The impact of financialisation on the wage share. A theoretical clarification and empirical test

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Abstract

It is frequently asserted that financialisation has contributed to the decline in the wage share. This paper provides a theoretical clarification and a systematic empirical investigation. We identify four channels through which financialisation can affect the wage share: (1) enhanced exit options of firms; (2) rising price mark-ups due to financial overhead costs for businesses; (3) increased competition on capital markets; and (4) the role of household debt in increasing workers' financial vulnerability and undermining their class consciousness. The paper compiles a comprehensive set of empirical measures of financialisation and uses it to test these hypotheses with a panel regression of 14 OECD countries over the 1992-2014 period. We find strong evidence for negative effects of financial liberalisation and financial payments of non-financial corporations on the wage share that are in the same order of magnitude as the effects of globalisation.

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1. Introduction

The last four decades have been characterised by drastic changes in the distribution of income between wages and profits. Figure 1 shows the median of the adjusted wage share[1] for 14 member states of the Organisation for Economic Cooperation and Development (OECD) from 1970 to 2014.[2] The wage share moves countercyclical because profits decline in recessions, while wage incomes are more stable due to fixed wage contracts. Noteworthy, however, is the long-term trend: between 1977, when the median wage share peaked at 71.6% of gross domestic product (GDP), and 2014 there was a decline by 8.4%-points. In the same time period, we observe an 'unprecedented expansion of financial activities, rapid growth of financial profits, permeation of economy and society by financial relations, and domination of economic policy by the concerns of the financial sector' (Lapavitsas 2013, p. 3) – a phenomenon often dubbed 'financialisation', which has given rise to a substantial academic literature. Financialisation has many dimensions, including financial deregulation, securitisation, shareholder value orientation, and increasing household debt. Most studies on financialisation are concerned with its effects on firms' investment decisions (Stockhammer 2004; Orhangazi 2008; Tori and Onaran 2017), corporate governance and employment (Lazonick and O'Sullivan 2000), the changing role of financial assets and liabilities for households (Hein 2012, chap. 5), and the implications of financial deregulation on financial stability (Lapavitsas 2009; Guttman 2016). The issue of income distribution is often touched upon, but rarely analysed systematically. Palley (2007)[3] and Lapavitsas (2013)[4] assert that financialisation has contributed to the decline in the wage share, but fail to identify mechanisms and do not provide econometric evidence. Hein (2015) presents the most elaborate theoretical discussion of the impact of financialisation on the wage share from a Kaleckian perspective. Jayadev (2007), Lin and Tomaskovic-Devey (2013), Alvarez (2015), Dünhaupt (2016), Wood (2017), and Stockhammer (2017) offer econometric evidence on the effect of financialisation on functional income distribution.[5]

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[1] The adjusted wage share includes imputed payments of self-employed workers.
[2] Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, the Netherlands, Portugal, Spain, Sweden, the United Kingdom, and the USA.
[3] "Economists have identified multiple factors behind the stagnation of wages and the growth of income inequality […]. Those factors include the erosion of unions, the minimum wage, and labor market solidarity; globalization and trade; immigration; skill-biased technical change; and rising CEO pay […]. However, such analysis tends to treat these factors as independent of each other. The financialization thesis maintains that many of these factors should be linked and interpreted as part of a new economic configuration that has been explicitly promoted by financial sector interests" (Palley 2007, p. 11-12).
[4] "The divergence between [labour productivity and hourly real wages] is a further indication of the worsening position of labour in the course of financialisation" (Lapavitsas 2013, p. 190).
[5] Some studies also analyse the effect of financialisation on measures of personal income distribution, such as the Gini coefficient (Kus 2012; Jaumotte and Buitron 2015), top income shares (Flaherty 2015; Jaumotte and Buitron 2015), and earnings dispersion (Lin and Tomaskovic-Devey 2013).

However, these studies tend to focus only on one measure of financialisation, which does not do justice to its multidimensional character and runs the risk of omitting important channels. Using only a single measure of financialisation in regression analyses may be misleading, as the different dimensions of financialisation are likely to be correlated. Moreover, there are no cross-country studies that take into account the time period after the Great Recession (2009).[6]

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[6] An exception is Hein et al. (2017) which offer a descriptive analysis of trends in income distribution and financialisation, measured by the relative size of the financial sector and rentier incomes, for pre- and post-crisis Sweden, United Kingdom, and the USA. In the post-crisis period, they find an association between financialisation and the wage share for the USA, while the United Kingdom's wage share mostly declined due to an erosion of worker's bargaining power. Sweden's wage share remained constant in the post-crisis period.

Figure 1: Adjusted wage share, 1970-2014, median and interquartile range over 14 OECD countries

The aim of this paper is theoretical clarification as well as empirical evaluation. We argue that financialisation affects income distribution by four different channels that require distinct empirical measures: (1) increased exit options for capital due to financial globalisation; this is based on models of bargaining in which exit options determine bargaining power. (2) Increased financial payments for non-financial businesses due to shareholder value orientation; this is based on mark-up pricing theories that postulate financial cost-sensitive mark-ups. (3) Increased competition on capital markets; this has been put forward by neo-Marxian authors. (4) Increased household debt; this is an under-theorised area, where heterodox economists and Cultural Political Economy have made contributions.

Hypotheses about the relation between financialisation and the wage share can be found in different theoretical approaches within heterodox Political Economy. It is not always possible to associate one hypothesis strictly to a single theoretical tradition. Bargaining power plays a

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role in Marxian and Kaleckian theory, but also in mainstream economics accounting for imperfect competition. Mark-up pricing is often associated with the work of Kaleckians, but can be found in post-Keynesian and Sraffian economics in general. Therefore, we prefer the term channel rather than 'theory' to distinguish the different hypotheses.

We have compiled a broad data set of financialisation variables for OECD countries. The empirical contribution of the paper is to econometrically test these four mechanisms with a panel analysis of 14 OECD countries for the period 1992 to 2014, and thus to assess the empirical validity of the theoretical channels through which financialisation impacts on functional income distribution. Thereby, the paper also contributes to our understanding of the causes behind the recent surge in inequality. Our main finding is that there are strong negative effects of financial liberalisation and financial payments of non-financial corporations on the wage share. Rising household debt also reduces wage shares, albeit only in countries with a high share of mortgage debt among low-income earners combined with weak bargaining institutions. Taken together, the effects of financialisation are in a similar order of magnitude as the effects of globalisation.

The paper is structured as follows: section 2 discusses theoretical hypotheses and summarises empirical studies about the effect of financialisation on functional income distribution. In section 3, the econometric method is outlined, and variable definitions and data sources are introduced. Section 4 presents econometric results and section 5 concludes.

2. Determinants of functional income distribution and financialisation: theoretical channels and empirical findings

Financialisation has been first and foremost analysed within the heterodox theoretical tradition of Political Economy.[7] This approach starts from the assumption that power relations are pervasive in production and market exchange. The distribution of income between profits and wages should thus be regarded as the outcome of power relations rather than technology as in pure neoclassical theory. In formal bargaining models firms are assumed to operate in oligopolistic markets in which they can appropriate rents whose distribution depends on the

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[7] Van der Zwan (2014) and Epstein (2015) provide summaries of the literature. Some neoclassical authors acknowledge the 'growth of finance' (Greenwood and Scharfstein 2013), but do not use the concept of financialisation. Admati (2017) is a recent exception, who discusses negative effects of financialisation on corporate governance and economic stability.

relative bargaining position of firms and workers (see the short-run model in Blanchard and Giavazzi, 2003, for a representative piece of a sizeable literature). Both sides have an interest in concluding the negotiations and the split of the value added will depend on the exit options of the parties. For example, an increase in unemployment benefits would improve the exit options and thereby the bargaining power of workers, and real wages would rise. If the elasticity of substitution between capital and labour is less than one, a rise in wages would increase the wage share.[8] Bargaining power is thus a concept that is consistent with Marxian and some versions of Kaleckian and Sraffian theory, but also with the non-market clearing versions of neoclassical and New Keynesian economics. However, mainstream versions of bargaining theory, such as Blanchard and Giavazzi (2003), typically assume that in the long run there is a fully elastic supply of firms that are eager to enter the market in order to capture rents. Eventually, an increase in the bargaining power of workers leads to higher unemployment rather than wages. This view basically re-establishes the market-clearing approach to distribution in the long run and is not shared by heterodox Political Economy, in which imperfect competition is considered a structural feature of capitalist economies.

We identify four theoretical hypotheses on the effect of financialisation on the wage share in the Political Economy literature: (1) enhanced exit options of capital due to financial globalisation; (2) rising pricing mark-ups due to financial overhead costs for firms; (3) increased competition on capital markets; and (4) the role of household debt in increasing workers' financial vulnerability and undermining their class consciousness

2.1 Financial globalisation and the exit options of capital

Models of bargaining have originally focused on labour market institutions (LMI) to explain the decline in the wage share (e.g. Blanchard and Giavazzi, 2003). Financialisation may reduce the wage share indirectly through its negative effects on trade union density, employment protection legislation, and bargaining coverage (Darcillon, 2015). However, several contributions claim that financialisation also affects bargaining power directly as it increases the exit options for capital. Financial liberalisation during the 1980s and 1990s and thus higher capital mobility is regarded as one of key developments of financialisation (ILO 2008, chap. 2; Stockhammer 2013). Harrison (2002) and Jayadev (2007) argue that increasing capital account openness has contributed to the declining wage share through worsening labour's bargaining

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[8] Rowthorn (1999) summarises evidence that the elasticity of substitution is less than one.

power due to capital's increased ability to relocate production. The power struggle in this channel takes place between industrial capital and workers. Harrison (2002) reports a positive effect of capital controls on the wage share for a sample of over 100 countries between 1962-1997. In a similarly large panel over the period 1972-1995, Jayadev (2007) finds that capital account openness exerts a statistically significant and robust negative effect on the wage share. The ILO (2008, pp. 50-52) has linked a *de facto* measure of financial globalisation, foreign assets plus foreign liabilities as a share of GDP, to a declining wage share through an erosion of workers' bargaining power vis-à-vis capital. This hypothesis has been empirically investigated by Stockhammer (2009, 2017) and the ILO (2011, chap. 3). Stockhammer (2009) analyses the effects of financial globalisation, trade globalisation, and labour market institutions but also technology variables for a sample of 15 OECD countries over the period 1982-2003. The negative effect of financial globalisation is statistically significant in a within-estimation with 5-year averages, but statistically insignificant in a first difference estimation. ILO (2011, chap. 3) reports statistically significant negative effects of financial globalisation on the wage share for a sample of 16 high-income countries over the 1981-2005 period. Stockhammer (2017) offers an analysis for a broader sample of 71 developing and advanced countries for the time period 1980-2000. He finds that financial globalisation and trade openness have the strongest negative effect on wage shares. Lastly, IMF (2017, chap. 3) reports a negative effect of financial globalisation on the wage share in a sample of 49 countries between 1991-2014.

Some authors argue that financialisation enhances the exit options of capital through rising financial incomes. Lin and Tomaskovic-Devey (2013) present an econometric study with industry level data for the USA (1970-2008). Their central financialisation variable is the ratio of financial receipts of non-financial corporations (including interest income, dividends, and capital gains) to business receipts, which is supposed to capture firm's ability to make profits without employing workers. They find that 'increased dependence on earnings through financial channels tends to decrease labor's share of total income in the long run' (Lin and Tomaskovic-Devey 2013, p. 1306). Similarly, for a sample of French firms Alvarez (2015) reports a robust negative impact of net financial income on the wage share.

Table 1 gives an overview of the existing econometric studies that investigate the effect of financialisation on functional income distribution.

Table 1: Econometric studies on financialisation and functional income distribution

Study	Dependent variable	Main explanatory variables		Estimation Methods	Sample	Findings for financialisation variables
		Financialisation	**Non-financialisation**			
Harrison 2002	WS	CAPCON	KL, Y, FX, OPEN, CC, GC, FDI	FE; IV; 5YA; long-diff	N > 100 T: 1960-1997	CAPCON: positive & significant
Jayadev 2007	WS	CAO, LRIR	TXT, OPEN, CC, GC	FE;5YA	N > 100 T: 1972-1995	CAO: negative & significant LRIR: positive & significant
Stockhammer 2009	WS	FINGLOB, LRIR	ICT, KL, OPEN, TW, UD, PMR, EPL, TOT, BRR, INV	5YA (with FE);5YA (with FE2); FD	N = 15 T: 1982-2003	FINGLOB: negative & significant
ILO 2011	WS	FINGLOB	KL, OPEN, UD, BRR, TW, EPL, YW, OW, Y, FX, LRIR	FE	N = 16 T: 1981-2005	FINGLOB: positive & significant
Hein and Schoder 2011	PS	INTPAY	U, CPI, GRW	ADL (in FD)	1. N = 1 (USA) T: 1963-2007 2. N = 1(GER) T: 1963-2007	INTPAY: positive & significant
Lin and Tomaskovic-Devey 2013	WS	FI	UD, CI, COL, WW, ICE, SI, DEPR, IMP	ECM (with FE2)	1. N = 35 (Industry-level data, USA) T: 1970-1997 2. N = 40 (Industry-level data, USA) T: 1998-2008	FI: negative & significant
Alvarez 2015	Compensation of employees over total assets	INTPAY, FININC	FA, EXREV, E, VA, EBIT	FE; FD	N = 6980 (firm-level, France) T: 2004 – 2013	INTPAY: negative & significant FININC: negative & significant

Dünhaupt 2016	WS	DIVPAY, INTPAY	OPEN, FDI, PM, U, UD, STR, GC	FE2; FD	N = 13 T: 1986 – 2007	DIVPAY, DIVPAY+INTPAY: negative & significant INTPAY: negative & insignificant
IMF 2017 (chap. 3)	WS	FINGLOB	PC, INIT, OPEN, GVC; UD; TXC; EPL; PMR	long-diff (with FE);5YA (with FE)	N=50 countries N=129 (sectors) T; 1991-2014	FINGLOB: negative & significant for country-level estimation
Stockhammer 2017	WS (Private Sector)	FINGLOB	ICT, KL, OPEN, TOT, GC, UD, GRW	FE; FD; 5YA; GMM	N = 28 T: 1980-2000	FINGLOB: negative & significant

Abbreviations of variables: BRR: benefit replacement rate; CAO: capital account openness; CAPCON: capital controls; CC: currency crisis; CI: computer investment; COL: college education among workers; DEPR: depreciation of non-financial companies to total depreciation; DIVPAY: dividend payments; E: employment; EBIT: earnings before interest and taxes; EPL: employment protection legislation; ESI: employment size in industry; EXREV: export revenues; FA: fixed assets; FDI: foreign direct investment; FI: financial income to business income; FINGLOB: Financial globalisation; FININC: financial income; FX: foreign exchange rate; GC: government consumption; GRW: GDP growth; GVC: global value chain linkages; IC: industrial concentration; ICT: information and computer technology; INIT: initial exposure to routinization; IMP: import penetration; INTPAY: interest payments; INV: investment rate; IR: interest rate; KL: capital-labour ratio; LRIR: long-term real interest rate; OPEN: trade openness; OW: old workers to labour force; PC: Relative price of investment (capital deflator/ CPI); PM: import prices; PMR: product market regulation; PS: profit share; STR: strikes; TOT: terms of trade; TW: tax wedge; TXT: taxes on trade; TXC: corporate tax rate; U: unemployment rate; UD: union density; VA: value added; WR: wage rate; WS: wage share; WW: non-Hispanic white workers to labour force; Y: GDP per Worker; YW: young workers to labour force

Abbreviation of econometric methods and sample properties: 5YA: 5 year averages; ADL: auto-regressive distributed lag model; ECM: error correction model; FD: first difference estimator; FE: within estimator (cross-section fixed effects); FE2: cross-section and period fixed effects; FGLS: feasible generalised least squares; GLS: generalised least squares; GMM: generalised method of moments; long-diff: long-term annualized changes between 10 years or more; IV: instrumental variable estimation using lags as instruments; N: number of cross-sections; OLS: ordinary least squares; T: time period

2.2. Shareholder value orientation, financial payments of non-financial companies (NFC) and mark-up pricing

The emergence of a market for corporate control has been discussed in the mainstream and in the financialisation literature. For example, Lazonick and O'Sullivan (2000) argue that with the rise of shareholder power firm strategies have shifted from 'retain and reinvest' to 'downsize and distribute', with a focus on short-term capital gains at the expense of long-term investment. Shareholder value orientation induces firms to maintain rising share prices to serve shareholders and managers, which are increasingly remunerated through stock options (Lazonick and O'Sullivan 2000). In order to raise share prices, firms may increase the dividend payout ratio or take on debt to buy back shares. Another aspect of financialisation is the increase in leveraged buyouts, where a company takes out debt in order to take over another firm. The debt is then transferred to the merged firm (Crotty 2003). As a result, interest and dividend payments can increase. This argument has been formalised in order to analyse changes in investment behaviour (Stockhammer 2004; Dallery 2009). Empirical research has found negative effects of financial payments on business investment (Stockhammer 2004; Orhangazi 2008; Demir 2009; Tori and Onaran 2017). There is also a mainstream version of the argument (Jensen and Meckling 1976; Jensen 2001) that endorses shareholder value orientation because it would improve efficiency.

Distributional effects of rising financial payments due to shareholder value orientation may be mediated through the price-setting of firms. The idea that firms set prices based on unit costs plus a mark-up is prevalent in heterodox economic thought. In particular contemporary Kaleckians (Hein 2015) have argued that financialisation affects the wage share because financial payments by non-financial businesses constitute financial overhead costs that may lead to an increase in the mark-up entrepreneurs charge on unit costs. Kalecki (1969) assumed that firms operate in oligopolistic markets in which they charge a mark-up in accordance with the degree of monopoly. A rise in the mark-up will increase prices, reduce real wages and thereby increase the profit share. He also mentioned the possibility that the mark-up rises with increasing overhead costs (Kalecki 1969, pp. 17-18). Hein (2015) argues that if the mark-up is elastic with respect to interest and dividend payments, a rise in these financial overhead costs will decrease the wage share. This channel thus assumes a power struggle between rentiers and industrial capitalists that is eventually being resolved at the expense of workers. The argument is also consistent with Sraffian theory and other theories of cost-pricing. Notably, it presupposes

that financial payments did rise in the era of financialisation and that firms possess the power to raise the mark-up in response to an increase in overhead costs.

The mark-up pricing channel has motivated three econometric studies. Hein and Schoder (2011) estimate an autoregressive distributed lag model for the USA and Germany between 1963 and 2007 and report a weakly significant (at the 10% level) positive impact of net interest payments on the profit share. Dünhaupt (2016) regresses the wage share on net dividend and interest payments of non-financial corporations using a panel of 13 OECD countries over the period 1986-2007. She finds a strong and statistically significant negative impact of dividend payments, whereas the coefficient on interest payments is negative but statistically insignificant. Alvarez (2015) uses interest payments as an explanatory variable and finds a negative effect on the wage share in France.

2.3. Increased competition on capital markets

Some neo-Marxian authors (Martin et al. 2008; Bryan et al. 2009; Sotiropoulos and Lapatsioras 2014) suggest that the process of securitisation and increased trading of financial assets affects the internal organisation of production. Financialisation has increased the pressure on firms as capital markets have become more competitive - with negative effects for workers. The process of securitisation and derivative trading of short-term oriented financial investors led to an increasing importance of the valuation of firm securities on secondary markets. Indeed, financialisation came with an increase in the turnover of securities due to intense competition between institutional investors looking for short-term capital gains (Crotty 2003). According to the neo-Marxian view, a 'capitalist firm that goes to the markets to raise funds acquires a risk profile which depends to a significant extent on its ability to pursue effective exploitation strategies in a competitive economic environment' (Sotiropoulos and Lapatsioras 2014, pp. 94-95). Through the pricing of financial assets, the economic efficiency of a firm becomes objectively quantified and hence commensurable with other monetary prices. This puts firms under pressure to guarantee an appreciation of their stocks (Bryan et al., 2009). As the price of securities is a function of the internal efficiency of the firm, this process will induce ruthless cost-cutting, especially wage suppression, but also intensification of work (Lapavitsas 2009, p. 125).

Similar to the mark-up pricing channel, this argument is related to Lazonick and O'Sullivan's (2000) claim that financialisation is characterised by a management ideology of shareholder

value maximisation. However, in the neo-Marxian argument, the change in management behaviour is mainly induced by the abstract and systemic forces of competition in financial markets, rather than an exogenous change in ideology. Moreover, distribution is affected directly through the pressure on managers to raise efficiency rather than indirectly through financial overhead costs. While mark-up pricing and capital market competition are thus distinct channels, they both assume that the primary conflict is between rentiers and firms but it is being settled at the expense of workers.

Within a Marxian framework the argument that increased short-termism and competition in capital markets leads to an increase in the profit rate and exploitation raises some issues. The argument implies that capitalists did not exploit workers to the extent that they could have prior to securitisation. This presupposes that industrial capitalists were not profit maximising, i.e. did not make full use of their bargaining power. While the corporate governance literature is explicit about this and argues that the shareholder value revolution has unsettled a balance between stakeholders and shareholders that had been more favourable to workers,[9] it is difficult to find similar statements in the neo-Marxian literature. Importantly, there are as of yet no econometric studies to substantiate the effects of increased competition on capital markets.

2.4 Rising household debt

In the wake of the financial crisis rising household debt has gained prominence. Several authors (Barba and Pivetti 2009; Frank et al. 2014; Stockhammer 2015; Cynamon and Fazzari 2016) have claimed that distributional changes and household debt are related, but that causality goes from distribution to debt. Barba and Pivetti (2009) and Stockhammer (2015) argue that as wages fell workers tried to maintain consumption levels through debt financing. Frank et al. (2014) as well as Barba and Pivetti (2009) argue that as personal income inequality increased, poor households tried to keep up with richer households and thus ran into debt.

There is only little systematic work on the effects of working class indebtedness on the wage share. Panico et al. (2012) present a two-class model with a banking sector to analyse the distributional consequences of increasing debt-financed workers' consumption due to easier access to credit. In the model, the profit share increases when the rate of growth of loans to workers exceeds the rate of growth of total wages. The authors conclude that 'an expansion of

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[9] Jensen and Meckling (1976) explicitly argue from a principal-agent point of view that firms were inefficient.

the banking industry [to lend to workers] affects the income shares, even if the rate of profit and wages remain constant' (Panico et al. 2012, p. 1467). However, this statement is misleading. The crucial assumption in the argument is not lending per se, but the increase of autonomous working-class consumption. An increase in borrowing that does not affect consumption (e.g. buying a house) would not affect distribution.[10] It is not the level of household debt that matters, but the exogenous increase in consumption relative to income. Changes in debt are the outcome, not the cause of the process. Thus the model does not provide a sufficient foundation for analysing how household debt affects functional income distribution.

Bryan et al. (2009, p. 470) and Barba and Pivetti (2009, p. 127) offer various hints that working-class indebtedness may affect working class power, but no thorough analysis.[11] The Cultural Political Economy literature argues that financialisation has not so much changed the relations between existing social actors, but that it constructs 'investor identities', i.e. it transforms agents' perceptions of their identities and their interests (e.g. Langley 2007). Without referring to this theoretical approach, Fligstein and Goldstein (2015) find in an empirical study of about 4000 US-households between 1989 and 2007 that it was above all the middle and upper middle class that has embraced a new 'finance culture' expressed by a higher willingness to take on risk through financial investment and to borrow money to sustain a high level of consumption. It could be argued that a working but individualised middle class that focuses on financial income streams, portfolio management, and debt-financed consumption is less likely to engage in collective action to fight for higher wages.

There is also an empirical literature on financial vulnerability, which refers to the financial incapacity of households to cover monthly expenses of basic consumption, the inability to meet unexpected payment obligations, and accumulation of arrears (Anderloni et al., 2012). The authors develop an index of financial vulnerability using a sample of 4000 Italian households in 2009 and find statistically significant positive effects of the level of debt servicing on financial vulnerability. The study does not link the finding to class relations, but the impact of financial vulnerability on class struggles is immediate if we assume that class consciousness

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[10] Most credit to households is mortgage credit and related to asset transactions (see Table 1 in Zabai 2018).
[11] Bryan et al. (2009, p. 470) argue that the rise in household debt increased the 'likelihood of each household offering more workers to the market and each worker's commitment to deliver productivity growth and longer working weeks as the condition of meeting her own costs of subsistence'. However, no further explanation is offered why households would do that rather than, say, default on their debt, or demand higher wages. Similarly, Barba and Pivetti (2009, p. 127) state that 'the burden of servicing their debt pushes [workers] […] to work harder and for longer hours […] thereby contributing to the persistence of low wages and labour costs'.

contributes to working class militancy. Working class households and university graduates might be worried about their access to credit and about the repercussions of personal bankruptcy, and therefore eager to service their debt. This can make them reluctant to join industrial action that might cost them their job. Kim et al. (2017) integrate this channel into a Kaleckian macro model in which higher indebtedness reduces worker's bargaining power as it increases the cost of job loss. They argue that the resulting increase in inequality may induce workers to take on even more debt, which can give rise to a vicious cycle of household debt and inequality. The argument is consistent, but incomplete as workers typically hold assets (for example a house) as well. In this channel, the power relation is thus between banks and households, but may spill over to industrial conflicts.

Empirically, a negative effect of household debt on the wage share due to financial vulnerability requires at least two preconditions. First, a relevant share of low-income households, those who are most likely to suffer from financial vulnerability, holds debt. Second, the effect also depends on the degree of institutional power of labour and the generosity of the welfare state (Wood 2017). If bargaining institutions are strong and there is a reliable social safety net, high indebtedness might not discourage workers from engaging in bargaining processes.

Wood (2017) and Guschanski and Onaran (2016) are the only empirical studies that investigate the effect of household debt on the wage share. Wood (2017) finds a negative effect of mortgage debt in Great Britain and the USA, but no effect in Sweden and Denmark for the period 1979-2012. Guschanski and Onaran (2016) find a negative effect of household debt (measured at the country level) on sectoral wage shares in Austria, Great Britain, and the USA between 1970-2010. However, they do not find evidence in estimations with a pool of all countries, suggesting that the effect is country-dependent.

2.5 Other determinants of the wage share: labour market institutions, globalisation and technology

The wage share will also be influenced by factors other than financialisation. In line with the Political Economy approach to income distribution, Kristal (2010) distinguishes three fields of workers' bargaining power: organisational power in the economic sphere, which she operationalises by union density and strike activity; organisational power in the political sphere, which is measured by the political orientation of government and social spending; and structural power in the global sphere approximated by the import shares, migration and FDI. Positive

effects of union density on the wage share were found by Kristal (2010), ILO (2011), Stockhammer (2009; 2017) and Guschanski and Onaran (2017). Other labour market institutions that affect the exit options of workers are employment protection legislation, minimum wages, unemployment benefits, and bargaining coverage. However, these variables have produced mixed results in previous studies.[12]

Many studies link a strengthening of firms' bargaining power to globalisation via foreign direct investment and offshoring. For example Choi (2001) uses a Nash bargaining model to analyse the bargaining relationship between unionised workers and a multinational firm that has the option of outsourcing production via foreign direct investment (FDI) and finds a negative relation between FDI and wages. In an empirical study with over a hundred countries over the 1960 to 1997 period, Harrison (2002) fails to find robust effects of outward FDI on the wage share, although there is evidence for a negative effect of inward FDI. Guschanski and Onaran (2017) find a negative effect of offshoring to Global South countries on the sector level wage share in 14 OECD countries over the period 1995-2007.

IMF (2017, chap. 3) suggest that *de facto* financial globalisation can reduce the relative price of capital, which would increase the wage share if the elasticity of substitution is smaller than one. However, their finding of a negative impact of financial globalisation for advanced economies suggests that either the elasticity of substitution is above one or that the negative effect is due to the bargaining channel discussed above.

Mainstream economists have put forward an explanation for the declining wage share that refers to skill-biased technical change in the context of globalisation without taking financialisation into account. In a neoclassical framework, factor incomes are determined by their marginal productivity. Skill-biased technical change has caused substitution of low-skilled workers by machines, especially for routine tasks that are easily automatized. The effect of this process on the wage share depends on the elasticity of substitution between capital and labour. If the elasticity is above one, as is usually assumed for low-skilled workers, the effect will be negative. Conversely, the effect can be positive for high-skilled workers. If the latter effect outweighs the

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[12] EC (2007) finds a positive effect of minimum wages on the wage share, but an unexpected negative effect of unemployment benefits and employment protection legislation. Likewise, the IMF (2007) reports a negative effect of unemployment benefits. Stockhammer (2017), on the other hand, does not find statistically significant effects of these variables.

former, the aggregate wage share declines. Globalisation accelerates this process through international specialisation, which is especially harmful for low-skilled workers in developed countries, while it simultaneously increases the global labour supply and makes offshoring more accessible. These hypotheses are empirically investigated by the EC (2007, chap. 5), IMF (2007, chap. 4), and Bassanini and Manfredi (2012) but neither of these studies controls for financialisation variables.

2.6 Summary

We have identified four distinct mechanisms by which financialisation can affect the wage share and tried to clarify their theoretical foundations. First, bargaining models argue that financialisation has increased the exit options for corporations and thereby enhanced their bargaining power vis-à-vis workers. Second, contemporary Kaleckians maintain that financial payments such as interest and dividend payments constitute overhead costs for firms, which will increase their mark-up. Third, competitive pressures on firms due to securitisation and financial trading can lead to wage suppression and intensification of work. This has been highlighted by Marxian writers on financialisation. Fourth, increasing financialisation of households, in particular the rise of household debt, may have increased the financial vulnerability of working-class households and undermined working-class consciousness by establishing a self-perception of households as financial managers. This may have weakened labour vis-à-vis capital. All of these channels are grounded in heterodox Political Economy; neoclassical economics is notably absent from these debates as it has highlighted skill-biased technical change and globalisation, and has not included financialisation so far. An exception is IMF (2017, chap. 3) which has suggested that financial globalisation can reduce the wage share via a reduction in the relative price of capital, if the elasticity of substitution is larger than one. However, this channel is not related to a change in bargaining power.

Table 2 gives an overview of the mechanisms by which financialisation affects income distribution (column 1), their theoretical foundation (column 2), and power relations that are being highlighted (column 3). It also matches the existing econometric panel studies (column 4) and their empirical measures (column 5), and lastly indicates the empirical measures that we will be using (column 6). There is a notable asymmetry in the empirical attention that the different mechanisms have received. Bargaining power models and the exit option of capital, as well as the hypothesis of financial overheads and flexible mark-ups have motivated a few studies. So far there are two studies investigating the effect of household debt on the wage

share, while the competitive pressures on capital markets has not given rise to econometric investigations.

Table 2: Channels linking financialisation and the wage share

Channel	Theoretical origin	Main power relation between:	Theoretical and empirical studies	Empirical measures used	Proposed measures
Enhanced exit options for NFCs	Models of bargaining	Firms and workers	Harrison (2002); Jayadev (2007); Stockhammer (2009, 2017); ILO (2011); Lin and Tomaskovic-Devey (2013); Alvarez (2015); IMF (2017, chap. 3)	Financial openness (*de jure*) Financial globalisation (*de facto*) Financial profits of NFCs to business profits	Financial openness (*de jure*) Financial globalisation (*de facto*) Financial income of NFCs
Increasing financial overhead costs for NFCs and elastic mark-ups	Cost-plus pricing theories	Rentiers and firms	Hein and Schoder (2011); Hein (2015); Alvarez (2015); Dünhaupt (2016)	Net interest payments of NFCs Net dividend payments of NFCs	Net financial payments of NFCs
Increased competition on capital markets puts pressure on NFCs	Neo-Marxians	Rentiers and firms; firms and workers	Martin et al. 2008; Bryan et al. 2009; Sotiropoulos and Lapatsioras 2014		Stock market turnover
Household debt and financial vulnerability of workers	Cultural Political Economy and heterodox macroeconomics	Banks and workers; workers and firms	Panico et al. (2012); Kim et al. (2017); Guschanski and Onaran (2016); Wood (2017)	Mortgage debt Household debt	Household debt

Our objective is to assess the relevance of different channels, but these are likely to be interrelated.[13] For example, financial openness can increase competition on capital markets. Different measures of financialisation might constitute intervening variables with respect to

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[13] Table A3 in the appendix provides correlation coefficients between different measures of financialisation.

each other, thus we control for all channels simultaneously, as estimations with individual variables might conceal the precise channel at work.

3. Variables, data sources and econometric method

3.1 Regression equation, variable definitions, and data sources[14]

In order to test the four hypotheses regarding the effect of financialisation on the wage share, the following equation is estimated:

$$(1) \quad WS_{i,t} = a_i + b_1 FIN_{i,t}^{EXIT} + b_2 FIN_{i,t}^{NFCPAY} + b_3 FIN_{i,t}^{CAPCOMP} + b_4 FIN_{i,t}^{HHD} + b_5 U_{i,t}$$
$$+ b_6 UD_{i,t} + b_7 OPEN_{i,t} + b_8 ICT_{i,t} + b_9 GRWTH_{i,t} + \varepsilon_{i,t}$$

where subscript i stands for cross-sections, t represents the time period, a_i denotes a country specific constant and $\varepsilon_{i,t}$ is the error term. The dependent variable, *WS*, is the adjusted wage share. It is defined as the average compensation of employees times total employment (including self-employment) divided by GDP at factor costs, i.e. after indirect taxes. Thereby, the wage share is being adjusted for the compensation of self-employed workers whose income is imputed based on the average wage of employees. The wage share is regressed on four financialisation variables that capture the exit options of capital (*FIN^EXIT^*), the financial payments of non-financial businesses (*FIN^NFCPAY^*), the competition in capital markets (*FIN^CAPCOMP^*), and household debt (*FIN^HHD^*). We further use a set of control variables to account for other factors that affect the wage share.

As labour market indicators we use union density (*UD*) and the unemployment rate (*U*). *UD* is calculated as the ratio of wage and salary earners who are members of a trade union to the total number of wage and salary earners (adjusted for non-active and self-employed members). It captures the effects of a reduction in workers' bargaining power which are not explained by financialisation. *U* is defined as unemployed persons as a share of the total labour force.[15] We use trade openness (*OPEN*), exports plus imports over GDP, as a measure of globalisation and thus (non-financial) exit options for capital, e.g. in the form of offshoring. To measure the effect of skill-biased technical change we employ the share of value added of the information and

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[14] Table A1 in the appendix provides an overview of data definition and sources.
[15] We also considered other LMIs such as collective bargaining coverage and the gross replacement ratio. They were insignificant in our estimations and were consequently excluded from the analysis. The results can be found in Table A5, specification A1, in the appendix.

computer services sector in GDP (*ICT*). The expected sign of its coefficient is negative because it is assumed by mainstream authors that this kind of technical change reduces the income of unskilled workers, which make up a large share of the work force. *GRWTH* is the growth rate of real GDP and serves as a business cycle measure. It is supposed to control for the countercyclicality of the wage share due to overhead costs and rigid wage incomes (Kalecki 1969, chap. 2).

We use four distinct measures for financialisation to capture the different mechanisms involved. Where more than one variable is available to proxy a mechanism we estimate our baseline specification including each measures subsequently and then keep the one with the highest t-statistic. We aim for one variable per mechanism for symmetry and to avoid multicollinearity problems. For the exit options of capital highlighted by the bargaining power framework, we consider financial globalisation (*FINGLOB*), financial openness (*FINOP*), and gross financial income of NFCs (*FININC^{GROSS}*). *FINGLOB* is defined as the logarithm of foreign assets plus foreign liabilities divided by GDP. It is taken from Lane and Milesi-Ferretti (2007), who have introduced this variable as a measure of international financial integration. Note that this is a *de facto* measure. It has been used in Stockhammer (2009, 2017) and ILO (2011). *FINOP* is a *de jure* index for financial openness accounting for the presence of multiple exchange rates, restrictions on current account transactions and the requirement of the surrender of export proceeds developed by Chinn and Ito (2006). It is similar to the index used by Jayadev (2007). *FININC^{GROSS}* is the sum of dividend and interest income of NFCs as a ratio to the value added of this sector and is thus close to the variable used by Lin and Tomaskovic-Devey (2013). Bargaining theories predict a negative distributional effect of each of these variables, which are expected to improve the exit options of capital. However, note that the effect of *FININC^{GROSS}* is theoretically ambiguous as gross financial incomes may also ease the financial cost burden and thereby offset the mark-up pricing channel. In order to find a suitable measure for the exit options of capital, we run an exploratory estimation with *FINOP*, *FINGLOB*, and *FININC^{GROSS}* (see Table A5, specification A2, in the appendix). *FININC^{GROSS}* exhibits a positive sign and is statistically insignificant. We conclude that *FININC^{GROSS}* is not a suitable measure for the exit options of capital. Instead, its positive sign is more in line with the mark-up pricing channel. *FINOP* (specification 1, Table 3 below) and *FINGLOB* (specification A3, Table A5) are both statistically significant with the expected negative sign. *FINOP* turned out to be more robust in other estimations and is therefore our preferred measure for the exit options of capital. Figure 2 shows the median of *FINOP* for our sample of 14 OECD countries from 1980 to 2014. It

demonstrates that financial liberalisation has largely taken place between 1980 and the mid-1990s, with three quarters of the countries in our sample reaching their maximum of financial openness in 1997.

Figure 2: Financial openness index, 1980-2014
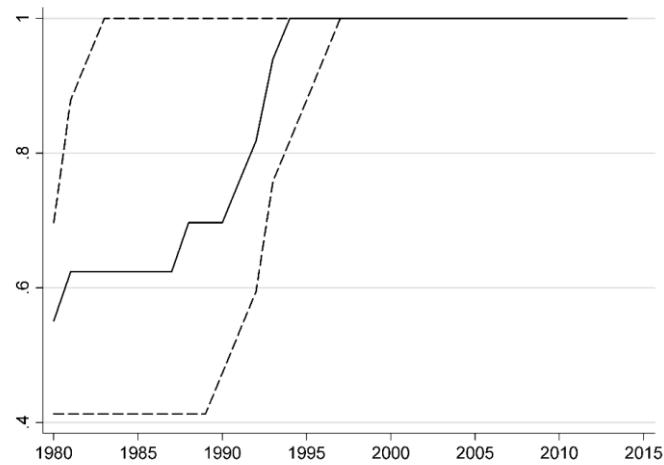

Data source: Chinn and Ito (2006)

Figure 3: Net financial payments of NFCs, 1980-2014
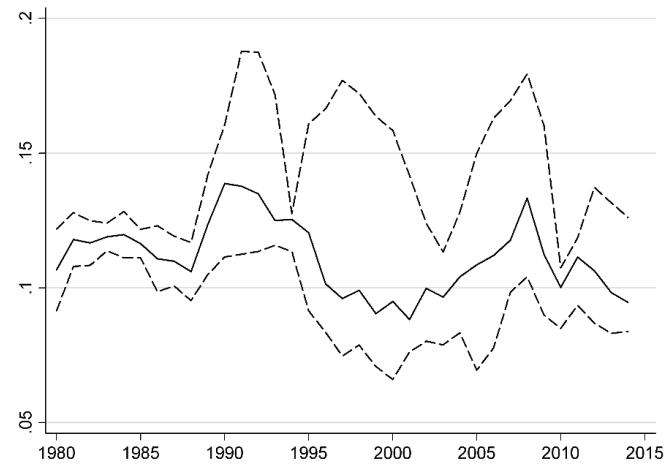
Data source: OECD

Figure 4: Stock market turnover ratio, 1980-2014
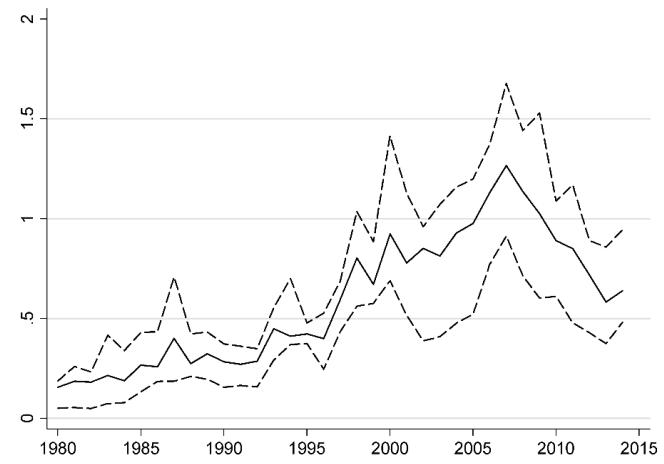
Data source: World Bank

Figure 5: Household debt to disposable income, 1980-2014
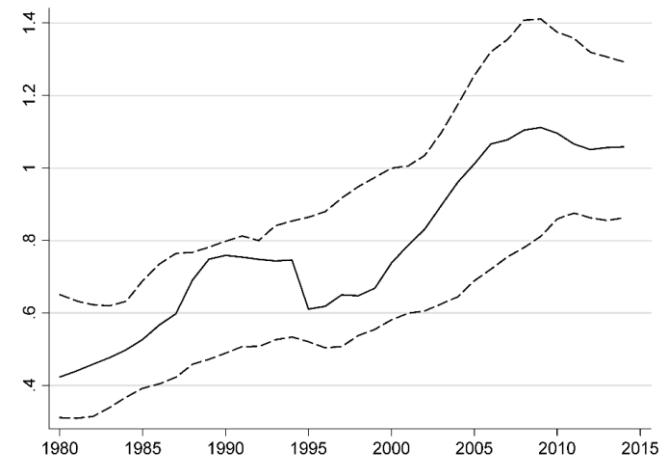
Data source: BIS

For the financial payments of non-financial firms we construct the measure *FINPAY*, which is the sum of net dividend payments and net interest payments of NFCs as a ratio to the value added of this sector. We sum interest and dividend payments as both factors should have the same effect according to the hypothesis of a financial cost elastic mark-up. Following the existing literature (Hein and Schoder 2011; Dünhaupt 2016), we use net financial payments by deducting dividend and interest income from dividend and interest payments, since financial income is expected to ease the financial cost burden. Indeed, the use of a net measure is consistent with our preliminary finding that $FININC^{GROSS}$ exhibits a (statistically insignificant) positive sign, while gross financial payments ($FINPAY^{GROSS}$) are negative and statistically significant (see Table A5, specification A2, in the appendix). This suggests that gross financial incomes may ease the financial cost burden. By using a net measure, we control for this potentially offsetting effect. The expected sign of net financial payments is negative because of the assumption that financial overhead costs are shifted onto the mark-up. Financialisation is typically associated with rising financial payments due to shareholder value orientation. Figure 3 plots the median *FINPAY* for our sample and reveals a nuanced picture. The variable appears stationary with periods of increasing and decreasing net financial payments. In the first decade of the sample, net financial payments increased to a median value of about 13.9% of valued-added in 1990. Throughout the 1990s they mostly fell, but picked up again from the early 2000s onward and peaked in 2008. The post-crisis period was characterised by falling net financial payments. This suggests that financialisation was not characterised by a secular trend in net financial overhead costs, but by ups and downs. We see two main reasons for this pattern: First, there has been a secular decline in global real interest rates since the early-1980s (IMF 2014, chap. 3), which compensated for rising dividend payments and business debt due to financialisation. Second, as we use a net measure of financial payments, increasing financial incomes due to financial investments of NFCs in the era of financialisation can periodically offset rising financial payments.

The competition on capital markets has been highlighted by neo-Marxian authors, but they have not operationalised this channel empirically. We measure it by the stock market turnover ratio (*STO*), which is defined as the total value of shares traded per year divided by the average market capitalisation. In the neo-Marxian perspective, high stock market turnover contributes to the objective quantification of a firm's value. This increases the competitive pressure on firms to raise labour productivity and supress wages. *STO* is thus expected to have a negative impact on the wage share. However, *STO* is only an indirect measure of this mechanism since

it does not directly measure changes in the internal structure or behaviour of firms. Moreover, a variable measuring the velocity of bond trading would have been desirable to complement *STO* but is unfortunately not available. As depicted in Figure 4 the median has a rising trend that started in 1980 at 15.5% and subsequently increased to 113.6% in 2008. *STO* then sharply declined due to the financial crisis of 2007-2008 and only weakly recovered in 2014 to a value of 63.8%. Notably, while both *FINPAY* and *STO* are associated with rising shareholder value orientation under financialisation, their sample correlation coefficient of 0.071 is low (see Table A3 in the appendix), which confirms that they represent distinct channels.

In order to account for a potentially negative impact of workers' debt on their bargaining power, we use household debt as percentage of the disposable income of households (*HHD*) as a proxy for workers' debt. The expected effect on the wage share is negative. Figure 5 shows the median *HHD* for our sample. A clear rising trend is visible starting from 42.4% in 1980 and peaking at 111.1% in 2009. In the last five years of our sample, *HHD* declined by about 5%-points.

3.2 Econometric method

Our data set is a panel of 14 OECD countries[16] and starts with the onset of financialisation in 1980. We restrict our baseline sample to the period from 1990 to have at least five countries per period in the estimations. In specifications with only one financialisation variable each, we use the full period from 1980 to 2014. The drawback is that the panel becomes more unbalanced in these estimations, as it contains less than five countries in the earliest years of the sample. We further include a dummy variable that assumes the value 1 in the period after the financial crisis in 2007 (*D-0814*) to allow for a possible structural break due to the crisis. This improves the explanatory power of the model.[17]

The panel approach is used due to the large number of variables and relatively short time series. It imposes the same slope coefficients on each panel – an assumption which can become problematic when there is strong cross-sectional heterogeneity. Our panel has a small N and somewhat larger T (N=14, T=25). This is typical for macroeconomic panels and implies that

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[16] Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, the Netherlands, Portugal, Spain, Sweden, the United Kingdom, and the USA. Due to data restrictions, inclusion of non-OECD countries was not possible. The choice of countries is mainly due to data availability. Central and Eastern European countries were excluded to avoid distorting effects of the historically unique transformation from centrally planned to capitalist market economies.

[17] Our results are robust to the exclusion of this variable.

we have to be more concerned about autocorrelation than microeconometric contributions that have a large N and small T. Our first tentative specification is a within-estimator in levels (see below, Table 4, specification 13). Unit root tests, however, indicate that *WS*, *U*, and *UD* are integrated of order one (I(1)).[18] The level-specification is thus prone to spurious correlation problems. We therefore choose a first-difference estimator as our baseline specification. First differencing renders I(1) variables stationary and removes country-specific constants that can bias the coefficients and cause serial correlation in the residuals. Moreover, we first estimate a general specification with a lagged dependent variable[19] and a contemporaneous and lagged explanatory variable each. This allows us to capture lagged effects and reduces autocorrelation in the residuals, but we lose the first two periods. We then successively exclude either the contemporaneous or lagged variables with the lowest absolute t-statistic. The resulting specification constitutes our baseline specification.[20]

We subject our baseline specification to several robustness checks. First, we estimate models with only one financialisation variable each. Notably this extends our maximum sample period from 1990-2014 to 1980-2014 as we do not impose a minimum of five cross-sections in these estimations. Second, we conduct robustness tests by adding various additional explanatory variables to our baseline model. Third, the baseline specification is estimated using an error-correction model (ECM), as well as 5-year non-overlapping averages, which are techniques for capturing long-run relationships as opposed to short-run effects.[21]

4. Econometric results

The results of our main estimations are summarised in Table 3. Our baseline specification (1) is a first-difference estimator with a lag structure that has been obtained from a testing-down procedure. This accounts for problems of non-stationarity and serial correlation, which is confirmed by a test on the residuals that rejects the null hypothesis of autocorrelation of the first order. With respect to the financialisation variables, we find that *FINOP* and *FINPAY* are

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[18] Reported in Table A4 in the appendix.

[19] The inclusion of a lagged dependent variable in a first difference estimator leads to correlation between the lagged dependent variable and the error term which violates the exogeneity assumption. In order to deal with this problem, we apply an instrumental variable estimator using the first difference of the second lag of the dependent variables as an instrument for the first lag of the dependent variable.

[20] We also estimate our baseline specification with Driscoll and Kraay (1988) standard errors, which are robust to cross-sectional and temporal dependence (see appendix, Table A5, specification A4). This does not change the statistical significance of our variables, which does suggest that cross-sectional dependence is not a major problem.

[21] Note that error-correction models do not require the variables to be non-stationary or cointegrated. Long-run equilibrium relationships can also exist between non-integrated dynamic variables (De Boef and Keele 2008).

statistically significant at the 5% level and exhibit the expected negative effect. This corroborates the results of earlier studies with data prior to the Great Recession, which found statistically significant effects of *de facto* measures of financial globalisation (Jayadev 2007; ILO 2011; Stockhammer 2017), and financial payments of businesses (Hein and Schoder 2011; Dünhaupt 2016) who have tested these in specifications without other financialisation variables. We confirm these effects in a joint specification with several financialisation measures. We fail, however, to find evidence for a statistically significant effect of *STO* and *HHD* in our baseline estimation.

Table 3: Main estimation results

Specification number	(1) (baseline)	(2)	(3)	(4)	(5)	(6)	(7)
Estimation method	First difference	First difference	First difference	First difference	First difference	First difference	First difference
FINOP(-1)	-2.700**	-1.977*				-2.655*	-2.637**
	(0.046)	(0.072)				(0.050)	(0.048)
FINPAY(-1)	-5.609**		-4.242*			-5.300*	-5.598**
	(0.042)		(0.091)			(0.052)	(0.041)
STO(-1)	-0.120			-0.260*		-0.120	-0.263
	(0.468)			(0.070)		(0.459)	(0.156)
HHD(-1)	-0.052				-0.381	0.994	-0.084
	(0.956)				(0.668)	(0.392)	(0.929)
U(-1)	-13.904**	-14.837**	-15.123**	-15.935***	-14.619**	-14.419**	-13.678**
	(0.020)	(0.010)	(0.018)	(0.006)	(0.025)	(0.016)	(0.024)
UD(-1)	-11.647	-4.534	-6.201	-4.170	-6.755	-10.744	-11.801
	(0.154)	(0.488)	(0.453)	(0.518)	(0.429)	(0.183)	(0.150)
OPEN	-6.721***	-6.207***	-5.882***	-6.412***	-5.567***	-6.901***	-6.829***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ICT	-67.176**	-60.249**	-76.186**	-59.050**	-74.256**	-72.060**	-65.623**
	(0.031)	(0.038)	(0.013)	(0.046)	(0.015)	(0.023)	(0.037)
ICT(-1)	69.998**	52.818*	63.681**	50.117*	69.549**	70.349**	70.720**
	(0.013)	(0.071)	(0.022)	(0.089)	(0.013)	(0.014)	(0.012)
GRWTH	-15.988***	-18.552***	-18.527***	-18.697***	-18.442***	-15.993***	-15.925***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
D-0814	0.369**	0.228	0.254	0.286*	0.228	0.380**	0.388**
	(0.030)	(0.168)	(0.134)	(0.084)	(0.187)	(0.025)	(0.024)
HHD_HDWB(-1)						-3.369**	
						(0.029)	
STO_LC(-1)							0.247
							(0.409)
Countries	14	14	14	14	14	14	14
Observations	265	352	289	347	290	265	265
F-test	17.082***	23.139***	21.963***	23.288***	19.218***	16.688***	15.436***
Adj.R²	0.430	0.398	0.408	0.399	0.403	0.434	0.429
Period	1992-2014	1982-2014	1982-2014	1982-2014	1982-2014	1992-2014	1992-2014
P-value of Wald test on variables with interaction terms						0.038	0.947

Notes: The dependent variable is the adjusted wage share. P-values are in parenthesis below the estimation coefficients. ***, **, * denote statistical significance at the 1%, 5% and 10% level. All standard errors were corrected for heteroscedasticity and autocorrelation. Note that the estimation period is two years shorter than the sample period due to the inclusion of differenced lagged explanatory variables. *HHD_HDWB* is an interaction term of *HHD* and a dummy variable that assumes the value one for Portugal, Spain, UK, and USA. *STO_LC* is an interaction term of *STO* and a dummy variable that assumes the value one for Denmark, Finland, Greece, Spain, Sweden, The United Kingdom, and the USA.

With respect to the control variables we note statistically significant effects of *U*, *OPEN*, *ICT*, and *GRWTH*. The negative effects of *U* and *OPEN* constitute empirical support for the argument that the exit options of workers and firms are affected by the state of the labour market and the possibility of firms to offshore production (Kristal 2010). *ICT* enters our specification both as a contemporaneous effect and as a first lag. Both are statistically significant, but the contemporaneous effect is negative and the lagged effect is positive, while the size of the coefficients is of similar absolute magnitude. One may conclude that there is a negative effect as predicted by neoclassical theory (EC 2007, chap. 5; IMF 2007, chap. 4) but that the long-term effect is close to zero.[22] *GRWTH* is statistically significant with the expected negative sign due to the countercyclical behaviour of the wage share.

In specifications (2)-(5), we include each financialisation variable separately. This exercise confirms the statistical significance of *FINOP* and *FINPAY* also for a substantially longer sample period (34 and 33 years, respectively). Moreover, we now find a statistically significant effect of *STO* (at the 10% level). For *HHD*, we again fail to reject the null hypothesis.

A negative effect of *HHD* on the wage share requires two preconditions related to the share of debt held by low-income households and the bargaining institutions of a country (Wood 2017; see Section 2.4). In order to account for the possibility that *HHD* has a negative effect on the wage share only in countries with household debt held by low-income earners combined with weak bargaining institutions, we allow for a slope differential between two different country-groups. First, we identify those countries in our sample, where household debt is especially wide-spread among low-income earners. As no data for household debt by income group are available, we divide countries along the median of the share of mortgage-financed homeownership in the bottom 40% of the income distribution to identify those countries.[23] Denmark, the Netherlands, Portugal, Spain, Sweden, the United Kingdom and the USA exhibit an above-median value. Among these, Portugal, Spain, the United Kingdom, and the USA exhibit the lowest degree of collective bargaining coverage, i.e. comparatively weak bargaining institutions, and thus constitute our 'high mortgage debt among low-income earners – weak

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[22] The zero-long-term effect was also confirmed by a Wald test. The presence of opposite signs on the contemporaneous and lagged effect may suggest using the second difference of ICT. We estimated such a specification, which did not change our results significantly.
[23] We use the median over time to classify countries.

bargaining institutions' (*HDWB*) group.[24] We interact *HHD* with a dummy variable for this group (*HHD_HDWB*). Results are reported in specification 6. We find a statistically significant negative slope differential between the group of countries that exhibits a large share of low-income mortgage-financed homeowners combined with relatively weak bargaining coverage. A Wald test on the coefficients on *HHD* and *HHD_HDWB* displays a statistically significant negative effect of *HHD* on the wage share for this group, while the effect remains insignificant in the rest of the sample. We thereby confirm, for a larger number of countries, that the negative impact of household debt on the wage share depends on the institutional structure (Wood, 2017). Our results show that it occurs only in countries with widespread household debt among low-income earners combined with weak wage bargaining institutions.

We conduct a similar exercise to investigate the possibility that the effect of *STO* only occurs in those countries where stock markets play a significant role. To this end, we interact *STO* with a dummy variable that assumes the value one if a country exhibits an above-median number of listed companies relative to the population (*STO_LC*), where LC denotes 'high number of listed companies'.[25] However, specification (7) indicates that there is no statistically significant slope differential between countries with a large or small number of firms on the stock market.

Table 4 contains a set of robustness tests on our baseline. In specification (8) we add a measure of labour migration (*MIGR)* defined as the change in the share of foreigners in the total labour force.[26] Insofar as migrant workers are willing to work for lower wages than domestic workers, one would expect a negative effect. Indeed, this is often the underlying assumption behind political anti-immigration campaigns that have gained strong prominence recently. We observe that the effect of *FINOP* and *FINPAY* is robust to the inclusion of *MIGR* to the baseline model. *MIGR* turns out to be statistically insignificant, indicating that the mobility of capital, as captured by *FINOP,* rather than labour contributed to the decline in the wage share.

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[24] Collective bargaining coverage, which measures the effectiveness of unions to transfer their achievement to the wider workforce, can be considered an important measure of union strength (Visser, 2006). Also note that Schwartz and Seabrooke (2008) characterise Denmark, the Netherlands and Sweden as 'corporatist' and 'statist-developmentalist' regimes due to high levels of social housing provision.

[25] These countries are Denmark, Finland, Greece, Spain, Sweden, the United Kingdom, and the USA.

[26] Based on data on foreign labour force by nationality. The series is unavailable for the USA where we relied on data on foreign labour force by country of birth.

In specification (9), we replace *HHD* by *PPI*, a measure of property price inflation, which can be interpreted as an alternative measure for the financialisation of households. *PPI* is constructed as the first difference of a real house price index. Given that several authors have argued that inequality leads to an increase in household debt (Barba and Pivetti 2009; Frank 2014), the coefficient for *HHD* may suffer from an endogeneity bias. *PPI* is expected to pick up the dynamics of mortgage debt that is due to rising asset prices that serve as collateral. The variable is statistically insignificant, while leaving the other results unaffected. This supports our finding that *HHD* does not have a statistically significant effect and suggests that a possible endogeneity bias is negligible.

Table 4: Robustness tests

Specification number	(8)	(9)	(10)	(11)	(12)	(13)
Estimation method	First difference	First difference	First difference	ECM	5-year averages	Within
FINOP					0.815	0.186
					(0.795)	(0.946)
FINOP(-1)	-3.108**	-2.847**	-2.667**	0.647		
	(0.031)	(0.034)	(0.048)	(0.897)		
FINPAY					-28.444***	-16.329**
					(0.006)	(0.035)
FINPAY(-1)	-4.912*	-4.430*	-5.799**	-27.641**		
	(0.074)	(0.096)	(0.040)	(0.020)		
STO					-1.704**	-0.631
					(0.025)	(0.166)
STO(-1)	-0.135	-0.185	-0.169	0.126		
	(0.428)	(0.276)	(0.336)	(0.900)		
HHD					2.135	1.482
					(0.289)	(0.396)
HHD(-1)	0.231		-0.103	1.056		
	(0.806)		(0.923)	(0.493)		
U					-22.707**	-24.186***
					(0.035)	(0.002)
U(-1)	-17.161***	-14.943***	-11.750	-61.779***		
	(0.006)	(0.009)	(0.142)	(0.000)		
UD					2.328	-1.002
					(0.858)	(0.926)
UD(-1)	-7.114	-12.364	-12.433	-31.193**		
	(0.378)	(0.132)	(0.142)	(0.024)		
OPEN		-6.167***	-6.114***		-11.615**	-9.123**
		(0.000)	(0.000)		(0.046)	(0.016)
OPEN(-1)	-6.820***			-8.279*		
	(0.000)			(0.081)		
ICT	-72.535**	-74.018**	-75.952**		-19.719	-92.493
	(0.019)	(0.017)	(0.021)		(0.864)	(0.354)
ICT(-1)	62.660**	63.175**	66.317**	-168.308*		
	(0.027)	(0.026)	(0.019)	(0.068)		
GRWTH	-16.343***	-17.547***	-18.181***		-3.463	-24.899***
	(0.000)	(0.000)	(0.000)		(0.856)	(0.002)
D-0814	0.330*	0.430**	0.314*		1.432	0.429
	(0.060)	(0.012)	(0.089)		(0.200)	(0.405)
MIGR	-8.580					
	(0.144)					
PPI		0.018				
		(0.408)				
VAFIN			-6.455			
			(0.672)			
Constant				19.168***	75.163***	77.542***
				(0.000)	(0.000)	(0.000)
Countries	14	14	14	14	14	14
Observations	252	258	241	260	68	269
F-test	15.592***	16.877***	13.350***	14.445***	11.742***	24.582***
Adj. R²	0.449	0.439	0.420	0.484	0.293	0.321
Period	1992-2013	1992-2014	1992-2014	1992-2013	1994-2013	1992-2013

Notes: The dependent variable is the adjusted wage share. P-values are in parenthesis below the estimation coefficients. ***, **, * denote statistical significance at the 1%, 5% and 10% level. All standard errors were corrected for heteroscedasticity. Only the long-run coefficients of the ECM are reported (for the short-run coefficients, see Table A6 in the appendix).

Specification (10) adds the value added of the financial sector relative to total value added (*VAFIN*) as a measure of the change in the sectoral composition of the economy towards finance. Hein (2015) points out that financialisation can depress wage shares simply because of sectoral change given that wage shares in the financial sector are typically below average. *FINOP* and *FINPAY* remain robust, while *VAFIN* is statistically insignificant. This indicates that the decline in the wage share is not merely driven by a change in the sectoral composition of the economy due to the relative growth of the financial sector.

Given that financialisation is conceived as a structural change of the economy, some of its effect on the wage share may materialise only over longer periods. The last two specifications aim to assess these long-run effects of our explanatory variables. Specification (11) constitutes an ECM. ECMs are used to disentangle short- and long-run effects. We find a statistically significant negative long-run effect of *FINPAY* and of our control variables *U* and *OPEN*. Specification (12) is based on 5-year non-overlapping averages to smoothen out short-run fluctuations. Here we confirm the effect of *FINPAY* again. Moreover, *STO* becomes statistically significant at the 5% level with the expected negative sign. Among the control variables, we observe statistically significant effects of *U* and *OPEN*. We thus find robust evidence for a long-term effect of *FINPAY,* as well as *U* and *OPEN* on the wage share. This suggests that financial overhead costs have a long-lasting effect on mark-ups. *FINOP*, in contrast, only exhibits short-run effects. One may conclude that the firing threat due to enhanced exit options of firms loses its credibility in the medium-run. This could be the case if the threat to relocate has a stronger distributional impact than the relocation itself. However, due to the relatively short time period of our sample, we consider the coefficients of our short-run baseline specification (1) more reliable.

Lastly, in specification (13) we report results from a simple within-estimator in levels with only contemporaneous effects. We note a statistically significant negative effect of *FINPAY* at the 5% level. The other financialisation variables are statistically insignificant. However, a unit-root test on the residuals suggests that these findings are not reliable (see Table A4 in the appendix)

Finally, we investigate the economic significance of our variables by calculating standardised coefficients. These coefficients allow us to compare the relative effect size of different

explanatory variables as they transform variables into the same unit.[27] Equation (2) represents our baseline first-difference specification with standardised coefficients. Among the financialisation variables, *FINOP* has the strongest effect. An increase in the rate of change of *FINOP* by one standard deviation reduces the rate of change of the wage share by about 0.11 percentage points. *FINPAY* exhibits the next largest effect with an increase in the rate of change by one standard deviation reducing the rate of change of the wage share by about 0.1 percentage points. The economic effects of *STO* and *HHD* are comparably low, which corresponds to the finding that these variables are statistically insignificant. Among the control variables we note a comparably strong effect of *GRWTH*, which stems from the countercyclical behaviour of wages and salaries. Economically more interesting is the relatively large effect (0.28) of *OPEN,* which points to the relevance of trade globalisation for the decline of the wage share. *U* also has a sizeable effect (0.16) which confirms the hypothesis that a high unemployment rate worsens the exit options of workers. For *ICT*, we use the sum of the contemporaneous effect and the first lag which exhibit opposite signs in specification (1). The effect is very small compared to the other variables which confirms our presumption that its long-run effect is close to zero. Taking all financialisation variables together, we obtain a negative effect of -0.25, which is in the same order of magnitude as *OPEN*, and larger than the effect of *U*.

$$(2) \quad \Delta LQ_{it} = -0.114\Delta FINOP_{it-1} - 0.099\Delta FINPAY_{it-1} - 0.035\Delta STO_{it-1}$$
$$- 0.002\Delta HHD_{it-1} - 0.155\Delta U_{it-1} - 0.092\Delta UD_{it-1} - 0.276\Delta OPEN_{it-1}$$
$$+ 0.004\Delta ICT_{it-1} - 0.354\Delta GRWTH_{it}$$

Our main result is that financialisation indeed has contributed to the decline in the wage share through different channels. We find support for the effects of *FINOP* and *FINPAY*. Among the financialisation variables, *FINOP* displays the strongest economic effect. Moreover, there is evidence that the effect of *FINPAY* also prevails over longer time periods, and its economic effect is comparatively large. *STO* is statistically significant in some specifications but less robust. Its economic effect is relatively low. We fail to find evidence for effects of *HHD* in the full sample but find negative effects in countries with widespread mortgage debt among low-

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[27] Standardised coefficients are obtained by multiplying the estimated coefficients by the standard deviations of the respective explanatory variables and dividing by the standard deviation of the wage share. They imply that all transformed variables have a mean of zero and a standard deviation of one. They indicate by how many standard deviations the wage share changes for a one standard deviation change in the explanatory variable.

income earners and weak wage bargaining institutions. For the control variables, we find statistically significant effects of *U* and *OPEN,* whereas *ICT* does not display robust effects.

5. Conclusion

The era of financialisation has been accompanied by a substantial decline in the wage share. This paper analyses the link between financialisation and functional income distribution. It provides a theoretical clarification by identifying several channels linked to different approaches within heterodox Political Economy. We argue that financialisation is a multi-dimensional phenomenon whose different aspects may impact the wage share through distinct channels. Each channel comprises power relations between different classes: Financial openness impacts on the exit options of firms and mainly affects the balance of power between firms and workers; financial overhead cost and competition on capital markets in the first instance intensify the conflict between rentiers and firms, but may be resolved at the expense of workers. Lastly, household debt can affect working class identity and undermine workers' position in industrial conflict. The paper presents an empirical analysis in which these channels are operationalized and jointly tested by a panel regression analysis for 14 OECD countries over the period 1992-2014. We find strong effects of financialisation on functional income distribution which are, taken together, in the same order of magnitude as the effects of globalisation. International financial openness and financial payments of firms have the most robust negative impact on the wage share. Financial openness displays the largest economic effect, followed by financial payments of businesses. Household debt reduces the wage share in countries where it is held by financially vulnerable low-income households and where wage bargaining institutions are weak. There is only weak evidence for the effect of competition on capital markets.

The main advantage of our approach in comparison to previous contributions is that we operationalise different channels and jointly assess the relative importance of different theoretical approaches, which helps identify potential policy interventions. This is not possible in estimations with only one measure of financialisation, as several of the channels are interlinked. Our results lend empirical support to theories of bargaining according to which the exit options of capital are enhanced by financial openness (Jayadev 2007; Stockhammer 2017), as well as to mark-up pricing theories in which the mark-up is elastic with respect to financial overhead costs (Hein 2015; Dünhaupt 2016). The neo-Marxian literature has linked increased competition on capital markets to downward pressure on wages (Martin et al. 2008; Bryan et

al. 2009; Sotiropoulos and Lapatsioras 2014). We are the first to test this channel empirically, but find only weak support. A possible negative effect of household debt on the wage share has been predicted in the models by Panico et al. (2012) and Kim et al. (2017). We have provided further theoretical justification for this channel by linking it to class consciousness and worker militancy. We find empirical evidence for this effect only for a subset of countries in our panel, where mortgage-financed household debt of low-income earners is high while collective bargaining coverage is low.

Our findings have several important policy implications. They indicate that the opening of domestic financial markets for foreign capital contributed to an erosion of the wage share. This is particularly interesting in conjunction with our finding of a negative effect of trade openness, and no significant effect of migration. Simply put, wages have stagnated because of an increase in capital mobility, not because of labour mobility. If that is correct, how should we de-financialise? First, reduce capital mobility. Besides progressive distributional effects, there are also benefits for financial stability. International capital flows are pro-cyclical and when they come in waves, they often end in financial crises (Reinhart and Reinhart 2009). Forbes et al. (2015) show that controls on capital inflows can enhance financial stability by curbing private credit growth. Second, appropriately designed taxation and corporate regulation can decrease financial payments. This would not only encourage firms to invest in productive capacity rather than maximising shareholder value (Tori and Onaran 2017), but also improve income distribution. This could be achieved through higher taxation of dividend payments and capital gains, and by prohibiting share buybacks. Decoupling executives' remuneration from share prices and including representatives of employees and the wider public on company boards would support this process (Lazonick 2014). Lastly, Arcand et al. (2015) find that the link between finance and growth becomes negative when credit to the private sector reaches 80-100% of GDP. De-financialisation is thus a more effective measure for improving income distribution than the presently popular migration controls and can be macroeconomically beneficial in terms of stability and growth.

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Appendix

Table A1: Data definition and sources

Variable	Abbreviation	Definition	Source	Note
Adjusted wage share	*WS*	Wage bill divided by GDP at factor cost. The wage bill includes the imputed income of self-employed workers.	AMECO	
Financial openness	*FINOP*	Index accounting for the presence of multiple exchange rates, restrictions on current account transactions and the requirement of the surrender of export proceeds	Chinn und Ito (2006)	
Financial globalisation	*FINGLOB*	Logarithm of foreign assets plus foreign liabilities divided by GDP	Lane and Milesi-Ferretti (2007)	Own calculation
Gross financial income of non-financial corporations	$FININC^{GROSS}$	The sum of dividend and interest income of NFCs as a ratio to the value added of this sector.	Eurostat: Sector Accounts, nasa_10_nf_tr; OECD: ANA, 14A	Own calculations based on Eurostat data for European countries and OECD data for non-European countries.
Gross financial payments of non-financial corporations	$FINPAY^{GROSS}$	The sum of dividend payments and interest payments of NFCs as a ratio to the value added of this sector		When Eurostat data were not available for early years, data were extrapolated backwards based on the growth rate of the OECD series.
Net financial payments of non-financial corporations	*FINPAY*	$FINPAY = FINPAY^{GROSS} - FININC^{GROSS}$		
Stock market turnover	*STO*	Total value of shares traded per year divided by the average market capitalisation	World Bank, Global Financial Development Database	
Value added of the financial sector	*VAFIN*	Value added of the financial sector relative to total value added	KLEMS	
Property price inflation	*PPI*	First difference of the real house price index	OECD	Own calculation
Household debt	*HHD*	Household debt as percentage of the disposable income of households	BIS; OECD: ANA, 14A	Own calculation
GDP growth	*GRWTH*	Growth rate of real GDP	AMECO	Own calculation
Unemployment rate	*U*	Unemployed persons as a share of the total labour force	AMECO	
Union density	*UD*	Ratio of wage and salary earners who are members of a trade union to the total number of wage and salary earners (adjusted for non-active and self-employed members)	OECD: Annual Labor Force Statistics	
Trade openness	*OPEN*	Exports plus Imports over GDP	AMECO	Own calculation
Value added of the information and computer services sector	*ICT*	Share of value added of the information and computer services sector in GDP	OECD	Own calculation
Migration	*MIGR*	Change in the share of foreigners in the total labour force	OECD	Based on data on foreign labour force by nationality. The series is unavailable for the USA where we relied on data on foreign labour force by country of birth. Data on foreign labour force were extrapolated using the growth rate of data on foreign population.
Collective bargaining coverage	*BARCOV*	Number of employees covered by collective (wage) bargaining agreements as a proportion of all wage and salary earners in employment with the right to bargaining, adjusted for the possibility that some sectors or occupations are excluded from the right to bargain	ICTWSS Database	Linearly interpolated between existing years
Gross replacement ratio	*GRR*	Gross unemployment benefit levels as a percentage of previous gross earnings	OECD	Linearly interpolated between existing years . A series based on

				Average Production Worker wages (1970–2005) was extrapolated with the growth rate of GRR based on Average Worker wages (2001–2011).
Housing tenure across the income distribution	For calculation of *HHD_HDWB*	Share of people in the bottom 40% of the income distribution that are mortgage-financed owner-occupiers	OECD Affordable Housing Database	Own calculation. Data only available for the period 2010-2014.
Number of listed companies per population	For calculation of *STO_LC*	Number of listed companies per 10k population	World Bank, Financial Structure and Development Database	

Table A2: Descriptive statistics

Variable	Mean	Standard deviation	Minimum	Maximum
WS	64.529	3.885	53.207	75.298
FINOP	0.852	0.250	0	1
FINPAY	0.120	0.060	-0.024	0.322
STO	0.661	0.518	0.010	3.412
HHD	0.946	0.530	0.071	2.869
U	0.082	0.038	0.016	0.275
UD	0.388	0.225	0.075	0.839
OPEN	0.662	0.301	0.166	1.655
ICT	0.042	0.010	0.023	0.065
GRWTH	0.019	0.023	-0.096	0.076
BARCOV	0.681	0.266	0.12	0.98
Share of people in the bottom 40% of the income distribution that are mortgage-financed owner-occupiers	0.178	0.078	0.064	0.439
Number of listed companies per 10k population	2073.626	1488.856	233.6214	7734.352

Notes: The summary statistics are computed for the sample of 14 OECD countries over the period 1980-2014, although the series of some variables may be shorter. WS is scaled from 0 to 100, while all other variables that are expressed in percentages are scaled between 0 and 1.

Table A3: Pairwise Pearson correlation coefficients between explanatory variables

	FINOP	FINPAY	STO	HHD	U	UD	OPEN	ICT	GRWTH
FINOP	1								
FINPAY	-0.277	1							
STO	0.261	0.071	1						
HHD	0.304	-0.572	0.136	1					
U	-0.132	0.150	-0.115	-0.239	1				
UD	-0.003	-0.190	-0.206	0.184	-0.112	1			
OPEN	0.182	-0.329	-0.241	0.383	-0.231	0.348	1		
ICT	0.249	-0.270	0.469	0.274	-0.218	-0.161	-0.231	1	
GRWTH	-0.001	-0.112	-0.012	-0.181	-0.247	0.058	-0.013	0.046	1

Notes: The correlation coefficients are computed for the sample of 14 OECD countries over the period 1992-2014.

Table A4: Unit root tests

Variable	Fisher-type unit root test (p-value)
WS	0.47
FINOP	0.70
FINPAY	0.49
STO	0.10
HHD	0.26
U	0.01
UD	0.14
OPEN	0.73
ICT	0.32
GRWTH	0.00
PP	0.03
VALAD	0.60
Residuals	0.97
Δ*WS*	0.00
Δ*FINOP*	0.00
Δ*FINPAY*	0.00
Δ*STO*	0.00
Δ*HHD*	0.00
Δ*U*	0.00
Δ*UD*	0.00
Δ*OPEN*	0.00
Δ*ICT*	0.00
Δ*GRWTH*	0.00
Δ*PP*	0.00
Δ*VALAD*	0.00
Δ*Residuals*	0.00

Notes: The table reports p-values of Augmented Dickey Fuller unit root test with trend for variables in level, and drift for variables in first differences. The test is applied to each county individually, and then the test statistics are combined to calculate p-values for an overall test. The null-hypothesis is that all cross sections contain a unit root. Residuals denotes the residuals of specification (7), which uses the within-estimator.

Table A5: Further estimations: *LMI*, *FINGLOB*, *FININC^{GROSS}*

Specification number	(A1)	(A2)	(A3)	(A4)
Estimation method	First difference	First difference	First difference	First difference, Driscoll-Kraay standard errors
FINOP(-1)	-2.998**	-2.709**		-2.519**
	(0.034)	(0.047)		(0.038)
FINGLOB(-1)			-1.385***	
			(0.01)	
FINPAY(-1)	-5.248*		-5.617**	-5.678**
	(0.076)		(0.037)	(0.032)
FINPAY^{GROSS}(-1)		-5.681**		
		(0.039)		
FININC^{GROSS}(-1)		4.398		
		(0.214)		
STO(-1)	-0.198	-0.114	-0.085	-0.123
	(0.275)	(0.490)	(0.612)	(0.317)
HHD(-1)	-0.305	-0.062	0.635	0.318
	(0.768)	(0.947)	(0.508)	(0.707)
U(-1)	-17.534**	-14.011**	-17.782**	-12.808**
	(0.044)	(0.019)	(0.021)	(0.035)
UD(-1)	-8.993	-11.998	-12.626	-13.112
	(0.282)	(0.149)	(0.113)	(0.135)
OPEN	-6.909***	-6.692***	-5.739***	-6.532***
	(0.000)	(0.000)	(0.000)	(0.000)
ICT	-66.227**	-66.003**	-44.021	-62.697**
	(0.049)	(0.034)	(0.155)	(0.018)
ICT(-1)	53.795*	70.129**	71.828***	72.863**
	(0.071)	(0.012)	(0.009)	(0.025)
GRWTH	-15.534***	-16.178***	-14.616***	-16.223***
	(0.000)	(0.000)	(0.000)	(0.001)
D-0814	0.422**	0.376**	0.428**	0.387***
	(0.019)	(0.032)	(0.013)	(0.001)
BARCOV	-0.017			
	(0.365)			
GRR	-0.010			
	(0.655)			
Countries	14	14	14	14
Observations	221	265	242	265
F-test	13.757***	16.41***	17.825***	62.29***
Adj.R^2	0.451	0.429	0.439	0.451 (R^2)
Period	1992-2011	1992-2014	1992-2014	1992-2014

Notes: The dependent variable is the adjusted wage share. P-values are in parenthesis below the estimation coefficients. ***, **, * denote statistical significance at the 1%, 5% and 10% level. All standard errors were corrected for heteroscedasticity and autocorrelation. Estimation with Driscoll and Kray (1998) standard errors requires inclusion of a constant, which explains slight differences in the point estimates of specification (A4) compared to the baseline.

Table A6: Short-run effects of ECM (specification 11 of Table 4)

Adjustment speed	-0.202***
	(0.000)
U	-6.456
	(0.265)
UD	7.478
	(0.350)
OPEN	-5.625***
	(0.000)
ICT	-27.337
	(0.431)
FINOP	2.069
	(0.268)
FINPAY	-4.848
	(0.113)
GRWTH	-16.056***
	(0.000)
STO	-0.069
	(0.718)
HHD	-1.375
	(0.395)
D-0814	0.040
	(0.877)

Notes: The dependent variable is the adjusted wage share. P-values are in parenthesis below the estimation coefficients. ***, **, * denote statistical significance at the 1%, 5% and 10% level.