tions, as well as social security and welfare regimes affect the wage share. While Austria is the focus of our analysis in this paper, we compare our results with estimations for Denmark, France, Germany, Italy, Spain, the UK, and the US.[3]

We confirm previous research based on the analysis of pooled aggregate county data attributing the decline in the wage share to financialisation, globalisation and a decline in bargaining power of labour; however, we find that these factors impact countries and skill groups within countries differently. Thereby we confirm the upmost relevance of country specific institutional setting in determining income distribution. In Austria, union density and household debt appear to be the strongest drivers of the decline in the wage share. Although we also find evidence for some negative impact of technological change, albeit not robust, our results indicate that the increase in income inequality is not inevitable but can be altered by political and institutional decisions.

The remainder of the paper is organised as follows. Section 2 provides a short review of the theoretical literature the determinants of functional income distribution from the perspective of different schools of thought as well as an overview of the empirical literature. Section 3 introduces our data and the stylised facts. Section 4 presents our estimation methodology and expected results based on the theoretical considerations introduced in section 2. Section 5 presents the estimation results and section 6 concludes.

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, globalisation, 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.[4] There is a substantial literature in the New Keynesian tradition that derives from this.[5] Empirically, this approach is most prominently represented by the International Monetary Fund (2007), the European Commission (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.[6] 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.[7]

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 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. Sector-level data allows to differentiate between the decline in the within-sector wage share and a change in the sectoral composition of the economy which is an advantage over country-level data.[8] 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 on the sectoral composition in their sample. 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,[9] as well as intermediate import penetration and outward FDI for within sector wage shares in Austria.[10]

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.[11] 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,[12] 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[13] – especially in countries with a low level of bargaining coordination,[14] 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).[15] 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,[16] 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;[17] 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.

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".[18] 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.[19] 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.[20] 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".[21] The main indicators of financialisation applied are financial globalisation calculated as foreign assets plus liabilities,[22] current account openness,[23] and dividend and interest payments and income.[24] Interestingly, all studies obtain a significant negative effect of at least one of those variables. Kohler, Guschanski and Stockhammer (2016) 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 dis-

cussed 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.

3. Data and stylised facts

3.1 Data

We have compiled a comprehensive database for nine OECD economies drawing on six publicly available international databases for sectoral data which we augmented by country level data.[25]

We measure the wage share as labour compensation as a ratio to value added with data obtained from the EU KLEMS database. Labour compensation includes the wage of self-employed workers, imputed based on the assumption that their wage is equal to the average hourly wage of the sector.[26] Since data from EU KLEMS is only available until 2009 we extrapolate through splicing. More specifically, we link the wage share from KLEMS with the growth rate of the wage share obtained from the OECD Structural Analysis database (OECD STAN).[27] Both series have a correlation of 0.91. We control for violent swings in the wage share by excluding years where the percentage change in the wage share exceeds 30% in absolute values, which mostly appear in Denmark, the UK and Sweden, but our results are robust to all these cleaning procedures.

In order to see how our results differ if we use the after-tax wage share as the dependent variable in our estimations we had to obtain measures for implicit tax rates on labour income, indicating the share of taxes paid out of wage income. The series are not readily available for many countries and for long periods; therefore we reconstructed the series using the technique proposed by Carey and Tchilinguirian (2000) with data from several sources of the OECD database.

We obtain measures of capital stock from the EU KLEMS database. Unfortunately only aggregated capital stock data is available at the 2-digit level.[28] We extrapolate capital stock from KLEMS using the growth rate of the same measure from STAN. At the 1-digit level we are able to disaggregate ICT and non-ICT capital. ICT and non-ICT capital is reported as services (measured as an index) rather than stock in the newer versions of KLEMS.

Our globalisation variables are obtained from the OECD. Import data disaggregated for intermediate import and other imports is from OECD