

## 2. Literature review

The issue of increasing personal income inequality, in particular earnings inequality, has attracted a significant amount of research. In contrast, changes in functional income distribution, i.e. the fall in the share of wages in GDP have only recently been the subject of research with an aim to pin down the effects of technology, globalization, and changes in the bargaining power of labour. Different economic schools of thought developed distinct starting points for their analysis of functional income distribution.

The neoclassical approach, which also forms the basis for the New Keynesian analysis, starts with a production function with two factors: capital and labour. The relative income shares of labour and capital are determined by technology. If a firm produces in a fully competitive market with full-capacity utilisation and the production function is characterised by constant elasticities of substitution between capital and labour the relative income shares of the productive factors are determined by their marginal productivity which is technologically given by the employment elasticity of output. Hence, the focus on technological change which characterises many studies in the mainstream economic tradition derives directly from their theoretical approach. There are two critical assumptions in this framework: fully competitive markets and full-capacity utilisation. As soon as the assumption of perfect competition is dropped, i.e. if firms and workers act in oligopolistic markets as is mostly the case, relative bargaining power is influenced by the price setting power (mark-up power) of firms (Stockhammer, 2009). There is a substantial literature in the New Keynesian tradition that derives from this (EC, 2009). Empirically, this approach is most prominently represented by the IMF (2007), EC (2007), Bassanini and Manfredi (2012), and Karabarbounis and Neiman (2012). Indeed their findings indicate that technological change is the primary determinant of falling wage shares followed by globalisation. However, Stockhammer (2015) argues that a close examination of the reported findings reveals serious robustness issues regarding the effects of technology. Indeed both the IMF (2007) and the EC (2007) report that the technology variables are not robust to the inclusion of time effects. However, they do not interpret the non-robust effects of technology with caution, but rather make a strong case that the fall in the wage share is an unavoidable outcome of technological progress.

Consistent with the nature of modern capitalist economies, the relaxation of the assumption of full-capacity utilisation gave birth to Keynesian macroeconomics which

emphasise the role of effective demand in determining output, income and employment. Consequently, functional income distribution is governed by consumption of workers and capitalists and, more importantly, by the propensity to invest which is driven by aggregate demand and business expectations, i.e. the animal spirits of the private investors (Kaldor, 1955). Most heterodox authors accept this analysis but augment the emphasis on animal spirits by additional factors governing the balance of power between employers and employees as suggested by Marxist or Institutionalist economists. Technology might affect the contributions of the factors of production but technological change itself is an endogenous outcome of conflict in the labour process. Wages are negotiated between employers and employees and are therefore subject to social norms and relative bargaining power. Consequently scholars in this tradition have offered a more thorough analysis of the determinants of bargaining power. Marxist economists emphasise the sphere of production as the source of surplus and the core determinant of income distribution. Economists working in a post-Keynesian or Kaleckian tradition start directly from the assumption of oligopolistic markets and focus on the sphere of circulation. They emphasise the degree of monopoly in a market, which is determined by the degree of competition between firms, union power and, in a more recent interpretation of the literature by the strength of the financial sector (Kalecki, 1954; Hein, 2015). In the following, we refer to the Marxist, Institutionalist and post-Keynesian/Kaleckian analysis as the Political Economy approach.

Although the New Keynesian and the Political Economy approach to income distribution start from different assumptions, both arrive at a bargaining framework to analyse distribution of income, at least in the more recent studies in the New Keynesian tradition. The difference is rather that the New Keynesian approach discusses the effects in a rather technical manner driven by a production function approach, while studies following the bargaining approach would always relate the developments to changes in bargaining power. For example, New Keynesian scholars discuss how globalisation changed the factor supplies or costs of intermediate products, and how this technically affects parameters in the equation for the wage share. In contrast, political economists rather look at how globalisation and financialisation increase the fall-back options of capital while decreasing the fall-back options of labour and thereby change the relative bargaining power between the two factors.

Both the mainstream studies and the research in the tradition of political economy find substantial negative effects of globalisation on the wage share. IMF (2007) and EC

(2007) employ import and export prices, immigration, offshoring, and trade openness (measured as export plus imports as a ratio to value added) as measures of globalisation and find all of them to have the expected negative effect on the wage share. However, there is a difference in the interpretation of the results depending on the country group used.

Publications focusing on within sector wage shares find mixed results. Country-level analysis always faces the question as to whether the decline in the wage share captures changes in sectoral composition rather than a simultaneous decline of the wage share in all sectors; therefore, in order to abstract from mere reallocation effect and focus on a distributional analysis it is crucial to isolate the within sector development of the wage share. This can be illustrated simply by writing the aggregate wage share as a function of weighted sectoral wage shares (EC, 2009):

$$WS_t^C = \frac{LC_t^C}{VA_t^C} = \sum_{i=1}^n \frac{VA_{i,t}}{VA_t^C} * \frac{LC_{i,t}}{VA_{i,t}} \quad \text{Equation (1)}$$

where  $i$  stands for the sector and  $t$  for the year.  $WS_t^C$  stands for the aggregate wage share of country  $C$ , which is defined by labour compensation  $LC_t^C$  as a ratio to total domestic value added ( $VA_t^C$ ) or GDP, and can be expressed as the sum of within sector wage shares  $\frac{LC_{i,t}}{VA_{i,t}}$  weighted by the sectors' contribution to total value added  $\frac{VA_{i,t}}{VA_t^C}$ . Consequently a change in the aggregate wage share can result from changes in the sectoral composition, referred to as the between component, or changes in the sectoral wage shares, referred to as the within component.

$$\Delta WS_t^C = \sum_{i=1}^n \Delta \left( \frac{VA_{i,t}}{VA_t^C} \right) * \frac{LC_{i,t}}{VA_{i,t}} + \Delta \left( \frac{LC_{i,t}}{VA_{i,t}} \right) * \frac{VA_{i,t}}{VA_t^C} \quad \text{Equation (2)}$$

Sector-level data allows to differentiate between the two processes and has thereby an advantage over country-level data. Bassanini and Manfredi (2012) fail to find a robust effect of sector specific import prices on the wage in all but one specification and do not obtain a significant coefficient for import penetration at all. They argue that the negative effect confirmed by country level studies result from a process of reallocation of production towards sectors with lower wage share brought about by increasing competition from abroad and confirm their hypothesis by additional estimations of low and high wage share sectors' share in total value added. Thereby they refer to the between component of the aggregate wage share. They do find, however, a negative impact of offshoring, especially in high wage share countries, while FDI appears to be insignificant in their analysis. The negative effect of offshoring is furthermore confirmed by Lin and Tomaskovic-Devey (2013) for the US.

Research in the tradition of political economy confirm these results, especially with respect to trade openness variables (Jayadev, 2007; Stockhammer, 2015), as well as intermediate import penetration and outward FDI for within sector wage shares in Austria (Onaran, 2011, 2012).

Interestingly, there is a difference regarding the interpretation of the results depending on the country group used. The IMF (2007) and the EC (2007) focus on the aggregated country-level wage share in advanced countries and interpret their findings as consistent with the traditional trade theory based on the Stolper-Samuelson Theorem, as well as skill biased trade induced technological change argument of the new trade theories. Bassanini and Manfredi (2012) include both rich and (formerly) poor OECD countries and find the effect of intermediate imports to be negative for rich and insignificant for poor countries. However, the findings in the political economy literature (e.g. Rodrik, 1997; Harrison, 2002; Onaran, 2009; Jayadev, 2007; Stockhammer, 2015), which cover also the developing countries, indicate that globalization has a negative effect on the wage share in the developing as well as developed countries; hence point at a contradiction to the predictions of the traditional trade theory.

Regarding the effects of the changes in the bargaining power of labour, the IMF (2007) and the EC (2007) both use standard indices for labour market institutions such as union density, employment protection legislation, unemployment benefit generosity and the tax wedge designed to measure labour market rigidities rather than to measure the bargaining power of labour (Stockhammer, 2015). EC (2007) finds that while minimum wages have a

positive effect, higher employment protection legislation has negative effects on the wage share; their interpretation of the results is that tighter employment protection legislation leads to higher bargaining power of workers and an increase in wages, but it does not increase the wage share, since the labour demand is very elastic. IMF (2007) finds negative effects of unemployment benefits and the tax wedge. Numerous studies also include direct bargaining variables such as union density, strike activity and collective bargaining regimes into their empirical analysis. Strike activity has been found to have a positive impact on the wage share (Kristal, 2012; Argitis and Pitelis, 2001), while ILO (2011) argues that collective bargaining arrangements and minimum wages could have positive effects on the wage share. Union density is the most commonly used variable with the best data availability and the most robust effect. It has been found to increase the real wage (Choi, 2001) – especially in countries with a low level of bargaining coordination (Nunziata, 2005), reduce wage dispersion, and limit the size of top income shares. Additionally, stronger labour unions are likely to exercise political pressure in favour of redistribution policies, thereby decreasing *net* income inequality (after taxes and transfers) (Jaumotte and Buitron, 2015).<sup>2</sup> Nevertheless, it has been argued that the actual effect of unions may be underestimated in empirical studies since collective bargaining coverage greatly exceeds union membership in some countries. However, poor data availability limits the employability of this variable (OECD, 2006), at least for the sectoral level. Stockhammer (2015) fails to find any statistically significant effect of the labour market institution variables such as employment protection legislation, minimum wages, unemployment benefit replacement ratio, unemployment benefit duration, and the tax wedge.

The mainstream literature does not control for the effects of welfare state retrenchment or financialisation. In the political economy literature, welfare state retrenchment is found to be an important determinant of the fall in the wage share (e.g. Harrison, 2002; Jayadev, 2007; Onaran, 2009; Stockhammer 2015); however the measure used is often only aggregate government spending as a ratio to GDP, and is too broad to reflect the details of the welfare reforms essential to the bargaining power of labour. Kristal (2012) uses government civilian spending, which nevertheless does not capture the details of spending that is particularly important for the social wage and bargaining power of labour such as public spending on social protection or health and education.

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<sup>2</sup> Although some economists argued that stronger unions can lead to higher unemployment there is very little econometric evidence for this hypothesis (OECD, 2006; Jaumotte and Buitron, 2015) .

There have been only few studies investigating the impact of financialisation on functional income distribution. The term is not unambiguously defined, but encompasses the ‘increased role of financial activity and rising prominence of financial institutions’ (Stockhammer, 2015). Financialisation gained momentum since the 1980s. Similar to globalisation, it has increased the ‘exit options’ for capital which can now be invested in real as well as financial assets (Jayadev, 2007). Furthermore, it has been argued that financialisation changed industrial relations and led to a ‘shareholder value orientation’ as a consequence of hostile takeovers of listed companies (Lazonick and O’Sullivan, 2000). Financialised firms adopt a ‘downsize and distribute’ strategy, which reduces prospects for labour to agree on a beneficial compromise. Similarly, the self-perception of workers changed due to financialisation, resulting in an emergence of ‘investor identities’ (Langley, 2007). The main indicators of financialisation applied are financial globalisation calculated as foreign assets plus liabilities (Stockhammer, 2009, 2015), current account openness (Jayadev, 2007), and dividend and interest payments and income (Hein and Schoder, 2011; Dünhaupt, 2013). Interestingly, all studies obtain a significant negative effect of at least one of those variables. Kohler, Guschanski and Stockhammer (2015) offer a systematic analysis of different channels through which financialisation affects the wage share including all of these measure and augmenting them by variables measuring the competition on capital markets (stock market turnover ratio) and household debt. They find the latter variable to be most significant for the determination of the wage share among all financialisation variables as well as control variables. The only study on within sector wage shares including a measure of financialisation is Lin and Tomaskovic-Devey (2013) who account for the ratio of financial receipts of non-financial corporations (including interest, dividend and capital gains) to business receipts for the case of the US. The only paper, to the best of our knowledge, investigating the effect of financialisation on the wage share using firm level data is Alvarez (2015) who includes net financial income and interest payments as explanatory variables in his analysis of France.

Summing up, the research based on a political economy approach uses aggregate country level panel data, which does not differentiate the results across skill groups and industries. Within the mainstream literature, which argues the primacy of technological change, Bassanini and Manfredi (2012) and Karabarbounis and Neiman (2012) use sectoral as well as country panel data; however they do not explicitly control for variables which would reflect the bargaining power of labour and labour market institutions, welfare state

retrenchment or financialisation. IMF (2007) attempts to distinguish the effects on the wage share of the workers in the skilled and unskilled industries; however the study claims that the income share of skilled workers rose by focusing on the share of wage bill in the industries using predominantly skilled labour as a ratio to the economy wide value added, rather than the share of wages in the skilled sectors as a ratio to the value added in those sectors, which is also mentioned in a figure in the paper. According to the latter indicator, which is reported but not discussed in the IMF study, the labour share of skilled workers is also falling in some major economies. Lin and Tomaskovic-Devey (2013) and Onaran (2011, 2012) are closest to our analysis, but while these studies focus on a single country, the US and Austria respectively, we perform our analysis for selected OECD countries and are therefore able to account for country specific differences in industrial relations. Furthermore, we incorporate a broader range of explanatory variables.