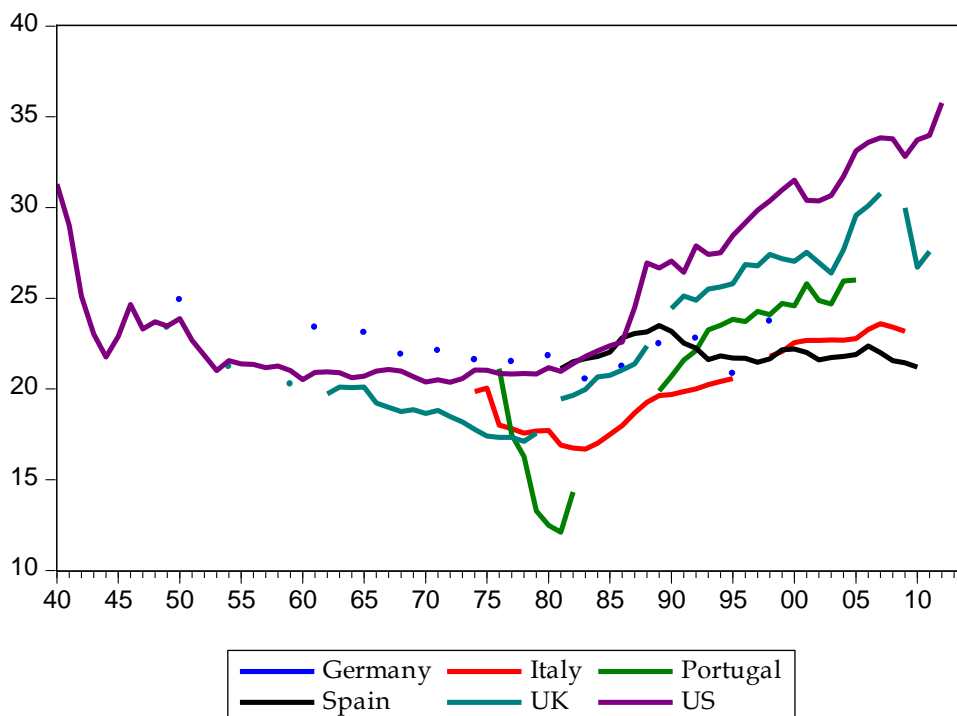
As well documented by a rich empirical literature (Stockhammer and Onaran 2012, Storm and Naastepad 2012), since the late 70s most developed countries experienced a huge shift in favour of profits.

In Figure 1.A, shown in the Appendix, we can see the dynamic of the wage-share for selected Anglo-Saxon and European countries. Data are taken from the AMECO annual database.

The decline of the wage-share throughout our sample, for all the countries under analysis but Germany, is remarkable. In contrast with all other countries, Germany experienced a drop in the wage share only in recent times while, for the rest of them, it has happened well before. The rate of unemployment, in contrast with the orthodox literature, moves exactly counter-cyclically with respect to the wage-share. As GDP growth never came back to its 1960s and 1970s levels, so did the rate of unemployment following the policies and clashes of the 1980s.

The other side of the decline of the wage share is the sudden surge of top 5% incomes in the last thirty years. Since the publication of the World Top Incomes Database (accessible at <http://topincomes.g-mond.parisschoolofeconomics.eu/>) by Atkinson, Piketty and Saez, regarding income distribution, a complete new line of research has born. Using tax record data for a large number of countries going back until the late 19th century, the studied Top income trends throughout the Twentieth century.

Figure 1. Top 5% income share of GDP



They showed that Top income shares fell sharply in all countries in the first half of the century. The destruction brought by WWII and the Great Depression caused capital income to shrank, thus affecting the top income shares, that passed from shares of 20% for the Top 1% in 1930, to 7.5% for the successive four decades 1945-1985. As we can see from Figure 1,

which shows the dynamic of the Top 5% income in the last 70 years², in the 1980s it is clear the surge of top incomes in all countries under analysis, the most remarkable being, needless to say, the UK and the US.

They found (Atkinson, Piketty and Saez, 2011) four different trends in the top income shares: A first one for English speaking countries that shows a U shaped pattern, with falling top income shares until the 1980s and then a sharp rise to its 1930s levels. A second one for continental Europe and Japan, where the L shaped trend shows that the rise in top incomes shares in the decades of financialization had not grown as much as in the previous group, but still there is an upward trend in the last decade. A third one for Mediterranean Europe and Scandinavian countries, with a U-L shaped trend. Here also the rise of top incomes has been vigorous, but still not at the levels of English speaking countries. Finally, they found a fourth trend for emerging economies, where inequalities have always been larger, but are now being reduced.

They recognise the sources of the fall in top incomes in two major forces, the losses due to the physical destruction of productive capital for war damages or from the losses in capital gains due to inflation, and, then, through the equalisation of wages in the Post-War era. This equalisation was sustained by highly progressive income taxes, inheritance taxation and rising wages for workers.

Their results confirms that since the 1980s, the share of the Top 1% has abruptly risen again to its 1930s level; however, "the key point that needs to be stressed from our viewpoint is the magnitude of the aggregate income shift that has occurred in the US since the early 1980s. The bottom 90% has become poorer, the top 10% has become richer, with an income transfer over 15% of US national income" (Piketty and Saez, 2011:8).

Moreover, the composition of that has changed massively. While capital income represented over 60% of the income of the top 1% in 1929, while wages and entrepreneurial income accounted for almost 20% each, in 2007 the picture was completely different. The major component of top 1% incomes is now wages, which accounts for almost 50%, while entrepreneurial income and capital income accounted for 30 and 20% respectively.

They pointed mainly at fiscal policies since the 1980s as the main culprit for this shift in income distribution. Following the Neoliberal agenda, inheritance taxes had fallen to ridiculous levels and the same happened to income taxes. OECD (2008) found similar results. A major source for the rise of top incomes, however, lies in the changes brought by what has now been labelled as financialization.

Section 1.2. The rise of financialization

Beside the distributional changes, the neoliberal right-turn produced both changes in public policies and a change in social norms – the attenuation of the so-called "outrage constraint" – which has played a significant role in the sudden surge in higher incomes. At the same time, that right-turn led to financial deregulation and, more importantly, to non-regulation of new forms of banking activity.

The most striking feature of the post 1970s era has been the rise in the role of finance over production, that has made the point of departure for the analysis of financialization and

² Source: <http://topincomes.g-mond.parisschoolofeconomics.eu/>

that led some authors to claim about the ascendance of a new accumulation regime dominated by finance.

As for the other recent term *globalisation*, the label *financialization* has been widely used in recent research, in the Marxist as well as in the Post-Keynesian tradition, but still there is no agreement on a common definition, since it seems to refer to a widely range of phenomena.

Greta Krippner, which has been one of the first to give a definition of financialization, stresses that it has been used in different analysis and with different meanings, with some authors using it to mean the ascendancy of shareholder value as a mode of corporate governance; others used it to refer to the growing dominance of capital market financial systems over bank-based ones; some others, following Hilfreding, use the term to refer to the increasing political and economic power of the rentiers. For Krippner herself the term refers to a “pattern of accumulation in which profit making occurs increasingly through financial channels rather than through trade and commodity production” (Krippner 2005: 174).

Krippner, however, is reluctant to threat financialization as an epochal structural change, preferring to focus the empirical analysis on the rise of finance in the US in the last thirty years, linking explicitly financialization to the growing weight of financial motives for both the financial and the non-financial sectors of the economy.

Over the heterodox community, a large body of research has been devoted to the analysis of financialization in recent times. In contrast with Krippner, however, most of the literature tend to treat financialization as a structural, epochal change of the capitalist system, one which had a huge impact on its behaviour and dynamic.

With its attention upon structural epochal changes of the economic system, determined by contrast in the spheres of production, circulation and distribution, “the concept of financialization is closely related with Marxist political economy” (Lapavitsas, 2013:15). The first attempts to describe financialization, indeed, came from the Monthly Review (Magdoff and Sweezy 1987, Baran and Sweezy 1966). This tradition related the ascendancy of finance as a natural outcome of mature capitalist economies. Following the classical Marxist assumption of the tendency of the rate of profit to fall, capitalist economies tend to create, as they become monopolized, a surplus that cannot be easily absorbed. These systems are, in their view, monopolistic regimes that use this ever-raising surplus for unproductive consumption, military expenditures and advertising. When, in the late 1970s, the absorption of this surplus became more difficult in the usual way, it moved toward, and increasingly relied on, the sphere of circulation and the realm of finance.

Other attempts to treat financialization as an epochal change of the capitalist system which are built upon Marx’s political economy are Arrighi’s theory of the epochal trajectories of capitalism (Arrighi 1994) and some recent post-Marxists works (Dumenil and Levy 2001, 2004, 2011, Crotty 2009, Lapavitsas 2013). Arrighi stressed that the world economy is characterised by the cyclical presence of a hegemonic power. Hegemonic powers succeed each other as their productive and trade capacities declines and so they rely increasingly on finance, whose rise, resulting from intensified inter-capitalist and inter-state competition during period of transition, then, represents the *autumn* in its cyclical trajectory.

“Marx's general formula of capital (MCM) can therefore be interpreted as depicting not just the logic of individual capitalist investments, but also a recurrent pattern of

historical capitalism as world system. The central aspect of this pattern is the alternation of epochs of material expansion (MC phases of capital accumulation) with phases of financial rebirth and expansion (CM' phases). [...] Together, the two epochs or phases constitute a full systemic cycle of accumulation (MCM')" (Arrighi, 1994:6).

Dumenil and Levy, as well as Crotty, related the growth of finance to the rise of neoliberalism, the latter representing a secular transformation of the capitalist system. In their work, these authors describe neoliberalism as a superstructure whose aim is to restore the power of the wealthier classes, indeed, "Neoliberalism is the expression of the desire of a class of capitalist owners and the institutions in which their power is concentrated, which we collectively call 'finance,' to restore [...] the class's revenues and power" (Dumenil and Levy, 2004:1-2).

Finally, we found the work of Lapavitsas (2013). The point of departure of his analysis is that "financialization represents a structural transformation of advanced capitalist economies, and its roots must therefore be sought within the fundamental relations of non-financial enterprises, financial enterprises and workers" (Lapavitsas, 2013:36). For him, three underlying tendencies characterise financialization. First, monopoly capitals have become financialized, in the sense that non-financial institutions rely heavily on capital markets rather than bank-lending for investment financing. Second, banks have restructured themselves, partly in response to the changed behavioural pattern of non-financial institutions, moving toward the search for profits in trading for both non-financial institutions and households. Finally, the personal revenue of households and workers has been financialized, referring both to increased indebtedness and expanded holdings of financial assets as a source of revenue. Furthermore, the financialization of households has been associated with rising income inequality and the retreat of the State from interventions in the economy. As for other authors, Lapavitsas also embed the rise of financialization within "the historical and political context of neoliberalism" (Lapavitsas, 2013:39).

Other efforts to discuss financialization came from the Post-Keynesian school, which shares some aspects of Marxist analysis while still, needless to say, being more influenced by the works of Keynes and Kalecki. The Post-Keynesian analysis regarding financialization has focused on different issues. The first aspect Post-Keynesian focused on, of course, given the emphasis they shed on investment as the main driver of growth, was the analysis of the deleterious effects of financialization on productive investment, and thus on aggregate demand. In doing this, they usually point at the figure of the rentier and of its raising power in the decades following the 1970s, and of the effect that this had on income distribution.

One of the first attempts in this regard, which acted as a bridge between the Marxist and the Post-Keynesian analysis and posed the foundations for some later research, was the Social Structure of Accumulation (SSA) approach, initially propounded by Bowles and Gordon (Bowles et al. 1986, Gordon 1978). This line of research analyse the institutional peculiarities of each capitalist epoch "by applying the concept of the social structure of accumulation (SSA) as a historically expression of the capitalist mode of production" (Bowles et al., 1986:133). The analysis of SSA, is closely related to the study of long swings in economic activity and therefore to successive stages of accumulation and shares some features with the work of Arrighi's and some French Marxists. According to this perspective, capitalist economies experience periods of relatively rapid and stable growth once a set of socioeconomic institutions comprising an SSA has been established. This underlying social structure of the economy is, however, always subject to shocks, both

external and endogenous. Eroding the SSA through some decades, the social order then enters a period of crisis during which political struggles develop over the institutional restructuring necessary to re-establish conditions for successful accumulation. In their work, though, Bowles et al. pointed at the diminished profitability in the real sector of the US economy, due to political and social struggle, that led to the rise of finance and the slowdown of growth after the 1970s.

In their model of 1990, Bhaduri and Marglin offered, when talking of an open economy, another important link between financialization and growth. Their seminal work led to the emergence of a large body of literature, theoretical and empirical, on wage and profit-led growth regimes. The distributional and structural changes brought by financialisation, as shown by several works (Hein and Van Treeck 2007, Hein 2009, Stockhammer and Onaran 2012), led to falling real investment for firms, which relied ever more on financial motives, falling labor income shares and increasing inequality in wages and salaries that implied an increasing potential for wealth-based and debt-financed consumption. Beside the wage-led and profit-led growth regimes, thus, with the rise of financialisation and in reaction to potentially stagnant demand, two growth models have emerged: a debt-led model where, to keep up with consumption standards of the affluent class, households rely increasingly on debt, and an export-led model, where the decline in domestic demand due to lower wages is more than offset by the increase in exports caused by the increased competitiveness on foreign markets.

The two possible regimes of accumulation, wage-led and profit-led, are thus, in the interdependent world economy, just two faces of the same coin. The debt-financed consumption of households in wage-led countries was possible only because of the willingness of banks in export-led countries to lend to them to sustain consumption, fuelling current account imbalances globally.

This Post-Keynesian tradition on growth, thus, as we can see from the works of some distinguished scholars (Dutt 2005; Palley 2005, 2007; Hein and van Treeck 2007; Skott and Ryoo 2007) “focuses on the growth effects of increased indebtedness, increases in the profit share, shifts in income away from workers, and lower retained profits of corporations” (Palley, 2007:17). In the same line, we also find a strain of research on *finance-dominated capitalism* (Hein et al. 2008, Evans 2009).

Other research coming from the Post-Keynesian school focuses, instead, on the effects of financialization on corporate behaviour. In a recent review, Hein associated financialisation with “rising power of shareholders which has caused increasing ‘shareholder value’ orientation of the firms’ management with a partially negative effect on firms’ investment in capital stock (‘downsize and distribute’ instead of ‘retain and invest’)” (Hein, 2007:24). The rising power of shareholders is also associated with an increasing dividend rate, which has a negative effect on firm’s investment but also affects household consumption positively. In this regard, as Stockhammer asserts, “the process of financialization is linked to changes in the internal power structure of the firm” (Stockhammer, 2004:3). Other examples in this respect are the works of Hein (2008) on *shareholder value orientation* and the paper by Lazonick and O’Sullivan (2000) on *maximizing shareholder value*.

Section 1.3. The Great Recession of 2007-08

After decades of Neoliberal policies, financial deregulation and growing current account imbalances, in late 2006, after almost a decade of uninterrupted growth (with the exception of a first slowdown in 2005), real estate prices in the US markets started to fall. As soon as the FED pushed up interest rates, in order to tighten credit, this resulted in an increase in floating interest rates on subprime mortgages, which led to a first wave of household bankruptcies.

The excess supply in the housing market brought a drastic fall in the value of real estates. The collapse of these assets' value, moreover, was associated with huge losses in the balance sheets of the financial institutions most exposed to the subprime market. On September 15 2008, the bankruptcy of Lehman Brothers, the fourth US investment bank, led to the worst financial crisis the world had seen since the Black Tuesday of 1929.

Six years later, effects of the financial turmoil are still visible and some countries have not yet managed to get out of the crisis. While the financial crisis has been, especially for orthodox economic theorists, a very difficult puzzle to solve, tons of ink has been spilt to attempt explaining the causes, consequences and possible policy responses to the crisis.

As Andrew Lo stresses, "only by collecting a diverse and often mutually contradictory set of narratives can we eventually develop a more complete understanding of the crisis" (Lo, 2012:154). We will now play this exercise, trying to develop a full picture of its causes taking into account the narratives of both sides.

When speaking in front of the Financial Crisis Inquiry Commission, who called him to explain the dynamics and causes of the crisis, Ben Bernanke, the Governor of the FED, made several important points. He distinguished between *triggers* of the crisis and *vulnerabilities* of the system. In the first group, he points to the prospective losses on the subprime markets as the key trigger, but "judged in relation to the size of global financial markets, prospective subprime losses were clearly not large enough on their own to account for the magnitude of the crisis" (Bernanke, 2010:2). He thus looks at the vulnerabilities of the system, assessing that these were due, primarily, to changes which occurred in the financial sector of the economy, in particular the growing role of shadow banking, repo markets and, then, to the deficiencies in risk management that led to excessive leveraging of households, banks and firms. In their analysis of the crisis, the BIS (2009) and the IMF (2010) also present evidence for the growing role of financial markets and instruments in the shaping of the crisis worldwide, with the BIS depicting the crisis as caused by a lack of confidence that affected banking credit and the IMF focusing on the developments of repo, CDO and CDS markets in the US and Europe.

The dominant orthodox theories, used since the 1980s as the main theoretical pillar for the Neoliberalisation of western economies (Harvey, 2007), of the Efficient Market Hypothesis and of Real Business Cycle, both descendant from the Rational Expectations Revolution, came under pressure as unable to predict or even explain the possibility of such market failure. As Skidelsky pointed out, "according to mainstream theories, a downturn of this scale should not have happened" (Skidelsky, 2010:XV).

In their 2011 work, Reinhart and Rogoff covered the long-term empirical analysis of financial crisis, using dating back to the 19th century for 70 countries, focusing particularly on the links between debt cycles and the recurrent pattern of banking and sovereign debt

crises. Using a VAR analysis, they found that, on the one hand, external debt sharply rises prior to a banking crisis and, on the other, that banking crises usually lead to sovereign-debt crises. In another recent effort (Renhart and Rogoff, 2008:342), which covers the run-up to the present crisis, the authors also assess that the new unregulated financial institutions are, “undoubtedly enhancing stability against some kinds of shocks, but possibly increasing vulnerabilities against others”. However, they also show similarities with previous financial crash experiences with respect to real rates of growth in equity price indices, current account balance-to-GDP ratios and public debt growth.

Growing current account imbalances are also at the centre of the work of Obstfeld and Rogoff (2009). They assess that the apparently favourable equilibrium of the previous decade, was reinforced by three underlying trends that appeared increasingly unsustainable. First, real estate values were rising at a high rate in many countries. Second, a number of countries were simultaneously running high and rising current account deficits. Third, leverage had built up to extraordinary levels in many sectors across the globe. In their view, the cheap money policies of the FED and the financial flows from emerging markets and oil exporting countries led to an unsustainable demand for private credit driven by unrealistic expectations, asset-market distortions, and agency problems, notably in markets for housing finance. Moreover, “the process was fed by wider financial innovation that repackaged mortgages (as well as other forms of debt, including consumer debt) into structured products endowed with very high levels of systemic risk.” (Obstfeld and Rogoff, 2009:24-26) The policy prescription for the recovery are thus focused on monetary policies and financial regulations to mitigate the possibilities of market failures and to rebalance the current account.

In line with Obstfeld and Rogoff we find Brunnheimer (2009). He stresses that the rising indebtedness was fuelled by FED easy-money and external financial flows, caused by the replacement of the traditional banking model with “the originate-and-distribute banking model, in which loans are pooled, tranced, and then resold via securitization” (Brunnheimer, 2009:78). As for Obstfeld & Rogoff, Brunnheimer treats the crisis as a classical banking crisis that has to be counteracted by a more vigorous financial architecture.

Finally, we find the work of Blanchard (2009). As with the previous authors, he also recognizes the triggers for the financial crisis in the decline in real estate prices but, then, identifies, in the years preceding the crisis, four underlying evolutions that made it possible for a minor price decline to turn into a global financial crisis. The first one was the underestimation of the risk contained in new financial instruments, both of lenders and of rating agencies. He then points to the opacity of financial institutions balance sheets, which were loaded of derivatives and other securitized financial instruments. The third was the improved connection and inter-dependence of financial institutions, within countries and across countries, due to securitization and globalisation and, finally, the high leverage of the financial system as a whole. Triggered by the decline in housing prices, these evolutions prior to the crisis combined with two amplification mechanisms; the first one identified with the modern version of bank runs (with the sale of assets to satisfy liquidity runs by investors) and, second, the need for financial institutions to maintain an adequate capital ratio (with the sale of assets to reestablish capital ratios). As for all other orthodox authors, Blanchard identifies causes and remedies for the financial crisis in supply-side adjustment, monetary policies and financial supervision.

As already mentioned, the distinction used to separate between orthodox and heterodox schools looks at the core presuppositions about methodology, epistemology and rationality. All those in the heterodox school, to various degrees, reject the instrumentalist epistemology and individualistic approach of representative agents modelling in favour of realistic models, where the behaviour of individuals is related to their social environment. Following the Keynesian concept of uncertainty, heterodox schools also reject the rational expectations hypothesis. For them, expectations arise from a backward-looking process, and are bounded by social, institutional and class constraints.

Stockhammer (2012) analyses the Financial Crisis in the light of the shift, started in the 1980s, from the post-Fordist regime of accumulation to the finance-dominated one that changed the existing power relations in favour of capital. He argues that the financialization of the economy and the polarization of income distribution, both pillars of the Neoliberalist era, are a root cause of the crisis, in the sense that they contributed to the imbalances that erupted in the crisis. The shift in power relations has had social as well as macroeconomic effects. With stagnant wages, working classes had to rely on debt to keep up with consumption norms. From a macroeconomic point of view, this shift in power relations had a dampening effect on domestic demand. While Anglo-Saxon countries reacted by turning to debt-driven systems fuelled by current account deficits, a second group of countries relied on a mercantilist export-driven growth model, running huge current account surpluses. Therefore, “two key sources of the crisis, debt-driven consumption and international imbalances, are thus linked to the interactions of financial liberalization and the polarization of income distribution” (Stockhammer, 2012:41). While still underlining failures at the micro level in the financial system, the heterodox narratives points to macro dynamics to explain, and to resolve - via labor friendly and wage friendly policies that ought reverse the shift in power relations - a financial crisis that has turned into a full blown economic crisis. A similar story can be found in Wray (2012). Wray, as anybody else, follows the Financial Crisis Inquiry Report in saying that a big part of the crisis could be explained by a mix of lack of supervision and fraudulent behaviour. But adds, then, that “there is some danger in focusing on bad actors, bad financial practices and bad events, [and, thus,] we need to put the crisis in the context of the long-term postwar transformation of the financial system.” (Wray, 2012:3) He analyses the financial crash in the light of the Minskyan Financial Instability Hypothesis (FIH) (Minsky, 1986a and 1986b) of long-term shifts between sound and financially stable regimes that, after decades of growth, financial innovation and deregulation, turn into financially unstable systems. He stresses that, what Stockhammer calls financialization and Minsky the money-manager-state of capitalism, caused commercial banks to run after the practices of the growing important shadow banking system, which had, in the years preceding the crisis, short-term profit-maximisation objectives, thus leading the whole financial system to a more fragile and liquidity-seeker state. While Stockhammer focuses on demand policies to get rid of the crisis, Wray points primarily on a re-regulation of the financial system via the renewed differentiation between commercial banks, who shall be the only FED-backed institutions allowed to collect deposit, and, on the other hand, all the other unregulated financial institutions, that shall be “pretty much free to buy any assets, but they must “term out” – financing by using long-term liabilities,” (Wray, 2012:25). Thus reducing the short-termism of the market and, if such an institution files for bankruptcy, well, the policy implication is that the State should let it fail.

To end with the heterodox narratives of the crisis, we review the work of Crotty (2009).

Moving away from the orthodox Marxist position, which looks at every crisis as the final evidence of the up-coming end of the capitalist system, Post-Marxist authors are now closer to the position of Post-Keynesians in their analysis of long-term dynamics, while still focusing on the classical Marxist theme of exploitation. Crotty, as the other heterodox authors we reviewed, but with a different terminology, identifies the deep causes of the crisis in the “flawed institutions and practices of the current financial regime, often referred to as the New Financial Architecture (NFA).” (Crotty, 2009:564) While using a different terminology, his approach also looks at the interactions between financial innovation, deregulation and government intervention in the neoliberal era that spread the doors to the present crisis. He identifies several structural inefficiencies of the NFA: the theoretical pillars on which it is built, i.e. that “relatively free financial markets minimise the possibility of financial crises and the need for government bailouts”, are weak and not empirically-backed. And that a mix of securitization, perverse incentives and new opaque financial instruments led to growing instability, which, instead of being counteracted by government interventions, had been fuelled by deregulation and bailouts of risk-taking institutions. As with Wray, he states that until the government “adopts a radical change of course in its financial market policies, US and global financial markets are likely to remain fatally structurally flawed.” (Crotty, 2009:578)

To close with the first Part of this work, some comments spread out. The slowdown of growth in advanced economies in the decades after the 1970s, the rise of the financial sector as a source of income and rents for household as well as for non-financial institutions, the rise of income inequality, especially in Anglo-Saxon countries, were all structural changes that changed the pattern of the economy. The process of financialization has been fuelled by the rise of Neoliberalism as the new dominant ideology, by the policy changes that it brought about and the rise of globalization. Since the 1980s, the financial system that assured the stability of the Golden Age of Capitalism has been dismantled. Some recent research (Wray, 2011), which introduce the Minskian *money-manager capitalism* theory into the Post-Keynesian analysis of financialization, found evidence of the growing instability of the US financial system. After the 2007 financial crisis a large body of literature on financialization has grown, pointing at its dampening effect on the economy, but still the institutional changes that should be done to counteract it do not seem to be on policymakers agenda. Our work will contribute to the analysis of the effects of financialization and of changes in functional distribution on aggregate demand and, thus, on growth, by highlighting the role of financial variables in determining households consumption and non-financial corporations investment.

Part 2. The model

In this work, we will analyse the effects of changes in functional distribution on growth for a chosen group of countries, adopting a Post-Kaleckian model of growth and distribution. After the Great Recession, the interest on growth theories rose again. In particular, a new line of research started, which aims at capturing the effects of the socio-economic changes of the last thirty years, and in particular of the deep transformations brought by the rise of neoliberalism and that of financialization, with the development, the trajectory and the stability of the capitalist system. We will contribute to this line of research by connecting the effects of financialization, via the flows of credit accruing to households and non-financial corporations and by their stock of wealth for the financing of consumption and investment. Moreover, instead of relying on aggregate data, we will investigate sectoral accounts which have not been widely used so far in the empirical literature, and which may provide more precise estimates of how changes in functional distribution affects growth for our choice of countries.

Section 2.1. The Framework

At the time Keynes was writing his *General Theory*, Michael Kalecki started, in the mid-1930s, a series of working papers on income distribution (Kalecki 1935, 1938, 1942, 1954, 1962).

The Polish economist, coming from a complete different background with respect to Keynes, came to the same conclusions. The focus of his analysis was on the interactions between class conflict and the process of accumulation. The main difference between the two authors lies in the fact that, while Keynes focused on money, Kalecki focused on income distribution. For Kalecki, as we will see later in more detail, assuming a closed economy without significant government interventions and no saving from workers, profits are determined by investment and by capitalists' consumption, so that, by investing more, capitalists earn more. This is exactly what the theory of the multiplier tells. As Kregel says, "one can replace the word "saving" in Keynes by the word "profit" in Kalecki and the result is pretty much the same" (Kregel: 1989, p. 198). Furthermore, by rejecting all assumptions about a *natural* long-run level of economic activity, for Kalecki there is no need for real wages to fall in order to see the multiplier effect, i.e. a given income distribution might easily accommodate a higher level of output and of capacity utilization.

Kalecki, who also shows hints of a Marxian tradition, identifies the main limit to investment in the realm of finance. Following his *principle of increasing risk* (Kalecki, 1937), the Polish asserts that, due to incomplete reinvestment of profits, demand fails to keep up with an increased capacity and the slump follows suit. The restriction on investment comes from the fact that firms would not be able to borrow more than a multiple of their own capital without increasing the risk they face (and therefore rising interest rates).

This far, we said that at any given point, profits are determined by investment. But what did Kalecki said about the *distribution* of wages and profits? For Kalecki, firms put a mark-up on consumer good prices in order to pass price increases on to workers, in the context of constant returns to scale and excess capacity. The mark-up reflects firms' *degree of*

monopoly (Kalecki, 1965) in a certain industry, which is affected by the degree of competition, overhead costs and trade unions.

Beside the economic limits to growth, Kalecki recognised the presence of political limitations to growth. The business sector, indeed, works in opposition to a steady level of full employment, since it would lower the degree of monopoly and, thus, profits.

For Kalecki, thus, the distribution of income is determined by the ability of the capitalist class to pass wage increases on prices. The distribution of the economic pie, thus, is a matter of the level of imperfect competition and, within it, of class struggle. The business cycle and the long-run growth of the economic system can then be explained by the interrelations of distribution, market structure and the firms pricing behaviour.

The basic Kaleckian model rests on five prior assumptions: 1) we have two classes, workers and capitalists; imperfect competition is the norm and firms are demand-constrained; 3) information is imperfect; 4) as a result of 1) and 2), the economy faces chronic unemployment, i.e. excess capacity of production wins out; and 5) we are in a monetary production economy.

Once we have set the framework, we can derive Kalecki's profits equation. We start from the two national accounts identity defining output, both from the spending and from the income side. We do not include neither the government nor the foreign sectors. Income is, thus,

$$Y = C_w + C_c + I \quad (1)$$

where C_w is the consumption of workers, C_c is capitalist's consumption and I is investment.

Second, production is the sum of wages W and profits Π ,

$$Y = W + \Pi \quad (2)$$

Assuming that all wages are consumed, so that ($W = C_w$), and combining (1) and (2), profits must be given by

$$\Pi = C_c + I \quad (3)$$

Equation (3) could also be written to determine investment, i.e. $I = Profits - C_c$, Kalecki, however, underlined that if there is a profit, some output must have been sold in the first place, so that the causation must run from expenditure to profits, not the other way around.

This, moreover, is exactly what Kaldor said: "capitalists earn what they spend and workers spend what they earn" (Kaldor, 1956:96).

One of the key points in the Kaleckian framework is the exogeneity of the profit share, justified by the oligopolistic market structure and by the decision making power of the capitalists class. The share of profits β that is desired by capitalists is defined as β^*

$$\beta = \beta^* \quad (4)$$

The wage share, therefore, is given by

$$\alpha^* = 1 - \beta \quad (5)$$

Combining (4) with the share of profits $\beta = \Pi/Y$, we can compute the level of economic activity such as

$$Y^* = \frac{1}{\beta^*} \Pi \quad (6)$$

so that production depends on both the level and the share of profits. The term $\frac{1}{\beta^*}$ is what Giovannoni defines, in a recent review of growth and distribution models, “the income distribution multiplier” (Giovannoni, 2014:12) and is the inverse function of β^* .

It follows that production varies inversely with the share of profits.

Section 2.2. The basic Bhaduri-Marglin model

While in the Kaleckian model a decrease in the profit share always leads (in a closed economy) towards higher production, this is not necessarily the case in the Bhaduri and Marglin model (1990). Following these authors, different hypothesis on investment, i.e. on the responsiveness of the IS curve to changes in the real wage, can make the case for either wage-led regimes, where a decrease in demand caused by a reduction in the wage share is not fully compensated by the increase in investment and/or exports, or profit-led ones, where in contrast investment demand responds strongly to variations in the profit share, and thus wage reductions play a larger role in expanding exports and growth.

The basic model we are presenting follows Stockhammer and Onaran (2012). While the model is post-Kaleckian in its setting, the behavioural functions for consumption and investment encompass standard Keynesian models. This strand of post-Keynesian models are used to analyse the effects of changes in functional income distribution on aggregate demand.

The model is of a closed, demand led, economy where aggregate demand Y is given by the sum of consumption C and investment I . All variables enter in real terms. In a general formulation, consumption and investment are written as functions of income Y , the wage share WS and other control variables (summarised as z), these latter assumed to be independent of output and distribution. Aggregate demand, thus, is:

$$Y = C(Y, WS, z_c) + I(Y, WS, z_i) \quad (7)$$

The model can be reduced to a standard Keynesian model if $\partial C/\partial WS$ and $\partial I/\partial WS$ are assumed to be zero. In the goods market, equilibrium income is equal to aggregate demand ($Y^* = Y$). Differentiating Y^* with respect to WS and collecting terms we get

$$\frac{dY^*}{dWS} = \frac{h2}{1-h1} \quad (8)$$

Where $h1 = \left(\frac{\partial C}{\partial Y} + \frac{\partial I}{\partial Y}\right)$ and $h2 = \left(\frac{\partial C}{\partial WS} + \frac{\partial I}{\partial WS}\right)$.

The term $1/(1-h1)$ in equation (8) is the standard Keynesian multiplier and should be positive for stability. The sign of the total derivative, therefore, will depend on the sign of $h2$ (the sum of the partial derivatives of the components of demand with respect to income distribution) which is private excess demand, i.e. the change in demand caused by a change in income distribution for a given level of income.

The total effect of an increase in the wage share on aggregate demand depends on the size of the reactions of consumption and investment to changes in income distribution. If it is positive, $\left(\frac{dY^*}{dWS} > 0\right)$, the regime is called wage-led while, if it is negative, $\left(\frac{dY^*}{dWS} < 0\right)$, it is called profit-led.

Section 2.3. Related Literature³

The first paper in this literature is that of Bowles and Boyer (1995). Their results, however, are flawed by non-up-to-date techniques for the econometric investigation. Gordon (1995a) estimated, using a VAR model, consumption and investment as functions of income distribution, simulating various exogenous shocks. In an extension to the previous model (Gordon 1995b) he also investigates, for the open economy, the effect of changes in functional distribution for the US. He found that the US follows a profit-led path, which is also confirmed by Stockhammer and Onaran (2004), and Barbosa-Filho and Taylor (2006).

Stockhammer et al. (2009) run a similar model for the Euro Area, finding that it is actually following a wage-led path. Naastepad (2006) presents a model for the Netherlands, finding that it has followed a wage-led regimes between the 1960s and the pre-euro years. Naastepad and Storm (2007) find a profit-led regime in the USA and Japan, and a wage-led regime in the other countries.

In contrast, Hein and Vogel (2008) find wage-led regimes in the USA, France, Germany and the UK, and profit-led regimes in Austria and the Netherlands. However, their findings are due to very low or insignificant effects of the profit share on investment and net exports.

In recent times, and especially following the Great Recession of 2007-08, a new whole body of research has birth. The links between financialization and growth got growing interest in the heterodox school. In this regard, the major source for Post-Keynesians is Minsky (Minsky, 1986, 1993, 1994). Minsky explained the fluctuation in investment in a capitalist economy by focusing on not only the income distribution but also the link between investment and finance. For Minsky, capital accumulation is affected by the long-run expectation of an entrepreneur with regard to cash flow. When a system experiences continues grow, the entrepreneurs' expectations become optimistic, we have active capital accumulation. However, with capital accumulation, the firms are more dependent on external finance. As a result, following Kalecki's theory of increasing risk, the firms' leverage ratio gradually increases, and their financial position thus becomes fragile. As soon as the system as a whole becomes fragile, the seeds for a crisis rise as well.

A seminal paper in this regard is Foley (2003) who examined the Minskian taxonomy in the context of post-Keynesian growth theory. Inspired by Foley, Lima and Meirelles (2007) also investigate the stability of debt and the interest rates dynamics under the Minskian taxonomy. As highlighted by Nishi (2011), even if the above studies on the Minskian taxonomy are examined in terms of economic growth, they do not consider the type of finance growth regimes in a sufficient manner.

In contrast, Hein (2006, 2007) allows for both debt-led and debt-burdened regimes, whit the second being inherently unstable in the long-run.

Our work will contribute to the Post-Keynesian literature on the interactions between changes in functional distribution and the effects of financialization, via the flows of borrowing and the effect of growing house prices for consumption and investment for our set of countires.

³ For a more complete survey, see also Blecker (2002) and Taylor (2004).

Section 2.4. Our extension

The key role of financialization in changing the growth trajectories of advanced capitalist countries has been highlighted by several authors (Harvey 2005). This new stage of capitalism has been labelled as finance-dominated accumulation regime (Stockhammer 2012).

The income polarization generated by neoliberal policies, with its depressing effects on domestic demand, and financial deregulation (combined with non-up-to-date regulation of new instruments and habits of the financial institutions), whose aim was to boost growth through a more efficient and globalized financial market and which should have decreased the risk of allocating resources in the best forms of investment, has led to the emergence of two distinct growth models: a consumption-driven growth model (in Anglo-Saxon and, due to the particular currency regime, some southern European countries) and an export-oriented regime (in countries like Germany, Japan, China).

Both growth regimes are the results of the interactions between financialization and the changes in functional distribution. While in the consumption-driven regime the shortfall in disposable income has been replaced by an increase in debt levels, in the export-oriented set, which was also facing stagnant or declining wages, the key component of demand growth became exports. The export revenues, moreover, through the now globally integrated banking system, served as the liquidity needed for consumption in debt-led regimes, in the form of capital flows, thus fuelling current account imbalances.

The focus of our work is to analyse, via a Post-Kaleckian model of growth and distribution, the effects of changes in functional distribution on growth for a chosen group of countries.

Our work will expand the already rich literature on the Bhaduri-Marglin model in two ways. First, while the usual literature uses data referring to the total economy, we will use the quarterly sector accounts. Consumption will be estimated for the households sector, while investment for non-financial corporations. Second, we will extend the basic model with the introduction of wealth effects and credit constraints on both households' consumption and non-financial corporations' investment.

As we saw in the previous section, in the basic model, the effect on growth of a change in functional distribution depends on the shape of the IS curve. The total effect of an increase in the wage share on aggregate demand depends on the size of the reactions of consumption and investment to changes in income distribution. If it is positive, $((dY^*)/dWS > 0)$, the regime is called wage-led while, if it is negative, $((dY^*)/dWS < 0)$, it is called profit-led. In our empirical work, we will thus estimate such impact through consumption and investment.

Section 2.4.1. Consumption

In the basic Bhaduri-Marglin, consumption is a function of income Y and the wage-share WS . However, when moving from the theoretical model to an empirical estimate, we must take into account the fact that households consumption is the sum of the consumption of workers and of consumption of capitalists. The former group has historically been credit constrained, i.e. their ability to borrow was limited, sometimes even against collateral. Since

the start of the financialization process, however, credit constraints have been progressively lifted – at least until the Great Recession of 2007 – and therefore workers could increase their consumption above their real wage. To capture this effect we include the flow of household borrowing as an additional determinant of consumption.

Consumption of capitalists, on the other hand, does not depend only on their income, but wealth effects could also play a role. Since a measure of real household wealth is not available, we chose to use the change in housing prices as a proxy for capital gains on the stock of housing, which probably played a relevant role in the years before the recession, characterized by a housing price bubble in many of the countries we are studying. In addition, the role of wealth effects arising from net financial assets are measured by the opening stock of household net financial wealth, which is available in the sector accounts, and which should also reflect upward and downward movements in the stock market.

Wealth, in both financial and real terms, and credit, are thus additional forces driving consumption. If stock prices rise, more dividends and interest accrue to households, while if house prices rise, they can borrow against it, if they have not already, or refinance their debts. The flows of loans as a share of households income represent the credit constrain for our sector. Since we are using the data from the sector accounts, in our model consumption will be a function of households disposable income YD rather than aggregate demand Y . The consumption function is of the form

$$C = c_0 + c_1 \cdot YD_t + c_2 \cdot WS_t + c_3 \cdot FNW_{t-1} + c_4 \cdot dlog(PH_t) + c_5 \cdot \frac{DL_t}{YD_t} \quad (9)$$

where all variables enter in real terms and C is consumption, YD is disposable income, WS is the wage share of GDP, FNW is net financial wealth, $dlog(PH)$ is the growth rate in house prices, which captures the effects of real wealth, DL/YD are the flows of loans as a share of disposable income.

Section 2.4.2. Investment

Financialization not only affected, and changed, the behaviour of households, but also that of non-financial corporations. Some recent literature highlighted the role of financial constraints for investment financing, as well as for household consumption. Moreover, since the rise in recent times of what has been labelled as share-holder value orientation of firms, profits have been used to pay increasing dividends or to buy stock rather than for productive investment. Firms, thus, depended on the flows of credit to finance their investment decisions.

In the basic Bhaduri-Marglin model, Investment is a function of income Y , the wage-share WS which, of course, enter with a negative sign and the real interest rate IR , which is assumed to be exogenous.

While the related literature uses the Gross operating surplus as variable for Profits, in our estimations we will rather use Gross Savings of non-financial corporations S , is to say we take out tax payments and other minor transfers from the Gross operating surplus We also include an accelerator term, measured as the deviation of output from its trend, as measured by an Hodrik-Prescott filter.

Investment, thus, are written as

$$\frac{I_t}{GDP_t} = i_0 + i_1 \cdot Cycle_t - i_2 \cdot WS_t + i_3 \cdot \frac{S_t}{GDP_t} + i_4 \cdot \frac{DL_t}{GDP_t} + i_5 \cdot IR_t \quad (10)$$

where I is investment as a share of GDP, $Cycle$ the accelerator term, WS is the wage-share, S is net profits (savings) as a share of GDP, DL is the flows of loans as a share of GDP, representing the credit constraint for the sector and IR is the interest rate.

More details on the econometric specification will be given below in Part IV.

Part 3. Data and methodology

Section 3.1. Variables sources

Most of our data is taken from the quarterly, non-consolidated, sector accounts in the Oecd database⁴. When series were not seasonally adjusted, we used the X12 procedure available in Eviews to remove seasonality. A complete description of variables and their sources is provided in Appendix 1.

Data is available for most countries from 1999 to present, while some countries – notably the U.S. – have a longer series: we chose to estimate our model using the longest available sample for each country, although we will use a common sample when comparing results in the final stage of our analysis.

Section 3.2. Stylized facts emerging from the dataset

The first variable we are interested in exploring is household consumption, reported in Figure 2.A as a ratio to disposable income.

In Germany, the propensity to consume – which was lower than most other countries, and close to that of Italy – has been declining since the start of our sample, and increasing after the crisis (vertical line, first quarter of 2008⁵). In Italy and Greece, consumption was stable relative to disposable income in the run-up to the crisis, and increasing afterwards reflecting the strong decline in disposable income. However, while Italy still exhibited a positive saving rate, consumption in Greece before the crisis was close to disposable income, signalling a possible credit-financed level of expenditure. For Ireland and Spain, the figure shows a severe vertical drop after the crisis, but these countries did not experience an increase in household propensity to spend, as it was the case in the UK and the US. The U.K., as Greece, experienced some periods of a negative household saving rate, necessarily implying credit-financed consumption.

The analysis of Figure 2.A does not provide a clear-cut evidence of consumption rising relative to income before the crisis for all of our countries, as it would be the case when consumption is financed out of borrowing, for a given level of real disposable income. This is evident for the U.K., and to a lesser extent for the U.S., while other countries, notably Greece, show a very large propensity to consume for many years before the crisis, which may be a signal of a prolonged period of structural imbalances. It is thus necessary to examine in detail the other determinants of consumption.

The first striking thing we notice, when we look at the data on the opening stock of net financial wealth in Figure 3.A, is the ever-increasing trend in Germany. In Greece and Portugal, it seems that in the late 1990s wealth was far above the level of the euro years (in Greece is 1/9 of its value in its peak at the beginning of the sample). It is clear the dynamic

⁴ Available at stats.oecd.org, last accessed on July, 24th, 2014.

⁵ We chose the first quarter of 2008 to mark the start of the recession, looking at the cycle in the majority of our countries. The National Bureau of Economic Research dates the start of the recession in the U.S. to the last quarter of 2007 (<http://www.nber.org/cycles.html>) but effects in Europe were felt with some lag.

in the US, where we see the booms and bust of 2001 and 2007 (vertical line) and wealth reaches sky-high levels. In the UK, the losses of the 2007 crisis are not as big as for the dot.com crisis, nor was the boom. Ireland and Spain had seen, with the US, the largest effects after 2007, rising financial wealth prior to the crisis and a sharp decline after it. In Italy, finally, wealth has decreased strongly after the dot.com crisis and, then, experienced a minor boom in the years preceding the crisis. As the boom was not as big for other countries, neither did the bust. However, Italy is one of the last countries showing signs of recovery, with the bounce only in 2011.

In Figure 4.A, we report the ratio of household borrowing – measured by the net flows in loans – to disposable income. German households reduced considerably borrowing in the first three years of the euro, passing from a 10% ratio to income to zero or even negative flows for the rest of the sample. Other countries, on the contrary, experienced a large increase in borrowing in the run-up to the crisis: this is clear for Greece, Italy, Spain, the U.K. and the U.S. Borrowing in these countries started to decline, relative to income, before the recession hit. All the countries in the Eurozone periphery are now deleveraging, i.e. they exhibit negative levels of borrowing: they are cutting down on their existing debt. When looking at the levels of borrowing before 2007/8, the information provided by Figure 4.A is similar to our analysis of the propensity to spend out of income: simple math shows that when the ratio of borrowing to income exceeds the growth rate of income, the debt to income level must be rising.

When we add investment to household's consumption, we can plot total expenditure over disposable income (Figure 5.A). For some countries – notably Spain, the U.S. and Ireland – the pre-recession period was marked by strong increases in residential investment – related to a bubble in the housing market – which may show up in household investment, rather than current consumption. When total household expenditure exceeds current disposable income, the whole sector must be borrowing from other sectors to finance the excess in expenditure. On the contrary, when total expenditure is below income, the sector is accumulating financial claims on other sector, i.e. is a net lender. Figure 5.A, thus, can be interpreted as an implicit measure of household's acquisition of net financial assets – for countries like Germany – or of net borrowing – for the majority of the other countries before the 2007 crisis. While the drop in total expenditure has been strong for Portugal, Spain and the US, with the largest effect in Ireland, the UK is still in deficit, although it has been in a deficit position since the beginning of the sample. The country that experienced the biggest rise in the deficit, however, is Ireland, with a peak of 129% at the end of 2006. Greece has had more than a decade of high deficit, but the crisis does not seem to have changed household's behaviour. Germany run a large surplus throughout the sample, however, we can clearly see the rapid rise between 2000 and 2004.

The dynamic of the wage share (Figure 6.A) is difficult to interpret. Germany, Spain, UK and the US, seem to be the only countries experiencing declining wage shares, which is in contrast with the literature, but this could be explained by the short dataset: most of the decline in the wage share was experienced before the 2000s (primarily after the 1980s) for most of the countries in our dataset.

Regarding investment, some facts deserve attention. When looking at the non-financial corporations (NFC) share of investment of GDP, shown in figure 7.A, it is clear the boom & bust dynamic for the US, where we see the bust of the dot.com crisis of 2001, the boom phase in the run up to 2007 and the huge drop afterwards, as happened for Germany,

Ireland, Italy and Spain. For Spain, the vertical drop after the crisis could be explained by the housing market crash, which was heavily felt in Spain, more than in our choice of countries. For Germany, however, we can see that at the beginning of the sample the level of investment was far higher than in the run up to 2007. Portugal and UK, in contrast, experienced a continuous decline in investment throughout our sample.

In Figures 8.A and 9.A, we plot our chosen sources of investment financing for NFCs, savings and borrowing, as a share of GDP. While all countries, with the exception of Germany, UK and US, experienced stagnant savings in the period under analysis, when we look at firms borrowing – measured by the net flows in loans – the story changes a lot. In Germany, NFC passed from a deficit position at the beginning of the sample to a strong surplus from 2002 to 2005, then returning to a deficit, as all other countries, in the run-up to the crisis. For all countries but UK, it is clear the boom dynamic as it is the deleveraging in the afterwards of the crisis, while the US only fully recovering at the end of our sample.

Finally, in Figure 10.A, we plot the nominal interest rates. We can see that it has been declining for all countries since the start of our sample. For the southern European countries, however, we can see the effects of the European debt crisis of 2010-11, which caused interest rates to explode.

Section 3.3. Econometric methodology

After the *golden age* of econometrics of the 1950s and 1960s, a growing scepticism toward the discipline rose. As Desai said, *“even within the academic profession, one is sensing a doubt as to whether the generation of more numbers for their own sake is fruitful. The ad hoc approach of many practising econometricians to the problem of hypothesis testing and inference is illustrated by the popular image of much econometrics as a high R^2 in search of a theory.”* (Desai, 1976:7)

The forecasting ability of the large scale macro-econometric models built in the 1970s following what has been labelled the Cowles Commission methodology, moreover, was found to be poor (see Cooper, 1972).

In 1978, however, a major step forward in the discipline occurred with the publication of the work of Davidson, Hendry, Srba and Yeo. This work has had an important influence on the way many econometricians now use time series data to model economic relationship. These new developments include general to specific modelling and cointegration analysis, upon which our work will be built.

One of the main methodological innovations of their approach was that a “good” empirical econometric model could be developed by starting from a relatively large, general model and by gradually reducing its size and transforming the variables through the testing of various linear and non-linear restrictions.

By general to specific modelling we mean the formulation of a fairly unrestricted dynamic model which is subsequently tested, transformed and reduced in size by performing a number of tests for restrictions.

The general model is usually described in an autoregressive distributed lag (ADL) form. This means that a dependant variable y_t is expressed as a function of its own lagged values, and the current and lagged values of all explanatory variables X , as in

$$a(L)y = B(L)X + u$$

where L is the lag operator.

An important implication, thus, is that we must have a tool which can be used for testing whether or not the restrictions of interest which lead to a specific model are valid, or equivalently, whether or not the restrictions contradict the general model. Several tests have been suggested for testing both linear and non-linear restrictions in a general econometric model. The most well-known are the Likelihood Ratio, Wald and Lagrange Multiplier (scores) tests.

The General-to-specific approach is usually adopted on stationary variables. A first step of modern econometric analysis involving time series has thus become unit root testing, to ascertain the order of integration of each series. Formally given

$$a(L)y = u$$

in order for the variable y_t to meet what are called the “stationarity conditions”, it is required that the roots of the lag polynomial $a(L)$ “lie outside the unit circle”, i.e. they are larger than unity in absolute value (see Granger and Newbold, 1986:6-10). To put it differently, a stochastic process⁶ y is said to be *stationary* if the joint and conditional probability distributions of the process are unchanged if displaced in time. The means and the variances of the process, thus, are constant over time, while the value of the covariance between the two periods depends only on the gap between the periods, and not the actual time at which this covariance is considered. If one or more of these conditions are not fulfilled, the process is said to be non-stationary.

If this is not the case, i.e. if y is not stationary, unit root testing is performed on the time difference of y , and the order of integration of a series is defined by the number of time differences required to obtain stationarity (Engle and Granger, 1987).

Non-stationarity of time series has always been regarded as a major problem in econometric analysis. In such cases, a spurious correlation may emerge given stochastic (or deterministic) trends⁷ in both the dependent and one or more of the explanatory variables. These regressions often give apparently good results, and therefore may make it impossible to determine whether or not an economic relationship suggested by a theory has in fact any support from the data.

From the discussion above follows that, in order to have meaningful economic results, regression analysis should be run only on data which are not subject to a trend. Since almost

⁶ By “stochastic process” we mean a family of real valued random variables, indexed by t , where t represents time. Simply put, each element $X_1, X_2 \dots X_t$ of the stochastic process $\{X_t\}$ is a random variable.

If all the random variables X_t have means (expected values), we may describe the *mean of a stochastic process* $\{X_t\}$ as a series of means (expected values) for particular X_t s or as function of t . We will denote the mean of a stochastic process μ_t , while σ_t^2 will stand for its variance and the covariance between two of the variables which belong to the stochastic process, for example X_t and X_{t+j} , by $\sigma_{t,t+j}$.

⁷ A series Y has a deterministic trend when

$$y_t = \alpha + \beta \cdot t + \varepsilon$$

while it has a stochastic trend when it grows following

$$y_t = y_{t-1} + \varepsilon \text{ [random walk].}$$

Moreover, when a process is given by

$$y_t = \alpha + \beta \cdot t + y_{t-1} + \varepsilon_t \text{ [random walk with drift]}$$

it has both a deterministic and a stochastic trend.

all economic series contain trends, a convenient way of getting rid of a trend is by using first differences rather than levels of the variables. A simple method of testing the order of integration of y_t has been proposed by Dickey and Fuller (1979), hereafter DF test, which is a test of the null-hypothesis that the series contains a *unit root*, i.e. is integrated of order zero. If the test is rejected, the series could be integrated of order higher than zero, or might be not integrated at all. Consequently, one shall test whether the order of integration is one (Δy_t) or two ($\Delta\Delta y_t$) and so on. However, is unusual for economic series to be integrated of order higher than two.

A substantial weakness of the original DF test is that it did not take into account of autocorrelation in ε_t . A simple solution, proposed by the same authors (Dickey and Fuller 1981), is to use lagged left-hand-side variables as additional explanatory variables to approximate the autocorrelation. This test is called the Augmented Dickey Fuller test (ADF).

The problem of modelling first differences, however, is that we lose long-run properties. The attention, thus, concentrated on economic data series that, although non-stationary, can be combined together into a single series which is itself stationary. Such series are defined as *cointegrated*. The formal definition of cointegration of two variables, developed by Engle and Granger (1987) is as follows: *time series x_t and y_t are said to be cointegrated of order d, b if:* 1) both series are integrated of order d and, 2) there exist a linear combination of these variables which is integrated of order $d-b$. The vector $[\alpha_1, \alpha_2]$ is called a *cointegrating vector*.

For empirical econometrics, the most interesting case is where the series transformed with the use of the cointegrating vector become stationary and the cointegrating coefficients can be identified with parameters in the long run relationship between the variables.

The fact that the variables are cointegrated implies that there is some adjustment process which prevents the errors in the long-run relationship becoming larger and larger. Engle and Granger (1987) showed that any cointegrated series have an error correction representation. The converse is also true, in that cointegration is a necessary condition for error correction models to hold.

This kind of models currently represent the most common approach to incorporate the theory-driven long-run relation of the variables and their short-run disequilibrium behaviour. The Engle-Granger approach consist of a two-step procedure. First, estimate the equation in the levels with OLS and test for the stationarity of residuals. Second, if this is not rejected, switch to a short-run model with an error correction mechanism. When using the Engle-Granger method, however, we must be aware that we do not prove that the relation in the levels is really a long-run one.

The analysis of cointegration in time series econometrics, introduced in the mid-1980s, has indeed been regarded as one of the main methodological development in empirical modelling. Following the previous discussion, our estimation strategy will start with appropriate tests for the stationarity of our time series. As we will show in Section 4, our results point to non-stationarity for most of our series. We therefore adopted the simple Engle-Granger approach to estimation of the cointegrating vector, for both consumption and investment, and used residuals from these estimates as the “error-correction term” in our dynamic specification.

Then, following a general to specific approach, we will not pre-impose a specific dynamic to the links among our variables, but we will start instead from a general specification where we allow each variable to have an impact on consumption and investment of up to one year, and then we remove dynamic links that are not statistically relevant.

The result will thus allow us to distinguish between an immediate, “impact” effect of each explanatory variable, and a “long-run” effect estimated through cointegration.

Part IV. The empirical analysis

The message coming from Part I is that two major changes of the economic system, namely the emergence of neoliberalism as the dominant ideology and the intensification of the process of financialization as the new driver of behavioural changes for both households and non-financial corporations, have had, in the last thirty years, a primary role in the rise of the new finance-dominated accumulation regime. These underlying processes, which caused an increase in income inequality and, because of stagnant wages and keep-up-with-the-Joneses consumption behaviour, of private indebtedness, combined with the global current account imbalances that this dynamic have generated, have posed the basis for the Great Recession of 2007-08.

In our model, thus, our hypothesis is that wealth and credit have played an additional role as driver of households consumption and non-financial corporations investment in the years preceding the Great Recession. Moreover, we test the hypothesis that the crisis has generated a structural break, i.e. it has determined a change in the long-run relation between our variables.

Building upon the Post-Kaleckian growth and distribution literature, we will, first, investigate the determinants of consumption and investment and, then, compute the total effects of exogenous changes in the wage-share through its impact on the single components of aggregate demand for our set of countries.

Section IV.I. Consumption

With respect to household current expenditure, we expand the original Bhaduri-Marglin model, which focuses on the wage share, to take into account wealth effects (in financial form, through changes in financial wealth and, in real terms, through the growth rate in property prices relative to a general inflation measure) and credit constraints, modelled by the increase in household loans.

Consumption, disposable income and net financial wealth are all deflated by the aggregate consumption deflator.

We perform our analysis on both the levels of each variable, and adopting a log transformation. In the latter case, we used the ratio of the changes in loans to disposable income, since negative values for the change in loans prevent the adoption of the log transformation for this variable.

Results of the ADF test for stationarity, as implemented in Eviews, show that real consumption, real disposable income and real net financial wealth are all integrated of order one. The (log of the) price of housing is integrated of order two, i.e. the growth rate of house prices is non stationary. As a matter of fact, the real price of housing has an inverted U shape in many countries, and therefore its growth rate has changed over our sample. The wage share and the ratio of net new loans to disposable income are both integrated of order one⁸, albeit they are ratios, and as such they should be stationary over a

⁸ With the exception of Germany (at 1%) and Portugal (at 5%), for which the change in loans is stationary.

long enough sample. Results of the ADF test for consumption are shown in Table 1.A in Appendix.

Given our results, we tested for the existence of a stationary linear relation among our I(1) variables, estimating equation (9) for each country. When plotting our variables, notably house prices, it is clear the presence of a break determined by the Great recession. We introduce, thus, an additional dummy variable dum_{gr} for the Great Recession, which is equal to one from the first quarter of 2008 onwards. We estimated

$$C = c_0 + c_1 \cdot YD_t + c_2 \cdot WS_t + c_3 \cdot FNW_{t-1} + c_4 \cdot dlog(PH_t) + c_5 \cdot \frac{DL_t}{YD_t} + dum_{gr} + u_t \quad (11)$$

where C is the log of household consumption, YD_t is the log of gross disposable income, WS_t is the log of the wage share of GDP, FNW_t is the log of the opening stock of net financial wealth⁹, $d(PH_t)$ is the growth rate in real house prices, $\frac{DL_t}{YD_t}$ are households changes in loans, dum_{gr} is our dummy variable and u_t is the error term.

In Table 1, we report our estimation of (11) through OLS. For each country, we verified the stationarity of the residuals which, as already said, is a necessary condition for the existence of cointegration among our variables, and the test was passed for all countries. Results are shown in Table 2.A in Appendix.

	Germany	Greece	Ireland	Italy	Portugal	Spain	UK	US
YD	1.003*	0.472*	0.851*	0.479*	0.858*	0.817*	1.078*	0.901*
WS	0.168*	0.511*	0.135	0.179°	0.133	-0.464*	-0.678*	-0.234*
FNW	0.029^	-0.029^	0.092*	0.047	-0.086°	0.131*	0.032^	0.058*
PH	0.160°	-0.226	0.026	0.077	-0.362	-0.253^	-0.391*	-0.052
DL	0.092^	0.631*	0.008	0.414*	0.342*	0.064	0.222*	0.016
constant	-0.511	6.291*	0.473	5.746*	2.463°	-0.065	-1.895*	0.366
GR break	-0.008*	0.064*	-0.032°	0.029*	0.032*	0.009	-0.012	-0.017*
R2	0.986	0.961	0.932	0.843	0.805	0.975	0.974	0.996
N	59	54	46	58	59	54	59	58

Legenda: (°)significant at 10%; (^) significant at 5%; (*) significant at 1%

Some authors consider this approach to be sufficient for the existence of a cointegrating vector among our variables: to verify our results, we also estimated (11) with the Fully-Modified OLS (FM-OLS) approach provided by Eviews. Results are reported in the Appendix (Table 3.A), and do not show significant changes with respect to the OLS estimates¹⁰. For this latter approach we also formally tested the hypothesis of cointegration with the Engle-Granger test available in Eviews: tests rejected the null of no-cointegration for Germany, Greece, Spain (at 10%) and for the US. This implies that the specification may not be appropriate for our other countries. However, since what we want to explore are the

⁹ Namely, the end-of-period stock for the previous quarter.

¹⁰ With the exception of Ireland, for which the change in loans inverts sign in the FM-OLS.

effects of our variables for all the countries under observation, we chose not to find the best possible specification for each country, and work with a unique model, even if doing so will affect the robustness of our results.

The relation between consumption and income is one of the most investigated. As expected, real disposable income is significant for all countries and exhibit a positive sign, with a higher elasticity for Germany and UK (.96 and 1.1), while Greece and Italy exhibit a small value (around 0.5), and all other countries exhibit values between .8 and .9.

The wage share of GDP is significant for Germany, Greece, UK and US. However, in Spain, UK and US the signs are not as expected. Our results so far are mixed: the role of the wage share on consumption is significant only for a small set of countries, while it is puzzling for Spain, the U.S. and the U.K. This could be due to the fact that in these countries, since 2007, the wage share has been falling while the consumption was rising relative to disposable income, since the latter was falling faster than the former¹¹.

The core of our analysis is to investigate the relations among consumption and wealth, in both financial and real terms, and credit. We find that real financial net wealth is significant for all but Italy. The signs are as expected with the exception of Greece and Portugal. This results is not surprising since, as we saw in Part III, Greece and Portugal experienced a serious decline in the stock of financial wealth at the end of the 1980s while, for the rest of our sample, it has been almost constant, and does not seem to have been affected as strongly as other countries by the crisis of 2007-08. The strongest effect of wealth is found for Spain (.13) while for all other countries the effect ranges between .002 and .01. The growth rate of real house prices, which in our equation appears as a proxy of net capital gains from real wealth, is significant only for Germany, Spain and UK, but shows a negative sign in five countries out of eight (it is positive only for Germany, Ireland and Italy). This result is surprising both from a theoretical point of view, since consumption behaviour shall be related to changes in real wealth, and because it contrast the existing literature and narratives on the Great Recession. A possible explanation is given by the fact that other variables – such as borrowing – are correlated to our measure of real house prices.

The changes in loans, which represent the credit constrain in our theoretical model, are significant for Germany, Greece, Italy, Portugal and UK. The signs are all as expected. The results show a very strong elasticity for Greece, Italy, Portugal and UK (between .18 and .63) while for all other countries the elasticity is smaller (between .008 and .06).

While equation (11) is appropriate to investigate the long-run links among our variables, other effects could be relevant in the short-run. We therefore adopted an error-correction approach to test the short-run links among variables in (11), when all variables are stationary, and the error-correction term obtained from the residual of (11) is included with a lag.

We followed a general-to-specific approach, including 4 lags for the dependent variable, and one lag for the other explanatory variables. The change in net financial wealth has been dropped, as it should be highly collinear with real household saving, which in turn is given by real disposable income less consumption.

¹¹ For some of these countries, as noted above, a more complex model is needed, and this may also influence the link between the wage share and consumption.

After dropping non-significant lags in explanatory variables, we verified that the model was properly specified by running the usual tests for normality, autocorrelation and heteroscedasticity of residuals¹². Results are reported in the Appendix (Table 5.A).

We found that real disposable income is significant for all countries but Greece, Ireland and Spain, always exhibiting the expected sign while, for the short-run, is slightly significant only for Portugal. It shows, however, a negative impact in the short-run for most of the countries under analysis but for Germany, UK and US. The wage share shows the expected sign only for Greece, while it is significant for Greece UK and US. In the short-run, it shows negative effects also for Ireland whereas inverts sign for Spain. The rate of growth of house prices is significant, in the long-run, only for Germany but loses significance in the short-run, it becomes instead significant for Greece. The flows of loans have the expected positive effect for Germany, Italy, Portugal and Spain, while it is not significant for the rest of our set of countries. For Germany and Italy, though, the parameter changes its sign in the short-run relationship and loses significance, while maintaining its positive effect for Portugal and Spain. The error correction term is always significant, with the exception of Portugal, always exhibiting the right sign, thus confirming the validity of our approach.

Section IV.II. Investment

In the last decades, as we said, stagnant demand, combined with the new shareholder value orientation of firms, determined for the non-financial corporations to rely on external funding for their investment financing. Thus, we expanded the Bhaduri-Marglin model to take into account the role of credit constraints.

We followed the same strategy we adopted for consumption. First, we checked for the properties of our time series. The results of the ADF test (Table 5.A.) showed that all our variables are integrated of order zero or one with some exceptions.

We tried two different general specifications. The first one is of the form:

$$\frac{I_t}{GDP_t} = i0 + i1 \cdot Cycle_t - i2 \cdot WS_t + i3 \cdot \frac{S_t}{GDP_t} + i4 \cdot \frac{DL_t}{GDP_t} + i5 \cdot IR_t \quad (10.1)$$

Where investment I_t , Savings S_t and the flows of Loans DL_t enters as a share of GDP, WS_t is the wage share, IR is the long-term interest rate and $Cycle$ is the accelerator term, measured as the deviation of real output from its trend.

Results of the OLS estimations are shown in the Appendix (Table 8.A).

In (10.1) we used the nominal interest rate. However, the real interest rate¹³ may better capture the effect on investment, and we therefore also tried a different specification. This time the IR enters as:

$$\frac{I_t}{GDP_t} = i0 - i1 \cdot WS_t + i2 \cdot \frac{S_t}{GDP_t} + i3 \cdot \frac{DL_t}{GDP_t} + i4 \cdot IRR_t + i5 \cdot CycleGDP \quad (10.2)$$

Where

¹² Tests results are not reported for space consideration, but are available on request.

¹³ Measured subtracting the growth rate in the investment deflator from the nominal interest rate.

$$IRR_t = IR_t - 100 * \left(\frac{Idefl_t}{Idefl_{t-4}} - 1 \right)$$

(12)

And $Idefl_t$ is the investment deflator taken from the OECD database.

We preferred (10.2) over (10.1). Results are shown in Table 2.

	Germany	Greece	Ireland	Italy	Portugal	Spain	UK	US
Cycle	0.130*	0.100^	0.041	0.077*	-0.081	0.357*	0.02	0.232*
WS	-0.136^	0.166^	-0.265^	-0.248*	-0.032	-0.321*	0.322	0.246*
S	-0.180*	0.042	-0.414*	-0.045^	0.148*	-0.265*	0.139	0.044
DL	0.063*	-0.004	0.024^	0.036^	0.155*	0.031^	0.068^	0.009
IRR	0.002*	-0.001^	-0.001*	-0.002*	-0.002*	-0.003*	0.001^	0.002*
constant	0.183*	0.011	0.221*	0.214*	0.129°	0.325*	-0.102	-0.053
R2	0.705	0.437	0.634	0.825	0.7	0.93	0.221	0.803
N	60	51	47	60	61	53	61	71

Legenda: (°)significant at 10%; (^) significant at 5%; (*) significant at 1%

We can see that the wage share is significant for all countries but Portugal, however, it has the expected sign only for Germany, Ireland, Italy and Spain while shows a very strong positive effect for UK (.74). Savings are significant for all but Greece, but has the expected (positive) sign only in Portugal and UK. The flows of loans seem to be a relevant source of investment financing. DL are significant for all countries and shows the expected positive effect in all countries but Greece and US. With this second specification, the IR again shows a negative effect for Germany and US. The value of the parameter, however, is very small for all countries. The variable for the CYCLE is significant for all but Ireland, Portugal and UK.

As we did for consumption, to capture the short-run links among our variables, we adopted an error-correction approach from the stationary variables in (3) and including, with a lag, the error-correction term obtained from the residuals of (3).

We followed a general-to-specific approach, starting with several lags for the dependent variable (4) and one or more for the explanatory variables. After dropping non-significant lags we decided to specify our equation with one lag for both the dependent and the independent variables. We then verified that the model was properly specified by running the usual tests for normality, autocorrelation and heteroscedasticity of residuals¹⁴. Results are shown in the Appendix (Table 9.A).

From our dynamic estimation, we found that the wage-share enter as expected in the long-run relation for Ireland and Spain, while shows a negative effect for US. In the short-run, the wage-share becomes significant for Greece, Portugal and UK, although exhibiting the wrong sign. Regarding our first source of investment financing for NFCs, namely net profits

¹⁴ Portugal and UK shows non-normality.

S , we found that it has the expected positive effect, in the long-run, for Greece and UK, while for Ireland has a dampening effect. In the short-run, the finding is confirmed for UK, which still exhibits the positive effect of profits on investment, while became significant for Germany and Italy. For the former, though, the effect is negative while for the other one has the usual benign outcome.

When looking at the parameters related to the flows of credit accruing to NFCs to finance their investment, we see that they always show, when significant, the expected positive sign. It is so for Ireland, Portugal and Spain for the long-run and for Italy and Spain in the short-run.

The real interest rate shows the usual negative effect on investment, both in the long as in the short run, for most of the countries under analysis.

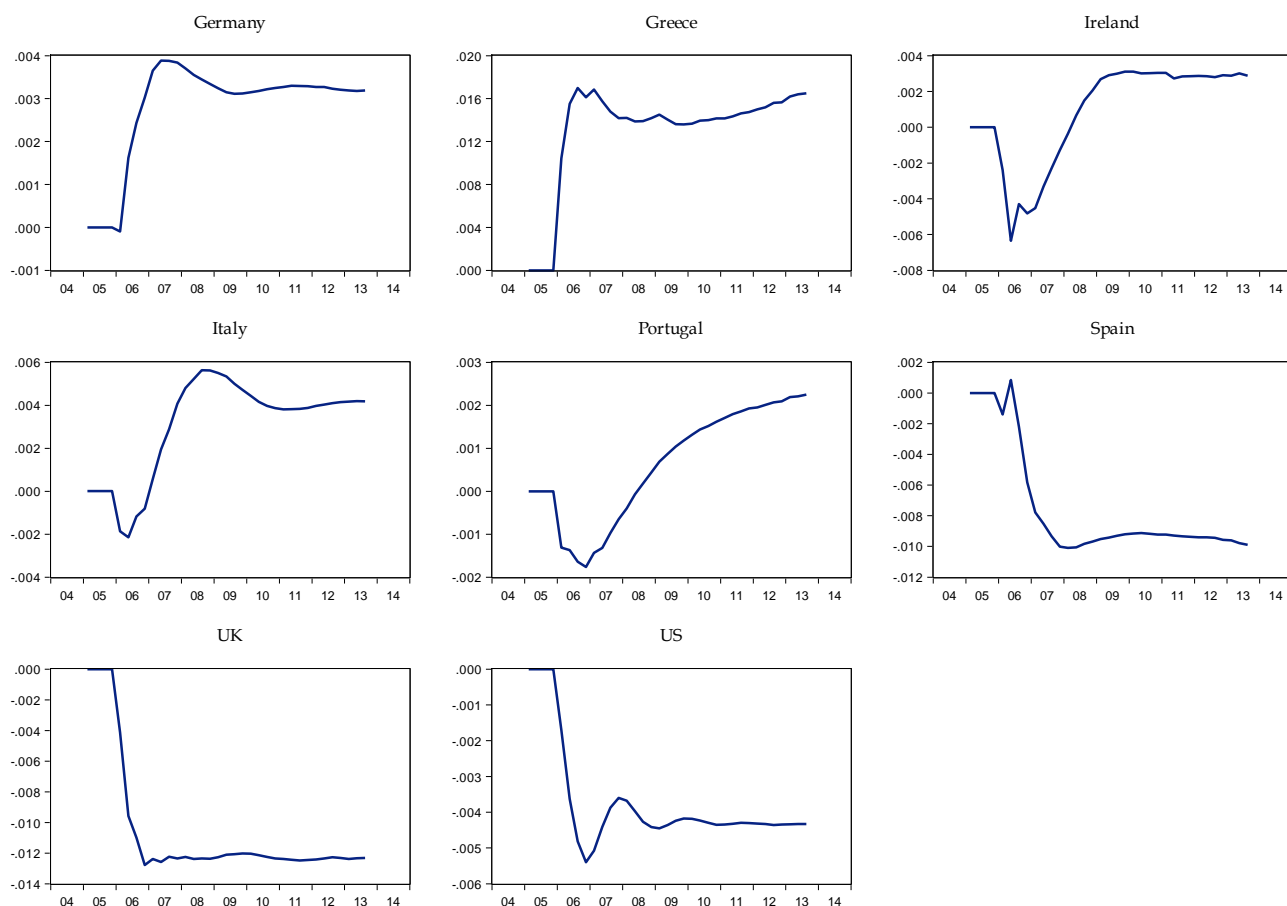
Section V.III. Final results

Our attempt in this work was to analyse the cumulative effects of changes in distribution on growth and output in times of financialization. In our model, the total effect on output of a change in the wage-share depends on the shape of the IS curve. If the rise in consumption due to increased wages more than offset the decline in aggregate demand caused by the reduction of investment, the regime of accumulation is labelled wage-led. If the cumulative effect is negative, in contrast, the regime is called profit-led.

Given our estimated equations for consumption and investment, using Eviews we computed what shall be the effect on output, all other things being equal, of a 1% change in the wage-share. Computing the cumulative short-run effect from our dynamic equations and the long-run relationship from the simple OLS estimations, we will be able to see both the short and the long-run effect of distributional changes. Results are shown in Figure 11.

It is clear that two countries, the UK and the US, stand out as unambiguously profit-led. Spain is also found to be profit-led, but in the short-run we can see that the effect is modest. All other countries are, with various degrees, all wage-led, at least in the long-run. While Germany and Greece are unequivocally wage-led, in the short as in the long-run, for Ireland, Italy and Portugal the beneficial effect on consumption of an increased wage-share takes time to materialize. Germany, however, is only weakly wage-led, since the cumulative effect of a distributional change is not very different from zero. The cumulative effects showed in the figures follows our results as for the puzzling role of the wage-share and of profits in our estimations for consumption and investment.

Figure 11. Total effect of a 1% change in the wage share on output.



In our model, consumption will depend positively on the wage-share while investment responds positively to profits. In our estimations, though, this is not always the case. As already said, the unexpected effect of the wage-share on consumption could depend on our short sample, since its decline, for most of the countries under analysis, as we saw in Part I, happened in the late 1970s. Regarding the role of profits on investment, we have assumed no reverse causation from investment to profits, while it is clear that a more accurate and complete model aimed at explicating the behaviour of profits is needed. Moreover, our model is of a closed economy, while the data used as well as the countries chosen for our inquiry are all, to various degrees, economies widely open to international trade. Pro-capitalist policies shall, indeed, positively affect the external competitiveness, thus boosting exports. The positive effect of net exports on demand, thus, could play a major role in determining the total effect of change in functional distribution. In the related literature, indeed, most of the countries we analysed are found to be domestically wage-led while being profit-led internationally.

Extensions of the model to endogenize profits and trade are left, however, to future research.

Conclusion

In this work, we built a Post-Kaleckian growth and distribution model, extending the original Bhaduri and Marglin model (1990), which analyses the effects of changes in income distribution on output and employment, to take into account the effect of financialization, focusing on the links between the real and the financial sectors of the economy. Our empirical research focused on how income distribution, wealth, in both real and financial terms and the flows of credit affected consumption and investment, and thus growth, from the mid-1990s to present, for a set of Anglo-Saxon and European countries. Our assumption was that both wealth and credit constrain have played a major role as a source of consumption and investment financing in the years preceding the crisis.

In the first part of the work, we reconstructed the historical background of our analysis. Starting from a narrative for the decline in the wage share from the 1980s until present, we highlighted the role that neoliberal policies had in changing the pattern of growth and distribution. The process of financialization, moreover, which led to the emergence of the new finance-dominated accumulation regime, caused a change in the behaviour of both households and non-financial corporations. While households had to rely on debt to maintain their consumption standards, non-financial corporations depended on the flows of credit in order to finance their investment. This surge of financial motives, combined with the new institutional settings, have played a major role in causing the Great Recession of 2007-08. In the second part, we presented our extension to the original model, the literature to which it is related and the methodology we adopted for the econometric analysis. Following modern practice in econometrics, we adopted a general-to-specific approach for our investigation. In part three, we presented our empirical analysis. The analysis confirmed our hypothesis regarding the role of wealth and credit in determining households' consumption and non-financial corporations' investment in the run up to the crisis. The role of the wage share and of profits has indeed been puzzling. As we highlighted, however, this results is not surprising. Regarding the wage share, a big part of its decline occurred in the late 1980s, and so it did not appear to be relevant in our sample. Regarding profits, since we did not assumed any reverse causation from investment to profits, it is clear that a more accurate and complete model aimed at explicating the behaviour of profits is needed. Our final results, regarding the total effect of changes in functional distribution on output, are in line with the related literature. Of our set of countries, the UK, US and Spain are found to be profit-led, while all other countries are wage-led, at least in the long run.

Summing up, we expanded the heterodox literature on wage-led growth in two ways. First, we used different specifications for our estimations, extending the original model to take into account some financial variables. Second, for our analysis we used the sector accounts, which have not been widely used in the literature.

We are aware, however, that our result can be made more robust. As already said, endogenizing profits is a first step to shed light on its role in the determination of investment. Moreover, the model can be improved considering the role of the foreign and the government sectors. The foreign sector, in particular, as showed by a rich literature, plays a big role in the determination of the total effects on output. This however, is left for future research.

Francesco Zezza

Appendix 1. Variables sources and description

code	description	source
c	final consumption expenditure, household sector	Oecd, QSA
ce	compensation of employee, total economy	Oecd, QSA
cfk	consumption of fixed capital, household sector	Oecd, QSA
defl	consumption deflator	Oecd, QNA
defl_gfcf	investment deflator	Oecd, QNA
dl	net changes in loans, household sector	Oecd, QSA
fnw	net financial wealth, household sector	Oecd, QSA
gdp	gross domestic product, total economy	Oecd, QNA
gdp_defl	GDP deflator	Oecd, QNA
hp	house prices	Oecd, MEI
i	gross fixed capital formation, household sector	Oecd, QSA
ir	interest rate	Oecd, QNA
nfc_cfk	consumption of fixed capital, non-financial corporations sector	Oecd, QSA
nfc_dl	net changes in loans, non-financial corporations sector	Oecd, QSA
nfc_fnw	net financial wealth, non-financial corporations sector	Oecd, QSA
nfc_gdp	gross domestic product, non-financial corporations sector	Oecd, QSA
nfc_gfcf	gross fixed capital formation, non-financial corporations sector	Oecd, QSA
nfc_gs	gross savings, non-financial corporations sector	Oecd, QSA
nfc_netl	net lending/borrowing, non-financial corporations sector	Oecd, QSA
yd	gross disposable income, household sector	Oecd, QSA
Legenda:		
-	Oecd, QSA: Quarterly Sector Accounts, not consolidated	
-	Oecd, QNA: Quarterly National Accounts	
-	Oecd, MEI: Main Economic Indicator database	
data availability: Germany, Italy, Portugal, UK (1999q1-2013q4); Greece and Spain (2000q1-2013q4), Ireland (2002q1-2013q4), US (1980q1-2013q4)		

Appendix 2. Figures

Figure 1A. The dynamic of the wage-share of GDP and unemployment

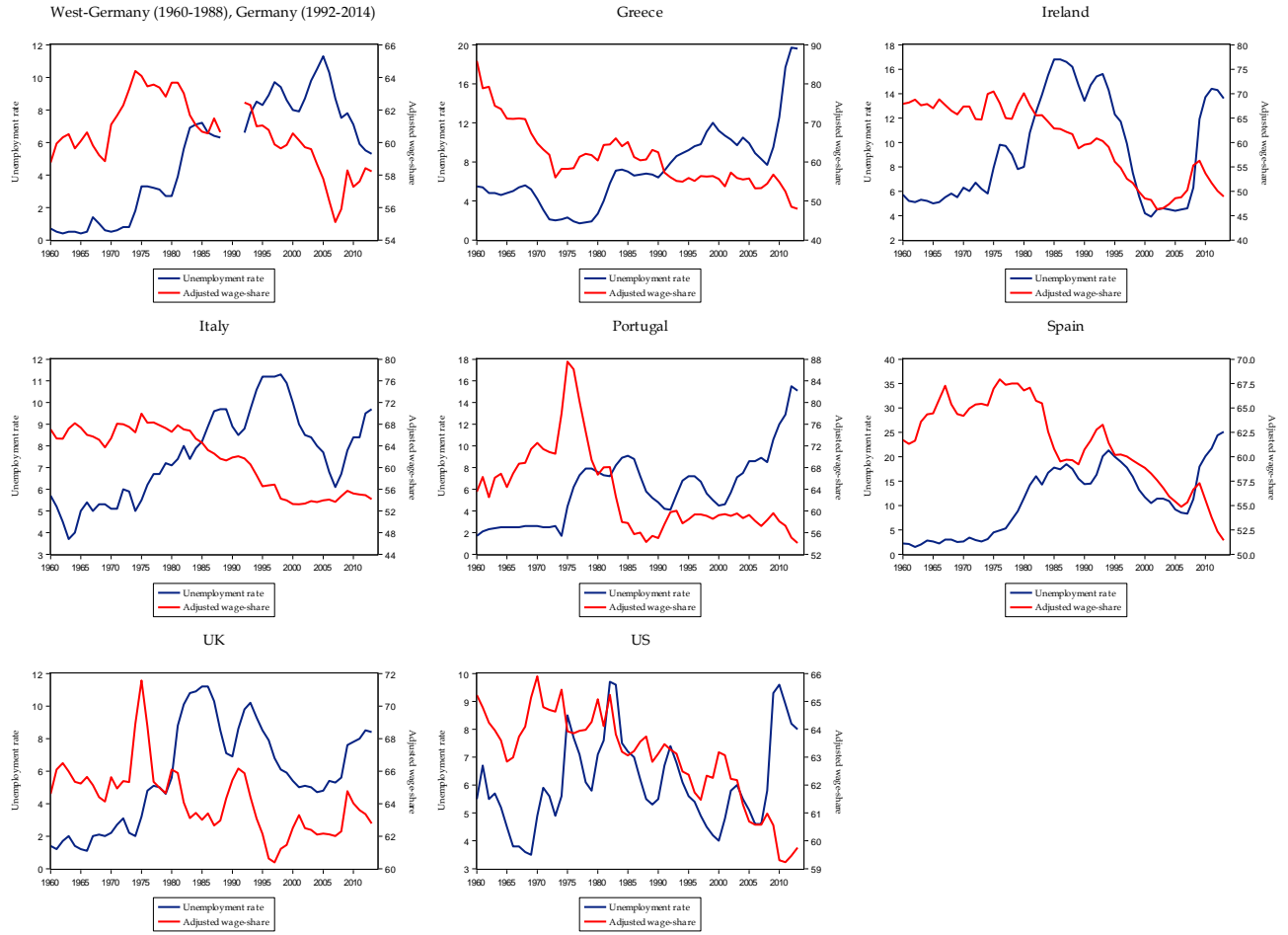


Figure 2.A. Households propensity to consume out of disposable income

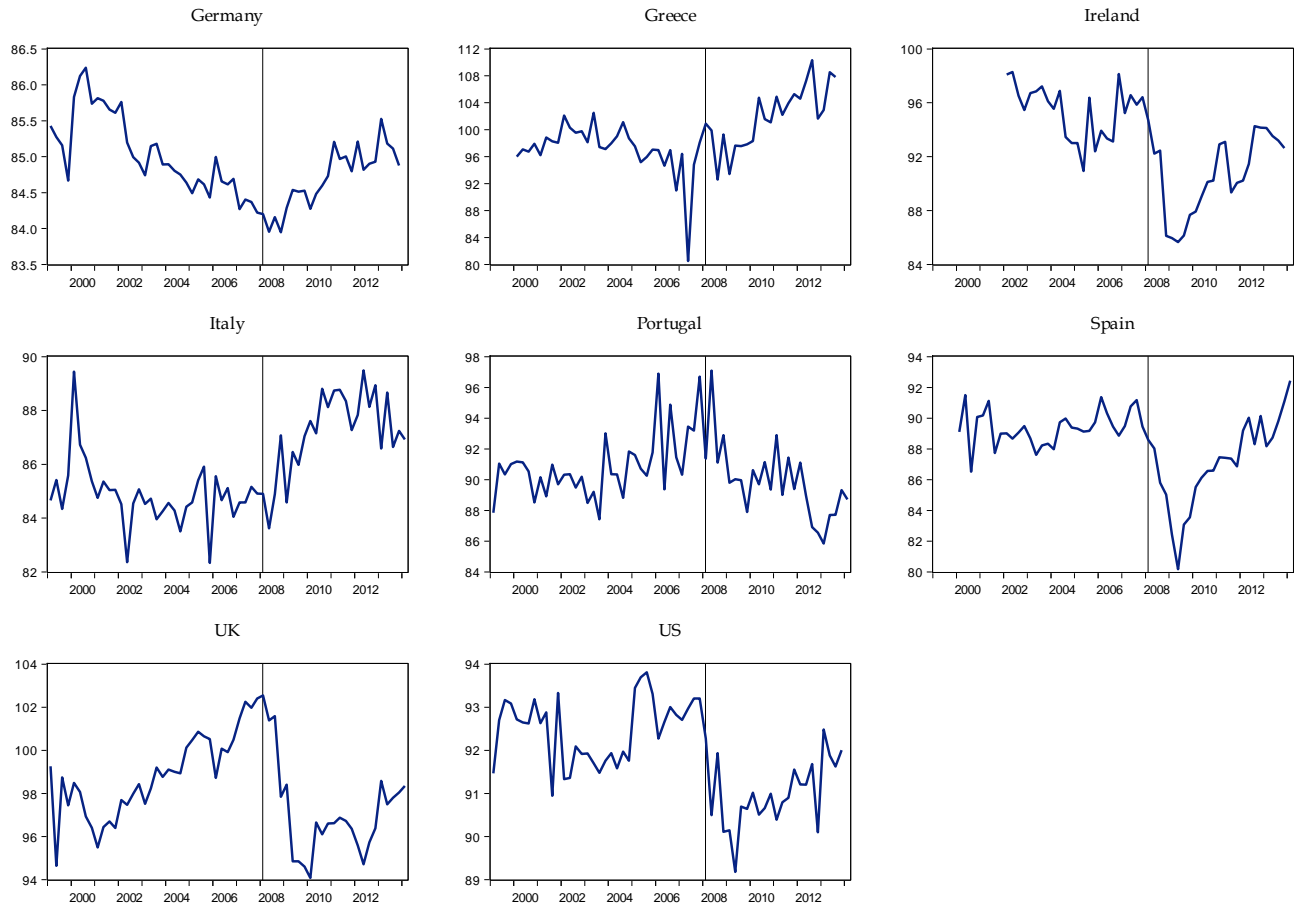


Figure 3.A. Households opening stock of financial wealth as a share of disposable income

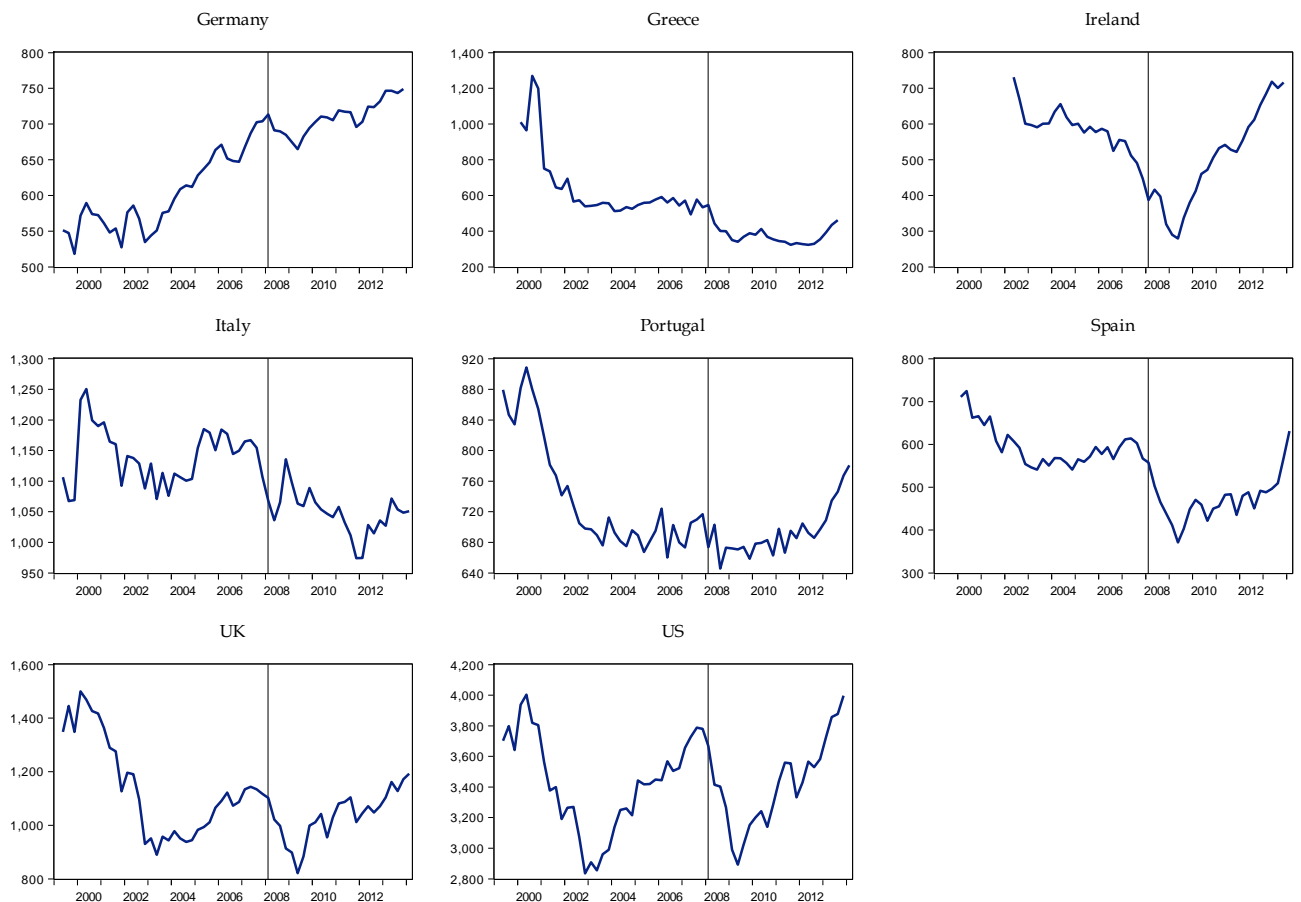


Figure 4.A. Households borrowing as a share of disposable income

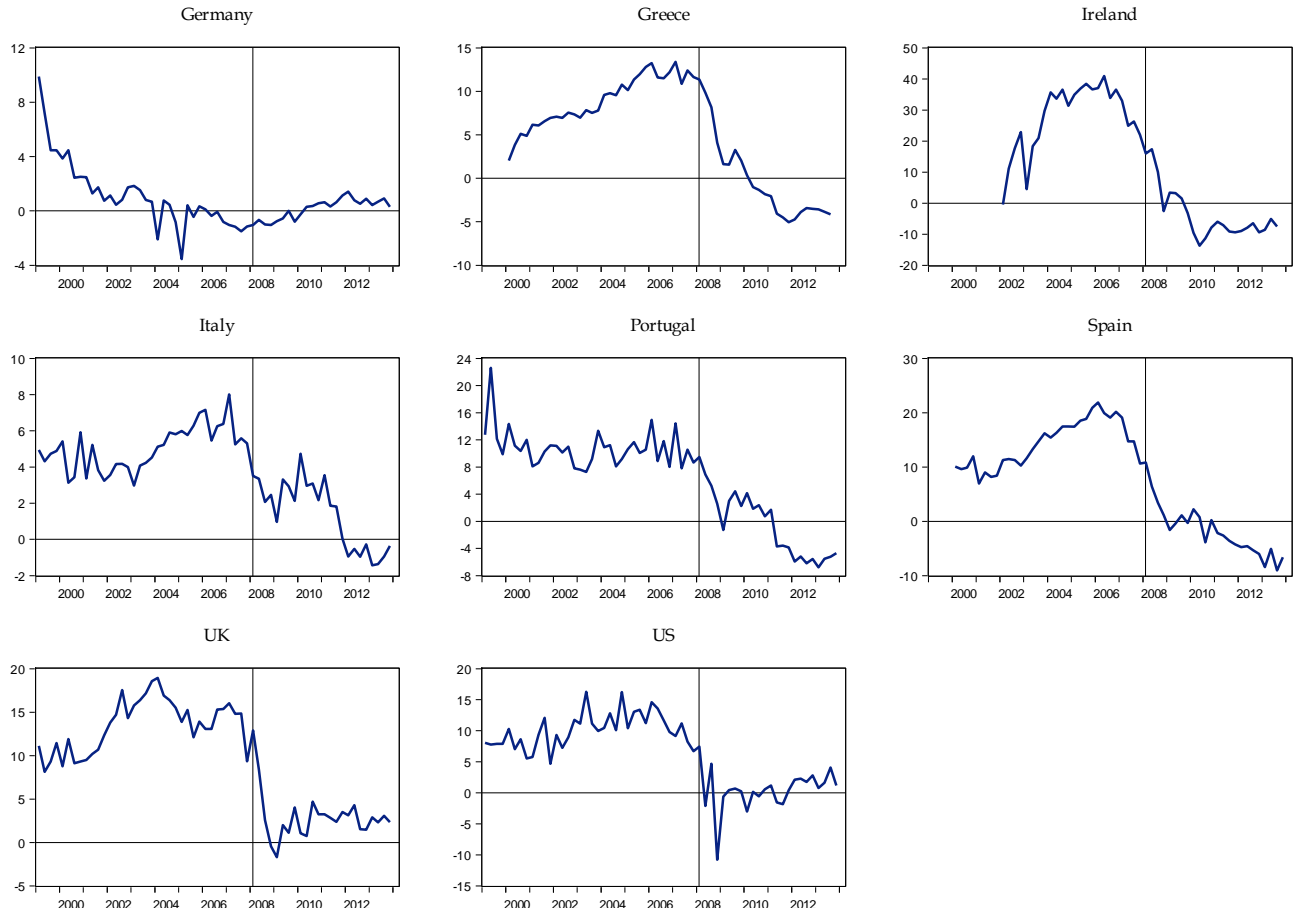


Figure 5.A. Households total consumption expenditure as a share of disposable income

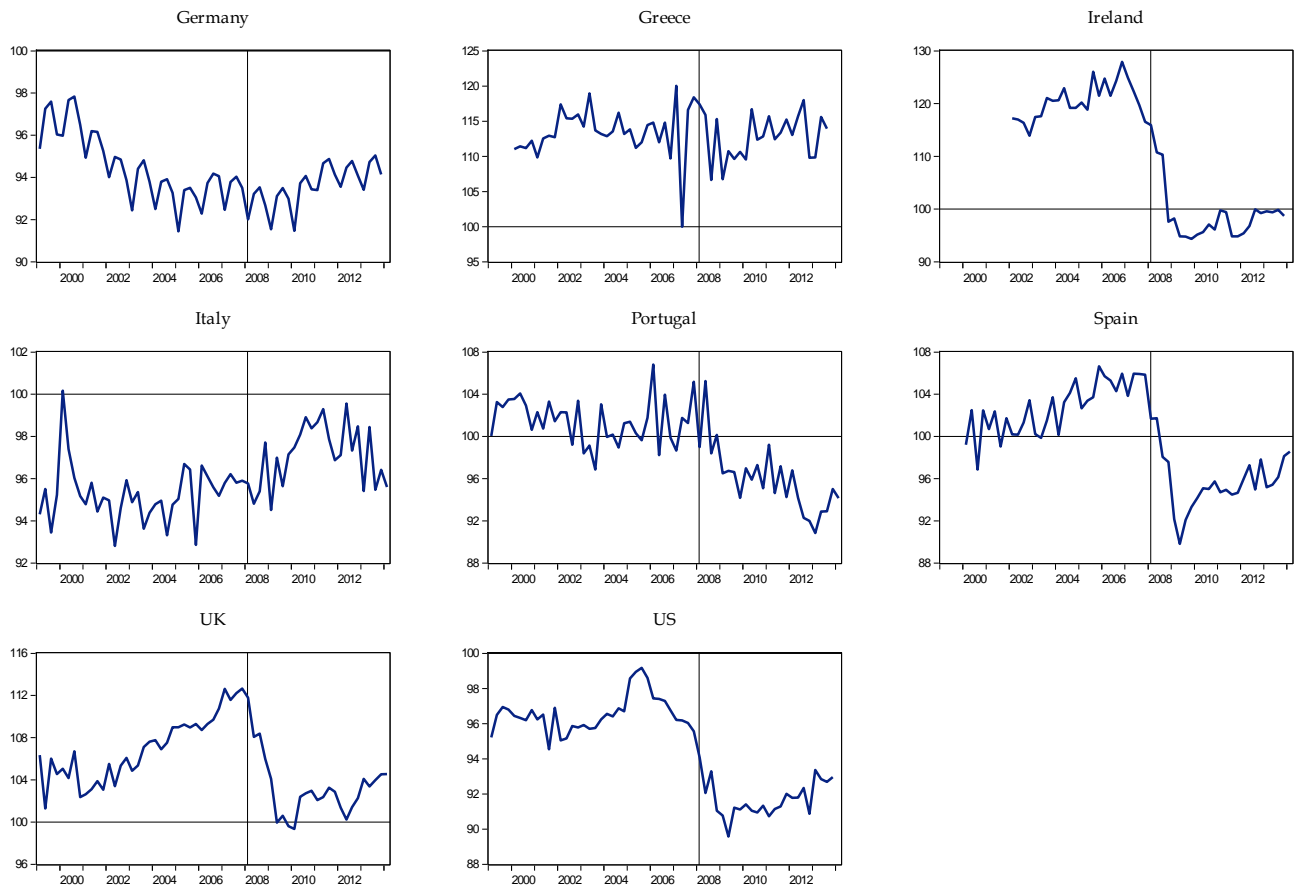


Figure 6.A. Wage share of GDP

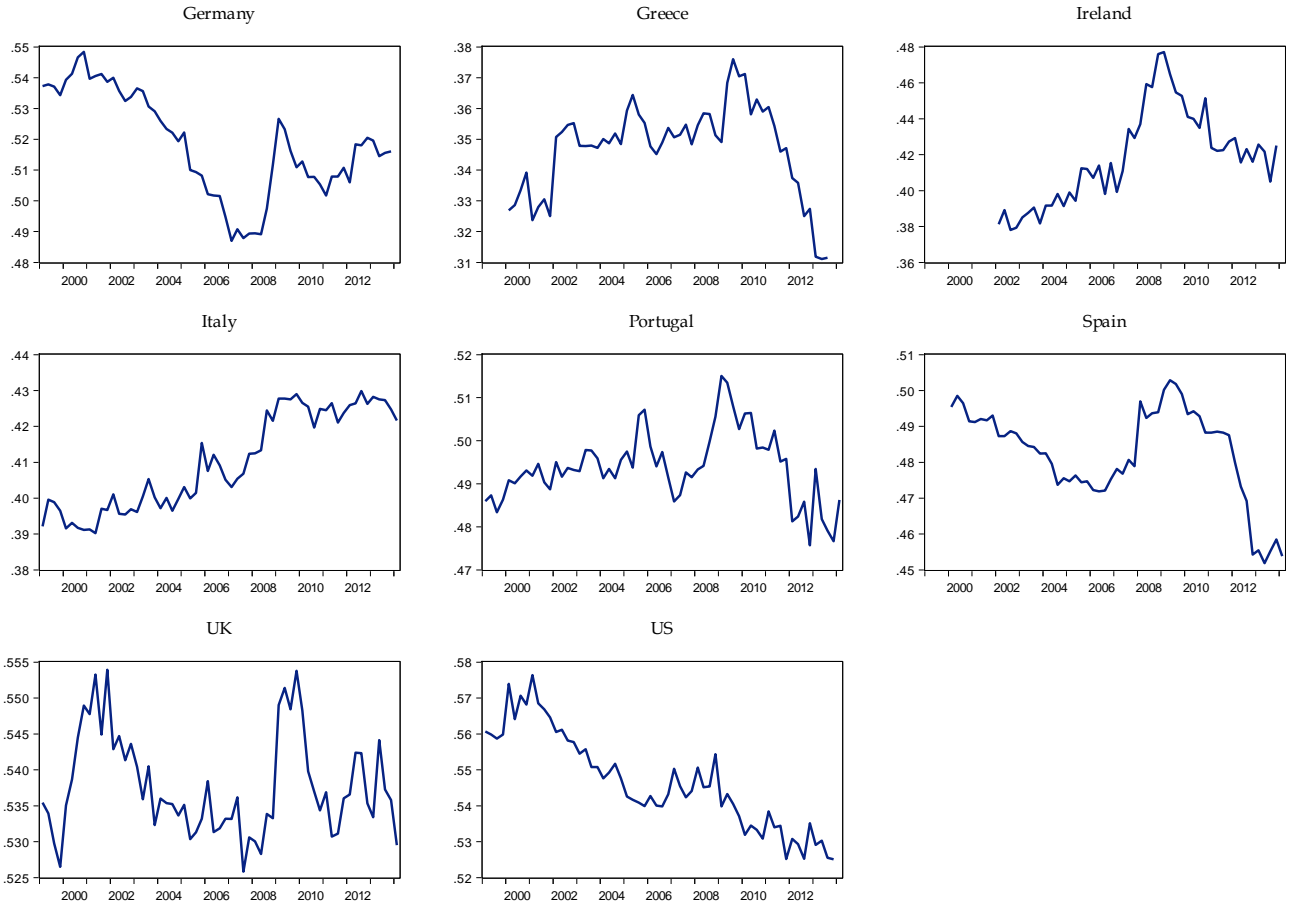


Figure 7.A. Non-financial corporations investment as a share of GDP

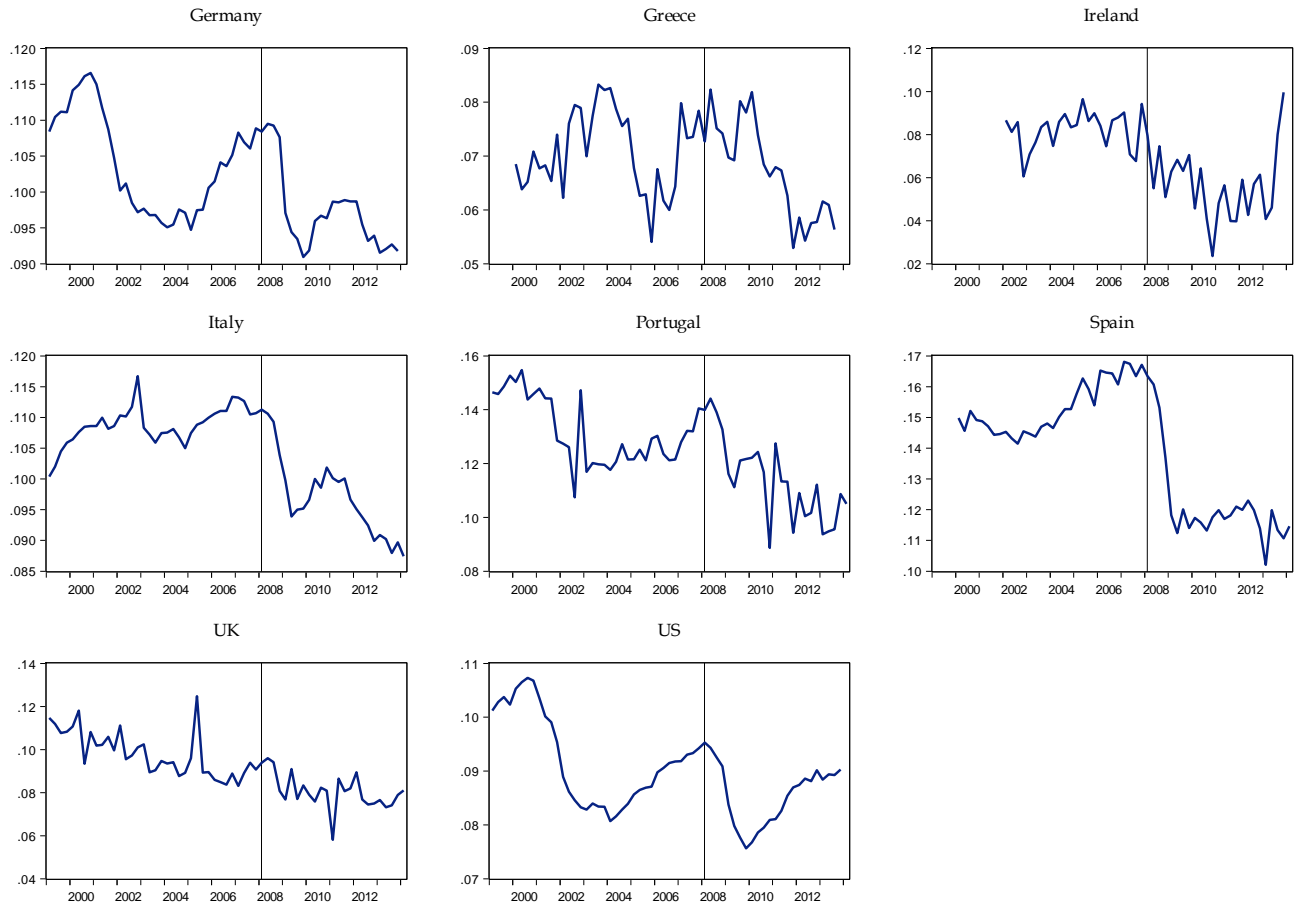


Figure 8.A. Non-financial corporations gross savings as a share of GDP

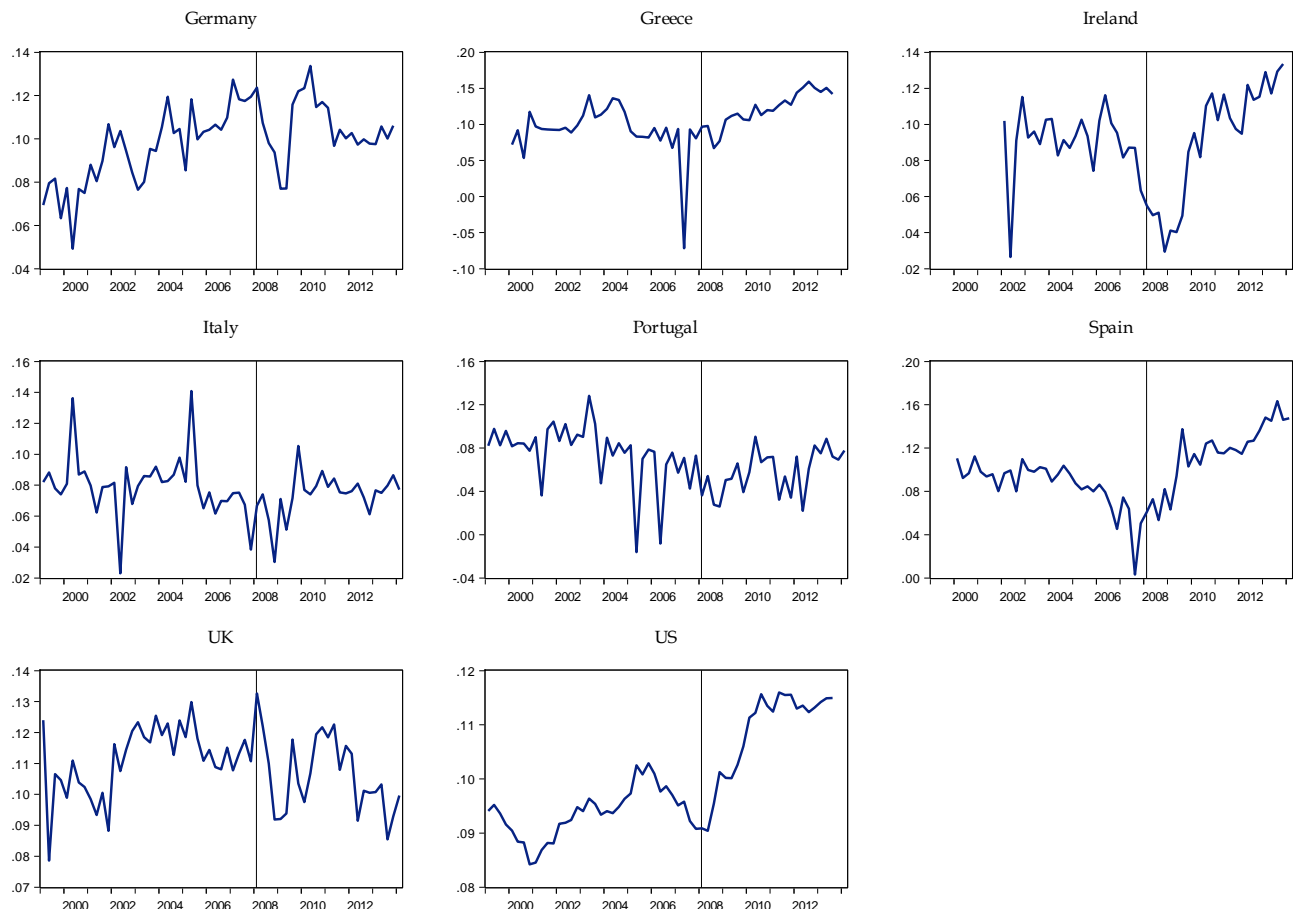


Figure 9.A. Non-financial corporations borrowing as a share of GDP

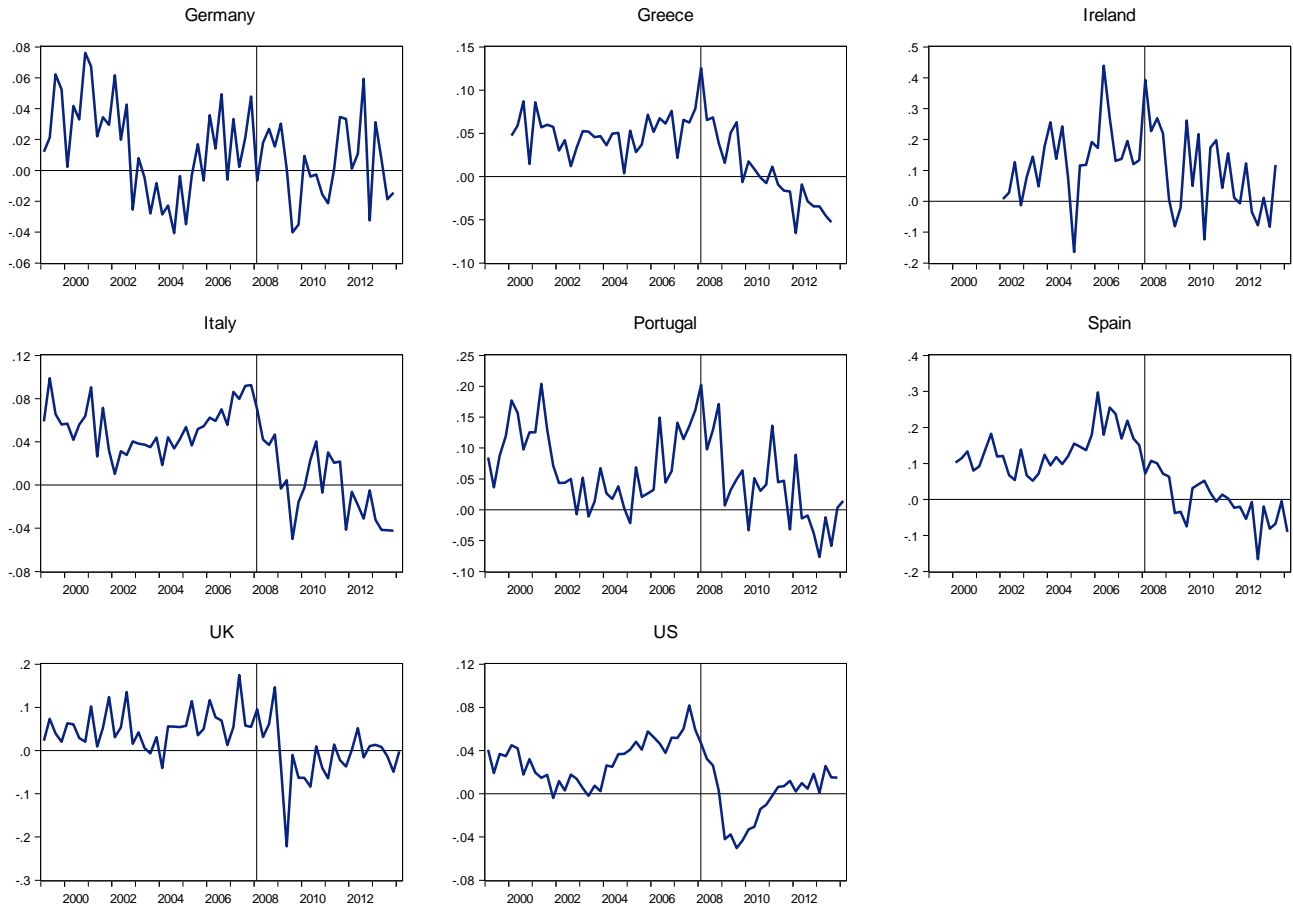
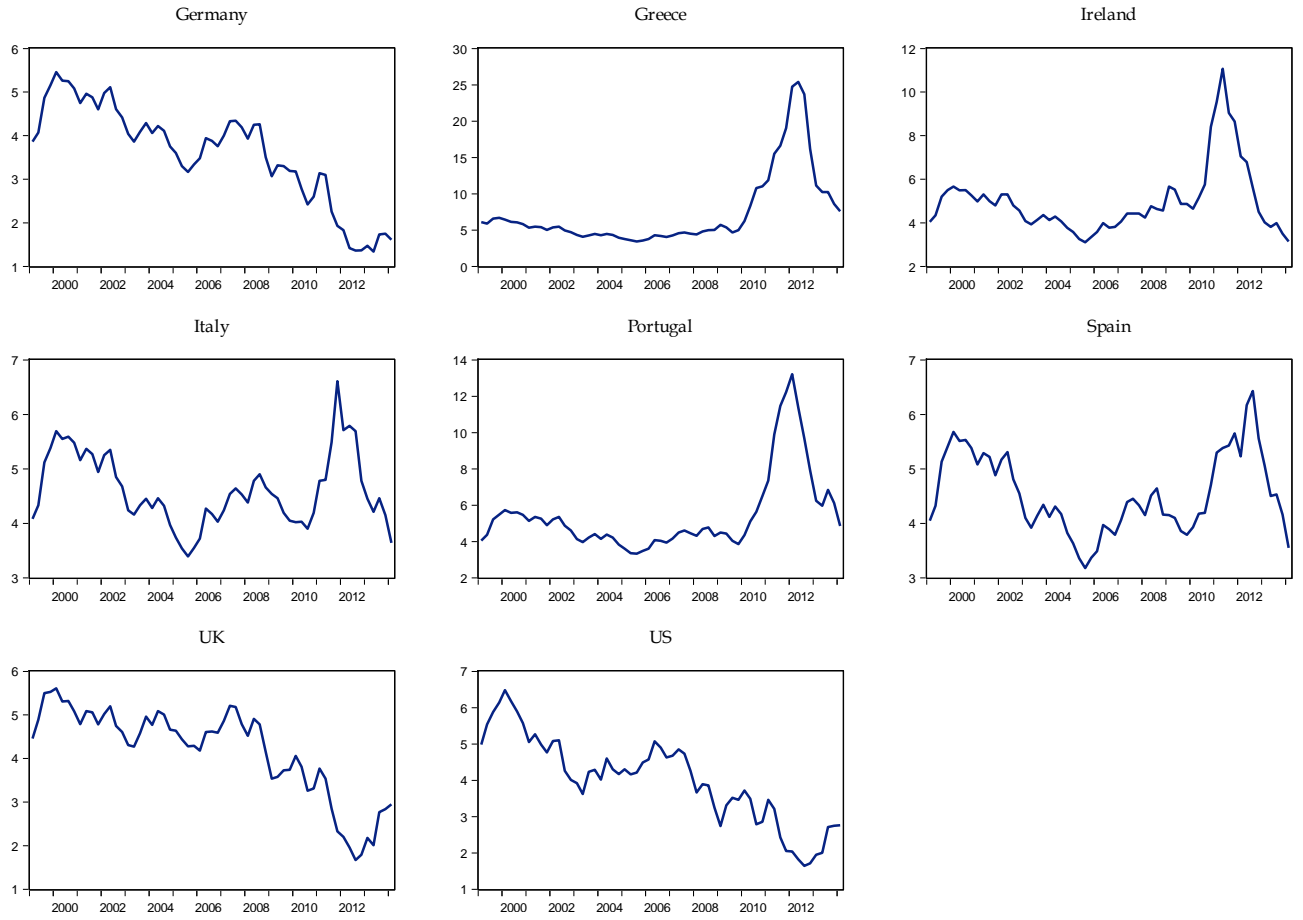


Figure 10.A. Nominal interest rates



Appendix 3. Tables

Table 1.A. Results for the ADF test over our time series for consumption, variables enter in logs (with the exception of DL/YD, since negative values prevent for the log transformation). Real values.

levels	Germany		Greece		Ireland		Italy		Portugal		Spain		UK		US	
C	0.627575	n	-0.757408	n	-2.056163	n	-2.455962	n	-2.148389	n	-2.570958	n	-2.084046	n	-2.066780	n
YD	-0.8894	n	-0.077747	n	-2.537922	n	-1.178098	n	-2.458723	n	-1.965887	n	-3.863044	(*)	-3.003608	(^)
WS	-1.411686	n	-1.229623	n	-1.403522	n	-0.85046	n	-2.781805	n	-0.38072	n	-3.007465	(^)	-0.30304	n
FNW	-0.57737	n	-1.759216	n	-1.558360	n	-1.397680	n	-1.548466	n	-1.836169	n	-1.578551	n	-0.03211	n
PH	-1.685904	n	-1.165443	n	-1.981179	n	-1.873525	n	-1.816528	n	-3.999402	(*)	-3.565977	(*)	-2.151291	n
DL	-5.232700	(*)	0.04612	n	-0.880325	n	-0.521	n	-1.302480	n	-0.17206	n	-1.157119	n	-1.305502	n
differences																
C	-4.993217	(*)	-6.603696	(*)	-3.109112	(^)	-3.004270	(^)	-5.563922	(*)	-4.689472	(*)	-2.850182	(*)	-2.679712	(*)
YD	-10.11085	(*)	-10.07536	(*)	-7.143468	(*)	-11.12322	(*)	-18.14392	(*)	-9.016483	(*)	-13.54588	(*)	-11.10630	(*)
WS	-6.340323	(*)	-7.938727	(*)	-9.514009	(*)	-10.37495	(*)	-9.706691	(*)	-3.973733	(*)	-9.826361	(*)	-12.72918	(*)
FNW	-7.477203	(*)	-6.407290	(*)	-4.240751	(*)	-8.161508	(*)	-5.569010	(*)	-6.369558	(*)	-7.325541	(*)	-6.377868	(*)
PH	-1.926803	n	-1.988832	n	-2.145665	n	-0.976508	n	-2.706366	(^)	-0.570113	n	-2.963238	(^)	-1.941738	n
DL	-6.535006	(*)	-5.683974	(*)	-7.522640	(*)	-12.30458	(*)	-14.48428	(*)	-8.882975	(*)	-9.523245	(*)	-15.14015	(*)

Legenda: n = non-stationary; (*) = stationary at 1% (critical value -3.544); (^) = stationary at 5% (critical value -2.911); (°) = stationary at 10% (critical value -2.593).

Table 2.A . ADF test on residuals of (10)

	Germany	Greece	Ireland	Italy	Portugal	Spain	UK	US
ck_ecm	-4,983 (*)	-8,317(*)	-3,343(*)	-3,858(*)	-2,810(*)	-4,703(*)	-2,534(^)	-8,388(*)

Legenda: (°)significant at 10%; (^) significant at 5%; (*) significant at 1%

Table 3.A FM-OLS estimation for (11), all variables in logs

	Germany	Greece	Ireland	Italy	Portugal	Spain	UK	US
YD	1.024*	0.484*	0.888*	0.503*	1.013*	0.824*	1.075*	0.904*
WS	0.180*	0.524*	0.168	0.190°	0.026	-0.478*	-0.694*	-0.228*
NFW	0.027°	-0.027^	0.103*	0.024	-0.038	0.144*	0.031°	0.064*
PH	0.188°	-0.248^	0.169	0.151	-0.34	-0.18	-0.371*	-0.018
DL/YD	0.093°	0.631*	-0.043	0.513*	0.469*	0.036	0.207^	0.025
constant	-0.755	6.160*	0.024	5.802*	0.2	-0.333	-1.839*	0.234
GR break	-0.008*	0.063*	-0.056^	0.030*	0.033^	0.005	-0.018°	-0.017*
R2	0.985	0.958	0.918	0.825	0.76	0.972	0.968	0.995
N	58	53	45	57	58	53	58	57

Legenda: (°)significant at 10%; (^) significant at 5%; (*) significant at 1%

	Germany	Greece	Ireland	Italy	Portugal	Spain	UK	US
d(YD)	0.801*	0.082	0.034	0.119 [^]	0.196*	0.129	0.273*	0.230*
d(WS)	-5733.327	38893.869*	-5724.367	-41181.964	-3858.342	-26013.158	-98132.375*	-1772952.299°
d(PH/ConsDefl)	58209.066*	3.347.052	2.535.953	4.171.457	1.410.833	-11629.715	-1990.960	363.891.379
d(DL/YD)	12716.378	3.489.398	-1010.847	26290.832 [^]	5028.494*	24640.243*	13738.088°	87.142.109
constant	-272.204°	101.200	241.866 [^]	122.032	45.969	786.967°	1012.287 [^]	21040.607°
DUM_GR	80.300	-190.960	-348.843 [^]	-135.387	-40.770	-824.662	-1148.774 [^]	-14935.617°
ecm (-1)	-170426.593*	-26235.527*	-2688.486	-44703.463 [^]	-1356.783	-54769.799*	-47859.537*	-3899137.939*
d(C(-1))	-0.039	0.115	-0.192	0.034	-0.07	0.261°	-0.109	0.350*
d(C(-2))	0.107°	0.175	0.141	0.219°	0.345*	-0.074	0.361*	0.198°
d(C(-3))	0.222*	-0.011	0.351 [^]	0.400*	0.267 [^]	0.067	-0.07	0.052
d(C(-4))	0.081	0.108	0.052	-0.107	-0.183°	0.102	-0.097	-0.200°
d(YD-1))	0.019	-0.088	-0.081	-0.012	0.092 [^]	-0.116	0.101	0.032
d(WS(-1))	-128.716	3.066.515	-10596.280*	-32604.187	-1668.114	78222.497°	-101378.737 [^]	-214956.384
d(PH(1)/ConsDefl(-1))	22.477.268	8882.778°	2.304.357	33.633.340	-539.536	-17622.840	10.119.889	210.833.124
d(DL(-1)/YD(-1))	5.886.751	7.246.472	-33.368	2.713.530	4910.968*	16240.093°	-5451.466	76.137.527
R2	0.87	0.577	0.63	0.583	0.634	0.666	0.631	0.647
N	55	50	42	54	55	50	55	57

Legenda: (°)significant at 10%; ([^]) significant at 5%; (*) significant at 1%

levels	Germany		Greece		Ireland		Italy		Portugal		Spain		UK		US	
I	-1.702397	n	-2.683331	(*)	-2.866169	(*)	-0.138245	n	-1.782487	n	-0.807496	n	-2.444889	n	-2.110646	n
S	-3.357596	([^])	-2.298330	n	-2.621530	(*)	-6.344826	(*)	-5.960055	(*)	-1.206781	n	-4.692618	(*)	-0.265038	n
DL	-4.395950	(*)	-0.923768	n	-5.037376	(*)	-1.268362	n	-2.085072	n	-1.010124	n	-1.989342	n	-2.028089	n
differences																
I	-5.621664	(*)	-10.08548	(*)	-7.413124	(*)	-7.012314	(*)	-13.31005	(*)	-7.101841	(*)	-8.962007	(*)	-3.976204	(*)
S	-10.68580	(*)	-13.71852	(*)	-10.61449	(*)	-8.907017	(*)	-8.395197	(*)	-8.273302	(*)	-13.38162	(*)	-6.630550	(*)
DL	-13.72136	(*)	-13.33597	(*)	-10.40031	(*)	-12.93880	(*)	-3.403521	([^])	-12.03905	(*)	-11.39527	(*)	-4.408659	(*)

Legenda: n = non-stationary; (*) = stationary at 1% (critical value -3.544); ([^]) = stationary at 5% (critical value -2.911); (°) = stationary at 10% (critical value -2.593).

	Germany	Greece	Ireland	Italy	Portugal	Spain	UK	US
Cycle	0.096*	0.091 [^]	0.067°	0.096*	-0.114	0.275*	-0.009	0.124*
WS	-0.100 [^]	0.158*	-0.389*	-0.275*	-0.02	-0.247*	0.112	0.582*
S	-0.159*	0.037	-0.298*	-0.050 [^]	0.184*	-0.208*	0.037	0.557*
DL	0.056*	-0.011	0.020°	0.061*	0.192*	0.132*	0.029	0.090*
IR	0.003*	-0.001*	-0.004*	-0.002 [^]	-0.002 [^]	-0.001	0.008*	0.001 [^]
constant	0.156*	0.017	0.278*	0.228*	0.119°	0.273*	-0.006	-0.289*
R2	0.79	0.481	0.709	0.757	0.646	0.818	0.472	0.661
N	60	55	47	60	61	57	61	95

Legenda: (°)significant at 10%; ([^]) significant at 5%; (*) significant at 1%

	Germany	Greece	Ireland	Italy	Portugal	Spain	UK	US
d(WS)	0.086*	0.005	0.045	0.086*	0.017	0.286*	-0.106	0.064*
d(S)	0.012	-0.062	-0.547*	0.091	-0.203	-0.292^	-0.023	0.086^
d(DL)	0.003	0.041	-0.322*	-0.005	0.036	-0.061	0.426*	-0.076
d(IRR)	0.004	-0.045	0.017°	-0.006	0.058^	0.025^	0.016	0.003
d(Cycle)	-0.001°	0	0	-0.002*	-0.003*	-0.002°	0	0.001
ecm	-0.148^	-0.388*	-0.754*	-0.222^	-0.680*	-0.605*	-0.367*	-0.122^
constant	-0.000°	0	0	0	-0.001	0	-0.001	0
d(I(-1))	0.116	-0.007	-0.107	-0.044	-0.225°	0.256°	-0.289^	0.370*
d(WS(-1))	0.048°	0.02	0.087°	0.055^	-0.006	-0.055	-0.044	0.045^
d(S(-1))	0.026	0.343*	-0.041	-0.002	0.354°	0.166	0.373°	-0.037
d(DL(-1))	-0.037°	0.033	-0.114	0.022^	-0.016	0.033	0.213°	0.01
d(IRR(-1))	0.009	-0.011	-0.013	0.018°	0.015	0.024°	0.004	-0.003
R2	0.579	0.48	0.708	0.536	0.609	0.579	0.481	0.641
N	58	49	45	58	59	51	59	69

Legenda: (°)significant at 10%; (^) significant at 5%; (*) significant at 1%

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