GREENWICH POLITICAL ECONOMY RESEARCH CENTRE

Wage-led growth in the EU15 Member States:
The effects of income distribution on growth, investment, trade balance, and inflation

Őzlem Onaran
University of Greenwich

And

Thomas Obst
University of Greenwich

Year: 2015

No: *GPERC28*

GREENWICH PAPERS IN POLITICAL ECONOMY

Abstract: This paper estimates a multi-country demand-led growth model for EU15 countries. A decrease in the share of wages in national income in isolation leads to lower growth in Finland, France, Germany, Greece, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and the United Kingdom, whereas it stimulates growth in Austria, Belgium, Denmark and Ireland.
However, a simultaneous decline in the wage share leads to an overall decline in EU15 GDP; hence EU15 as a whole is a wage-led economy. Furthermore, Austria and Ireland also experience negative effects on growth when they decrease their wage share along with their trading partners. The results indicate that a decline in the wage share has had significant negative effects on growth in the EU15 countries and supports the case of wage coordination. We present different wage-led recovery scenarios taking into account further effects of a change in the wage share on prices, nominal unit labour costs, investment, and net exports.

Keywords: Wage Share, Growth, European Multiplier, Demand Regime

JEL Codes: E12, E22, E25

Acknowledgements: This paper has received funding from the Foundation of European Progressive Studies, TASC, and Irish Congress of Trade Unions for the project titled "Wage-Led Growth in Europe? Demand Effects of Changes in Functional Income Distribution in Financialised Open Economies." The authors are grateful to Maria Nikolaidi, Engelbert Stockhammer, Mehmet Ugur and participants in the 7th annual PhD conference of the Post Keynesian Study Group, University of Greenwich, May 2015 for helpful comments. The usual disclaimers apply.

Corresponding author: **:** Özlem Onaran: Greenwich Political Economy Research Centre, University of Greenwich, Park Row, Greenwich, London, SE10 9LS, UK, e-mail: o.onaran@gre.ac.uk, phone: +44 20 8331 8519.
Thomas Obst: University of Greenwich, Park Row, Greenwich, London, SE10 9LS, UK,
e-mail: t.obst@greenwich.ac.uk

1. Introduction

Starting in the 1980s, there has been a substantial decline in the share of wages in national income in the majority of the European countries. In contrast to conventional wisdom, this development was associated with a poor growth performance in most European countries. Indeed, the outbreak of the Great Recession in 2007 and slow recovery in the aftermath shed light on the limitations of the conventional growth strategy of Europe that claims wage moderation, i.e. real wage growth below the rate of growth in labour productivity, would lead to a more productive and dynamic economic system with enhanced growth performance as is repeatedly advocated by the European Commission (EC, 2006). In contrast, Post-Keynesian models of distribution and growth demonstrate that the relationship between the wage share and growth is an empirical matter, which depends on the structural characteristics of the economy.

The significant fall in the wage share has also been associated with increasing personal income inequality. Daudey and Garcia-Penalosa (2007) show that changes in the factor distribution of income are an important explanatory determinant of personal income inequality. Similarly, Atkinson (2009) argues that analysing changes in functional income distribution is crucial to understand trends of increasing dispersion in personal incomes. In the rest of the paper, we will focus on changes in functional income distribution, which allows us to aggregate the effects of increasing inequality on demand.

This paper offers a theoretical and empirical analysis of the effect of a pro-capital redistribution of income on growth in the EU15 countries. The model estimated in this paper is similar to the spirit of the post-Keynesian/post-Kaleckian demand-led growth model developed by Bhaduri and Marglin (1990), and aims at analysing the effects of a change in the wage share on growth. A priori one would expect a falling wage share, i.e. a rising profit share, to have negative effects on consumption, since the marginal propensity to consume out of wage

income is higher than that out of profit income, but positive effects on investment and net exports. However, the question whether the negative effect of an increasing profit share on consumption overpowers the positive effects on investment and net exports essentially becomes an empirical one, depending on the relative size of the consumption differential, the sensitivity of investment to profit and the sensitivity of net exports to unit labour costs. If the total effect is negative, the demand regime is called wage-led; otherwise it is profit-led.

The post-Keynesian/post-Kaleckian theoretical framework highlights the central role of demand in determining growth in economies operating below full employment and points out the dual role of wages as a cost item to the firm but also as a source of demand in the economy. The flexible framework provided by the Bhaduri and Marglin (1990) model, which allows for both wage-led and profit-led demand regimes, lets us illuminate whether it is possible to promote higher growth with a more equitable income distribution in the case of Europe. Furthermore, by developing a multi-country model, we analyse whether coordinated wage policies present a feasible alternative to the European strategy of wage restraint.

The novelty of this paper is that it integrates cross-country effects of a simultaneous decline in the wage share on demand in Europe. Previous studies have only analysed a subset of European countries[1] (i.e. Onaran and Galanis, 2014; Storm and Naastepad, 2012; Hein and Vogel 2008; Bowles and Boyer, 1995) or taken the Euro area (twelve West European member states) as a hypothetical aggregate economy without considering cross-country interactions (Stockhammer et al., 2009; Onaran and Galanis, 2014). To the best of our knowledge, Onaran and Galanis (2014) were the first to develop a theoretical and empirical multi-country model for the G20 countries, which inspired the empirical model in this paper.

[1] Countries covered in the cited studies include Austria, Belgium, Denmark, Finland, France, Germany, Italy, Netherlands, Spain, Sweden and the UK.

We first provide new estimates for some individual EU15 countries previously not covered in the empirical literature. Second, we go beyond the nation state analysing the effects of a simultaneous fall in the wage share and its impact on growth in a highly integrated European economy. Third, we present different wage-led recovery scenarios and further effects of an increase in the wage share on prices, nominal unit labour costs, nominal wages, investment, and net exports.

We first estimate the effects of a change in the wage share on individual components of private aggregate demand, which are consumption, investment and net exports for each EU15 country in isolation. Next, we calculate the effects of a simultaneous decline in the wage share, as has been the case in the majority of countries in the post-1980s. Finally, we estimate the response of each country to not only the domestic wage share but also the trade partners' wage share, which affects the import prices and foreign demand of each country.

The paper is structured as follows: Section 2 presents data and stylised facts. Section 3 presents the theoretical model. Sections 4 and 5 discuss the estimation methodology and results. Section 6 compares the findings to the empirical literature and section 7 presents different wage-led recovery scenarios and further effects. Section 8 summarises the key findings and discusses policy conclusions.

2. Data and Stylized Facts

The definitions, calculations and sources of the variables in the model are presented in appendix A. C, I, X, M, Y, W and R are consumption expenditures, private investment expenditures, exports, imports, GDP, adjusted wages and adjusted profits, all variables are in real terms.

Profit share, π, is adjusted gross operating surplus as a ratio to GDP at factor cost, Y_f; wage share, ws, is $1-\pi$. Returns from self-employment income in national accounts accrue

to capital income and hence leads to lower wage shares, particularly in countries where self-employment income plays a significant part in the economy. The adjusted wage share allocates a labour compensation for each self-employed equivalent to the average compensation of the dependent employees[2]. The sample is restricted to EU15 countries[3], due to a lack of sufficient time series data for the new EU member states. The sample period is 1960-2013.

Figure 1 shows the wage share (in percentages) in the EU15 countries. There is an overall decline in the wage share in the majority of the countries, particularly pronounced between the early 1980s and mid-2000s. The fall is more moderate in Belgium, Denmark, and Luxembourg. In the UK, the fall in the ws is relatively lower. However, this may be due to a sharp increase in managerial income (OECD, 2012). Greece experienced a pronounced fall in the 1960s coming to a stop with the ending of the military dictatorship in the mid-1970s. Portugal exhibits an exceptional upswing followed by a significant downswing during the revolutionary period between 1974 and 1976 (Lagoa et al., 2014). Luxembourg, as an outlier, exhibits a significant increase starting in the early 1970s followed by a moderate decline after the early 1980s.

Overall, the share of wages in national income has declined by roughly 10 percentage points in the EU15 countries between their latest peak levels (in the mid-1970s or early 1980s) and 2013.

Appendix B Table B1 presents average annual growth rates of GDP for 6 sub periods and shows that the secular decline in the wage share was associated with a weaker growth performance. For instance, average growth in France declined from 5.7% in the 1960s to roughly 2% in the 1990s. In Italy, average growth dropped significantly from almost 6% in the 1960s to roughly 1.5% in the 1990s. This trend holds true for the majority of countries.

[2] This methodology is used by the European Commission to calculate the adjusted labour share.
[3]Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom.

However, growth rates increased in the case of Ireland and Luxembourg. In the 1990s, Ireland experienced high growth rates of almost 7% followed by a slight decline to 5.5% in the 2000s, until the Great Recession in 2008. In the UK, average growth remained relatively stable, with values between 2% and 3% between the 1960s and 2000s. Overall, growth in the EU15 has declined along with the lower wage share since the 1980s.

It has often been argued that job creation requires wage moderation. However, the association of a lower wage share with weaker GDP growth does not provide evidence in favour of wage-suppression policies.

[Figure 1]

3. The Theoretical Model

We model the effects of a change in the profit share on growth by analysing the country level effects on the components of private aggregate demand: consumption, investment, exports and imports. We then estimate European interactions resulting from the effects of a change in the profit share of other EU15 countries. The model is post-Kaleckian, however, the behavioural functions also encompass standard Keynesian models (Blanchard, 2006).

Consumption is commonly estimated as a function of income. In order to include the distributional effects, we estimate Consumption (C) as a function of adjusted profits (R) and adjusted wages (W)[4]:

$$logC = c_0 + c_R logR + c_W logW \quad (1)$$

[4] All variables will be used in logarithmic form due to the fact that they exhibit exponential growth.

We calculate the marginal effects of a change in the profit share on C through multiplying the estimated coefficients (elasticities) of R and W by mean values of our sample C/R and C/W respectively.

$$\frac{\Delta(C/Y)}{\Delta(\pi)} = c_R \frac{C}{R} - c_W \frac{C}{W} \quad (2)$$

The estimates are equivalent to the difference in marginal propensity to consume (MPC) out of profits and wages, and are expected to be negative.

Private Investment (I) is modelled as a positive function of output (accelerator effect) and the profit share as an indicator for expected profitability as well as for the availability of internal finance:

$$logI = i_A + i_Y logY + i_\pi log\pi + i_r r \quad (3)$$

where i_A is autonomous investment, Y is real output, π is the profit share and all parameters are expected to be positive. As a control variable, we include real long-term interest rate r that represents a cost factor and is expected to have negative effects on investment[5]. The marginal effect of π on I/Y is calculated as follows:

$$\frac{\Delta(I/Y)}{\Delta(\pi)} = i_\pi \frac{I}{R} \quad (4)$$

The details of the derivation of the marginal affects can be found in appendix C.

[5] We do not take log of the real interest rate since it includes negative values.

We model the effects of distribution on net exports using a stepwise approach that follows Stockhammer et al. (2009), Onaran et al. (2011) and Onaran and Galanis (2014). First, domestic prices (P) and export prices (P_x) are a function of nominal unit labour costs and import prices based on a mark-up pricing model in an imperfectly competitive economy.

$$logP = p_0 + p_{ulc}\log(ulc) + p_m\log(Pm) \quad (5)$$

$$logP_x = px_0 + p_{ulc}\log(ulc) + p_m\log(Pm) \quad (6)$$

where ulc is nominal unit labour costs and Pm is import prices, as a proxy for non-labour input costs and all parameters are expected to be positive.

Exports (X) are a function of relative prices and GDP of the rest of the world:

$$\log X = x_0 + x_{pxm}\log(Px/Pm) + x_{Yrw}\log(Yrw) + x_e\log(E) \quad (7)$$

where Px/Pm are relative prices of exports to imports and Yrw is the GDP of the rest of the world. We include exchange rate, E, as a control variable.

Imports (M) are a function of relative prices and domestic GDP.

$$logM = m_0 + m_{ppm}\log(P/Pm) + m_Y\log(Y) + m_e\log(E) \quad (8)$$

where P/Pm is domestic prices relative to import prices and Y represents domestic GDP. Again, we include exchange rate E as a control variable.

We calculate the marginal effect of a change in the profit share on exports/GDP as follows:

$$\frac{\Delta(\frac{X}{Y})}{\Delta(\pi)} = (-)\left(\frac{\partial logX}{\partial logP_x}\frac{\partial logP_x}{\partial log(ulc)}\frac{\partial log(ulc)}{\partial log(rulc)}\frac{\partial log(rulc)}{\partial log(ws)}\right)\frac{X/Y}{rulc} = (-)\left(e_{XP}e_{Px}\frac{1}{1-e_P}\frac{Yf}{Y}\right)\frac{X/Y}{rulc} \quad (9)$$

where e_{Px} illustrates the effect of nominal unit labour costs (ulc) on P_x and e_{XP} is the effect of P_x on exports. The wage share is real unit labour costs $(rulc)$ multiplied by GDP at market prices divided by GDP at factor costs (Y/Y_f). Thus, the total effect of a change in ws on exports includes the effect of $rulc$ on ulc, the effect of ulc on export prices, and the effect of P_x on exports. The average values of $\frac{X/Y}{rulc}$ for the sample mean are used to convert the elasticity to marginal effects. Finally, we take the negation of the total effect[6]. A similar procedure is followed for imports:

$$\frac{\Delta(M/Y)}{\Delta(\pi)} = (-)\left(\frac{\partial logM}{\partial logP}\frac{\partial logP}{\partial \log(ulc)}\frac{\partial \log(ulc)}{\partial \log(rulc)}\frac{\partial \log(rulc)}{\partial \log(ws)}\right)\frac{M/Y}{rulc} = (-)\left(e_{MP}\ e_{PULC}\ \frac{1}{1-e_{PULC}}\frac{Y_f}{Y}\right)\frac{M/Y}{rulc}$$

(10)

The sum of partial effects of a change in π on consumption, investment, and net exports $(NX = X - M)$ is the effect on private excess demand. This, in turn, will further affect consumption, investment, and imports through the multiplier mechanism.

3.1 Effects of a simultaneous change in the profit share

Until now, the unit of analysis has been the nation state. However, ignoring the effects due to a simultaneous change in distribution in Europe overestimates the positive effects of a fall in the ws on net exports. While higher openness of an economy increases the relevance of the positive effects of a fall in the ws due to a higher share of net exports in GDP, it is important to recognise that European economies are integrated and there has been a contagion effect of

[6] The marginal effect of a 1%-point increase in π on exports and imports is the negation of the effect of a 1%-point increase in ws.

wage moderation policies as countries are trying to compete on the basis of wage costs. This decreases the effects of a fall in the ws on net exports when it is implemented simultaneously in a variety of countries, as relative prices of exports and imports do not change significantly when all countries reduce their ulc. As a result, analysing the full effects of the fall in the ws requires an integrated analysis that incorporates cross-country interactions[7].

In the following, we present the European-wide effects of a simultaneous change in π in all economies based on the multi-country model developed in Onaran and Galanis (2014). This European multiplier mechanism incorporates the effects of a change in π on the aggregate demand of each economy through the changes in import prices and the GDP of trade partners. For the case of n countries, the percentage change in GDP of each country is

$$\begin{bmatrix} \frac{\Delta Y_1}{Y_1} \\ \vdots \\ \frac{\Delta Y_n}{Y_n} \end{bmatrix} = E_{nxn} \begin{bmatrix} \Delta\pi_1 \\ \vdots \\ \Delta\pi_n \end{bmatrix} + H_{nxn} \begin{bmatrix} \frac{\Delta Y_1}{Y_1} \\ \vdots \\ \frac{\Delta Y_n}{Y_n} \end{bmatrix} + P_{nxn} \begin{bmatrix} \Delta\pi_1 \\ \vdots \\ \Delta\pi_n \end{bmatrix} + W_{nxn} \begin{bmatrix} \frac{\Delta Y_1}{Y_1} \\ \vdots \\ \frac{\Delta Y_n}{Y_n} \end{bmatrix} \quad (11)$$

The matrices E and H represent the effects of a change in each country's own π on demand in that particular country. Matrices P and W add the effects of changes in import prices and GDP of trade partners on net exports of each country.

E is a matrix, whose diagonal elements are the effect of a change in π in country j on private excess demand ($C + I + NX/Y$) in country j. Matrix H reflects the national multiplier effects and hence shows the effect of an autonomous change in private excess demand on aggregate demand. Matrix P illustrates the effect of a change in trade partners` π on import prices and hence on net exports in each country. Finally, matrix W shows effects of a change

[7] Rezai (2011) and von Arnim et al. (2012) present theoretical models similar to the analysis in this paper.

in trade partners' GPD on exports of each country. Solving equation (11) for $\left[\frac{\Delta Y}{Y}\right]$ gives us the equivalent of a European multiplier effect:

$$\begin{bmatrix} \frac{\Delta Y_1}{Y_1} \\ \vdots \\ \frac{\Delta Y_n}{Y_n} \end{bmatrix} = (I_{nxn} - H_{nxn} - W_{nxn})^{-1}(E_{nxn} + P_{nxn}) \begin{bmatrix} \Delta\pi_1 \\ \vdots \\ \Delta\pi_n \end{bmatrix} \quad (12)$$

The details on each matrix are shown in appendix D.

Given the high economic integration of the European economy a full understanding of the simultaneous fall in the wage share requires an integrated European wide analysis. In 2013, the greater proportion of a member states total trade in goods was with partners within the EU-28 with an average of 62% share of total exports (Eurostat, 2015).

3.2 Total effects on investment, net exports, and inflation

Next we model the effects on investment to determine the character of the accumulation regime as defined in Bhaduri and Marglin (1990). A strong partial effect of π and a weak partial effect of Y on I favour a positive impact of pro-capital redistribution on investment, resulting in a profit-led investment regime $\left(\frac{\Delta I/Y}{\Delta\pi} > 0\right)$. In the reverse constellation a pro-capital redistribution would have a negative effect on investment leading to a wage-led investment regime $\left(\frac{\Delta I/Y}{\Delta\pi} < 0\right)$. Therefore, the total effects will depend on whether the profitability or the accelerator effects dominate as well as the sign and size of the overall effect of π on Y. We calculate the total effects on investment as follows:

$$\frac{\Delta I/Y}{\Delta\pi} = \left[\left(\frac{\Delta Y/Y}{\Delta\pi} e_{IY} \frac{I}{Y}\right) + i_\pi \frac{I}{R}\right] \quad (13)$$

where $\frac{\Delta Y/Y}{\Delta \pi}$ illustrates the change in aggregate demand in the economy and e_{IY} reflects the elasticity of investment to GDP. In order to convert elasticities into marginal effects we multiply with the sample mean of $\frac{I}{Y}$. The first term is the ex-post multiplier indirect effect, whereas the second term is the direct partial profitability effect as calculated in equation (3).

Regarding the trade balance, the total effect of a 1%-point increase in π on net exports in wage-led countries will be positive and larger after the multiplier due to a fall in imports following lower growth; however the effect in profit-led countries is theoretically ambiguous. There will be a positive effect on imports due to the rise in GDP in profit-led countries, which partially offsets the positive price competition effects and deteriorates the trade balance position. Furthermore, when there is a simultaneous change in all countries, and if the EU15 as a whole is wage-led, this leads to a decrease in trade partners' GDP, and a negative effect on exports. This may offset the positive effects via prices; hence the total effect on trade balance is ambiguous in both the wage-led and profit-led economies. We calculate the post-multiplier net export effects as:

$$\begin{bmatrix} \frac{\Delta NX/Y_1}{\Delta \pi_1} \\ \vdots \\ \frac{\Delta NX/Y_n}{\Delta \pi_n} \end{bmatrix} = (NX_{nxn} + P_{nxn}) \begin{bmatrix} \Delta \pi_1 \\ \vdots \\ \Delta \pi_n \end{bmatrix} + (W_{nxn} - M_{nxn}) \begin{bmatrix} \frac{\Delta Y/Y_1}{\Delta \pi_1} \\ \vdots \\ \frac{\Delta Y/Y_n}{\Delta \pi_n} \end{bmatrix} \tag{14}$$

where

$$NX_{nxn} = \begin{bmatrix} \frac{\frac{\Delta NX}{Y_1}}{\Delta \pi_1} & 0 & \cdots & 0 \\ 0 & \ddots & \vdots & \vdots \\ \vdots & \ddots & \ddots & \vdots \\ 0 & \cdots & \cdots & \frac{\frac{\Delta NX}{Y_n}}{\Delta \pi_n} \end{bmatrix} \tag{15}$$

and

$$M_{nxn} = \begin{bmatrix} \frac{\Delta M_1}{\Delta Y_1} & 0 & \cdots & 0 \\ 0 & \ddots & \cdots & \vdots \\ \vdots & \ldots & \ddots & \vdots \\ 0 & \cdots & \cdots & \frac{\Delta M_n}{\Delta Y_n} \end{bmatrix} \tag{16}$$

where NX_{ii} is $\frac{\frac{\Delta X}{Y_1}}{\Delta \pi_1} - \frac{\frac{\Delta M}{Y_1}}{\Delta \pi_1}$ calculated as in Equations (9) and (10) and M_{ii} is calculated as $e_{MYi}\frac{M_i}{Y_i}$.

NX represents a $n\ x\ n$ matrix which includes the effects of a change in π in country i on net exports in country i. M is a $n\ x\ n$ matrix which includes the effects of a change in π in country i on imports in country i.

Next, we analyse the price effects of changes in income distribution. We calculate the percentage change in the domestic price level, i.e. inflation ($\Delta logP$) as a response to an isolated change in π in one country as:

$$\frac{\Delta logP}{\Delta \pi} = -\left[\frac{\partial logP}{\partial logulc}\frac{\partial logulc}{\partial logrulc}\frac{\partial logrulc}{\partial logws}\right]\frac{1}{rulc} = -\left(e_{PULC}\ \frac{1}{1-e_{PULC}}\frac{Y_f}{Y}\right)\frac{1}{rulc} \qquad (17)$$

where e_{PULC} illustrates the effect of ulc on P. We multiply with $\frac{1}{rulc}$ to convert elasticities to marginal effects. We take the negation of the total effect in order to simulate an increase in π.

Next, we calculate the effects of a simultaneous change in π on prices in each country as:

$$\begin{bmatrix}\frac{\Delta logP}{\Delta \pi_1}\\ \vdots \\ \frac{\Delta logP}{\Delta \pi_n}\end{bmatrix} = \left(DP_{nxn}\begin{bmatrix}\Delta\pi_1\\ \vdots \\ \Delta\pi_n\end{bmatrix} + PM_{nxn}\begin{bmatrix}0 & \Delta\pi_2 & \cdots & \Delta\pi_n\\ \Delta\pi_1 & \ddots & \cdots & \vdots \\ \vdots & \vdots & \ddots & \vdots \\ \Delta\pi_1 & \Delta\pi_2 & \cdots & 0\end{bmatrix}\begin{bmatrix}p_{m1}\\ \vdots \\ p_{mn}\end{bmatrix}\right) \qquad (18)$$

where

$$DP_{nxn} = \begin{bmatrix}\frac{\Delta logP}{\Delta \pi_1} & 0 & \cdots & 0\\ 0 & \ddots & \cdots & \vdots \\ \vdots & \vdots & \ddots & \vdots \\ 0 & \cdots & \cdots & \frac{\Delta logP}{\Delta \pi_n}\end{bmatrix} \qquad (19)$$

and

$$PM_{nxn} = \begin{bmatrix}0 & \frac{\Delta log(P_x)_2}{\Delta \pi_2}\frac{M_{21}}{M_1} & \cdots & \frac{\Delta log(P_x)_n}{\Delta \pi_n}\frac{M_{n1}}{M_1}\\ \frac{\Delta log(P_x)_1}{\Delta \pi_1}\frac{M_{12}}{M_2} & 0 & \cdots & \vdots \\ \vdots & \vdots & \ddots & \vdots \\ \frac{\Delta log(P_x)_1}{\Delta \pi_1}\frac{M_{1n}}{M_n} & \frac{\Delta log(P_x)_2}{\Delta \pi_2}\frac{M_{2n}}{M_n} & \cdots & 0\end{bmatrix} \qquad (20)$$

where DP_{ii} is $\frac{logP}{\Delta\pi}$ as calculated in equation (17) and $PM_{ij}$is calculated as:

$$PM_{ij} = \frac{\Delta log(P_x)_j}{\Delta\pi_j}\frac{M_{ji}}{M_i} = -(e_{Pxj}\frac{1}{1-e_{pj}}\frac{Yf_j}{Y_j}\frac{1}{rulc_j})\frac{M_{ji}}{M_i} \quad (21)$$

DP represents a $n\ x\ n$ matrix which includes the effects of a change in π in country i on domestic prices in country i. PM is a $n\ x\ n$ matrix which includes the effects of a change in π in country j on inflation in country i via changes in the import prices of country i.

As wage negotiations are conducted in nominal terms we are also interested in the relationship between nominal wages and the ws. However, this includes also changes in productivity growth. We derive the required % change in the nominal wage rate as follows:

$$\Delta\log(ulc) = \Delta logw - \Delta logz \quad (22)$$

where $\Delta\log(ulc)$ illustrates a log change in nominal unit labour costs and is the difference between a log change in the nominal wage rate, $\Delta logw$ and a log change in total labour productivity, $\Delta logz$. Hence, to calculate the required % change in the w we rearrange:

$$\Delta logw = \Delta\log(ulc) + \Delta logz \quad (23)$$

4. Estimation methodology

We apply a single-equation approach in order to analyse the effects of the changes in the ws on growth for EU15 countries. We estimate the distributional effects on individual components of private aggregate demand, which are consumption, investment, exports and imports for each country as is widely applied in the literature (Stockhammer et al., 2009; Onaran and Galanis, 2014; Hein and Vogel, 2008). Unit root tests suggest that most of our variables are integrated of order one. Therefore, we will take first differences of the variables to avoid possible spurious regressions. The profit share is stationary in Greece, Netherlands, Spain, Sweden and the UK and hence we use this variable in its level

in these countries. Error-correction models (ECM) are applied wherever statistically significant[8]. In all estimations we start with general specifications with both the contemporaneous values and first lags of the variables as well as a lagged dependent variable, and keep those variables, which are statistically significant. Wherever there is autocorrelation, either the lagged dependent variable is kept or an AR(1) term is added.

The single equation approach has several advantages. It allows for flexible modelling of the individual behavioural functions for single countries and to detect the precise economic relationships between demand and changes in income distribution (Onaran and Galanis, 2014). Moreover, it is possible to distinguish between domestic and total effects that include international trade. However, it fails to account for the fact that C, I and NX add up to private demand. The main alternative, a vector autoregression model, estimates the goods market equilibrium in a full model and has been applied by Onaran and Stockhammer (2005) or Stockhammer and Onaran (2004), among others. The advantage of this approach is that the interaction between the variables can be incorporated and it allows for tracing effects through an entire system rather than analysing one equation at a time. Also, it is more suitable to deal with simultaneity bias. However, using this approach would require a substantial simplification of the model since it cannot handle more than five endogenous variables (Onaran and Galanis, 2014). In the context of our analysis, this would lead to a misspecification of the behavioural functions and does not give a precise account of the effects of the ws on C, I and NX.

The second major qualification relates to changes in the functional income distribution. In order to focus on the determinants of demand we take the ws as exogenous assuming that the time lag of potential feedback effects takes longer than one year. However, it is important to recognize that income distribution is endogenous (i.e. a higher unemployment rate lowers the wage share) in reality. Endogenising income distribution is not feasible in the absence of appropriate instrumental variables and using earlier lags is also not possible due to the short time series data.

[8] The t-ratios reported by Banerjee et al. (1998) are used for the speed of adjustment coefficient to test whether there is cointegration among the variables.

5. Estimation Results

The regression results for consumption are in Table 1. The hypothesis that the marginal propensity to consume between profit income and wage income differs is confirmed in all countries. The estimation results for investment are given in Table 2. In all countries, GDP has strong and significant accelerator effects on private investment. The effects of π are less robust across countries; it has no statistically significant effect in Austria, Finland, Germany[9], Greece, Luxembourg, Portugal and the UK. In these cases the effects are treated as zero when we calculate the total effects on private excess demand.

[Table 1]

[Table 2]

Comparing these results to previous findings in the empirical literature (Onaran and Galanis, 2014; Hein and Vogel, 2008; Stockhammer et al., 2009) we find a general breakdown of the profit-investment nexus since the start of the Great Recession in 2007. Onaran et al. (2011) find that in the case of the US when interest and dividend payments are deducted from the profit share, there is a positive effect on investment illustrating the impact of financialisation on the sensitivity of investment to π. Such a correction, however, is beyond the scope of this paper due to limited time series data on dividend payments in most EU15 countries.

The estimation results for domestic prices, export prices as well as exports and imports are given in Tables 3 to 6 respectively. The results are in line with our expectations, except in Belgium, Ireland, Luxembourg, Netherlands, and Portugal there are no significant effects of export prices relative to import prices on exports. Similarly, we find no statistically significant effects of domestic prices relative to import prices on imports in the case of Denmark, Finland, Germany, Greece, and Luxembourg. Table E1 in appendix E summarises the effects of a change in π on X/Y and M/Y as described in Equations

[9] While Onaran and Galanis (2014) found π to be significant in the investment equation in Germany we found it to be insignificant with revised data for both samples 1960-2007 and 1960-2013. Our findings are in accordance with Stockhammer et al. (2011) and Hein and Vogel (2008).

9 and 10. The total effect does depend not only on the elasticity of exports and imports to relative prices and the pass through from labour costs to prices, but also on the share of the respective component in GDP. As a result, in small open economies the effects are likely to be much larger compared to large relatively closed economies.

[Table 3]

[Table 4]

[Table 5]

[Table 6]

5.1 National effects

Table 7 summarizes the effects of a 1%-point increase in π on components of private aggregate demand: consumption, investment, exports and imports.

The first column reports the partial effects on consumption. The marginal propensity to consume out of wages is higher than out of profits, thus a rise in π negatively affects consumption. The differences between marginal propensities to consume range mostly between -0.23 (Ireland) and -0.564 (Greece). However, Belgium, Denmark and Luxembourg have relatively low (-0.15) albeit statistically significant negative consumption differentials[10].

The second column gives the partial effects on private investment. A 1%-point increase in π in the EU15 countries leads to an increase in investment with values ranging between 0.07%-points (Netherlands) to 0.20%-points (Belgium) as a ratio to GDP. If we sum up the effects of an increase in π on domestic private demand the negative effect on consumption is substantially larger than the positive effect on investment in absolute values in 13 out of 15 countries[11]. Thus, domestic demand in the EU15 is clearly wage-led.

[10]The results are robust when we use unadjusted wages or wage share as the regressors. Our mean differential is minus 0.312 and hence in alignment with previous studies, i.e. Marglin and Bhaduri (1992) find a savings differential of 0.37 for a sample of sixteen OECD countries.
[11] Belgium and Denmark are two exceptions in our sample.

The integration of the foreign sector, however, has a crucial role in determining whether an economy is wage-led or profit-led (Blecker, 1989). The effects of a 1%-point increase in π on net exports range between 0.05%-points (Germany) to 0.40%-points (Austria) as a ratio to GDP.

Column F sums up the partial effects on private excess demand when π increases in each country in isolation. Overall, large economies such as the UK, Germany, France, Italy, Spain as well as some small economies such as Greece, Portugal, Sweden, Finland, Netherlands, Luxemburg are wage-led.. Two small economies, Austria and Ireland are profit-led when integrating the foreign sector, as well as Belgium and Denmark, which already had profit-led domestic demand due to low consumption differentials and high investment effects.

Column G reports the multiplier, which was calculated using the elasticities of C, I, and M with regard to Y. The details of this calculation are presented in appendix F table F1. The multipliers are mostly above one and range between 1.03 in Austria and 2.1 in Spain, with only three small open countries having a multiplier less than one (Belgium, Ireland, Luxembourg, Netherlands)[12].

When multiplier effects are taken into account, the effect of a change in distribution on demand becomes amplified (for countries with multipliers larger than one). Column H in Table 7 reports the %-change in equilibrium aggregate demand after the multiplier mechanism.

[Table 7]

5.2 Europe-wide effects

Next, we analyse the effects of a simultaneous 1%-point increase in π taking place in all EU15 countries. Column I in Table 7 presents the results. Most strikingly, two economies, which were profit-led in isolation – Austria and Ireland, – also start to contract after the incorporation of further effects on their net exports due to decreasing wage shares of their trade partners, which reduce export prices and GDP of the trade partners, which are wage-led. Thus, when everyone is pursuing the same wage competition

[12] The IMF (2009) reports capital spending multipliers between 0.5 and 1.8.

strategy in Europe the expansionary effects of an increase in π are reversed as relative price effects are moderated and external demand dampens.

Comparing columns H and I in table 7, wage-led economies experience even stronger negative effects on demand. Demand in the large economies (rather closed) such as Germany, France, Spain, Italy and the UK now decrease by 0.23% to 0.54%. Demand in small open economies such as Ireland, Greece, Austria, Sweden, Finland, and Portugal decrease by 0.07% and 1.03%. Greece, albeit a small open economy, stands out as a strongly wage-led economy due to very low sensitivity of exports to labour costs, no significant effect of labour costs on imports and no significant effects of profitability on private investment. Even in isolation, a rise in the profit share leads to a 0.92% fall in demand, and the effect increases further after a race to the bottom in the wage share in Europe. Indeed, only Belgium and Denmark do not contract as an outcome of a simultaneous increase in π; however, the effects on growth diminish significantly in these countries as well and become almost economically insignificant, close to zero in the case of Belgium.

Overall, a simultaneous decline in the *ws* in all countries leads to a decline in the EU15 GDP by 0.30%.

5.3 Robustness Checks

In order to account for the exceptional behaviour of the economies during the crisis years we have checked the robustness of our results using a reduced sample size between 1960 and 2007[13]. However, the results are overall robust when estimations are repeated excluding the Great Recession years. As a second robustness check, we used unadjusted wages. We again found that the results are robust.

Furthermore, since the European effects are estimated on the basis of separate equations for each country, we also tested a seemingly unrelated regression model (SUR) to check for the robustness of our results. Indeed, we found the cross-correlation among the error terms of all six equations (C, I, P, P_x, X, M) for the EU15 countries to be statistically significant. In other words, there is a common factor that simultaneously affects all EU15 countries. This is plausible since the EU15 represent a highly

[13] Results are available upon request.

integrated economy, i.e. are affected by a common monetary policy. However, SUR methodology comes at a cost. First, our SUR estimations show that we do not increase statistical significance by applying a systems approach[14]. In contrast, in the investment specifications effects of π on investment becomes insignificant in the case of France, Spain, and Sweden, as opposed to the significant effects in the single equation estimations. Moreover, there are strong 'contagion effects' within the systems approach; thus a missspecified equation in one country leads to a change in otherwise significant results in other country specifications. Most importantly, our overall findings remain robust when estimating a SUR model, e.g. the EU15 GDP declines by 0.34%-points according to the SUR results, which is very close to the result based on single country simulations and still indicates that Europe as a whole is wage-led.

6. Comparison with the literature

Our results are in alignment with those of Onaran and Galanis (2014), Storm and Naastepad (2012), Stockhammer et al. (2011), Stockhammer and Ederer (2008) for Austria, Finland, Germany, France, Italy, Netherlands, Spain, Sweden and the UK[15].

Storm and Naastepad (2012) find Denmark to be wage-led in domestic demand as well as total demand and Belgium to be undefined. However, their estimations do not pay attention to unit root issues. Furthermore, international trade is modelled by means of estimating the effects of real unit labour costs directly on exports, and they do not estimate the effects on imports.

Bowles and Boyer (1995) find profit-led regimes in total demand in Germany and France. However, while their paper is seminal in terms of testing strategy, they do not discuss the time series properties of their variables and hence do not apply difference or error correction models.

[14] Results are available upon request.

[15] In alignment with our estimation strategy we focus on the empirical literature employing a single equation approach. Other studies (i.e. Onaran and Stockhammer, 2005) have applied a vector autoregressive approach. Stockhammer et al. (2009) and Onaran and Galanis (2014) provide more extensive reviews of the empirical literature.

Stockhammer and Stehrer (2011), focusing on domestic demand only, find mixed results for Ireland, depending on the amount of lags included. However, they find perverse but statistically insignificant consumption effects. In alignment with our findings, the authors find domestic demand in Luxembourg to be wage-led.

Hein and Vogel (2008) differ from our results regarding the Netherlands only, which they find to be profit-led. However, the unconventional finding that domestic demand is profit-led drives these results.

Overall, our results confirm the findings of the majority of studies that domestic demand tends to be wage-led; aggregate demand in large economies also tend to be wage-led, whereas small open economies may be profit-led due to international trade effects.

To the best of our knowledge, this paper is the first to estimate the aggregate demand regime in Greece, Portugal, Ireland and Luxembourg.

7. Wage-led recovery scenarios

In this section, we set out the effects on growth of an alternative scenario of a simultaneous wage-led recovery in the EU15 countries over the next 5 years. Obviously, if all countries increase their wage share by 1%-point EU15 GDP would go up by 0.30%. In this scenario, however, the small open economies Belgium and Denmark would contract. In table 8, we illustrate three alternative scenarios that take into account country specific room for manoeuvre to increase the wage share.

In the first scenario in Table 8, all EU15 countries increase their wage shares back to the latest peak level, which would trigger an increase in EU15 GDP of 2.56%. However, Denmark would again contract.

In the second scenario, all EU15 countries follow a differentiated increase in the *ws* with a 5%-point increase in the wage-led countries, a 3%-point increase in the intermediate group of Ireland and Austria which become wage-led in the race to the bottom scenario, and a 1%-point increase in Belgium and Denmark, which remain profit-led countries also in the race to the bottom scenario. In this scenario,

all EU15 countries can grow along with an improvement in the ws leading to an increase in EU15 GDP of 1.51%.

Finally, we can simulate a mix of the first and second scenario by outlining a wage share recovery back to the peak level in wage-led countries and a homogenous 3%-point increase in profit-led countries. In this scenario, all countries can grow along with an increase in the ws and EU15 GDP increases by 3.15%.

[Table 8]

7.1 Effects on Investment and Trade Balance

In this section, we focus on the effects on investment and net exports. Appendix G Table G1 shows the total effects of a 1%-point increase in π on investment and net exports in the EU15 countries in isolation.

The effects of a 1%-point increase in π are on investment are diverse. In isolation, investment regime is wage-led, i.e. the effect of a rise in π on I/Y is negative in Finland, Germany, Greece, Luxembourg, Portugal, Spain, and the UK whereas the investment regime is profit led in Austria, Belgium, Denmark, France, Ireland, Italy, Netherlands, and Sweden. The effects are ranging from strong negative effects in wage-led countries such as Greece (-0.43) to moderate positive effects in profit-led countries (0.27) in Denmark.

The effects on the trade balance are almost always positive. Belgium is an exception with a negative effect of -0.01 due to very low positive net export effects via the price channel and a strong increase in imports following the increase in aggregate demand. In other countries, the effects on net exports/GDP are ranging between 0.07 (Ireland) and 0.32 (Austria). The total effects on net exports are larger than the partial effects via price channels in wage-led economies, and lower in profit-led countries (compared to the partial effects reported in Column E in Table 7).

Next, we report the total effects on investment and net exports following a simultaneous 1%-point increase in π in the EU15 countries in Appendix G table G2. In this case Austria also experiences a decline in investment following a simultaneous 1%-point increase in π and hence 8 countries have a wage-led investment regime. The negative effects of a simultaneous rise in π on investment is larger

(in absolute value) in countries with wage-led investment regimes, and countries with profit-led investment regimes now experience smaller increases in investment due to more moderate growth effects (comparing columns one in Tables G1 and G2).

Regarding the net exports effects, in all countries, the total effects of a simultaneous rise in π is lower (reported in the second column of Table G2) compared to the effects of an isolated change in π (reported in the second column of Table G1) due to the fall in external demand. On average, however, net exports would still increase by 0.16%-points in the EU15 as a whole. Net exports decline only in Belgium.

Finally, Table 9 column C and D show the effects of a (simultaneous) differentiated increase in the *ws* based on scenario 2 in Table 8 (column A and B in Table 9), on investment and trade balance in the EU15 countries.

In 9 European countries the positive accelerator effects overpower the negative profitability effects leading to a wage-led investment regime. Greece experiences the strongest positive effects on $I/Y$of roughly 2.4%-points. We find a profit-led investment regime in Belgium, France, Ireland, Italy, Netherlands and Sweden with negative effects ranging between -0.05%-points and -0.41%-points. While further investment policies are undoubtedly required, particularly in countries with profit-led investment regimes, overall, due to increasing GDP and hence strong accelerator effects a wage-led recovery could generate an increase of 0.24%-points in I/Y in the EU15.

The effects of a differentiated increase in the *ws* on net exports are negative in the majority of the EU15 except Belgium and Denmark as can be seen in Table 9 column D. While net exports/GDP decrease by only 0.05%-points in Ireland, it decreases by 1.40%-points in Greece.

[Table 9]

7.2 Effects on Prices and Nominal Unit Labour Costs

In this section, we analyse to what extent a wage stimulus in the EU15 countries would exert inflationary pressures.

Appendix G table G3 summarises the effects of a 1%-point increase in the wage share in isolation and simultaneously as well as a differentiated simultaneous increase in the ws on annual inflation. On average, annual inflation would rise by 1.4%-point as an outcome of a simultaneous 1%-point increase in the wage share in the EU15 countries, and 1.2%-point following a differentiated increase in the ws as suggested in Scenario 2 in Table 8. It is plausible that the effects on inflation are not as strong as the effects on nominal ulc since firms might not be able translate higher costs into higher prices, particularly in relatively open economies[16]. As an outcome of our wage-led recovery Scenario 2, the majority of countries would experience increasing inflation rates well below the ECB target inflation rate, which is below (but close to) 2%. In Spain and the UK the increase in annual inflation marginally exceeds this limit, and in Italy it would lead to an increase in inflation rate of 2.7%-points. In light of a risk of deflation in the Eurozone our findings indicate that a wage stimulus in the EU15 would indeed help keeping the European economy away from deflation.

Since collective wage bargaining negotiations are conducted in nominal terms, we also calculate the required annual increase in the nominal wage rate to increase the ws by 1%-point. On average, a 1% point increase in the ws would increase ulc by 2.8% in the EU15 countries (appendix G table G3). Labour factor productivity in the EU15 countries increased by roughly 0.7% in the decade between 1997 and 2007 on average excluding the crisis years. Scenario 2 would be consistent with an annual nominal wage increase of 3.1% in the EU15 on average (e.g. 1.9% in Ireland, 3.6% in Greece).

8. Conclusions

The empirical analysis in this paper has highlighted that a simultaneous decline in the wage share in a highly integrated European economy leads to a decline in growth, although the magnitude of the effect is not large. Hence there is room to stimulate demand in the current economic climate of deficient

[16] Stockhammer et al. (2011) find that a change in $rulc$ by 1% will come with an increase of 0.72% in inflation in the case of Germany. They analyse different sub-sample periods and their results indicate that an increased openness of the German economy limits the ability of firms to pass on an increase in ulc.

demand and sluggish growth: A 1%-point increase in the wage share at the European level could lead to a 0.30% increase in EU15 GDP.

In alignment with previous research, the negative effects of a fall in the wage share on consumption overpower the positive effects on investment in 13 European countries. Domestic demand is hence clearly wage-led in the EU15. Small open economies may have a profit-led regime when the foreign sector is included due to a higher degree of openness of the economy, whereas the net export effects tend not to dominate in relatively closed large economies. In isolation, we have found 11 countries to be wage-led and 4 countries to be profit-led.

This paper went beyond the nation state and estimated the impact of a simultaneous decline in the wage share on demand and hence growth in EU15 countries. In a scenario of a simultaneous fall in the wage share, the positive net export effects are essentially wiped out leaving profit-led demand regimes in only Belgium and Denmark. Thus, when all EU15 countries pursue beggar thy neighbour policies, the competitiveness effects will be minor while the domestic effects dominate. A cautious interpretation of the empirical results suggests that a more equal income distribution does not hamper growth in Europe.

The results also illustrate a fallacy of composition issue between the micro rationale and macro outcomes of a pro-capital redistribution. While a higher profit share seems to be beneficial to the individual firm, in a wage-led economy it creates a problem of realisation of profits due to deficient demand. By the same token, even if increasing profit shares seem to promote growth at the national level in some profit-led economies, at the European level a simultaneous fall in the wage share leads to European demand deficiency as well as contraction, even in originally profit-led economies such as Austria and Ireland.

The estimated model in this paper has been kept simple to analyse the role of income distribution in determining private demand. Possible extensions include a richer modelling of the government sector, i.e. the potential crowding in effects on private investment.

The applied estimation approach might introduce some bias resulting from endogeneity issues and single-equation-based estimations. However, our results are robust across different sample sizes, and

estimation methods (i.e. the use of SUR) and in alignment with the findings of the majority of previous studies. Moreover, our results are consistent with the intuition that the EU15 countries have low extra regional trade and hence represent a rather closed economy.

Policies of internal devaluation have been negative for demand and growth in the EU15 countries. In an alternative scenario of a wage-led recovery, we have shown that it is possible for all countries to grow along a simultaneous differentiated increase in the wage share. If large wage-led economies take the initiative, egalitarian growth becomes feasible including in small open economies.

Furthermore, as a result of a wage-led recovery policy, annual inflation in the EU15 countries would remain well below the ECB target inflation rate. Therefore, a coordinated wage stimulus can keep the European economy away from deflation.

An increase in the wage share, interestingly, does not negatively impact the investment performance in the EU15 as a whole with most countries experiencing an increase in investment. The impact of wage increases on trade imbalances across countries require further targeted industrial policy at the European level. Achieving convergence in the level of nominal unit labour costs and overcoming persistent imbalances requires a more comprehensive policy mix of wage policies, investment and industrial policies.

Our results have important policy implications. First, if a country is wage-led, increasing the wage share is not an impediment to growth. Second, wage policy coordination in a highly integrated Europe, which tends to be wage-led, can improve growth and employment. Third, a coordinated wage stimulus does not have negative effects on investment in aggregate and induced inflation does not conflict with the ECB inflation target. Finally, a wage-led recovery scenario as an alternative to the current strategy of wage moderation implemented in the European countries is feasible, given that the coordination problem can be overcome.

References

Atkinson, A.B. 2009. Factor shares: the principal problem of political economy? *Oxford Review of Economic Policy*, vol. 25, no. 1, 3-16

Banerjee, A., Dolado, J.J. and Mestre, R. 1998. Error-correction Mechanism Tests for Cointegration in a Single-equation Framework, *Journal of Time Series Analysis*, vol. 19, no. 3, 267-283

Bhaduri, A. and Marglin, S. 1990. Unemployment and the real wage - The Economic-Basis for contesting political ideologies, *Cambridge Journal of Economics*, vol. 14, no.4, 375-393

Blanchard, O. 2006. *Macroeconomics*, 4 ed., New York, Prentice Hall

Blecker, R.A. 1989. International competition, Income Distribution and Economic Growth, *Cambridge Journal of Economics*, vol. 13, no.3, 395-412

Blecker, R. A. 2002. Distribution, Demand, and Growth in Neo-Kaleckian Macro Models. *In:* Setterfield, M. (ed.) *The Economics of Demand-Led Growth: Challenging the Supply-Side Vision of the Long Run*, Cheltenham, UK, and Northampton, MA, Edward Elgar

Bowles, S. and Boyer, R. 1995. Wages, aggregate demand, and employment in an open economy: an empirical investigation. In: Epstein, G.A. and Gintis, H. (eds.). *Macroeconomic policy after the conservative era*, Cambridge, Cambridge University Press

Daudey, E. and Garcia-Penalosa, C. 2007. The personal and the factor distributions of income in a cross-section of countries, *Journal of Development Studies*, vol. 43, no. 5, 812-829

European Commission, 2006. Time to move up a gear: the new partnership for jobs and growth, *Commission's January 2006 Annual Progress Report*, http://ec.europa.eu/archives/growthandjobs/european-dimension/200601-annual-progress-report/index_en.htm: European Commission [date last accessed 01 February 2015]

Eurostat 2015. *Intra-EU27 trade, by Member State, total product*, http://ec.europa.eu/eurostat/tgm/table.do?tab=tableandinit=1andlanguage=enandpcode=tet00039andplugin=1, [date last accessed 01. March 2015]

Glyn, A. 2009. Functional distribution and inequality. In: Salverda, W., Nolan, B. and Smeeding, T.M. (eds.). *The Oxford Handbook of Economic Inequality*, Oxford, Oxford University Press

Hein, E. and Vogel, L. 2008. Distribution and growth reconsidered: empirical results for six OECD Countries, *Cambridge Journal of Economics*, vol. 32, no. 3, 479-511

IMF, 2009. Global Economic Policies and Prospects, Meeting of the Ministers and Central Bank Governors, March 13–14, London, UK, https://www.imf.org/external/np/g20/pdf/031909a.pdf [date last accessed 02 February 2015]

Lagoa, S., Leao, E., Mamede, R. and Barradas, R. 2014. Report on the financial system in Portugal, *FESSUD studies*, http://EconPapers.repec.org/RePEc:fes:fstudy:fstudy09 [date last accessed 01. February 2015]

Marglin, S.A. and Bhaduri, A. 1992. Profit Squeeze and Keynesian Theory. In: Marglin, S.A. and Schor, J.B. (eds.). *The Golden Age of Capitalism: Reinterpreting the Postwar Experience*, Oxford, Oxford University Press

Naastepad, C.W. and Storm, S. 2006. OECD demand regimes (1960-2000), *Journal of Post Keynesian Economics*, vol. 29, no. 2, 211-246

OECD. 2012. *OECD Employment Outlook 2012.* http://www.oecd-ilibrary.org/employment/oecd-employment-outlook-2012_empl_outlook-2012-en [date last accessed 01.01.2015]

Onaran, O. and Galanis, G. 2014. Income distribution and growth: a global model, *Environment and Planning A*, vol. 46, no. *10*, 2489-2513

Onaran, O. and Stockhammer, E. 2005. Two different export-oriented growth strategies – Accumulation and distribution in Turkey and South Korea, *Emerging Markets Finance and Trade*, vol. 41, no. 1, 65-89

Onaran, O., Stockhammer, E. and Grafl, L. 2011. Financialisation, income distribution and aggregate demand in the USA, *Cambridge Journal of Economics*, vol. 35, no. 4, 637-661

Rezai, A. 2011. The political economy implications of general equilibrium analysis in open economy macro models, *Working Paper 11/2011*, Department of Economics, New School for Social

Research, http://www.economicpolicyresearch.org/econ/2011/NSSR_WP_112011.pdf [Accessed 07 January 2015]
Stockhammer, E. and Ederer, S. 2008. Demand effects of the falling wage share in Austria, *Empirica*, vol. 35, no. 5, 481-502
Stockhammer, E. and Onaran, O. 2004. Accumulation, distribution and employment: a structural VAR approach to a Kaleckian macro model, *Structural Change and Economic Dynamics*, vol. 15, no. 4, 421-447
Stockhammer,E., Hein, E. and Grafl, L. 2011. Globalization and the effects of changes in functional income distribution on aggregate demand in Germany, *International Review of Applied Economics*, vol. 25, no. 1, 1-23
Stockhammer, E., Onaran, O. and Ederer, S. 2009. Functional income distribution and aggregate demand in the Euro area, *Cambridge Journal of Economics*, vol. 33, no.1, 139-159
Stockhammer, E. and Stehrer, R. 2011. Goodwin or Kalecki in Demand? Functional Income Distribution and Aggregate Demand in the Short Run, *Review of Radical Political Economics*, vol. 43, no. 4, 506-522
Storm, S. and Naastepad, C.W.M. 2012. *Macroeconomics Beyond the NAIRU*, Cambridge, Massachusetts, Harvard University Press
Von Arnim, R., Tavani, D. and Barbosa de Carvalho, L. 2012. Globalization as coordination failure: a Keynesian perspective, Working Paper 02/2012, Department of Economics, New School for Social Research, http://www.boeckler.de/pdf/v_2012_10_25_tavani_von_arnim_de_carvalho.pdf [data last accessed 01. March 2015]

Figures and Tables

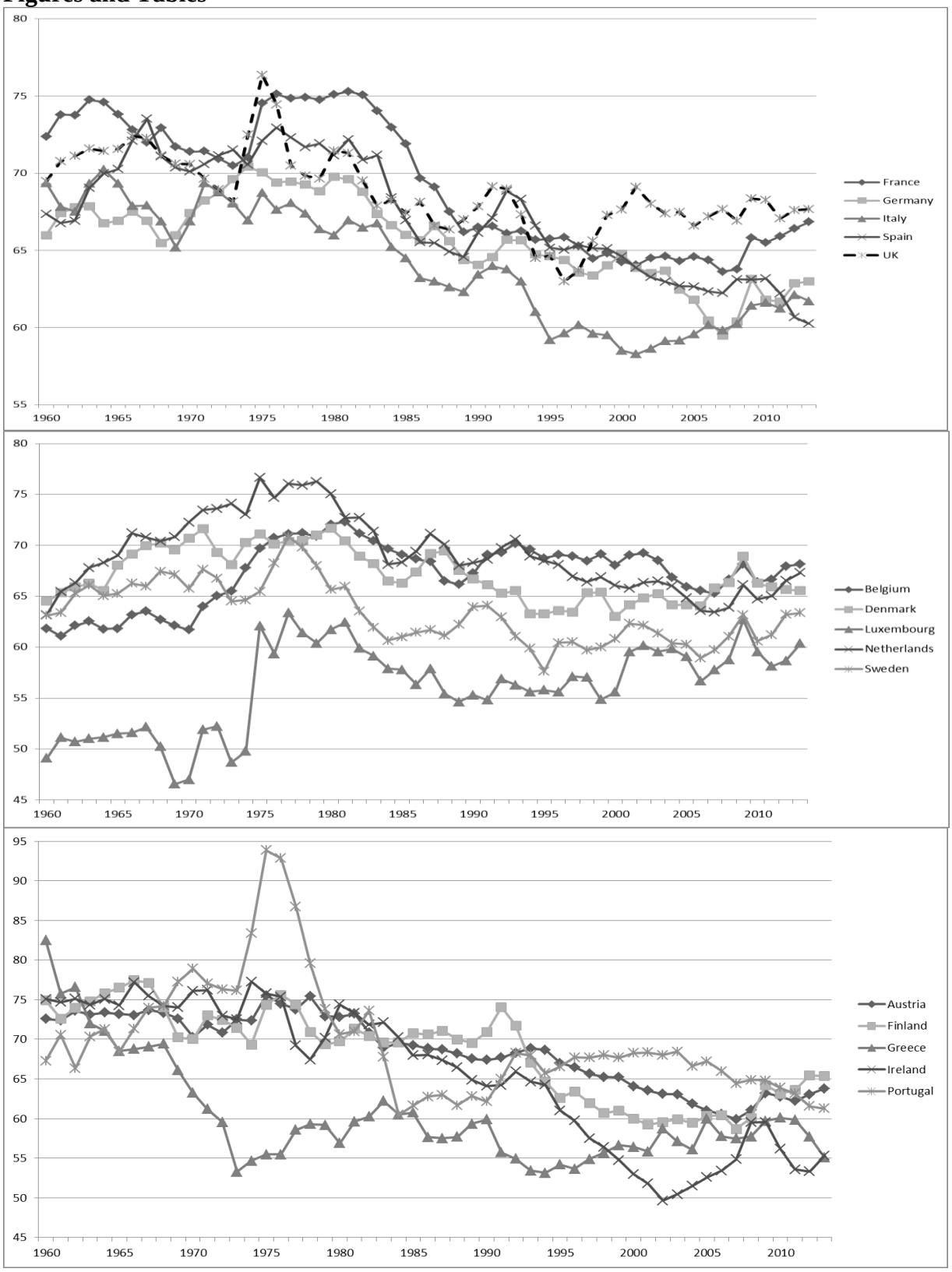

Fig. 1. *Wage share (adjusted, ratio to GDP at factor cost).*
Source: AMECO Online (2014).
Notes: Greece exhibit high levels of wage share due to the share of substantial agricultural self-employment in GDP. In Portugal, total compensation of employees increased substantially following the military coup in 1974.

Table 1. *Consumption: dependent variable* $dlog(C)$

	c	$dlog(R_t)$	$dlog(W_t)$	$dlog(C_t - 1)$	$(AR1)$	DW	$R2$	Sample
A	0.005	0.160	0.616			2.369	0.527	1961-
	(1.567)	(4.394)***	(6.024)***					2013
B	0.007	0.148	0.483			2.241	0.590	1961-
	(2.963)***	(3.832)***	(7.506)***					2013
DK	0.001	0.236	0.655			1.869	0.564	1961-
	(0.323)	(4.758)***	(6.262)***					2013
FIN	0.007	0.184	0.635			1.694	0.774	1961-
	(2.735)***	(7.984)***	(11.061)***					2013
F	0.006	0.143	0.657			2.074	0.771	1961-
	(2.751)***	(4.865)***	(10.635)***					2013
D	0.004	0.101	0.476	0.292		2.090	0.707	1962-
	1.313	(2.151)**	(4.352)***	(2.500)**				2013
GR	0.013	0.114	0.633			1.771	0.748	1962-
	(3.889)***	(3.859)***	(10.282)***					2013
IRL	0.004	0.183	0.520			2.233	0.483	1961-
	(0.798)	(4.746)***	(5.153)***					2013
I	0.004	0.204	0.744			1.531	0.773	1961-
	(1.793)*	(4.713)***	(9.447)***					2013
L	0.016	0.103	0.350			1.741	0.350	1961-
	(4.087)***	(3.451)***	(4.920)***					2013
NL	-0.004	0.149	0.582	0.376		1.876	0.813	1962-
	(-1.574)	(4.807)***	(5.749)***	(3.766)***				2013
P	0.012	0.099	0.612			2.121	0.615	1961-
	(3.025)***	(6.177)***	(8.195)***					2013
E	0.001	0.182	0.767			2.096	0.878	1961-
	(0.278)	(4.750)***	(16.751)***					2013
S	0.006	0.088	0.554			1.736	0.578	1961-
	(2.279)**	(2.788)***	(7.891)***					2013
UK	0.005	0.209	0.702		0.273	1.944	0.718	1962-
	(1.627)	(6.744)***	(7.567)***		(1.884)*			2013

Notes: *,**,*** stand for 10%, 5% and 1% significance levels respectively; *t*-values are given in parentheses.

A = Austria, B = Belgium, DK = Denmark, FIN = Finland, F = France, D = Germany, GR = Greece, IRL = Ireland, I = Italy, L = Luxembourg, NL = Netherlands, P = Portugal, E = Spain, S = Sweden, UK = United Kingdom

Table 2. *Private investment: dependent variable* $dlog(I)$

	c	$dlog(\pi_t - 1)$	$log(\pi_t - 1)$	$dlog(Y_t)$	$dlog(I_{t-1})$	$dlog(r_t - 1)$	$dlog(r_t)$	$log(I_{t-1})$	$log(Y_{t-1})$	$(AR1)$	DW	$R2$	Sample
A	-0.025	0.110		1.881							2.018	0.526	1962-
	(-2.828)***	(0.830)		(7.359)***									2013
B	-0.632		0.239	2.387	0.234			-0.247	0.330		1.932	0.638	1963-
	(-4.595)***		(2.290)**	(6.527)***	(2.340)**			(-4.107)**	(4.789)***				2013
DK	-0.038	0.321		2.929		-0.008					1.883	0.751	1963-
	(-4.448)***	(1.948)*		(11.168)***		(-2.310)**							2013
FIN	-0.038	0.174		2.067						0.322	1.841	0.752	1963-
	(-3.451)***	(1.588)		(9.138)***						(2.186)**			2013
F	-0.032	0.155		2.214			-0.002			0.541	1.940	0.826	1963-
	(-4.221)***	(1.646)*		(12.179)***			(-1.300)			(4.616)***			2013
D	-0.021	0.121		1.810						0.360	1.613	0.590	1963-
	(-2.196)**	(0.544)		(7.149)***						(2.154)**			2013
GR	0.028		0.091	2.293						-0.265	2.017	0.625	1962-
	(0.513)		(1.518)	(9.862)***						(-1.907)*			2013
IRL	-0.036	0.338		1.802							1.988	0.416	1963-
	(-1.976)*	(1.967)*		(5.004)***									2013
I	-0.026	0.295		1.722		-0.003				0.331	1.943	0.636	1964-
	(-2.941)***	(1.761)*		(7.841)***		(-1.172)				(2.293)**			2013
L	-0.029	0.160		1.728							2.410	0.273	1963-
	(-1.420)	(0.675)		(4.172)***									2013
NL	-0.392		0.130	2.681				-0.299	0.295		2.299	0.714	1961-
	(-2.762)***		(3.030)***	(9.527)***				(-5.346)***	(5.237)***				2013
P	-0.042	0.024		2.119							2.026	0.485	1962-
	(-2.834)***	(0.440)		(6.662)***									2013
E	0.099		0.134	2.720						0.415	1.994	0.769	1962-
	(1.098)		(1.664)*	(9.443)***						(3.297)***			2013
S	0.119		0.159	2.406	0.269						1.794	0.729	1962-
	(1.759)*		(2.384)**	(9.892)***	(3.437)***								2013
UK	-0.474		0.134	2.283				-0.243	0.261		1.909	0.677	1961-
	(-1.815)*		(1.581)	(8.870)***				(-3.527)**	(3.220)***				2013

Notes: *,**,*** stand for 10%, 5% and 1% significance levels respectively; *t*-values are given in parentheses.

A = Austria, B = Belgium, DK = Denmark, FIN = Finland, F = France, D = Germany, GR = Greece, IRL = Ireland, I = Italy, L = Luxembourg, NL = Netherlands, P = Portugal, E = Spain, S = Sweden, UK = United Kingdom

Table 3. *Price deflator: dependent variable* $dlog(P)$

	c	$dlog(ULC_t - 1)$	$dlog(ULC_t)$	$dlog(P_{t-1})$	$dlog(Pm_t)$	$dlog(Pm_t - 1)$`	$(AR1)$	DW	$R2$	Sample
A	0.005		0.286	0.453	0.146			1.920	0.851	1962-2012
	(2.433)**		(4.952)***	(5.320)***	(3.715)***					
B	0.020	0.180			0.154	0.129	0.627	2.163	0.811	1962-2012
	(3.797)***	(2.226)**			(5.036)***	(4.333)***	(4.829)***			
DK	0.008	0.249		0.465		0.183		2.029	0.865	1962-2012
	(2.423)**	(2.698)***		(4.037)***		(5.266)***				
FIN	0.009		0.388	0.249	0.220			1.890	0.842	1962-2012
	(2.511)**		(5.328)***	(2.834)***	(5.520)***					
F	0.004	0.194		0.633		0.094		1.795	0.907	1962-2012
	(1.718)*	(1.624)		(4.635)***		(3.580)***				
D	0.017		0.382				(0.699)	2.091	0.834	1962-2012
	(4.333)***		(7.351)***				6.577***			
GR	0.019	0.423			0.462			1.758	0.810	1962-2012
	(2.870)***	(5.932)***			(6.435)***					
IRL	0.031	0.256			0.284		(0.431)	2.111	0.678	1962-2012
	(2.987)***	(1.863)*			(3.744)***		2.490**			
I	0.014	0.633			0.206			1.715	0.828	1962-2012
	(3.033)***	(10.044)***			(5.279)***					
L	0.024		0.345	-0.482	0.523			1.651	0.479	1962-2012
	(4.180)***		(3.284)***	(-3.605)***	(5.076)***					
NL	0.007	0.255		0.448		0.152		1.997	0.801	1962-2012
	(2.492)**	(2.687)***		(3.656)***		(4.599)***				
P	0.018	0.471			0.204	0.247		1.803	0.857	1962-2012
	(3.200)***	(7.345)***			(4.035)***	(4.491)***				
E	0.029		0.585		0.023		0.798	2.284	0.937	1962-2012
	(2.904)***		(8.027)***		(1.093)		(8.667)***			
S	0.016	0.342			0.151	(0.220)		1.951	0.817	1962-2012
	(2.914)***	(4.107)***			(3.926)***	(5.499)***				
UK	0.016	0.582			`0.184			1.715	0.695	1962-2012
	(2.968)***	(7.530)***			(3.048)***					

Notes: *,**,*** stand for 10%, 5% and 1% significance levels respectively; *t*-values are given in parentheses.
A = Austria, B = Belgium, DK = Denmark, FIN = Finland, F = France, D = Germany, GR = Greece, IRL = Ireland, I = Italy, L = Luxembourg, NL = Netherlands, P = Portugal, E = Spain, S = Sweden, UK = United Kingdom

Table 4. *Export price deflator: dependent variable* $dlog(P_x)$

	c	$dlog(ULC_t - 1)$	$dlog(ULC_t)$	$dlog(Px_{t-1})$	$dlog(Pm_t)$	$dlog(Pm_t - 1)$	$log(Px_{t-1})$	$log(ULC_{t-1})$	$log(Pm_{t-1})$	$(AR1)$	DW	$R2$	Sample
A	0.002 (1.060)		0.152 (3.490)***		0.616 (15.385)***						2.339	0.867	1961-2013
B	0.001 (0.674)		0.096 (1.920)*		0.789 (26.133)***						2.037	0.949	1961-2013
DK	1.307 (4.828)***		0.085 (1.031)		0.687 (15.211)***		-0.643 (-4.950)***	0.223 (4.748)***	0.385 (4.642)***		2.045	0.916	1961-2013
FIN	-0.003 (-0.811)		0.185 (2.612)***		0.776 (15.279)***						1.569	0.879	1961-2013
F	-0.002 (-1.025)	0.248 (4.124)***		0.142 (3.074)***	0.528 (21.465)***						1.875	0.956	1962-2013
D	0.004 (1.653)*	0.197 (3.122)***		0.224 (3.227)***	0.365 (11.266)***						1.667	0.823	1962-2013
GR	1.115 (3.237)***		0.154 (1.631)		0.828 (12.355)***		-0.511 (-4.341)***	0.192 (3.250)***	0.297 (3.536)***		1.880	0.914	1961-2013
IRL	0.000 (0.009)		0.171 (1.946)*		0.708 (10.398)***						2.004	0.810	1961-2013
I	0.000 (0.113)	0.185 (3.179)***		0.539 (19.040)***	0.210 (3.630)***					-0.315 (-2.029)**	1.980	0.950	1963-2013
L	0.024 (2.389)**	0.322 (1.704)*				-0.001 (-0.006)					1.800	0.076	1962-2013
NL	0.002 (0.251)	0.370 (1.823)*				0.229 (1.877)*					2.008	0.171	1962-2013
P	0.280 (1.786)*	-0.103 (-1.658)*		0.246 (1.845)*	0.722 (14.862)***	-0.251 (-2.301)**	-0.382 (-4.404)***	0.053 (1.971)**	0.330 (5.082)***		1.834	0.930	1962-2013
E	0.012 (1.483)	0.255 (2.507)**		0.155 (1.716)*							1.620	0.884	1963-2013
S	-0.002 (-0.616)		0.172 (2.509)**		0.716 (16.126)***						1.928	0.877	1961-2013
UK	0.558 (3.051)***		0.136 (2.084)**		0.577 (13.998)***		-0.486 (-4.725)***	0.101 (3.172)***	0.377 (4.975)***		1.667	0.928	1961-2013

Notes: *,**,*** stand for 10%, 5% and 1% significance levels respectively; *t*-values are given in parentheses.
A = Austria, B = Belgium, DK = Denmark, FIN = Finland, F = France, D = Germany, GR = Greece, IRL = Ireland, I = Italy, L = Luxembourg, NL = Netherlands, P = Portugal, E = Spain, S = Sweden, UK = United Kingdom

Table 5. *Exports: dependent variable* $dlog(X)$

	c	$dlog(Px/Pm)_{t-1}$	$dlog(Px/Pm)_t$	$dlog\left(Y_{rw_t}\right)$	$dlog(e_t)$	$(AR1)$	DW	$R2$	Sample
A	-0.028 (-2.813)***		-1.728 (-5.717)***	2.314 (9.008)***			1.778	0.676	1961-2013
B	-0.029 (-3.264)***		-0.185 (-0.728)	2.315 (10.045)***			1.876	0.669	1961-2013
DK	-0.004 (-0.483)		-0.627 (-3.581)***	1.540 (6.445)***			1.718	0.472	1961-2013
FIN	-0.068 (-3.074)***		-0.576 (-2.003)**	3.428 (6.415)***		3.077 (0.430)	2.121	0.486	1962-2013
F	-0.020 (-1.718)*		-0.439 (-3.075)***	2.155 (7.689)***	0.158 (1.665)*	0.371 (2.684)***	2.194	0.725	1962-2013
D	-0.017 (-1.145)	-0.379 (-1.876)*		2.136 (5.376)***			2.022	0.372	1962-2013
GR	-0.037 (-1.342)	-0.729 (-1.805)*		2.917 (3.968)***			1.664	0.305	1962-2013
IRL	0.043 (2.223)**		-0.178 (-0.903)	1.041 (2.155)**		0.351 (2.608)***	1.896	0.189	1962-2013
I	-0.053 (-3.811)***	-0.307 (-1.994)**		3.006 (8.285)***			1.966	0.586	1962-2013
L	-0.033 (-1.621)	0.187 (0.789)		2.688 (4.893)***		0.317 (2.064)**	2.102	0.388	1963-2013
NL	-0.027 (-2.681)***		-0.290 (-1.318)	2.445 (10.955)***		0.559 (4.761)***	2.194	0.725	1962-2013
P	-0.017 (-0.799)	0.316 (1.354)		2.409 (4.401)***		0.330 (2.383)**	1.816	0.420	1963-2013
E	-0.012 (-0.815)		-0.277 (-2.214)**	2.448 (6.029)***			1.664	0.426	1961-2013
S	-0.045 (-3.009)***		-0.508 (-2.915)***	2.715 (7.877)***		0.497 (3.832)***	2.037	0.575	1962-2013
UK	0.001 (0.152)		-0.518 (-3.708)***	1.174 (4.696)***			1.562	0.453	1961-2013

Notes: *,**,*** stand for 10%, 5% and 1% significance levels respectively; *t*-values are given in parentheses.
A = Austria, B = Belgium, DK = Denmark, FIN = Finland, F = France, D = Germany, GR = Greece, IRL = Ireland, I = Italy, L = Luxembourg, NL = Netherlands, P = Portugal, E = Spain, S = Sweden, UK = United Kingdom

Table 6. *Imports: dependent variable* $dlog(M)$

	c	$dlog(P/Pm)_{t-1}$	$dlog(P/Pm)_t$	$dlog(Y_t)$	$dlog(Y_t-1)$	$dlog(m_{t-1})$	$log(m_{t-1})$	$log(P/Pm_{t-1})$	$log(Y_{t-1})$	$(AR1)$	DW	$R2$	Sample
A	-0.005 (-0.701)	0.329 (1.786)*		1.970 (8.114)***							2.251	0.648	1962-2013
B	0.004 (0.668)	0.336 (3.790)***		1.649 (8.360)***						-0.272 (-1.917)*	2.131	0.6921	1963-2013
DK	0.006 (0.907)		-0.152 (-1.272)	1.868 (8.994)***							2.004	0.618	1961-2013
FIN	-0.007 (-0.886)		-0.115 (-0.946)	1.854 (10.137)***							2.082	0.677	1961-2013
F	-0.001 (-0.159)	0.296 (3.604)***		1.940 (8.884)***							2.008	0.725	1962-2013
D	0.007 (0.923)		0.101 (1.098)	2.010 (9.666)***						0.241 (1.728)*	1.918	0.6841	1963-2013
GR	0.019 (1.830)*		0.148 (0.772)	1.268 (6.884)***							1.767	0.510	1961-2013
IRL	-1.578 (-3.623)***		0.174 (1.417)	1.351 (5.249)***		0.230 (1.839)*	-0.527 (-4.032)**	0.163 (1.941)*	0.807 (3.909)***		2.091	0.559	1962-2013
I	0.000 (-0.010)	0.195 (2.236)**		2.829 (10.797)***	-0.858 (-3.394)***						2.032	0.7193	1962-2013
L	0.010 (1.107)		-0.025 (-0.168)	1.230 (6.925)***							2.146	0.490	1961-2013
NL	0.007 (1.341)	0.145 (1.930)*		1.589 (9.536)***							1.873	0.727	1962-2013
P	-2.121 (-3.979)***		0.340 (2.408)**	1.641 (5.161)***			-0.555 (-4.128)**	0.411 (3.773)***	0.858 (4.141)***		1.636	0.551	1961-2013
E	-0.009 (-0.769)	0.225 (2.073)***		2.443 (8.171)***							1.581	0.649	1962-2013
S	-0.009 (-1.317)	0.252 (2.808)***		2.063 (9.993)***							2.210	0.678	1962-2013
UK	-4.300 (-5.583)***		-0.010 (-0.184)	1.778 (11.126)***			-0.594 (-5.721)***	0.098 (2.633)***	1.083 (5.677)***		2.114	0.798	1961-2013

Notes: *,**,*** stand for 10%, 5% and 1% significance levels respectively; *t*-values are given in parentheses.
A = Austria, B = Belgium, DK = Denmark, FIN = Finland, F = France, D = Germany, GR = Greece, IRL = Ireland, I = Italy, L = Luxembourg, NL = Netherlands, P = Portugal, E = Spain, S = Sweden, UK = United Kingdom

Table 7. *The summary of the effects of a 1%-point increase in the profit share at the national and European level*

	The effect of a 1%-point increase in the profit share in only one country on:								The effect of a simultaneous 1% - point increase in the profit share on % change in aggregate demand
	C/Y	I/Y	X/Y	M/Y	NX/Y	Private excess demand / Y	Multiplier	% Change in aggregate demand (F*G)	
	A	B	C	D	E (C-D)	F (A+B+E)	G	H	I
A	-0.277	0.000	0.234	-0.161	0.396	0.119	1.039	0.124	-0.185
B	-0.151	0.206	0.000	-0.053	0.053	0.108	0.740	0.080	0.009
DK	-0.155	0.169	0.185	0.000	0.185	0.198	1.246	0.247	0.107
FIN	-0.243	0.000	0.074	0.000	0.074	-0.169	1.316	-0.222	-0.304
F	-0.324	0.101	0.062	-0.078	0.140	-0.083	1.559	-0.129	-0.228
D	-0.397	0.000	0.049	0.000	0.049	-0.348	1.136	-0.395	-0.442
GR	-0.564	0.000	0.099	0.000	0.099	-0.465	1.984	-0.923	-1.027
IRL	-0.229	0.161	0.000	-0.074	0.074	0.006	0.863	0.005	-0.066
I	-0.410	0.156	0.050	-0.087	0.137	-0.117	1.451	-0.170	-0.238
L	-0.153	0.000	0.000	0.000	0.000	-0.153	0.535	-0.082	-0.128
NL	-0.322	0.078	0.000	-0.069	0.069	-0.175	0.820	-0.144	-0.191
P	-0.402	0.000	0.000	-0.182	0.182	-0.219	1.546	-0.339	-0.477
E	-0.410	0.088	0.044	-0.068	0.113	-0.210	2.147	-0.450	-0.544
S	-0.388	0.128	0.057	-0.056	0.113	-0.147	1.058	-0.155	-0.271
UK	-0.252	0.000	0.074	-0.066	0.140	-0.112	1.129	-0.126	-0.195
EU15 GDP									-0.298*

Notes: A = Austria, B = Belgium, DK = Denmark, FIN = Finland, F = France, D = Germany, GR = Greece, IRL = Ireland, I = Italy, L = Luxembourg, NL = Netherlands, P = Portugal, E = Spain, S = Sweden, UK = United Kingdom

* The country specific growth rates from column I are multiplied with the weighted share of each country in EU15 GDP.

Table 8. *Three wage-led recovery scenarios*

	Scenario 1 *All countries going back to the peak wage share level*		**Scenario 2** *Differentiated increase in the wage share in profit-led and wage-led countries*		**Scenario 3** *Recovery to peak level in wage-led countries and differentiated increase in the wage share in profit-led countries*	
	Change in the profit share	The % change in aggregate demand (including changes in P_m and Y_{rw})	Change in the profit share	The % change in aggregate demand (including changes in P_m and Y_{rw})	Change in the profit share	The % change in aggregate demand (including changes in P_m and Y_{rw})
A	-11.734	0.92	-3.00	1.15	-3.00	1.97
B	-4.167	0.29	-1.00	0.27	-3.00	0.35
DK	-6.094	-0.34	-1.00	0.44	-3.00	0.40
FIN	-10.247	2.94	-5.00	1.49	-10.25	2.90
F	-8.452	1.92	-5.00	1.12	-8.45	1.90
D	-7.441	3.34	-5.00	2.20	-7.44	3.32
GR	-7.134	7.43	-5.00	5.12	-7.13	7.41
IRL	-21.949	0.49	-3.00	0.33	-3.00	0.58
I	-6.347	1.67	-5.00	1.18	-6.35	1.65
L	-3.012	0.64	-5.00	0.64	-3.01	0.64
NL	-8.948	1.69	-5.00	0.95	-8.95	1.68
P	-18.278	7.53	-5.00	2.38	-18.28	7.51
E	-12.683	6.47	-5.00	2.71	-12.68	6.45
S	-7.488	2.11	-5.00	1.28	-7.49	2.02
UK	-8.692	1.70	-5.00	0.96	-8.69	1.65
EU 15 GDP*	2.56		1.51		3.15	

Notes: A = Austria, B = Belgium, DK = Denmark, FIN = Finland, F = France, D = Germany, GR = Greece, IRL = Ireland, I = Italy, L = Luxembourg, NL = Netherlands, P = Portugal, E = Spain, S = Sweden, UK = United Kingdom

* EU15 GDP is calculated by multiplying country specific growth rates with the weighted share of each country in EU15 GDP.

Table 9. *The effects of a differentiated increase in the wage share on investment and net exports*

	Based on *Differentiated increase in the wage share in profit-led and wage-led countries*		**Investment Regime** *Total effects of a differentiated increase in the wage share on investment*	**Trade Balance Effects** *Total effects of a differentiated increase in the wage share on net exports*
	Change in profit share	The % change in aggregate demand	Total effect on I/Y	Total effect on NX/Y
	A	*B*	*C*	*D*
A	-3.00	1.15	0.431	-0.419
B	-1.00	0.27	-0.138	0.202
DK	-1.00	0.44	0.020	0.153
FIN	-5.00	1.49	0.647	-0.758
F	-5.00	1.12	-0.053	-0.753
D	-5.00	2.20	0.684	-0.913
GR	-5.00	5.12	2.358	-1.404
IRL	-3.00	0.33	-0.379	-0.052
I	-5.00	1.18	-0.409	-0.842
L	-5.00	0.64	0.167	-0.355
NL	-5.00	0.95	-0.225	-0.641
P	-5.00	2.38	0.895	-1.004
E	-5.00	2.71	1.024	-1.303
S	-5.00	1.28	-0.095	-0.812
UK	-5.00	0.96	0.144	-0.756
Average*		*1.51*	*0.24*	*-0.793*

Notes: A = Austria, B = Belgium, DK = Denmark, FIN = Finland, F = France, D = Germany, GR = Greece, IRL = Ireland, I = Italy, L = Luxembourg, NL = Netherlands, P = Portugal, E = Spain, S = Sweden, UK = United Kingdom

* The country specific growth rates in column B and changes in investment and net exports in column C, D are each multiplied with the weighted share of each country in EU15 GDP.

Appendix A - Data Sources

Time-series data	Variable	Definition	Source [Variable construction]
Adjusted wage share	ws	*Compensation per employee as percentage of GDP at factor cost per person employed*	AMECO Database http://ec.europa.eu/
Adjusted profit share	π		$[\pi = 1 - ws]$
GDP in market prices (real)	Y	*Gross domestic product at 2010 market prices*	AMECO Database http://ec.europa.eu/
GDP at factor costs (real)	Y_f	*Gross domestic product at market prices minus taxes on production and imports, plus subsidies*	AMECO Database http://ec.europa.eu/
Private Consumption (real)	C	*Private final consumption expenditure at constant prices*	AMECO Database http://ec.europa.eu/
Adjusted compensation of employees (real)	W		$[W = ws * Y_f]$
Adjusted gross operating surplus (real)	R		$[R = \pi * Y_f]$
Total Investment (real)	I_t	*Gross fixed capital formation at constant prices; total economy*	AMECO Database http://ec.europa.eu/
Total investment (current prices)	I_{tcurr}	*Gross fixed capital formation at current prices; total economy*	AMECO Database http://ec.europa.eu/
Private investment (current prices)	I_{pr}	*Gross fixed capital formation at current prices; private sector*	AMECO Database http://ec.europa.eu/
Ratio of private to total investment	I_{ps}		$[I_{ps} = I_{pr}/I_{tcurr}]$
Private Investment (real)	I		$[I = I_t * I_{ps}]$
Real long-term interest rate	r	*Real long-term interest rates, deflator GDP*	AMECO Database http://ec.europa.eu/
GDP Deflator	P	*Price deflator gross domestic product at market prices*	AMECO Database http://ec.europa.eu/
Import price deflator	P_m	*Price deflator imports of goods and services*	AMECO Database http://ec.europa.eu/

Export price deflator	P_x	*Price deflator exports of goods and services*	AMECO Database http://ec.europa.eu/
Exports (real)	X	*Exports of goods and services at constant prices*	AMECO Database http://ec.europa.eu/
Imports (real)	M	*Imports of goods and services at constant prices*	AMECO Database http://ec.europa.eu/
Foreign GDP (real)	Y_{rw}	*GDP of the rest of the world*	World Bank World Development Indicators (WDI) http://data.worldbank.org [World GDP (in constant 2005 US$) - own GDP (in constant 2005 US$)]
Imports from country j to country i	M_{ji}	*Imports from country j to country i*	IMF, Direction of Trade Statistics, https://stats.ukdataservice.ac.uk//
Exchange Rate	E	*Average of local currency per dollar, euro, and yen*	World Bank World Development Indicators (WDI) http://data.worldbank.org
Real unit labour costs	$rulc$		$[rulc = ws * Y_f/Y]$
Unit labour Costs	ulc		$[ulc = rulc * P]$
Total factor productivity	τ	*Total factor productivity: total economy*	AMECO Database http://ec.europa.eu/

Notes: Private investment, real: For Luxembourg the data starts in 1990; for Belgium, Denmark, France, Ireland, Italy, Netherlands, Spain, and Sweden in 1970. We have reconstructed the data assuming the ratio of private to total investment to stay constant. Real long-term interest rate: Data in Portugal starts in 1984, in Greece in 1972, in Ireland in 1970, in Spain in 1977, and in Luxembourg 1972. Imports from country j to country i: 1980-2012 for all countries.

Appendix B

Table B1. *Average growth rates (percent) of GDP in EU15 countries*

	A	B	DK	FIN	F	D	GRE	IRL	I	L	NL	P	E	S	UK
1961-69	4.5	4.8	5.2	4.5	5.7	4.4	8.5	4.4	5.8	3.8	5.0	5.5	7.7	4.4	2.9
1970-79	4.2	3.6	2.4	4.2	4.1	3.3	5.5	4.7	4.0	2.7	3.5	5.4	3.9	2.5	2.4
1980-89	2.0	2.2	1.9	3.7	2.4	2.0	0.8	3.1	2.6	4.6	2.0	3.4	2.7	2.3	2.5
1990-99	2.7	2.2	2.5	1.9	2.0	2.2	2.1	7.0	1.5	4.8	3.2	3.4	2.7	1.8	2.7
2000-07	2.4	2.2	1.9	3.5	2.1	1.6	4.1	5.5	1.5	4.4	2.3	1.5	3.8	3.2	3.0
2008-2013	0.6	0.5	-0.6	-0.8	0.3	0.6	-4.8	-1.1	-1.4	0.8	-0.1	-1.2	-1.1	0.7	0.2

Notes: A = Austria, B = Belgium, DK = Denmark, FIN = Finland, F = France, D = Germany, GR = Greece, IRL = Ireland, I = Italy, L = Luxembourg, NL = Netherlands, P = Portugal, E = Spain, S = Sweden, UK = United Kingdom

Appendix C

In order to eventually sum up the individual effects across different components of demand and find $\Delta Y/Y$ as a response to a 1-percentage point increase in π (R/Y), we are interested in the marginal effects, rather than elasticites. Following Stockhammer et al. (2009) we thus convert elasticities to marginal effects. In the case of consumption, the elasticities are c_R and c_W in equation (1) respectively. Note that in Equation (1) $c_R$is estimated for a given W. The same is true for c_W where the elasticity is estimated for a given R. Hence:

$$c_R = \frac{\partial logC}{\partial logR}\Big|_W \cong \frac{\partial C}{C} \Big/ \frac{\partial R}{R}\Big|_W = \frac{\partial C}{\partial R}\frac{R}{C}\Big|_W$$

(C1)

and

$$c_W = \frac{\partial logC}{\partial logW}\Big|_R \cong \frac{\partial C}{C} \Big/ \frac{\partial W}{W}\Big|_R = \frac{\partial C}{\partial W}\frac{W}{C}\Big|_R \qquad \text{(C2)}$$

Multiplying and dividing equation (C1) and (C2) by Y gives

$$c_R = \frac{\partial C/Y}{\partial R/Y}\frac{R}{C}\Big|_W \qquad \text{(C3)}$$

and

$$c_W = \frac{\partial C/Y}{\partial W/Y}\frac{W}{C}\Big|_R \qquad \text{(C4)}$$

Calculating the marginal effects gives

$$\frac{\partial C/Y}{\partial R/Y}\Big|_W = c_R \frac{C}{R}\Big|_W \qquad \text{(C5)}$$

and

$$\frac{\partial C/Y}{\partial W/Y}\Big|_R = c_W \frac{C}{W}\Big|_R \qquad \text{(C6)}$$

Since we know that $W/Y = 1 - R/Y$, we can say that, for a given Y (prior to any multiplier effects), whenever there is an increase in R/Y there is an equivalent fall in W/Y. The aggregate effect combines these effects for an initially constant Y:

$$\frac{\Delta C/Y}{\Delta R/Y} = c_R \frac{C}{R} - c_W \frac{C}{W} \qquad \text{(C7)}$$

In converting the elasticities to marginal effects, we multiply the estimated elasticities of R and W by the mean values of C/R and C/W, respectively, for the whole sample. The initial changes in C and I will lead to changes in demand and output, this in turn will lead to further changes in C and I through the multiplier mechanism as discussed in appendix D.

In the case of Investment, i_π in equation (3) is the elasticity of I with respect to $\pi(R/Y)$, hence:

$$i_\pi = \frac{\partial logI}{\partial \log(R/Y)} \cong \frac{\partial I}{I} \Big/ \frac{\partial (R/Y)}{(R/Y)} = \frac{\partial I}{\partial (R/Y)}\frac{R/Y}{I} \qquad \text{(C8)}$$

Multiplying and dividing by Y, we obtain

$$i_\pi = \frac{\partial I}{\partial (R/Y)}\frac{Y}{Y}\frac{R/Y}{I} = \frac{\partial I/Y}{\partial (R/Y)}\frac{R}{I} \qquad \text{(C9)}$$

Hence, the marginal effect of R/Y on I/Y is:

$$\frac{\Delta I/Y}{\Delta(R/Y)} = i_\pi \frac{I}{R} \tag{C10}$$

In converting the elasticity to the marginal effect on I/Y, we use the mean value of I/R for the whole sample.

Appendix D

In order to simulate the case of a simultaneous fall in the wage share we can decompose the effects of a change in the profit shares in all countries to national and European effects. The total effect is given by:

$$\begin{bmatrix} \frac{\Delta Y_1}{Y_1} \\ \vdots \\ \frac{\Delta Y_n}{Y_n} \end{bmatrix} = E_{nxn} \begin{bmatrix} \Delta\pi_1 \\ \vdots \\ \Delta\pi_n \end{bmatrix} + H_{nxn} \begin{bmatrix} \frac{\Delta Y_1}{Y_1} \\ \vdots \\ \frac{\Delta Y_n}{Y_n} \end{bmatrix} + P_{nxn} \begin{bmatrix} \Delta\pi_1 \\ \vdots \\ \Delta\pi_n \end{bmatrix} + W_{nxn} \begin{bmatrix} \frac{\Delta Y_1}{Y_1} \\ \vdots \\ \frac{\Delta Y_n}{Y_n} \end{bmatrix} \tag{D1}$$

where E is a diagonal $n\ x\ n$ matrix, where the diagonal elements are the effect of a change in the profit share in country i on private excess demand in country i, calculated as in equations (2), (4), (9) and (10).

$$E_{nxn} = \begin{bmatrix} \frac{\frac{\Delta C}{Y_1} + \frac{\Delta I}{Y_1} + \frac{\Delta NX}{Y_1}}{\Delta\pi_1} & 0 & \cdots & 0 \\ 0 & \ddots & \vdots & \vdots \\ \vdots & \ddots & \ddots & \vdots \\ 0 & \cdots & \cdots & \frac{\frac{\Delta C}{Y_n} + \frac{\Delta I}{Y_n} + \frac{\Delta NX}{Y_n}}{\Delta\pi_n} \end{bmatrix} \tag{D2}$$

H is an $n\ x\ n$ diagonal matrix, which shows the effect of a change in aggregate demand on private excess demand in each country and reflects the national multiplier:

$$H_{nxn} = \begin{bmatrix} \frac{\Delta C_1}{\Delta Y_1} + \frac{\Delta I_1}{\Delta Y_1} - \frac{\Delta M_1}{\Delta Y_1} & 0 & \cdots & 0 \\ 0 & \ddots & \cdots & \vdots \\ \vdots & \ddots & \ddots & \vdots \\ 0 & \cdots & \cdots & \frac{\Delta C_n}{\Delta Y_n} + \frac{\Delta I_n}{\Delta Y_n} - \frac{\Delta M_n}{\Delta Y_n} \end{bmatrix} \tag{D3}$$

Any change in private demand in country i will lead to a multiplier mechanism in that country that is it will affect consumption, investment, and imports. The coefficient estimates in tables 1, 2 and 6 give the elasticities of C, I, and M with respect to Y (e_{CY}, e_{IY}, e_{MY}).

For the elasticity of C with respect to Y, e_{CY}, there is need for further calculation: e_{CY} is calculated as $e_{CR}\pi + e_{CW}(1-\pi)$, where e_{CR} and e_{CW} are the elasticity of C with respect to profit and wage income respectively. Thus e_{CY} is a weighted average of the elasticities of C with respect to R and W, where weights are the shares of R and W in Y (at sample mean).

The elasticities have to be converted into partial effects, for example:

$$e_{CY,i} = \frac{\partial log C_i}{\partial log Y_i} \cong \frac{\frac{\partial C_i}{C_i}}{\frac{\partial Y_i}{Y_i}} = \frac{\partial C_i}{\partial Y_i}\frac{Y_i}{C_i} \tag{D4}$$

Hence,

$$\frac{\partial C_i}{\partial Y_i} = e_{CY,i}\frac{C_i}{Y_i} \tag{D5}$$

Finally,

$$H_{ii} = \frac{\partial C_i}{\partial Y_i} + \frac{\partial I_i}{\partial Y_i} - \frac{\partial M_i}{\partial Y_i} = e_{CY,i}\frac{C_i}{Y_i} + e_{IY,i}\frac{I_i}{Y_i} - e_{MY,i}\frac{M_i}{Y_i}. \tag{D6}$$

If we assume that the change in the profit share is isolated to a single country, then in order to find the total effects of a change in π_i on equilibrium aggregate demand in country i, private excess demand (E_{ii}) has to be multiplied by the standard multiplier:

$$\frac{\Delta Y_i/Y_i}{\Delta \pi_i} = \frac{\left(\frac{\partial(C_i/Y_i)}{\partial \pi_i} + \frac{\partial(I_i/Y_i)}{\partial \pi_i} + \frac{(\partial NX_i/Y_i)}{\partial \pi_i}\right)}{1 - \left(\frac{\partial C_i}{\partial Y_i} - \frac{\partial I_i}{\partial Y_i} + \frac{\partial M_i}{\partial Y_i}\right)} = \frac{E_{ii}}{1 - H_{ii}} \tag{D7}$$

The numerator is private excess demand, that is, the change in private demand caused by a change in income distribution, for a given level of income. The term $1/\,1 - \left(\frac{\partial C_i}{\partial Y_i} - \frac{\partial I_i}{\partial Y_i} + \frac{\partial M_i}{\partial Y_i}\right)$ in equation (D7) is the standard multiplier and is expected to be positive for stability.

The last two matrices in Equation (D1) reflect the European effects when there is a simultaneous change in π in all EU15 countries. P is a $n\ x\ n$ matrix, which shows the effects of a change in a trade partner's profit share, π_j, on net exports in each country i:

$$P_{nxn} = \begin{bmatrix} 0 & \frac{\partial\left(\frac{NX}{Y}\right)_1}{\partial \pi_2}\frac{M_{21}}{M_1} & \cdots & \frac{\partial\left(\frac{NX}{Y}\right)_1}{\partial \pi_n}\frac{M_{n1}}{M_1} \\ \frac{\partial\left(\frac{NX}{Y}\right)_2}{\partial \pi_1}\frac{M_{12}}{M_2} & 0 & \ldots & \vdots \\ \vdots & \ddots & \ddots & \vdots \\ \frac{\partial\left(\frac{NX}{Y}\right)_n}{\partial \pi_1}\frac{M_{1n}}{M_n} & \frac{\partial\left(\frac{NX}{Y}\right)_n}{\partial \pi_2}\frac{M_{2n}}{M_n} & \cdots & 0 \end{bmatrix} \tag{D8}$$

The diagonal elements of P are zero, the off-diagonal elements are calculated as:

$$P_{ij} = \frac{\partial\left(\frac{NX}{Y}\right)i}{\Delta \pi_j}\frac{M_{ji}}{M_i} = \left(e_{Pxj}\frac{1}{1-e_{pj}}\frac{Yf_j}{Y_j}\frac{1}{rulc_j}\right)\frac{M_{ji}}{M_i}\left(e_{XPi}\frac{X_i}{Y_i} - e_{MPi}\frac{M_i}{Y_i}\right) \tag{D9}$$

The terms in the first parenthesis shows the effect of a change in the profit share in country j on its export prices, based on elasticities from equation (9). This change is weighted by the share of imports from country j to country i in country i's total imports to reflect the effect on country i's overall import prices. The last term calculates the effects of this change in import prices on country i's exports – imports (using the elasticities of X and M to P_x/P_m and P/P_m respectively), each weighted by the share of exports and imports in GDP.

W is an $n\ x\ n$ matrix, which shows the effects of a change in a trade partner's GDP on the exports of each country:

$$W_{nxn} = \begin{bmatrix} 0 & e_{XYrw,1}\frac{X_1}{Y_1}\frac{Y_2}{Y_w} & \cdots & e_{XYrw,1}\frac{X_1}{Y_1}\frac{Y_n}{Y_w} \\ e_{XYrw,2}\frac{X_2}{Y_2}\frac{Y_1}{Y_w} & 0 & \ldots & e_{XYrw,2}\frac{X_2}{Y_2}\frac{Y_n}{Y_w} \\ \vdots & \ddots & \ddots & \vdots \\ e_{XYrw,n}\frac{X_n}{Y_n}\frac{Y_1}{Y_w} & e_{XYrw,n}\frac{X_n}{Y_n}\frac{Y_2}{Y_w} & \cdots & 0 \end{bmatrix} \quad \text{(D10)}$$

The diagonal elements of this matrix are zero, and the off-diagonal element, W_{ij}, reflects the effect of a change in country j's income on country i's exports (as a ratio to GDP), and is calculated as the elasticity of exports of country i with respect to the GDP of the rest of the world ($e_{XY_{rw},i}$) multiplied by the share of exports in GDP in country i and weighted by the share of country j in world GDP (Y_w).

Appendix E

Table E1. *Calculation of the marginal effect of a 1 percentage-point increase in the profit share on net exports*

	Exports									**Imports**			**Sum**	
	$e(P)$	$\frac{1}{1-e(P)}$	$e(PX)$	$e(XP)$	$eX.rulc$	$rulc$	Y_f/Y	X/Y	$\frac{\partial X/Y}{\partial \pi}$	$e(M,P)$	$e(M,rulc)$	(M/Y)	$\frac{\partial M/Y}{\partial \pi}$	$\frac{\partial NX/Y}{\partial \pi}$
	A	B	C	D	E (B*C*D)	F	G	H	I(-E*G*H/F)	J	K(A*B*J)	L	M(-K*G*L/F)	I-M
A	0.524	2.099	0.152	-1.728	-0.551	0.599	0.874	0.291	0.234	0.329	0.361	0.306	-0.161	0.396
B	0.180	1.220	0.096	0.000	0.000	0.603	0.897	0.491	0.000	0.336	0.074	0.487	-0.053	0.053
DK	0.465	1.870	0.347	-0.627	-0.406	0.582	0.866	0.305	0.185	0.000	0.000	0.261	0.000	0.185
FIN	0.516	2.067	0.185	-0.576	-0.220	0.608	0.890	0.230	0.074	0.000	0.000	0.244	0.000	0.074
F	0.529	2.121	0.289	-0.439	-0.269	0.602	0.869	0.161	0.062	0.296	0.332	0.163	-0.078	0.140
D	0.382	1.617	0.253	-0.379	-0.155	0.600	0.913	0.207	0.049	0.000	0.000	0.195	0.000	0.049
GR	0.423	1.734	0.377	-0.729	-0.476	0.547	0.908	0.125	0.099	0.000	0.000	0.179	0.000	0.099
IRL	0.256	1.344	0.171	0.000	0.000	0.588	0.896	0.455	0.000	0.310	0.107	0.456	-0.074	0.074
I	0.633	2.723	0.235	-0.307	-0.196	0.586	0.913	0.165	0.050	0.195	0.336	0.165	-0.087	0.137
L	0.232	1.303	0.322	0.000	0.000	0.521	0.930	1.190	0.000	0.000	0.000	0.999	0.000	0.000
NL	0.461	1.855	0.370	0.000	0.000	0.634	0.916	0.428	0.000	0.145	0.124	0.385	-0.069	0.069
P	0.471	1.889	0.139	0.000	0.000	0.638	0.913	0.161	0.000	0.741	0.659	0.194	-0.182	0.182
E	0.585	2.410	0.301	-0.277	-0.201	0.614	0.913	0.149	0.044	0.225	0.318	0.144	-0.068	0.113
S	0.342	1.519	0.172	-0.508	-0.132	0.517	0.815	0.273	0.057	0.252	0.131	0.273	-0.056	0.113
UK	0.582	2.393	0.207	-0.518	-0.257	0.612	0.890	0.199	0.074	0.165	0.230	0.198	-0.066	0.140

Notes: A = Austria, B = Belgium, DK = Denmark, FIN = Finland, F = France, D = Germany, GR = Greece, IRL = Ireland, I = Italy, L = Luxembourg, NL = Netherlands, P = Portugal, E = Spain, S = Sweden, UK = United Kingdom

The marginal effect of a 1%-point increase in the profit share on exports and imports is -1*the effect of a 1%-point increase in the wage share on exports and imports. Therefore, in columns I and M, the values coming from E and K are multiplied by -1.

Appendix F

Table F1. *Elasticities of C, I, M with respect to Y and the Multiplier*

	e_{CY}	e_{IY}	e_{MY}	h	Multiplier
Austria	0.473	1.881	1.970	0.038	1.039
Belgium	0.373	1.334	1.649	-0.351	0.740
Denmark	0.517	2.929	1.868	0.197	1.246
Finland	0.492	2.067	1.854	0.240	1.316
France	0.499	2.214	1.940	0.358	1.559
Germany	0.348	1.810	2.010	0.120	1.136
Greece	0.427	2.293	1.268	0.496	1.984
Ireland	0.404	1.802	1.531	-0.158	0.863
Italy	0.550	1.722	1.970	0.311	1.451
Luxembourg	0.242	1.728	1.230	-0.870	0.535
Netherlands	0.448	0.985	1.589	-0.219	0.820
Portugal	0.457	2.119	1.547	0.353	1.546
Spain	0.575	2.720	2.443	0.534	2.147
Sweden	0.383	2.406	2.063	0.055	1.058
United Kingdom	0.548	1.076	1.823	0.115	1.129

Notes: Shows the elasticities of C, I, and M with respect to Y as given by the coefficient estimates in table 1, 2 and 6. The national multiplier is calculated for each country as described in the diagonal elements of the H matrix in appendix D.

Appendix G

Table G1. *The effects of an isolated 1% point increase in the profit share on investment and net exports*

	Total effects of an isolated 1% point increase in the profit share on investment	**Total effects of an isolated 1% increase in the profit share on net exports**
	Total effect on I/Y	Total effect on NX/Y
Austria	0.046	0.32
Belgium	0.226	-0.01
Denmark	0.274	0.06
Finland	-0.097	0.17
France	0.049	0.18
Germany	-0.123	0.20
Greece	-0.425	0.31
Ireland	0.163	0.07
Italy	0.103	0.19
Luxembourg	-0.021	0.10
Netherlands	0.053	0.16
Portugal	-0.128	0.26
Spain	-0.155	0.27
Sweden	0.062	0.20
United Kingdom	-0.012	0.19

Notes: For investment, we calculate the ex-post multiplier effect taking country specific values from table 7 column H.

Table G2. *The total effects of a simultaneous 1% point increase in the profit share on investment and net exports*

	Total effects of a simultaneous 1% point increase in the profit share on investment	**Total effects of a simultaneous 1% increase in the profit share on net exports**
	Total effect on I/Y	Total effect on NX/Y
Austria	-0.070	0.21
Belgium	0.208	-0.05
Denmark	0.214	0.02
Finland	-0.132	0.15
France	0.009	0.15
Germany	-0.138	0.18
Greece	-0.473	0.28
Ireland	0.141	0.04
Italy	0.081	0.17
Luxembourg	-0.033	0.07
Netherlands	0.045	0.13
Portugal	-0.180	0.20
Spain	-0.206	0.26
Sweden	0.012	0.16
United Kingdom	-0.029	0.15
*Average**	*-0.039*	*0.162*

Notes: For investment, we calculate the ex-post multiplier effect taking country specific values from table 7 column I.* The country specific changes in investment and net exports are each multiplied with the weighted share of each country in EU15 GDP.

Table G3. *The effect of a 1% point increase in the wage share on annual inflation and nominal unit labour costs*

	1% point increase in the wage share in isolation		**1% point simultaneous increase in the wage share**	**Differentiated simultaneous increase in the wage share***
	ULC $\Delta logulc/\Delta ws$	Annual inflation $\Delta logP/\Delta ws$	Annual inflation $\Delta logP/\Delta ws$	Annual inflation $\Delta logP/\Delta ws$
Austria	3.062	1.603	1.652	1.008
Belgium	1.815	0.327	0.434	0.170
Denmark	2.785	1.296	1.374	0.335
Finland	3.025	1.562	1.637	1.626
France	3.059	1.617	1.681	1.674
Germany	2.461	0.939	1.036	1.028
Greece	2.877	1.217	1.293	1.288
Ireland	2.049	0.525	0.612	0.398
Italy	4.242	2.684	2.749	2.744
Luxembourg	2.325	0.541	0.605	0.592
Netherlands	2.680	1.235	1.282	1.276
Portugal	2.702	1.272	1.343	1.340
Spain	3.581	2.095	2.177	2.173
Sweden	2.396	0.818	0.911	0.887
United Kingdom	3.477	2.025	2.092	2.085
Average	*2.836*	*1.317*	*1.392*	*1.242*

Notes: *The differentiated increase in Δws is based on scenario 2 illustrated in table 8 (negation of $\Delta\pi$) divided by 5 to report the annual change in Δws and its effects on annual inflation.