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Technological change and growth regimes

Assessing the case for universal basic income in an era of declining labour shares

IPR Policy Report

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Acknowledgements

This report provides an overview of the research project ‘Economics of basic income’ (March 2019 - January 2022), funded by an unrestricted gift from Mr Geoff Crocker. It summarises academic research on the multi-dimensional effects of technology on national economies with a particular focus on its relationship to trends of a declining labour share. We relate these findings to a discussion of policy solutions including a universal basic income (UBI).

Future empirical research at the Institute for Policy Research (IPR) will focus more comprehensively on this latter question, estimating the macroeconomic effects of a UBI funded by sovereign money.

1. Introduction

1.1 Synopsis and motivation

In recent decades, most OECD countries have seen a significant decline in the labour share, as well as an increase in inequality[1]. The decline in the labour share and the rise in inequality poses several problems for such countries, whether related to distributive justice, economic and social outcomes, such as deficient aggregate income and demand, or democratic politics.

In this report, we focus on the role of technological change as a central driver of the decline in the labour share and explore its contingency: both across contexts and across definitions/operationalisations of technology.

With respect to the latter, we distinguish between perspectives that place physical capital and investment in automation and ICT at the centre of technological change on the one hand, and the growth of the knowledge economy and intangible capital on the other. Meanwhile, following work by Baccaro and Pontusson (2016), and more recently Hassel and Palier (2021), we utilise the concept of 'growth regimes' to analyse how the effects of technology are mediated and moderated by national political-economic institutions. This approach allows us to test more nuanced arguments about the role of technological change in the decline in the labour share and to discuss the likely effects, and political feasibility, of policy solutions such as universal basic income (UBI) that are often advanced as an answer to increased automation and lower returns to labour.

The following issues provide the basis for our research questions:

1. To what extent is technological change responsible for the decline in the labour share?
2. What is the role of growth regimes in moderating the effect of technology on the labour share?
3. Are results consistent across different conceptions and definitions of technological change?
4. What policy solutions are available to tackle these trends and issues?
5. Does technological change strengthen the case for and the feasibility of a universal basic income?

This work builds on previous policy briefs and reports by the Institute for Policy Research (IPR) on UBI and technological change, namely the September 2019 report by Dr Luke Martinelli entitled 'Basic income, automation and labour market change' (Martinelli, 2019a). That report summarised the evidence regarding the effects of technology on labour markets and the case for UBI in such a light. Empirical analysis, however, focused on political economy questions concerning the political constituency for a UBI and policy trade-offs in design across EU countries using microsimulation analysis. Here, our empirical strategy is instead focused on questions about the effect of technology on the labour share, enabling us to re-pose the question of how a UBI could serve as a tool for combating growing inequality, income and demand deficiency, and labour market dysfunction in global economies. Future empirical research at the IPR will focus more comprehensively on the fifth and final research question above, namely estimating the macroeconomic effects of a UBI, including one funded using sovereign money.

[1] Both market (wage) and post-tax-and-transfer (after government redistribution).

Next, we introduce three central ideas in the report – the decline in the labour share, technological change and growth regimes – before briefly outlining the consequences for policy debates.

1.2 Decline in the labour share and increase in inequality

Historically, it was assumed by most economists that the labour share, i.e., the division of national income allocated to labour compensation as opposed to capital[2], was broadly constant. However, in the early 1980s, the labour share began a sharp and continued decline in OECD countries, at least until the financial crisis of 2007-8. Since then, the secular downward trend has plateaued at a lower level on average across advanced economies, but with considerable heterogeneity in trajectories across countries. The decline in the labour share is both theoretically and empirically associated with increases in income inequality as returns to capital are more concentrated among higher income households. However, increases in wage inequality have further contributed to the increase in inequality across OECD countries.

Why has the labour share declined? In the 2000s, the literature identified globalisation, defined as trade liberalisation and capital openness, as a crucial determinant in lowering the labour share (Diwan, 2001; Harrison, 2002; Guscina, 2007; Jayadev, 2007). Relatedly, Elsby et al. (2013) pointed to the role of offshoring labour-intensive activities. Others highlighted the liberalisation of financial markets more generally (Lane and Milesi-Ferretti, 2007) or the liberalisation of labour markets, whether due to the collapse of collective bargaining or falling union membership. Finally, demographic change, specifically ageing populations, has been cited as a more mundane explanation of the decline in the labour share as an increase in the dependency ratio puts downward pressure on the labour share relative to the returns to capital that non-active pensioners rely on for their living standards and consumption[3].

Recent studies have argued that technological change is a significant contributor to the decline in the labour share (Bentolila and Saint-Paul, 2003; Karabarbounis and Neiman, 2014; Dao et al., 2019), although identifying the causal effects of technological change is far from straightforward. To some extent, new technology facilitates growing global economic integration, outsourcing of labour, and financialisation, while the collapse of collective bargaining in many countries has also flowed from processes of deindustrialisation that are in part, a consequence of technological change. New technologies may also enable firms to capture and concentrate market power, which leads to higher profit shares and a lower labour share (Barkai 2020, Autor et al. 2020). These considerations also highlight the contingency of technological adoption, the multiple ways it can be understood and measured and its interaction with institutions and politics.

[2] The capital share is thus the share of national income distributed as capital income such as interest, profits, dividends, and realised capital gains. In 'adjusted' measures, self-employed or so-called mixed income is usually distributed between labour and capital income depending on assumptions about what the wages of self-employed people would be.

[3] D'Albis et al. (2021) also find that while natural growth in the population decreases the labour share, immigration increases the labour share, which they explain again as a result of the varying effects on the dependency ratio: in the short-to-medium-term natural growth increases the dependency ratio while immigration reduces it.

1.3 Technological change

Last year, a viral video of Boston Dynamics robots dancing to rock n' roll provided an evocative image of the oncoming technological revolution. The combination of awe and trepidation it inspired are a fitting representation of common reactions to the prospect of new technology. The promise of productivity gains and improvements in living standards sit alongside the threat of economic disruption, social dislocation and political upheaval. Yet, the precise nature of technological change and its effects across time and context are not best understood as unidimensional and linear. The nature of technological change and its effect on labour markets when the Fordist production regime was dominant differs considerably from the trends we are seeing now.

In the current era, there are multiple labels given to the process of technological change: automation, robotisation, routinisation, digitalisation, artificial intelligence, the transition to a knowledge economy and so on. While there is overlap in many of these concepts, they do not describe identical processes and the operationalisation of each process is usually distinct across different studies and empirical research. In the popular imagination, the most common concept used to capture the effect of technology on labour markets is 'automation', echoing similar concerns of a jobless future from the 1960s (Theobald, 1966). However, the extent to which ICT investment, the rise of the knowledge economy and intangible capital mark a distinct shift in the nature of technological change is worth considering. Clearly, the distinct forms of technological change experienced in the past did not have the same effect on the nature of production, inequality and the labour share as in recent decades.

In this report, we embrace a diversity of conceptions of technological change and explore the effects of technology on the labour share using multiple indicators. These include relative investment prices, capital intensity, ICT stock and software stock as an indicator of intangible assets. The different measures attempt to capture varying conceptions of technology (and its impact on the economy), with the latter three tapping into a more specific focus on digitalisation and the knowledge economy as compared to the initial generic measures of capital investment and development. Of course, all our measures are proxies of technological change and therefore cannot be said to provide smoking gun evidence of the effects of a concept as abstract as technology. Nevertheless, drawing on an existing research agenda that utilises many of the same measures and concepts, we believe it is a worthwhile and enlightening exercise.

1.4 Growth regimes

At least since Hall and Soskice (2001)'s seminal work on the Varieties of Capitalism (VoC), which distinguished between liberal market economies (LMEs) and coordinated market economies (CMEs), political economists have challenged theories of convergence by emphasising cross-national variation in economic models. The VoC framework classifies economies based on supply-side characteristics: the regulation of the labour market, structures of education and training provision, the role of the financial sector, corporate governance, modes of innovation, and the welfare state. A key argument is that there are significant institutional complementarities between these different areas of government and corporate management of the economy. These complementarities mean that countries cluster into either LMEs or CMEs rather than exhibiting a random combination of policies and institutions independent of each other.

The more recent 'growth regimes' framework expands this to include the components of aggregate demand in the national economic growth model, and political-economic coalitions that are formed around these. Whether growth is driven by exports, government expenditure or consumption, or some combination of these, can be used to explain varieties of national economic performance and the distribution of rewards across social classes (Baccaro and Pontusson, 2016). Drawing on both the VoC and growth regimes framework, as well as Esping-Andersen's welfare regimes, Hassel and Palier (2021) divide advanced economies into five growth regimes based on a combination of supply-side and demand-side factors. We borrow the growth regime theoretical framework of demand-side and supply-side factors and the grouping of countries for our analysis in Section 3 (but only use three of the regime types due to a lack of sufficient data).

The central argument of this report is that the effect of technology and related changes on the labour share is moderated by a country's growth regime. We examine how the effect of relative investment prices, ICT investment and intangible capital on the labour share varies depending on the constellation of institutions and drivers of aggregate demand within a country context. We use this typology as a means of exploring cross-national variation in the effect of technology on the labour share, rather than as a fixed categorisation of countries. Future work may clarify the specific dimensions of political economy institutions that are most central to moderating the effects of technology.

The endogenous relationship between technological adoption, labour market outcomes and political economic institutions means that it is difficult to disentangle the complex process of interaction. The growth model perspective helps to inform our understanding of the drivers and dimensions of policy reform, but it also indicates the 'strait-jacket' that institutional arrangements provide for national growth strategies. In other words, while we use the framework of growth regimes to help to explain the varying outcomes associated with technological change across countries, it is also implicitly an indication that policy solutions are constrained by institutions and opportunities for growth.

1.5 Household debt, policy solutions and UBI

This leaves us with the timeless question: what is to be done? And what can be done? Policy solutions should be both effective and politically feasible in response to the decline of the labour share. Yet, technological change can also reshape the desirability and feasibility of policy options, such as through its effect on occupational change. A considerable political economy literature points to the role of occupational class as a determinant of political preferences suggesting that technology can reshape political coalitions as it transforms the occupational structure of post-industrial societies (Evans, 1999; Oesch, 2008).

While our analysis of trends in the labour share in the main sections of the report focuses mainly on the effects of growth regimes on technology, we use the final section to explore the growth of household debt in OECD countries and the case for a UBI to reverse both the decline in the labour share and the increase in household debt. However, our emphasis on growth regimes and the importance of national contexts militates against the idea of 'one-size-fits-all' policy solutions available to all governments. Again, this is as much a question of politics as effectiveness: growth regimes not only characterise a given economic model but also the political actors that maintain a powerful role in policymaking. We suggest that UBI is most likely to be an effective response to technological change in consumption-driven economies with liberalised markets.

1.6 Structure of the report

Briefly, the next section of the report (Section 2) focuses on the relationship between technology and the labour share detailing research to date on the issue. Original empirical analysis is drawn from Garcia-Lazaro and Pearce (2021), which assesses the decline in the labour share in the aggregate and by skill level. The analysis shows the relative price of investment goods is the most consistent factor explaining the decline, driven by the effects on low-skilled workers.

Section 3 introduces the concept of growth regimes in more detail and revisits the determinants of the declining labour share by examining cross-national variation. The relative price of investment goods is a determinant of the reduction in the labour share in countries defined as high-tech manufacturing and public-financed regimes but not in Nordic countries, suggesting that growth regimes moderate the relationship between labour share and technology. On the other hand, a fall in the industry-level relative price of ICT investment to consumption goods leads to a decline in the labour share in Nordic countries but not those in a high-tech manufacturing growth regime.

Finally, Section 4 summarises evidence on trends in household debt and examines policy options for tackling declining labour shares and growing inequality, with a particular focus on what our prior analysis means for the role of a UBI in countering these trends.

2. Technology and the decline in the labour share

This section starts with a literature review revisiting the discussion of the determinants of the declining labour share in industrialised countries. We then briefly describe the empirical approach and results of original analysis by Garcia-Lazaro and Pearce (2021) before discussing the consequences for policy, politics and research.

2.1 Technology and the labour share: a literature review

The starting point for a discussion of the effect of technology on the labour share is establishing the precise trends we see, which are the matter of some debate. This is because aggregating trends in the labour share across time raises several measurement issues. First, an economy's unadjusted labour share is the total compensation of employees, which includes both wages/salaries before tax and employers' social contributions, divided by its national product. However, at least part of the income from self-employment, which is recorded as mixed income in National Accounts data, should be seen as returns to labour, and hence as a part of the labour share. Thus, adjusted labour share measures adopt various methods of including self-employment income.[4] This prevents attributing a decline in the labour share to changing modes of work, such as self-employment, contract work and so on.

Furthermore, some suggest that measures should focus on the labour share in the private sector, as opposed to the public sector, where it is more difficult to define and measure output and factor shares. There is some suggestion that CEOs and other senior management should be excluded from the category of employees in the unadjusted measure, while some studies suggest that the entire decline in the labour share in the US can be explained from the rise of salaries paid as stock options (Atkeson, 2020).

Nevertheless, in the aggregate, the long-term trend in the labour share tends to point in one direction: down. Figure 1 shows the unweighted average of the labour share[5] for the 20 OECD countries indicating a ten-percentage point decline in the last 40 years, although there has been a plateauing of the average labour share at just above 60% since the financial crisis.

[4] Guerriero (2019) lists five alternatives to an unadjusted labour share: (1) Assuming a fixed proportion (usually 2/3) of mixed income is roughly equivalent to labour compensation as a rule-of-thumb; (2) Assuming all mixed income is labour compensation; (3) Assuming the labour share of mixed income is equal to the rest of the economy, which in practice means subtracting mixed income from the denominator; (4) Using data on workforce composition (as self-employed income is difficult to accurately measure) to scale up employee compensation by the ratio of the total workforce to the number of employees; (5) Again using data on workforce composition to scale up employee compensation but subtracting employers from the numerator, i.e. (total workforce minus employers) / employees

[5] This uses data from AMECO that is adjusted, i.e., to include self-employed compensation deemed to be labour income, and measured at factor cost, i.e., minus taxes/plus subsidies. Labour share estimates are usually roughly 5% lower at market prices.

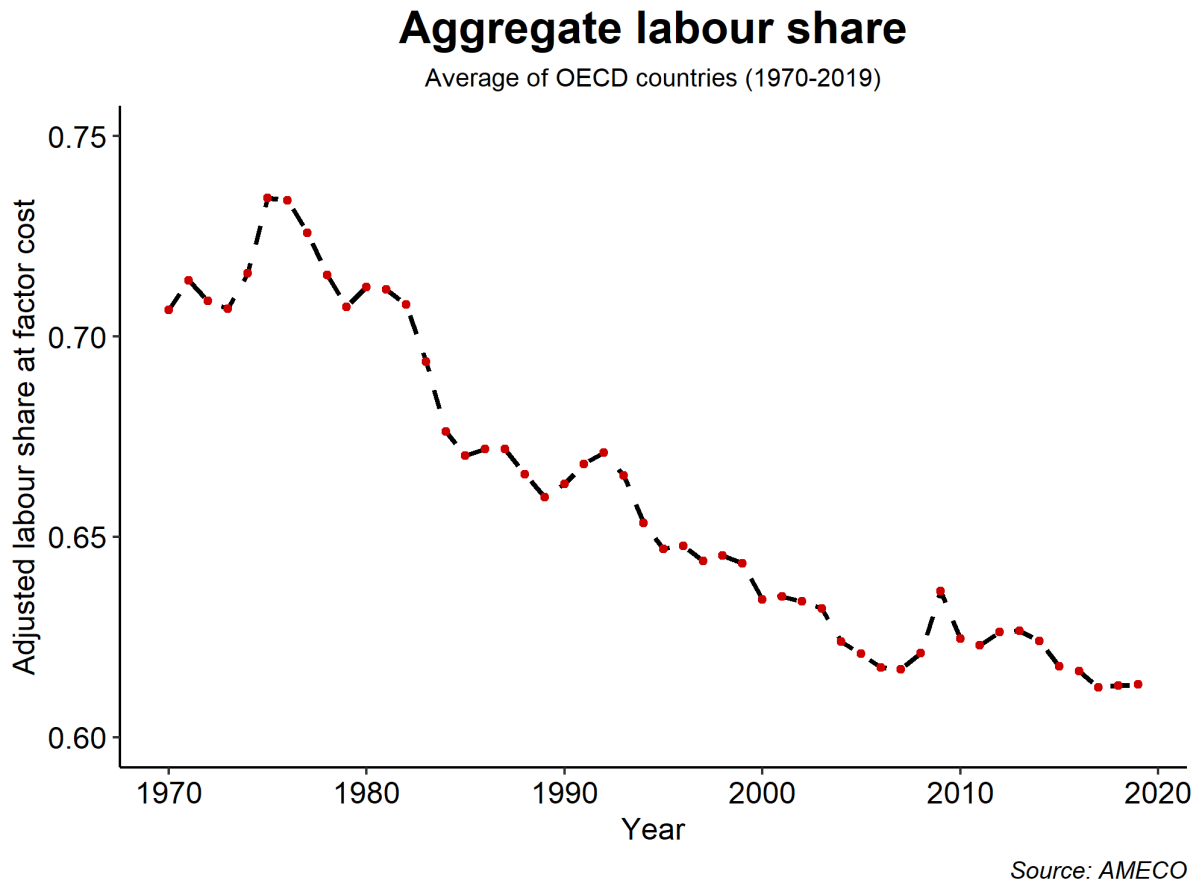

Figure 1: Adjusted labour share at factor cost, 1970-2019, average of OECD countries using data from AMECO.

However, this aggregation of all the OECD countries in the sample masks considerable variation in the trajectory of the labour share across countries. Figure 2 shows the labour share for five selected countries: France, the US, the UK, Sweden and South Korea. South Korea exhibits the greatest overall decline from an extremely high labour share of over 90% in 1970 to under 70% in 2017. France saw a relatively steep decline in the labour share from 1982 to 1989, then a slight decline from then until 2008, followed by a slight increase until 2019. The UK sees a decline from the mid-1970s until the mid-1990s followed by an increase in the labour share until the early 2000s and has been relatively constant since then. Sweden has followed a relatively similar trend, with the labour share declining from the late 1970s until the mid-1990s before stabilising until 2019, although its labour share has not recovered to the same extent as the UK. Finally, the US has exhibited a slow but relatively constant decline over the time-period from 1970 to 2019, at which point it had the lowest labour share of these five countries. Figures A1-A4 in the Appendix also show the trajectories of all 20 OECD countries used in the average in Figure 1, grouped by region.

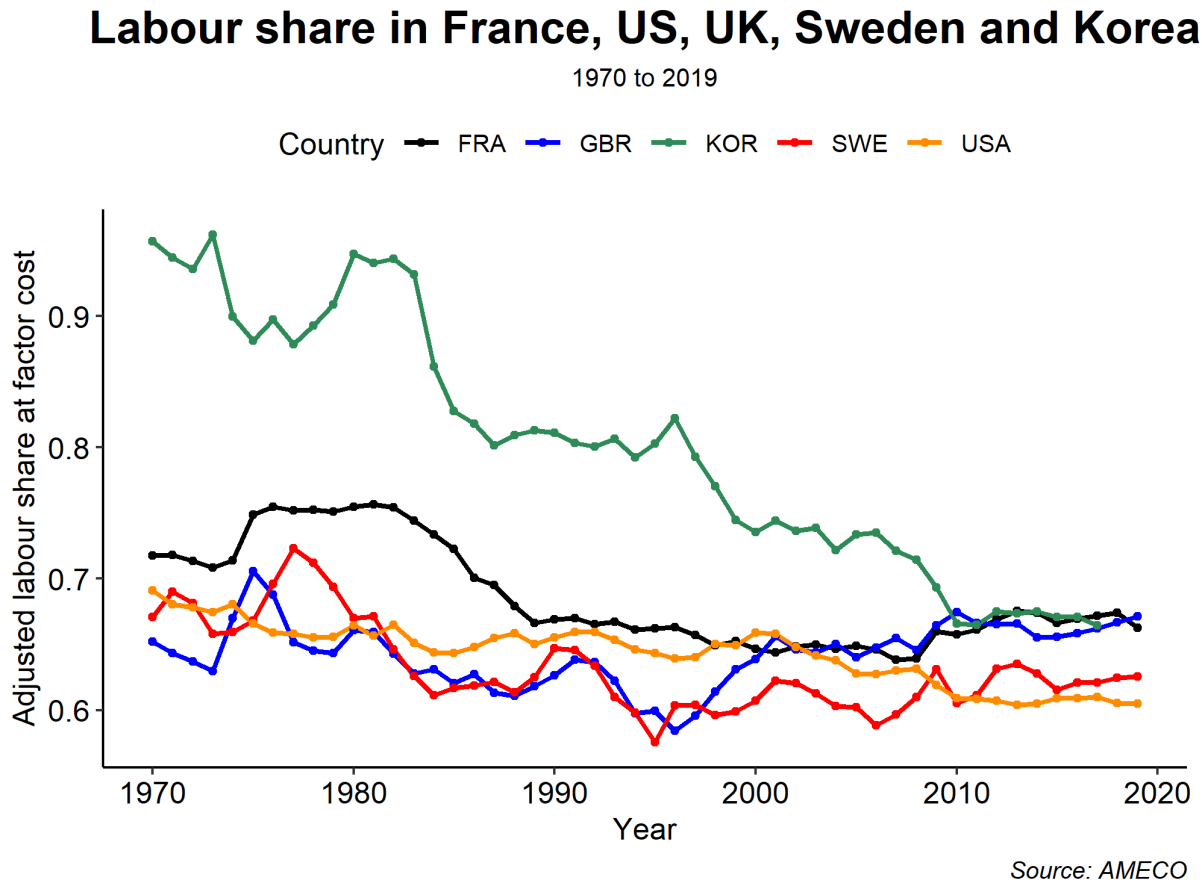

Figure 2: Adjusted labour share at factor cost, 1970-2019, for France, the US, the UK, Sweden and South Korea using data from AMECO.

Despite these cross-national differences in labour share trends, many authors take the long-term decline in the labour share as a given and a burgeoning literature has sought to assess the claim that technological change has been a major driver of it. Bentolila and Saint-Paul (2003) initially established the basis for the relationship between technological change and the labour share, providing empirical evidence at the industry level with a sample of 13 OECD countries from 1972 to 1993. They identified a negative impact of the capital-output ratio (i.e., capital intensity) and total factor productivity (TFP) on the labour share. Bassanini and Manfredi (2014) extended the analysis to cover 25 OECD countries with data from 1990 to 2007. Again using TFP growth and capital intensity as proxies of technology, they find that the two measures account for 80% of the decline in the labour share combined. Assuming that labour is paid its marginal product and technological change is not labour-augmenting, there should be a relatively mechanical one-for-one relationship between capital intensity and the labour share. However, within their model, factors such as the price of imported materials or capital-augmenting technical progress, changes in markups, union bargaining power or labour adjustment costs can alter this relationship. TFP is also commonly used as an indicator of technological progress as it expresses the level of output attained from a given measure of capital and labour inputs, which is assumed to depend on the level of technology in a firm, sector or economy.

Karabarbounis and Neiman (2014) and Dao et al. (2019) similarly argue that capital costs relative to the cost of labour have fallen, driven by a sharp decline in the price of technology of investment goods. It is assumed that technological progress leads to the more efficient production of investment goods, which in turn lowers the price of capital and thus the user cost

of capital.[6] Karabarbounis and Neiman (2014) show that this induces firms to substitute capital for labour, which in turn leads to a decline in the labour share. Dao et al. (2019)'s analysis similarly shows that a decline in the relative price of investment goods is a significant determinant of the decline in the labour share in a sample of 49 advanced and developing countries, albeit primarily in advanced economies with only a negligible role in developing countries.

Another perceived mechanism for the link between technological change and the labour share is the effect it has on the relative bargaining power of capital and labour, so that firms can drive down wages and conditions from a position of greater strength (Autor et al., 2020). To some extent, this can be identified as a weakening of labour power due to increasingly heterogenous and graded labour markets, declining collective bargaining and new forms of digital organisation of working practices that enable employers to extend their control over subordinate labour processes, for example using digital platforms and apps, such as Uber or Deliveroo (Degryse, 2016). However, technological change, and digitalisation in particular, has also enabled the rise of 'superstar' firms and related increases in market concentration (Autor et al., 2020). Technology and globalisation enable firms with various ownership-specific advantages (including transnationality, economies of scale and scope, and proprietary intellectual property) to dominate high-tech sectors, leading to increasing market concentration. This is said to provide greater bargaining power to such firms and enhance their capacity to extract profit margins from workers, even if the work may be high-skilled.

Thus, another group of studies does not directly test a proxy of technology but analyses the impact of highly concentrated high-tech markets on the labour share. Using disaggregated data by industry, Barkai (2020) identifies a negative relationship between the labour share and changes in market concentration for the US from 1984 to 2014. Autor et al. (2020) use firm-level data for the US and find empirical patterns to assess a new interpretation of the labour share, based on a model of 'superstar firms'. They observe that industries with greater market concentration are those where the labour share has declined significantly, suggesting that the fall in the labour share is driven by between-firm reallocation.

A similar focus on the interaction between technology and a post-industrial globalised economy (O'Mahony et al., 2020) points to the effect of intangible assets on the labour share, although this depends on the type of intangible asset. Often defined as expenditure that raises future output but has no physical substance, this typically includes investment in branding, intellectual property, software and databases and even factors such as training investment. A notable trend has been the fact that since the global financial crisis, intangible assets in OECD countries have grown at faster rates than investment in physical capital.

Intangible assets also bear upon measurement issues when estimating the labour share. Koh et al. (2020) show that including the capitalisation of intellectual property products (IPP) in the national accounts in the US mechanically lowers the labour share.[7] Similarly, Atkeson (2020) finds that changes in the methodology for measuring firms' expenditures on IPP has substantially impacted labour share data in the non-financial corporate sector. When expenditures on IPP are accounted for as expenditures on intermediate rather than final goods, as they were before changes by the BEA, the negative trend of the labour share vanishes.

[6] Lower interest rates or capital depreciation rates can exacerbate this process by lowering the user cost of capital.
[7] Changes in the methodology implemented by the Bureau of Economic Analysis (BEA) attribute all rents from intellectual property products to capital income, which leads to an apparent decline in the labour share.

Other research on the effects of technological change focus not so much on the labour share but on the effect on the distribution of skills and income. Recent evidence suggests that technological innovations have mostly accelerated the automation of routine tasks and replaced workers in these occupations, while those employed in jobs that require either manual or cognitive tasks are not affected by automation to the same extent. This leads to labour market polarisation and to 'lovely'/high-skilled jobs and 'lousy'/low-skilled jobs with a hollowing out of middle-skilled employment (Goos and Manning 2007). There is considerable empirical evidence of job polarisation (Goos et al., 2009; Autor and Dorn, 2013; Cortes et al., 2017; vom Lehn, 2020), although looking at skills rather than income suggests this may depend to a great extent on the country context (Oesch 2013). These findings also provided an alternative or nuance to the skill-biased technological change (SBTC) hypothesis, which states that capital and high-skilled labour complement each other while capital and low-skilled labour act as substitutes (Krusell et al., 2003; Dolado et al., 2021). The latter implies that only demand for high-skilled labour will increase as a result of technological change, whereas the polarisation hypothesis suggests that demand for both high-skilled and manual labour will increase.

Applying these varying hypotheses to the labour share, we may expect differences in the effect of technology according to skill-level: an increase in technology should lead to a rise in the demand for high-skilled labour and the high-skilled labour share, while it should lead to a fall in demand for middle-skilled labour and its labour share. According to the skill-biased technological change hypothesis, we would expect the low-skilled labour share to fall, although the evidence for polarisation leaves that question more open.

Despite the evidence that skill levels matter considerably for the effect of technology on wages, most of the existing studies focused on the labour share are based on country- and industry-level data (Bentolila and Saint-Paul, 2003; Jayadev, 2007; Bassanini and Manfredi, 2014; Elsby et al., 2013; Cette et al., 2019; Manyika et al., 2019), while empirical evidence disaggregating the labour share by skill level is less common. There are some exceptions, notably Karabarbounis and Neiman (2014), Dao et al. (2019) and O'Mahony et al. (2020) but we conduct a similar analysis here with robustness checks to account for endogeneity concerns.

Thus, in the following analysis, we focus on contributing three important things to this literature. First, we adopt a heterogenous set of proxies for technological change to capture the diversity of theories about what it comprises and what its effects are. Second, we adopt a number of different models to account for concerns with endogeneity. Third, we investigate the differential impact of technology on high-skilled, medium-skilled and low-skilled labour shares.

2.2 Analysis

We define the labour share as the compensation of employees over GDP at factor cost per person, adjusted by self-employment, including subsidies and excluding taxes. Our data spans 1970 to 2019 for 19 OECD countries[8], while Switzerland's labour share is only available after 1991, and data is taken from the AMECO database.

[8] Countries: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Netherlands, Norway, Korea, Portugal, Spain, Switzerland, Sweden, United Kingdom and United States

Technological change is measured using five proxies, which we discuss in turn[9]:

(1) The relative price of investment goods to consumption goods – calculated using data from the World Development Indicators (WDI) from the World Bank, from 1970 to 2019 and using Karabarbounis and Neiman (2014)'s methodology. This is variable at the national level.

As mentioned before, the assumption here is that as the relative price of investment goods falls, (relatively) less expensive capital investments start to substitute for labour. Of course, this depends on the extent to which capital is a substitute for labour vis-à-vis complementary. The downward trajectory of the relative price of investment goods on average across OECD countries can be seen in Figure A5 in the Appendix, while Figure A6 indicates this broad trend applies to individual countries as well.

(2) Capital intensity – data is obtained from the Penn World Tables version 9.1 and defined as the share of capital stock in GDP (Bassanini and Manfredi, 2014). This is variable at the national level.

As noted above, there may be a mechanical relationship between the level of capital intensity and the labour share given the assumption of wages being equal to marginal product. Although this assumption is unlikely to hold, we expect an increase in capital intensity to reduce the labour share. Figure A7 in the Appendix shows the increase at the aggregate level of capital intensity across OECD countries over our time period but Figure A8 shows that this varies considerably across countries.

(3) Capital ratio – defined as the capital stock as a share of value-added, calculated using the EUKLEMS dataset with information from 1995-2016. This is variable at the industry level.

Theoretically the assumed relationship between this measure and the labour share is the same as for capital intensity and is a measure of the same concept. However, as it is variable at the industry level it can provide a more precise indication of the effect on the labour share. We use the term capital ratio simply to differentiate between the two measures.

(4) ICT capital ratio – defined as the Information and Communication Technology capital stock as a share of value-added, calculated using the EUKLEMS dataset 1995-2016. This is variable at the industry level.

Drawing on the idea that the specific shift to a digitalised, post-industrial economy plays an important role in the decline in the labour share, we include a measure of the level of ICT capital investment at the industry level. Figure A9 shows the upward trajectory in ICT capital ratios in the aggregate and Figure A10 suggests there is little variation in this general trend across our selected countries.

(5) Software capital ratio – defined as the capital stock invested in software and databases as a share of value-added, calculated using the EUKLEMS dataset 1995-2016. This is variable at the industry level.

Finally, to explore the role of intangible capital in a digitalised economy, we test the effect of investment in software capital.

[9] The relative price of investment goods is on a logarithmic scale to reduce dispersion, while the rest of the variables are between 0 and 1.

We also introduce four control variables, which are used throughout the report in subsequent analysis to identify the independent effect of our technology proxies:

(1) Trade openness, defined as the sum of exports and imports of goods and services over GDP (WDI data from 1970 to 2019).
(2) Financial integration, namely the share of portfolio equity to total external liabilities (Lane and Milesi-Ferretti, 2007) 1970-2019.
(3) Union density rate, defined as the net union membership as a proportion of wage and salary earners in employment. Data comes from version 6.0 of Institutional Characteristics and Trade Unions, Wage, Setting, State Intervention and Social Pacts from 1960 to 2017 (ICTWSS) database elaborated by Visser (2019).
(4) Age dependency ratio, i.e., the total 65+ years population divided by the working-age population. The data is available from 1970 to 2019 and comes from the WDI.

We use dynamic ordinary-least-squared (OLS) regression models with time- and country-fixed effects, including heteroscedastic and autocorrelation consistent standard errors clustered by country. In simple terms, this means our analysis removes the variation in the labour share explained by the average of all countries at a given time and the average across all available years for a given country. We also conduct robustness checks using alternative models designed to deal with endogeneity concerns that changes in the labour share are driving our indicators of technological change rather than the other way around.[10]

Overall, we find that the relative prices of investment goods are the most robust technology proxy, with a significant positive relationship indicating that a decline in the price of investment goods drives down the labour share in our sample of advanced economies. Capital intensity also exhibits a negative impact on the aggregate labour share particularly if measured at the industry-level (capital ratio), but our robustness checks indicate that this relationship is not consistent in all specifications. This may reflect the fact that changes in capital intensity are preceded by changes in the labour share, as models that account for endogeneity do not find the same effect. The effects of these variables in the OLS are shown in Figure 3, with the 95% and 90% confidence intervals indicating all are significantly different from zero, albeit capital intensity at the country-level is weakly so. Figures A11-A12 in the Appendix show the effects in our robustness checks.

[10] We use the difference generalised methods of moments (DIFF-GMM) method proposed by Arellano and Bond (1991) that instruments the dependent variable with lag differences and the system of generalised methods of moments (SYS-GMM) method following Blundell and Bond (1998) and Blundell et al. (2001).

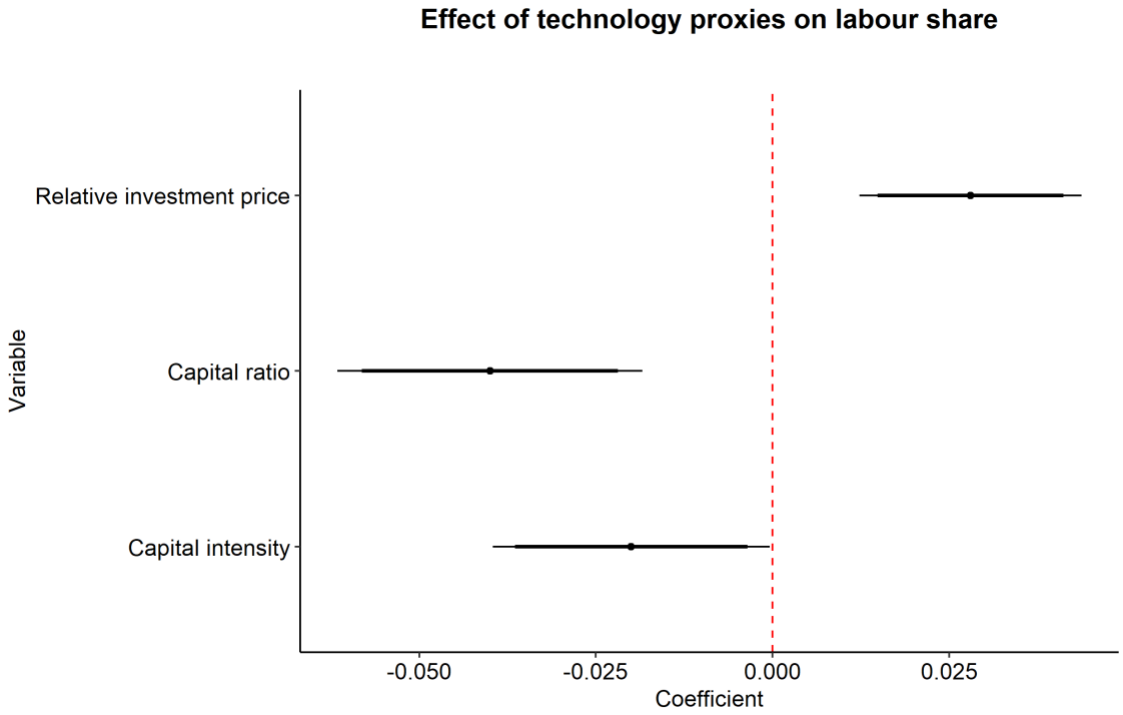

Figure 3: Estimated effect of relative investment prices, capital intensity and capital ratio on the labour share in OLS regression models.

On the other hand, the effect of the ICT capital stock and software and databases is statistically insignificant from zero in our OLS model, as seen in Figure 4. Figures A13-A14 also show no significant effects in our robustness checks.

This suggests that there is not a distinct effect of digital technologies or intangible capital on the labour share, at least when the latter is operationalised as software and databases.

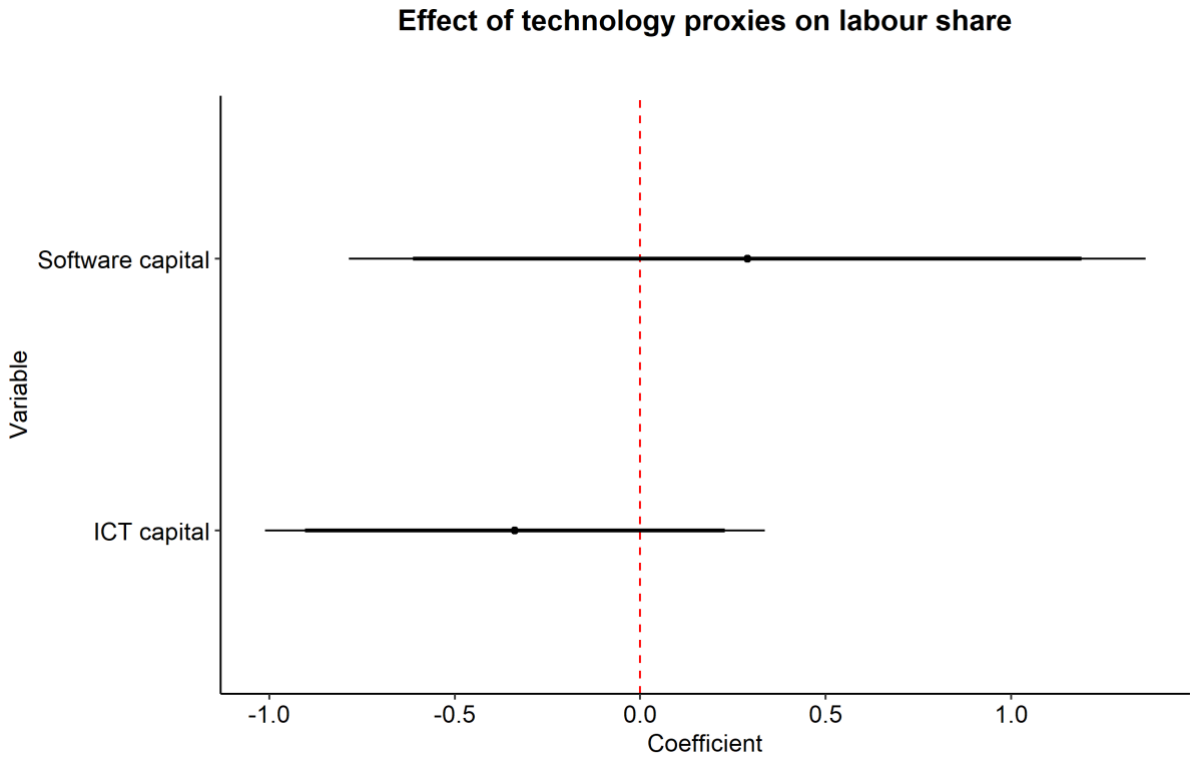

Figure 4: Estimated effect of ICT capital and software capital on the labour share in OLS regression models.

To examine the effect of technology on the labour share by skill level, we use two main data sources. Information from the Socio-Economic Accounts of the World Input-Output Database (WIOD) is used to calculate the labour share by skills at industry level using ISIC Rev. 3 classification. The sample is available from 1995- 2009 and for 16 OECD countries. Skills are classified into three levels - high, medium and low - based on educational attainment. We match information from the labour share with the EU KLEMS dataset released in 2019 for a total of 15 industries.

For this analysis we estimate the baseline results using OLS regressions with country and industry fixed effects as before.[11] The full details of the regression models can be found in Tables A1-A3[12] in the Appendix.

Our analysis indicates that the decline in the relative prices of investment goods leads to a higher labour share of high-skilled and mid-skilled workers and a lower labour share of low-skilled workers. This supports the idea that high-skilled labour tends to be a gross complement of capital, as others have argued (Krusell et al. 2003; Michaels et al., 2014) but it also suggests the same for mid-skilled labour. Meanwhile, capital is a substitute for low-skilled skilled labour.

We find the same for the effects of ICT capital and software capital (as a % of value added) on the high-skilled labour share, which are significantly positive, and the low-skilled labour share, which are significantly negative. This indicates that the rise in the share of value-added attributed to ICT or software capital leads to a higher demand for high-skilled workers, ceteris

[11] For the robustness check we deal with endogeneity concerns by estimating a two-step GMM (2GMM) using Correia (2017)'s estimator.

[12] The first four columns refer to the OLS estimations, while the last four columns report the results of the two-step GMM estimations.

paribus increasing its labour share, and a reduction in the demand for low-skilled workers reducing its labour share. Interestingly, ICT capital is associated with an increase in the labour share of mid-skilled workers, but software capital is associated with a reduction in the mid-skilled labour share. However, these latter results are not robust to alternative specifications.

Finally, there seems to be no significant effect of capital intensity on high- or low-skilled labour share but it does increase the mid-skilled labour share. Again, these results are not consistent in our robustness checks, so we discount the certainty of these findings.

2.3 Summary

With an eye on our research questions, our findings in this section speak directly to questions 1 and 3: examining the extent to which technology is responsible for a decline in the labour share and whether this varies with how we define and measure technology. With our analysis of the labour share of workers with different skills, we also add an understanding of which groups may be seeing a decline in wages relative to capital and thus the likely causes and appropriate policy responses.

In short, technological change is at least partly responsible for a decline in the labour share, certainly if we measure technological change as a fall in the relative price of investment goods vis-à-vis consumption goods. While this phenomenon has been relatively consistent over the 40-year period of our study, the extent to which this necessarily reduces the labour share in every context is likely to be contingent on the extent to which technology is capital-augmenting or labour-augmenting. We may argue that it is likely to continue on its current trajectory but as the relative price of investment goods is only a proxy of both technology and the price of capital compared to labour, this can be contested. On the other hand, while there is evidence that capital intensity or the ratio of capital to value-added could be a contributing factor, our robustness checks adjusting for endogeneity concerns question the idea that it is a causal driver of the reduction in the labour share.

Nevertheless, the fact that we did not find evidence that ICT or software capital drives down the labour share points to the possibility that the effect of an investment in ICT or software as a process of ‘digitalisation’ is distinct from the general development of technological change or the automation of manufacturing processes and in fact may not have the same effect on the labour share. This raises the question of whether the latest technological developments will continue to drive the labour share downwards.

We find a much more consistent story regarding the effect of technology on the labour share when we divide it according to the skill level. Technological advancement and capital investment generally increases the demand for high-skilled labour and thus its labour share, while it reduces the demand for low-skilled labour and in turn its labour share. Contrary to our expectations, our technology proxies mostly predicted an increase in the medium-skilled labour share, meaning that the main driver of a falling labour share would appear to be within the low-skilled. This provides more weight to the traditional theory of skill-biased technology change as opposed to a story of polarisation. However, as Oesch (2013) and others argue, there are important cross-national differences to consider, which we wish to explore.

In the next section, we turn to these cross-national differences in the relationship between technology and the labour share, using the theoretical framework of ‘growth regimes’ to examine these differences.

3. Growth regimes and the labour share

This section starts with a literature review of growth regimes and cross-national differences in political economy more broadly, as well as past research that links this to the labour share. As with the previous section, we then outline the methods and present and discuss the results of original analysis.

The section tests the hypothesis that significant differences in the political-economic structures of OECD countries determine the effect of technology on the labour share. More precisely, we examine whether 'growth regimes' influence the relationship between the relative price of investment goods and the labour share.

3.1 Growth regimes: a literature review

The argument that cross-national variation in political economy institutions determine the trajectories of national economies is not novel. Esping-Andersen (1990) identified three worlds of welfare capitalism, clustered according to how a country's system of social security benefits[13] relates to decommodification, stratification and residualism of the welfare state. Social democratic welfare regimes, mostly associated with Nordic countries, score highest on decommodification as they are characterised by near universal access to benefits that are relatively homogenous in level. Conservative welfare regimes, usually associated with Continental Europe, score highest on stratification, given the highly differentiated occupational schemes and distinction in status between public and private sector employees. Finally, Liberal welfare regimes, found primarily in Anglo-Saxon countries, are residual in that welfare provision is primarily means-tested and private provision is common or dominant.

Esping-Andersen posits that the origins of each 'world' lie in the efforts of political parties that were able to construct coalition majorities at critical formation points: the social democratic regime was formed by parties of the same name supported by coalitions of industrial workers and small-time farmers/agricultural workers, Christian democrats supported by a coalition of working- and middle-class voters constructed the Conservative welfare regime and liberals or conservatives relied on middle-class and petty bourgeois voters in the creation of a Liberal welfare regime. While many have contested the precise membership and number of distinct 'worlds' of welfare (Castles and Mitchell 1992; Huber and Stephens 2001), the argument that such institutions are durable and embedded in socio-political coalitions has inspired much subsequent work on the heterogenous trajectories of capitalist democracies (e.g., Beramendi et al. 2015).

The Varieties of Capitalism (VoC) framework (Hall and Soskice, 2001) equally points to differences in political-economic institutions but rather than emphasising the electoral determinants of diverse institutions, VoC posits that variation is explained primarily through institutional comparative advantage and the differing ways that firms solve problems of coordination with finance, other firms and their employees and customers. As a response to the literature on convergence across advanced economies, the framework rejects a universal 'best' set of institutions or policies for encouraging economic growth. Instead, it suggests there are two main ideal types of capitalism: liberal market economies (LMEs) and coordinated market economies (CMEs). In LMEs, coordination occurs primarily through market

[13] Pensions, unemployment and sickness benefits

mechanisms, whilst in CMEs formal institutions play a much more central role in governing the economy and regulating firm relations with stakeholders. This is usually exemplified by the fact that wages are set by market forces in LMEs but in CMEs, they are determined through industry-level collective bargaining between employers' associations and trade unions.

The archetypal liberal market economy is the US, although it is often extended to most English-speaking countries. Meanwhile, Germany is held up as the typical case of the coordinated market economy. In one sense, the framework collapses the social democratic and conservative welfare regimes of Esping-Andersen into a single CME grouping, although later work in the VoC literature often keeps the distinction between these two institutional formations, even with a more corporate and industrial relations lens (e.g., Thelen, 2014).

The more recent literature on 'growth regimes' combines this supply-side analysis with a neo-Kaleckian demand-side approach to national growth models (Pontusson and Baccaro, 2021). The growth model perspective argues that macroeconomic output and employment are primarily determined by aggregate demand, which in turn is a function of the distribution of income. While Neo-Kaleckian macroeconomists distinguish wage-led and profit-led growth Baccaro and Pontusson (2016) adopt a more limited focus and examine the role of consumption and exports as drivers of growth. Consumption-led growth may be fuelled by real wage growth but also by growing household indebtedness. Export-led growth can be identified when the export sector is sufficiently large and exports are price elastic, meaning wage restraint boosts competitiveness but depresses consumption. Growth could be driven by both consumption and exports if exports are relatively price inelastic.

However, by combining these perspectives, growth regimes can be said to comprise a wide variety of mutually interacting and complementary constellations of political economic institutions and macroeconomic drivers of growth. These include systems of wage-bargaining and wage-setting, the regulation of the labour market and the financial system, households' access to credit, the inclusiveness of the education system, the generosity of the social protection, the development of ICT industries and the demand for skills in the labour market, as well as the sector that drives economic growth, that is, exports or domestic demand. Thus, this selection of dimensions combines both supply-side factors that moderate how technological change is likely to affect the labour share, such as the type and breadth of skills, the way in which wages are negotiated, the level of insurance offered to workers, and demand-side factors

On this basis, Hassel and Palier (2021) divide advanced economies into five growth regimes detailed in Table 1:

i) Dynamic services export-led regime – countries that balance domestic demand and exports, with dynamic ICT services and finance driving export growth, comprising the Nordic countries, Luxembourg and the Netherlands. This is combined with a focus on social investment, inclusive education systems at a high-level and coordinated wage setting.
ii) High-quality manufacturing export-led regime – countries where growth is driven by the export of high-quality manufacturing goods, with a limited financial and ICT service sector, such as Germany, Austria, Belgium, Switzerland and Japan. Social protection is still largely dominated by social insurance, while there are high levels of coordination for wage setting within manufacturing industries and education systems are inclusive but stratified.
iii) FDI-financed export-led – countries where growth is driven by exports but with a far greater degree of foreign direct investment as a result of capital liberalisation and deregulated labour markets, which includes those in Central and Eastern

Europe and Ireland. The development of the knowledge-based economy is generally low.

iv) Financed-based domestic demand-led regime – countries that have a high level of financialisation and where domestic consumption drives demand and growth that corresponds to the Anglo-Saxon countries. Households' access to credit is a contributor to the maintenance of this economic model.

v) Publicly financed domestic demand-led – countries with high levels of domestic consumption and public funding driving demand and growth but low levels of ICT and financialisation, which includes Southern Europe and France. The labour market and financial system is regulated so that it does not incentivise household credit.

As mentioned above, we use this framework as a device for exploring the variation in effects across countries rather than a rigid categorisation of countries. Due to the high number of dimensions, it is inevitable that not all countries will meet the ideal-type description provided in the regime type. Despite the assumption of path dependency, research also points to the role of political agency in responding to deindustrialisation processes: countries can change their growth regimes to some extent as a result of both technological and policy change.[14]

However, for our purposes, the claim that growth regimes matter is tied to the observation that effects of technological change are not consistent across countries. Thus, there is not simply institutional inertia but a system of technological adoption that can have specific impacts within different growth regimes. For example, mapping the outcomes of occupational change, Oesch (2013) notes the cross-national variation according to political economy regimes: the story of labour market polarisation in skills is most prominent in Anglo-Saxon economies. It is notably absent in many other European labour markets where the story is instead one of 'upskilling', i.e., considerable growth in high-skilled work at the expense of low- and medium-skilled work, which have both reduced in the last 20 years.

3.2 Analysis

The aim of this section is to examine the relationship between labour share and technology measures when utilising a 'growth regimes' framework to explain cross-national variation. We examine the case of 15 OECD countries[15] from 1995 to 2009 with information at the industry level according to the ISIC Rev. 4 (NACE Rev. 2) classification. The sample size in the industry-level data allows us to present evidence by growth regimes. However, we were forced to drop two of the regimes, Anglo-Saxon and FDI-financed, from a regime-specific analysis due to insufficient observations. The Publicly-financed regime was dropped from the analysis of the effect of ICT relative prices for the same reason. We define labour share as in the previous section, both in aggregate and by skill level.

In this analysis we focus only on three proxies for technological change, with two measures drawn from the previous section but introducing a new measure of the relative prices of ICT investment (to consumption):

[14] E.g., drawing more directly on the lineage of the VoC framework, Thelen (2014) identifies varieties of liberalisation along two dimensions: levels of coordination and coverage. Countries can be more dualistic or inclusive depending on the coverage of workers in coordinated vs. liberalised markets, and trajectories have differed.

[15] The countries in the sample are Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Netherlands, Portugal, Spain, Sweden, United Kingdom and the United States.

(1) The relative prices of investment goods – as in previous section using Karabarbounis and Neiman (2014)'s methodology.

(2) ICT relative prices - We use the price of ICT investment variable reported in the 2019 EUKLEMS dataset. Following Karabarbounis and Neiman (2014)'s methodology to obtain the country relative prices of investment goods, we compute the relative prices of specific investment types at the industry level. We use the consumer price index (CPI) and the specific investment prices of ICT investment, and the price of software and databases. Our dataset is initially constructed for 25 OECD countries.

We calculate the relative prices of ICT investment goods to consumption goods instead of the general prices of investment we have used in the previous sections here to explore the idea that digitalisation or the reduction in ICT investment goods has a distinct effect on the labour share.

We also introduce the same four control variables – trade openness, financial integration, union density and age dependency ratio – as mentioned in the previous section.

We estimate the baseline specifications using OLS regressions with country and industry fixed effects following the development of Correia (2017) as in the previous section[16].

[16] To address the issue of endogeneity, we combine country (technology proxies) and industry level data and allow for heterogenous industry-level effects (following Gal et al., 2019).

Table 1: Growth regimes dimensions

Growth regimes	Hassel and Palier (2021) terms	Countries[17]	Demand driver of growth	Financialisation	Knowledge economy (ICT sector)	Current account	Education system	Wage-setting	Social protection
Nordic	Dynamic services export-led	DK, FI, LU, NL & SE.	Exports	High	High	Surplus	Inclusive at high-level	Coordinated	Social investment
Anglo-Saxon	Financed-based domestic demand-led	US & UK	Domestic consumption	High	High	Deficit	Private	Deregulated	Private insurance & investment
High-tech manufacturing	High-quality manufacturing export-led	AT, BE, DE, CH & JP	Exports	Regulated/low	Medium	Surplus	Inclusive at medium-level	Coordinated	Social insurance
FDI-financed export-led	FDI-financed export-led	CZ, EE, HU, IE, LT, LV, PL, SK & SI	Exports	Regulated/low	Low	Mixed	Inclusive at medium-level	Deregulated	Social insurance
Publicly financed demand-led	Publicly financed domestic demand-led	FR, GR, IT, PT & ES	Domestic consumption	Regulated/low	Low	Deficit	Private	Regulated	Social insurance

--- Source: Based on Table 1.3, p.41 on the characteristics of the five growth regimes in Hassel and Palier (2021) --

[17] AT = Austria; BE = Belgium; CH = Switzerland; CZ = Czechia; DE = Germany; DK = Denmark; EE = Estonia; ES = Spain; FI = Finland; FR = France; GR = Greece; HU = Hungary; IE = Ireland; IT = Italy; JP = Japan; LT = Lithuania; LU = Luxembourg; LV = Latvia; NL = Netherlands; PL = Poland; PT = Portugal; SI = Slovenia; SK = Slovakia; SE = Sweden; UK = United Kingdom; US = United States

Pooling all countries in the analysis, there is a positive relationship between the relative price of investment goods and the aggregate labour share, which indicates that a reduction in relative prices leads to a decline in the labour share. This is consistent with our results in the previous section. However, our analysis also identifies a differential impact across growth regimes with only High-tech manufacturing countries and Southern Europe and France (Public-financed regime) mirroring the pooled result with a significant positive relationship, with a particularly large effect in the Public-financed regime. However, in the Nordic regime, there is a (statistically insignificant) negative relationship implying that a fall in the relative price of investment goods increases the labour share. These effects are visualised in Figure 5.

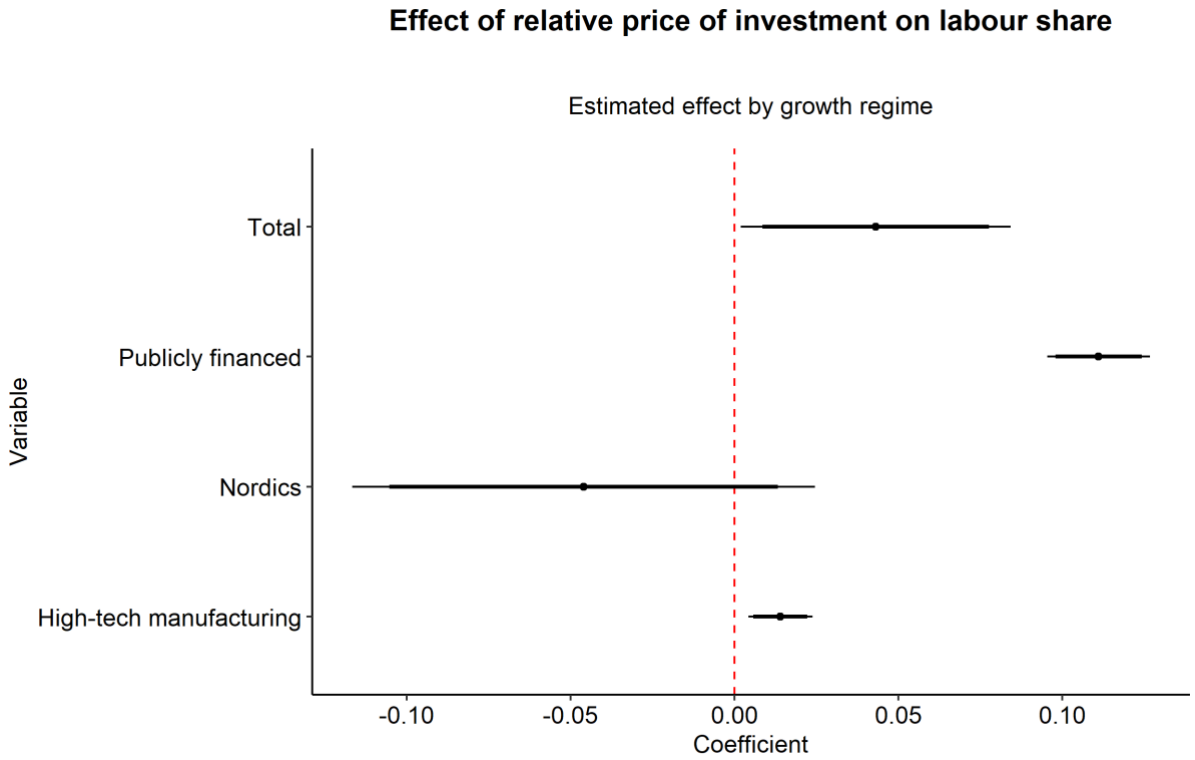

Figure 5: Estimated effect of the relative price of investment goods on the labour share across different growth regimes in OLS regression models.

We also find that the effect of the relative prices of ICT investment goods is positive and significant at the 10% level for the entire sample, meaning a decline in its price from technological advancement leads to a decline in the labour share[18]. However, the more notable finding is that we see variation across regime types as the effect is positive in the Nordic regime but negative in the high-tech manufacturing regime. So, for countries such as Germany, Austria and Japan a reduction in the relative price of ICT investment goods increases the labour share. The effects are visualised in Figure 6.

[18] The coefficient is also positive when we estimate the model using two-step GMM, though it is not significant.

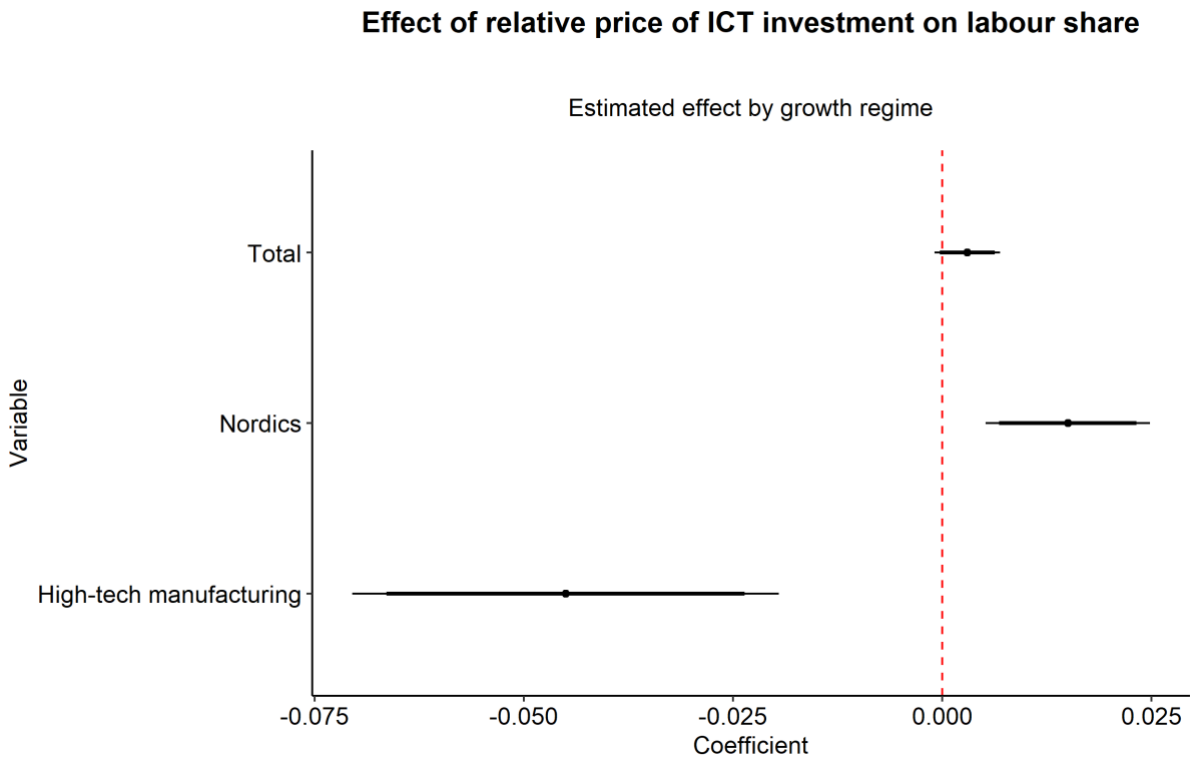

Figure 6: Estimated effect of the relative price of ICT investment goods on the labour share across Nordic and High-tech manufacturing regimes in OLS regression models.

The full details of the OLS models and robustness checks are provided in Tables A4-A5.

3.3 Summary

This section's main focus has been to answer the report's second research question: understanding the role of growth regimes in moderating the effect of technology on the labour share. But in doing so has continued to nuance our findings from the previous section regarding the role of technology in general and across different measures and conceptions of technology. In particular, we extend the analysis of the decline in the relative price of investment goods hypothesis to specific relative prices related to ICT capital and thus speak further to our third research question.

Ultimately, we find evidence that growth regimes do shape the conditions in which technology affects the labour share, or at least we find that the grouping of countries according to growth regime that we use reveals different effects of technology. The significant positive relationship between the relative price of investment goods and the labour share we find in the previous section and replicated in this section with the sample that includes all three growth regimes is not found in Nordic countries and indicates this is found only in High-tech manufacturing countries. Similarly, we provide evidence that growth regimes moderate the effect of the relative prices of ICT investment goods on the labour share. However, here we find a quite different result, as the analysis suggests that the relationship between the relative prices and the labour share is positive in Nordic countries, which implies that the decline in those relative prices leads to the deterioration of the labour share, while the negative coefficient estimated for Austria, Belgium, Germany, and Japan suggests that falling relative ICT prices actually increases the labour share.

Why this discrepancy? One of the main arguments of Baccaro and Pontusson (2016) is that Nordic countries such as Sweden have been able to combine export- and consumption-led growth due to the relative price inelasticity of its ICT exports, which allows for rising real wages without a decrease in their competitiveness. Interestingly, while the broader thesis that Nordic regime countries can combine broad technological advances that reduce the relative price of investment without a reduction in their labour share seems to hold, the same is not the case for the relative price of ICT investment goods. To some extent, this contradicts the mechanism implicit in the Baccaro and Pontusson thesis and in both cases marks the Nordic regime out as unique as compared to other regime types. We can speculate that the negative relationship between the relative price of ICT investment and the labour share in High-tech manufacturing countries is due to the comparatively less developed size of its ICT sectors. More research is needed to tease out exactly what is driving these two differential effects under the hood of 'regime type', both for the relative price of investment goods in general and for ICT investment goods specifically.

4. Household debt, universal basic income and other policy solutions

This final section reviews policy options for countering the trends identified across our empirical analysis and literature reviews. In particular, we discuss the role of UBI as a commonly cited response to technological change in light of our findings regarding the nature of the effect of technology on labour markets and macroeconomies.

4.1 The state of play: what is needed?

The previous analysis serves as a springboard for exploring the policy changes that could reverse the downward trend in the labour share and the increase in inequality across advanced economies. Our analysis has focused on the role of technological change and finds greater empirical support for the idea that it has been a significant determinant of the decline of the labour share, at least when operationalised as the relative price of investment goods.

However, our analysis also crucially finds that these trends are contingent on country contexts and their growth regimes. The political explanation for the persistence and effect of growth models can differ – electoral politics (Hall, 2020), business-state relationships (Bohle and Regan, 2021) – and likewise the assumed capacity to shift to alternative growth models. Nevertheless, we perceive it to be more likely (and feasible) that policy solutions will be attuned to the impetus of existing growth models and thus base our discussion of solutions on this assumption. The consequences of the decline in the labour share are also necessary to consider and likely to vary across regimes. A falling labour share might be expected to lead to increases in household indebtedness, as workers seek to maintain their incomes by taking on borrowing.

In the next section, we explore the cross-national variation in household debt as an indicator of differences across growth regimes but also within regimes.

4.2 Household debt

Household debt rose across most advanced economies in the years preceding the financial crisis and has mostly stabilised or started to fall in others. Figure 7 shows the level of household debt as a percentage of net disposable income by growth regime from 1995-2020.

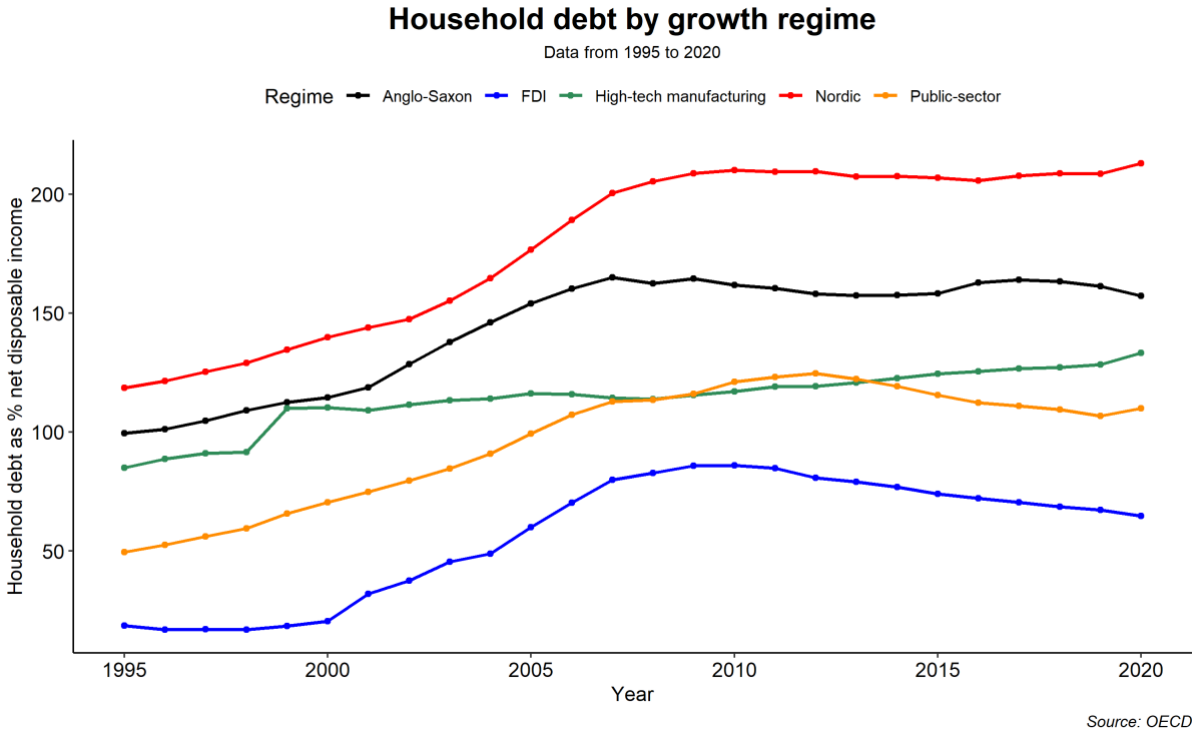

Figure 7: Household debt by growth regime. Source: OECD.

As we find that economies exhibit considerable heterogeneity in levels of consumer indebtedness, we assume that the effects of a falling labour share are mediated by national institutions, and/or that the causes of increased household debt are more varied than simply the decline in the labour share. Stockhammer and Moore (2018) test seven explanations of the macroeconomic determinants of household debt for a panel of 13 OECD countries over the period 1993 – 2011, including falling wages and increases in the income share of the top 1%. They find that the most robust macroeconomic determinant of household debt is real residential house prices, and that the phase of the debt and house price cycles play a role in household debt accumulation. In another recent study of 33 countries, Bank of Italy researchers found that 'supply-side factors and institutional variables, such as the length of time required to resolve insolvencies, the quality of bankruptcy laws, the legal origins and the welfare state regime, are more robust than demand variables in influencing household debt' (Coletta et al., 2018: 1213).

One line of academic study has associated increased household indebtedness with welfare retrenchment. As welfare entitlements have been cut or withdrawn, households borrow to maintain their living standards or seek alternative sources of income generation, such as rents from home ownership. Conversely, it has been argued that consumer debt is higher when welfare spending is generous, since social security provides consumers with the confidence to leverage.

Household debt is indeed high in both social democratic, Nordic growth regimes, and in those of the liberal market economies of Canada, the UK and USA. Integrating both the demand and supply sides, Johnston et al. (2021) argue that household indebtedness is a function of the interaction of labour markets (and complementary welfare state institutions), with the supply of mortgage credit. Countries with generous welfare states and strong institutions of collective bargaining have high levels of household indebtedness, but only if mortgage credit is readily available – as it is in the Nordic countries and the Netherlands. In countries with extensive financial sectors and easy access to consumer credit such as the UK, household indebtedness

is reduced by the exposure of labour to deregulated labour markets and the weakness of trade unions, but is still higher than in countries with restricted access to credit and fragmented labour market institutions, such as Greece or Italy. On this account, Germany's low household indebtedness reflects the restrictiveness of its access to credit, real wage restraint, and relatively low rates of home ownership.

Taking a life-cycle approach to debt and saving, Comelli (2021) argues that the level of household indebtedness is related to the age structure and directionality of welfare spending: when welfare benefits and services are strongly orientated to labour market insiders and old age pensions, younger people will be more risk averse and less likely to take on debt; where the welfare state is universalistic, orientated towards social investment, and spread more evenly across the lifecycle, younger people will be less risk averse and more willing to take on debts. The Nordic welfare regimes therefore have higher levels of aggregate household debt than Continental or Bismarckian regimes.

However, it is important to state that when examining single dimensions of our growth regime framework, such as household debt, there is considerable within-regime variation in the absolute level of debt and pre- and post-crisis trajectories. Figures A15-A19 show the variation in household debt within regimes. In the so-called Nordic and Anglo-Saxon regimes, there is too much within-regime variation to be considered a general trend. All Nordic regime countries saw rising household indebtedness prior to the financial crisis, but while Denmark and Netherlands saw a decline after an exceptionally high peak, all other countries have seen continued rises. Similarly, in Anglo-Saxon countries, debt peaked during the financial crisis in the UK and the US but is not discernible in the trend in Australia or Canada where the peak to date was in 2018 and 2019 respectively. The US has seen a particularly marked decline in household debt. The High-tech manufacturing and FDI regimes are relatively coherent other than a very clear outlier in both cases: Switzerland as a high and increasing household debt economy and Ireland following a closer pattern to the US and UK. Thus, while the previous section indicated that important differences exist in the way technology affects the labour share according to growth regime, the precise mechanisms by which household debt influences this relationship may not be consistent using this framework.

A different picture emerges when the focus is restricted to consumer credit, stripping out mortgage debt. Long term mortgage loans account for 60-70% of household debt in the OECD, and consumer credit debt is likely to be a better proxy for the effect of falling wages or welfare retrenchment than mortgage indebtedness. Accordingly, Comelli studies the relationship between the age profile of welfare spending, the youth labour market and consumer credit indebtedness. On these measures, indebtedness in the Nordic countries falls, since mortgage debt is high, but consumer credit is low. The young and middle aged do not need to take on consumer debt to maintain household incomes. Consumer debt is slightly higher in conservative welfare regimes, but still low overall, while it is highest in Anglo-liberal countries that substantially target welfare spending on older people and provide limited social security to the working age population. This provides some evidence to suggest that a falling labour share may lead to higher consumer indebtedness where labour market institutions are liberalised and the welfare state is relatively parsimonious for the working age population.

In response to the arguably unsustainable trend in certain countries to either expand household debt or face economic stagnation, there is a need for policy solutions. Our initial discussion of policy solutions focuses on the idea of a UBI, which has gained traction as a policy response to various problems posed by challenges posed in this report. In the next section, we examine the case made for a UBI in general but then focus more specifically on

the role it could play in reversing the downward trend in the labour share and increasing consumers' purchasing power in place of increasing household debt.

4.3 Universal basic income

A universal basic income (UBI) is a policy that would provide a regular income to all individuals within a political community, irrespective of working status or income from other sources. UBI advocates have long cited normative justifications for the policy, but in recent years accounts have increasingly focused on the impact of technological change as one of basic income's core rationales. The popular link between technology and UBI draws on influential studies such as Frey and Osborne (2017) and Brynjolfsson and McAfee (2014) that point to the dangers of technology giving rise to mass unemployment and thus the need for basic income to compensate the losers from structural change with (at least) a minimum standard of living guaranteed. This argument is present in the advocacy of Silicon Valley philanthropists who cite a UBI as a necessary response to the upcoming wave of automation set to destroy jobs. While this is still largely speculative, there are more nuanced arguments for the role of UBI in a technologically advanced economy, which we group into two sets of arguments: the 'social policy case for UBI' and the 'macroeconomic case for UBI'. The latter is of more relevance to this report but we briefly summarise the social policy case first.

The social policy argument for UBI

While mass technological unemployment may not occur any time soon, structural changes in labour markets already justify a reshaping of existing social protection systems. These include growing levels of flexible and/or insecure employment, wage polarisation, skills redundancy and long-term unemployment. Technological change is at least partly responsible for these trends, which may become more widespread as 'platform economies' become more prevalent, with the spread of employment by companies such as Uber and Deliveroo. Basic income has been proposed as a flexible way to cope with these diverse forthcoming threats and as a policy that complements the emergent 'knowledge economy', while growing numbers of the 'precariat' or labour market outsiders are seen as core beneficiaries of a UBI (Standing 2016; Rehm 2016).

Within the social policy paradigm, basic income is often posited as a reform to a (supposedly) old and creaking, punitive welfare state, which is no longer fit for purpose. The argument is that in a labour market of freelancing, 'mini jobs', short-term and irregular contracts, workers increasingly lack a contribution record to give them entitlement to social insurance or face an erratic and unresponsive means-tested system that increases their income volatility rather than providing security. Thus, basic income is said to provide more stability, predictability and comprehensive de facto coverage. It also has the advantage that, unlike means-tested benefits and those conditional on circumstances such as unemployment, it is not withdrawn as recipients increase their earnings or enter employment. This implies that under basic income, individuals face positive financial incentives to take any form of work and more adequate provision in relation to the alleviation of in-work poverty. Basic income should also avoid so-called 'bureaucracy traps' – in which claimants are reluctant to enter employment due to risk aversion regarding job security and concern regarding delays in reapplying for benefit. Opposition to increasingly strenuous labour market conditionality also motivates social policy support for a UBI.

However, Martinelli (2019) identifies a trilemma in basic income design (at least in advanced welfare states) whereby no more than two of the goals of affordability, adequacy and radically simplifying welfare can be met in a specific scheme. In other words, the introduction of a basic income will: be too expensive (if a basic income is set at a high enough level to replace most existing benefits), increase poverty (if a basic income is set lower than existing provisions) or be relatively pointless (if existing social security is maintained). Thus, most supporters of a basic income that utilise microsimulation modelling either support this modest supplement to the existing system (Torry, 2016; Reed and Lansley, 2016) that fails to meet the goals it is supposed to achieve for the new economy. An alternative approach to advancing the cause of basic income is to emphasise particular principles or dimensions of a basic income as being the solution to welfare state reform (Chrisp 2020). For example, policymakers may seek to reduce sanctions within unemployment benefits, or reduce the withdrawal rate of existing benefits. But the promise of a universal income set at the minimum living standard as a replacement for existing benefits is rarely seen as a credible option by politicians and policymakers for reforming the welfare state.

The macroeconomic argument for UBI

In more holistic formulations, basic income is sold as the basis of a new social contract between labour and capital – an institutional underpinning for a new phase of advanced capitalism – as well as fulfilling a range of crucial macroeconomic roles in the context of growing instability, demand deficiency and spiralling debt. Given the focus of this policy brief, it is this latter idea that we focus on.

As argued earlier in this report, a declining labour share and increasing wage inequality are problematic not only for social justice, but also because of the relative propensities of labour and capital (or low earners vis-à-vis high earners) to stimulate consumption and thus to contribute to aggregate demand. As the capitalist economy relies on maintenance of workers' purchasing power to consume goods and services, this is problematic (Crocker, 2020). As we indicate in our analysis of growth regimes, consumption has been sustained in many countries due to high levels of financialisation and thus through growing levels of private debt. Other countries have had to find growth from export-led demand. Could the injection of a UBI reverse this trend and provide a stimulus to aggregate demand that could replace household debt and/or export-growth? There is empirical evidence to suggest it would have such an effect. Jones and Marinescu (2018) find that the Alaskan Permanent Fund dividend had no overall effect on employment, which they surmise may be due to a positive general equilibrium effect (i.e., an increase in aggregate demand) cancelling out a negative income effect[19] from the provision of an unconditional income to households.

Absent a Sovereign Wealth Fund from the sale of oil, an obvious solution to the declining labour share and the corresponding increase in the share of GDP going to returns from capital and wealth would be to tax wealth and profits and distribute the proceeds as a UBI, thus reducing inequality and increasing household incomes and consumption. However, the political and administrative problems with increased taxes on wealth are well-documented (Fleischer, 2017) and an alternative means of funding the proposal – perhaps due to a perception that taxing wealth and particularly intangible assets is not a realistic option – would be to provide a basic income through sovereign money, i.e., an annual deficit funded through money printed by a central bank which is not paid back. A UBI funded in this way would stimulate demand in the economy in a way akin to the recent central bank policies of quantitative easing, only more effectively and in a far more egalitarian fashion (Standing, 2017). This idea of a UBI has a rich pedigree and harks back to the inter-war period in the UK

[19] There is no substitution effect given the lack of taxes required to pay for it.

and Canada, most famously in the form of Major C.H. Douglas's Social Credit movement and the work of economist James Meade where the idea of a national dividend was promoted[20] (Van Trier 1995).

A more recent proponent of this case is made by Crocker (2020). He argues that high technology economies in particular face an inexorable problem of a declining wage share, meaning that households require an increasing proportion of their consumption funded through unearned income, such as welfare benefits or household debt. Yet spending on welfare benefits under the current system is vulnerable to austerity following crises, and access to consumer debt curtailed. However, a UBI funded by sovereign money issued by central banks – but without the requirement that they purchase government or corporate bonds – could replace the levels of household and government debt we have seen in developed economies in recent years. This could continue to stimulate demand and consumption in high technology economies without the side effects of economic crises caused by fluctuations in household debt or austerity driven by governments' need to reduce the deficit and levels of debt.

The recent Coronavirus pandemic has done much to embolden proponents of this strategy, given the levels of fiscal and monetary support that were made available to households, firms and the banking sector to maintain incomes and employment during the crisis. For example, in the UK the furlough scheme that was rolled out to pay the wages of employees unable to go to work covered nearly 9 million workers at its peak, costing a total of £69 billion. In the period following the financial crisis of 2008 through to the end of 2021, Bank of England purchases of government debt under the programme of Quantitative Easing amounted to £875 billion, raising the question as to whether this was equivalent to debt-free sovereign money. As the Treasury owns the Bank of England, it can be argued that Quantitative Easing is in effect a process of monetary financing.

4.4 Opposition to a UBI and other policy options

Opposition to a UBI (and therefore the desire for alternative policy options) typically falls into one of three very broad camps. The first is scepticism regarding the funding mechanism, which would be applicable to any of the possible means of wealth taxes, sovereign money or a ratcheting up of redistributive income taxation. Such means are perceived to be neither economically viable, due to distortions of economic activity, capital flight or inflation, nor political feasible, due to entrenched interests or the electoral tightrope of tax rises. While there is perhaps something distinct about the sheer scale of revenue raising required by the distribution of a UBI, we are reluctant to dismiss policy solutions outright on the grounds that such funding mechanisms are unfeasible, particularly given the size of UBI is not specified at a given level. Such a position provides little in the way of alternative policy options and constitutes a form of defeatism in the face of a shrinking labour share.

[20] The Alberta Social Credit Party, which was partly inspired by Major Douglas's theories, won a surprise victory in the 1935 election and included a national dividend in its programme although it was never fully implemented (van Trier, 1995, p.p.146; Irving, 1968). The government did briefly issue 'prosperity certificates', to cover government expenditure but it was unpopular and the scheme was scrapped (Hanson, 2003). The party, which ended up maintaining power for over 30 years, mostly abandoned radical monetary reform and with it any prospect of a national dividend. James Meade pitched a national dividend as an anti-cyclical policy instrument to stimulate consumption, but it was not taken up by the Labour Party at the time.

The second camp, which constitutes much more substantial opposition to a UBI on the left, is the opportunity cost. In order words, if such radical and redistributive means of funding government policy were available, then the revenue would be better spent on social investment and/or traditional welfare policies rather than on a UBI. Instead of simply compensating everyone with an unconditional flat-rate benefit at great cost, social investment policies such as ALMPs, family policies and care, would actively promote labour market integration, by enhancing human capital, facilitating labour market participation and life course transitions (Hemerijck, 2017). Most starkly, the alternative vision to UBI is pitched as Universal Basic Services (UBS), the defence and expansion of public services free-at-the-point-of-use so as to facilitate a more participatory society built on common solidaristic institutions and need.

The third and final broad camp opposes a UBI on the grounds that it would make things worse by accelerating the downward trend in the labour share, as an enabler of the liberalisation of labour markets or financial markets and "capitulation to deregulation and exploitation, not a solution to it" (Coote and Yazici, 2019: 4). A UBI replaces "a wage over which workers can lawfully bargain with a state-administered monetary payment that creates a direct relationship of power between citizen and state, liquidating labor struggles" (Dinerstein and Pitts, 2018). Hence, the alternative policy solutions within this camp tend to be more structural, shifting away from welfare state expenditure and rather strengthening labour market institutions (Jaumotte and Osario Buitron, 2015), reforming global governance structures in relation to corporate regulation and tax (Picciotto, 2011), and new models of capital ownership. In a sense, this last critique questions the empirical findings of our report by stating that the relationship between technological change and a decline in the labour share is not inevitable and the desire to respond with structural reforms and labour mobilisation in place of technical fixes such as a basic income or even social investment policies is driven by this assertion.

4.5 The consequences of our framework and analysis for UBI

Our growth regimes framework points in general terms to the suitability of a UBI as a response to the declining labour share, with the most obvious case for it in consumption-driven economies, with liberalised markets. Here technology does seem to be related to a reduction in the labour share and high levels of household debt have proved unsustainable, contributing to crisis and then stagnation. There is also the possibility that a UBI could facilitate a transition from shrinking manufacturing economies that have increasingly large precarious workforces and/or an over-reliance on exports. However, we argue that it is unlikely to serve Nordic regimes or FDI-financed regimes - the former because their economies are heavily geared towards social investment and coordinated labour markets and the latter because capital flight may pose a particular concern. But as the household debt analysis points to considerable within-regime variation, it should always be born in mind that these are broad generalisations to paint a picture of how cross-national variation matters rather than rigid rules to which countries and policymakers must stick. Variants of UBI – for certain age groups, for example – may be politically plausible in a number of contexts.

We hope that our initial analysis serves as a catalyst for thinking through how technological change, trends in labour share and their consequences on factors such consumption, household debt and trade policy interact with a country's institutional context, which we have defined as growth regimes. However, there is more research to be done on establishing the precise institutional constellations that affect the relationship between technological change

and the labour share, as well as what the consequences are for the feasibility and desirability of policy options such as a UBI.

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Appendix

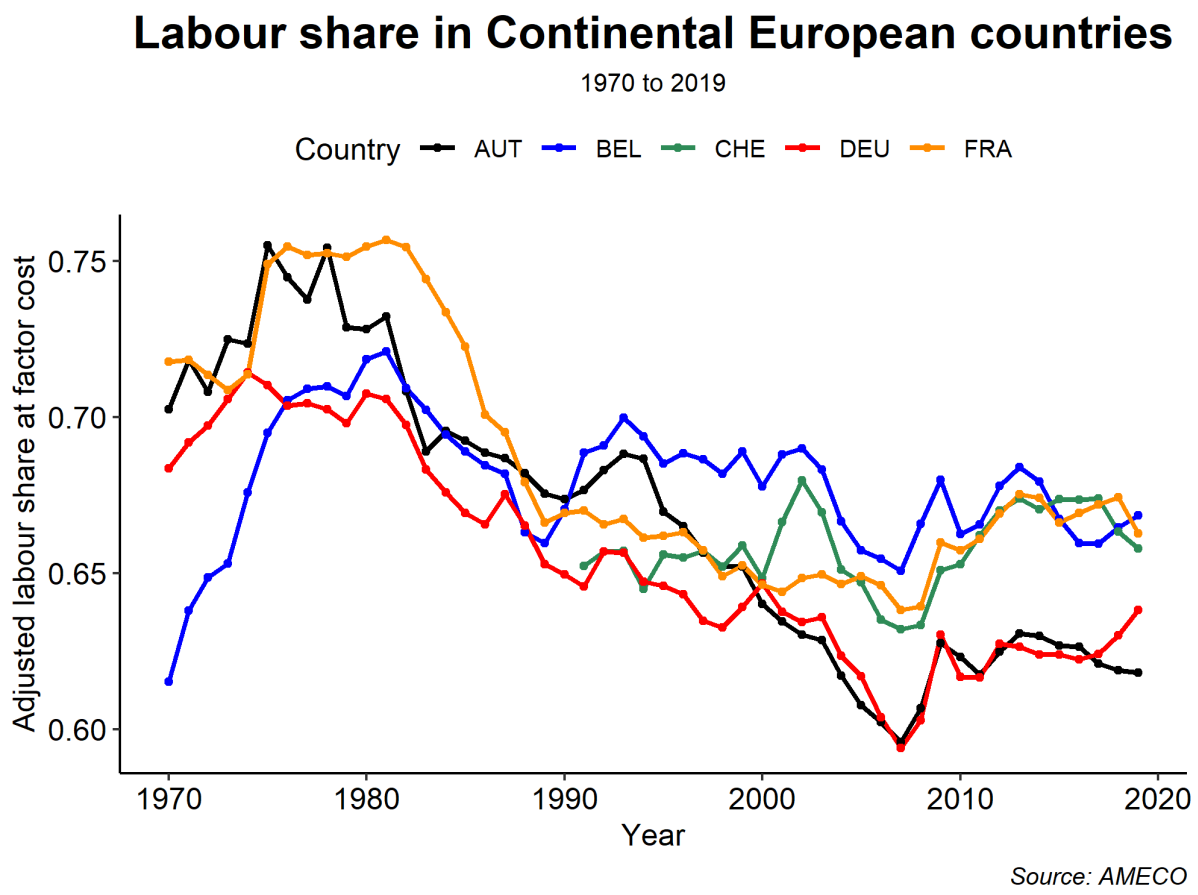

Figure A1: Adjusted labour share at factor cost, 1970-2019, for Austria, Belgium, Switzerland, Germany and France using data from AMECO.

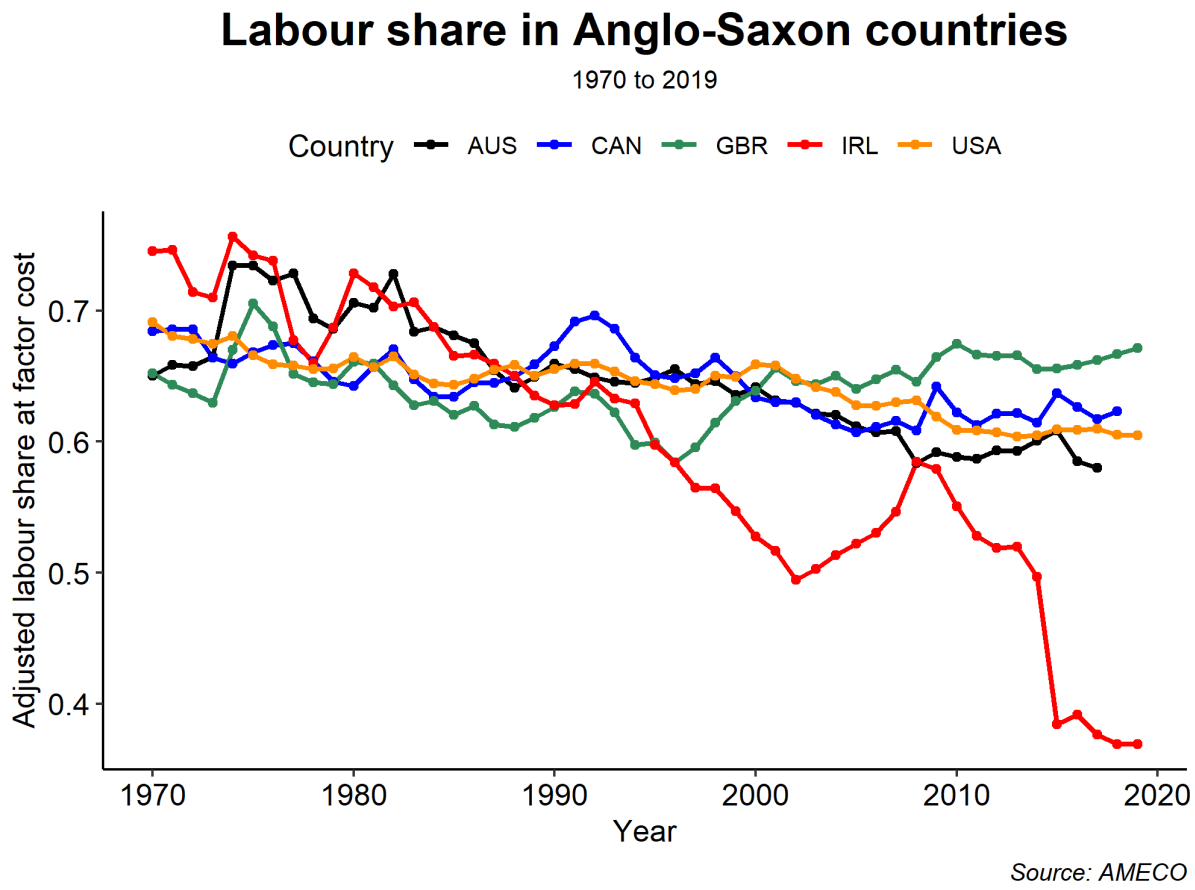

Figure A2: Adjusted labour share at factor cost, 1970-2019, for Australia, Canada, the UK, Ireland and the US using data from AMECO.

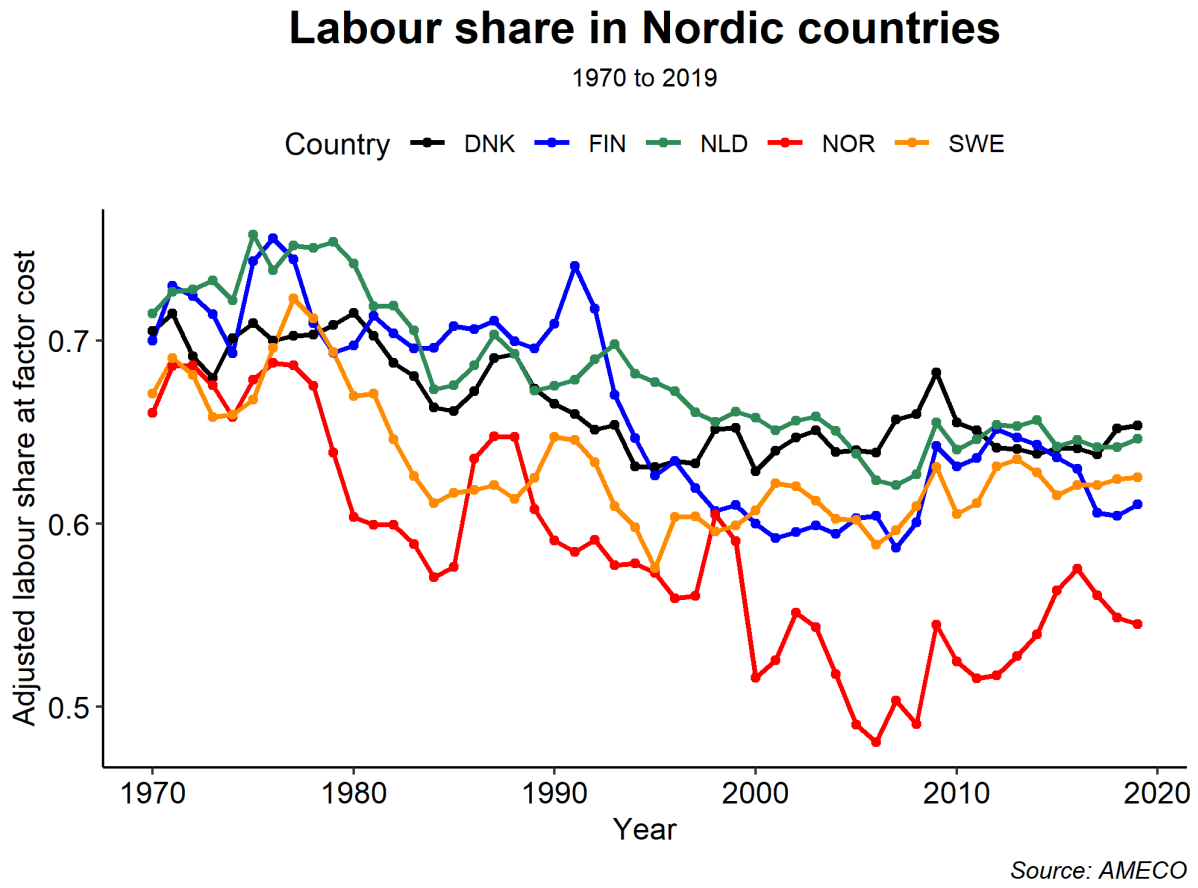

Figure A3: Adjusted labour share at factor cost, 1970-2019, for Denmark, Finland, Netherlands, Norway and Sweden using data from AMECO.

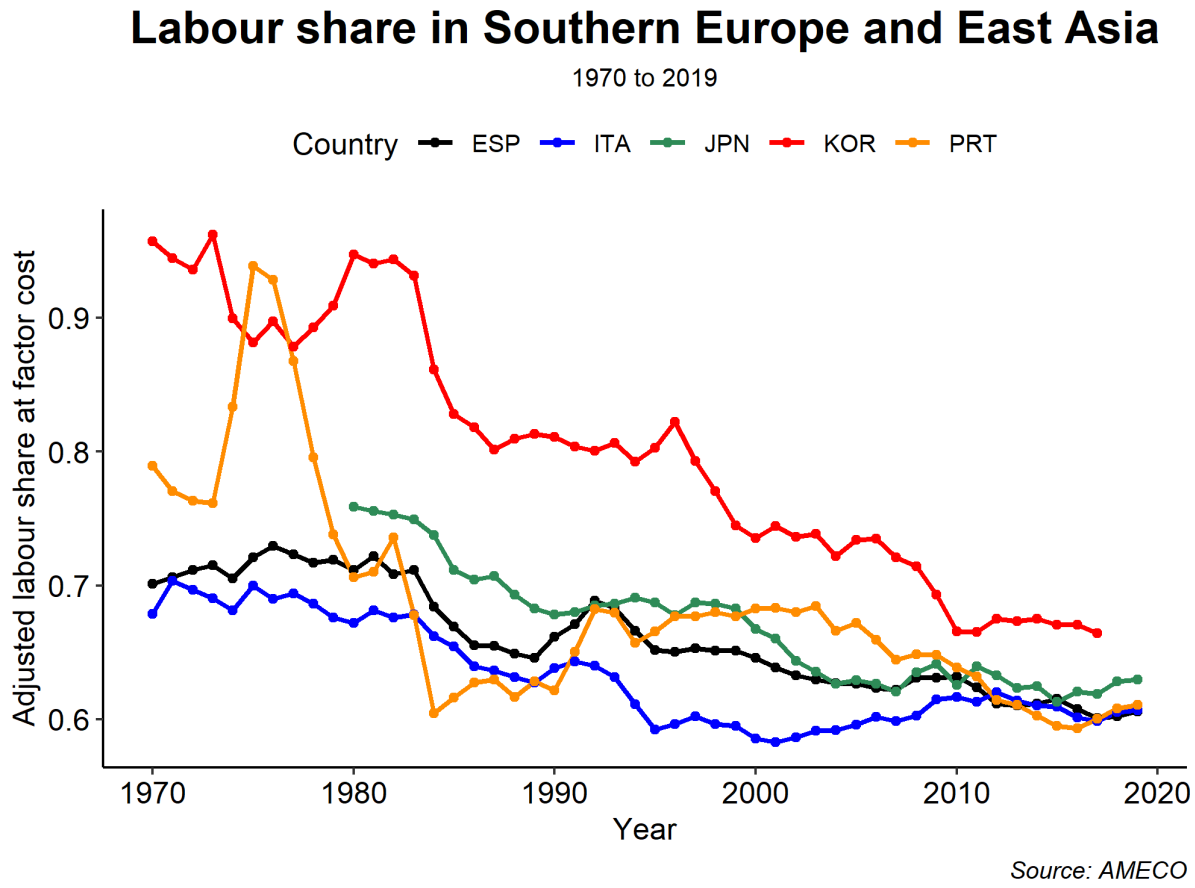

Figure A4: Adjusted labour share at factor cost, 1970-2019, for Spain, Italy, Japan, South Korea and Portugal using data from AMECO.

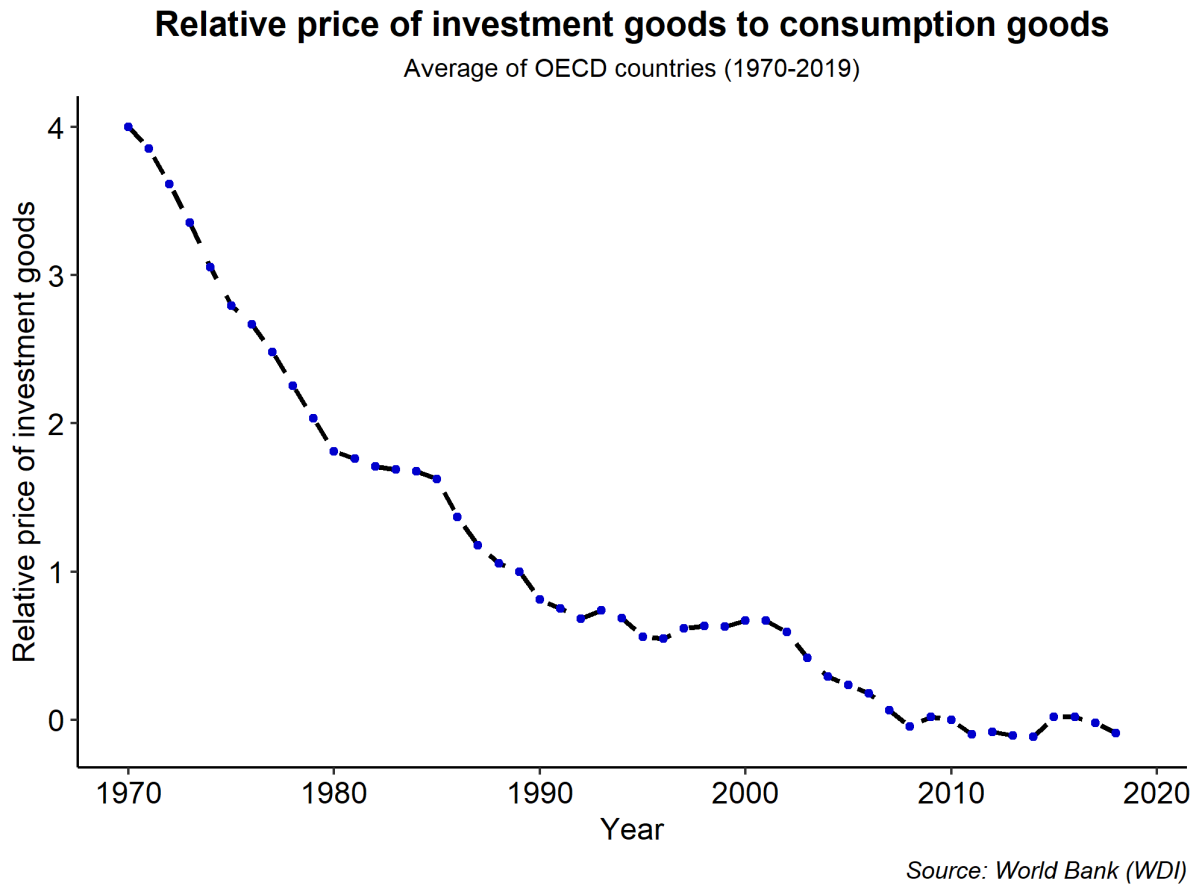

Figure A5: Relative price of investment goods to consumption goods, unweighted average across OECD countries between 1970 and 2019. Data from World Development Indicators, World Bank.

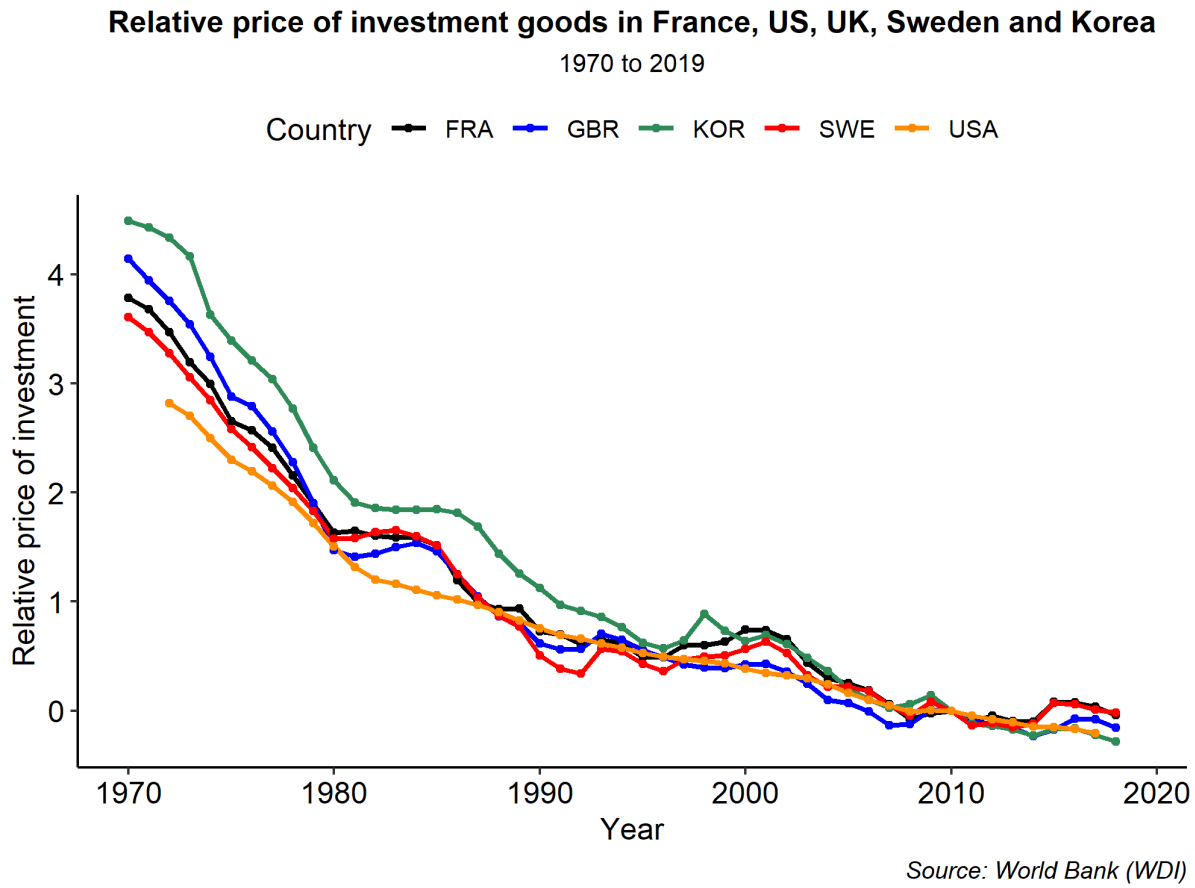

Figure A6: Relative price of investment goods to consumption goods in France, the UK, South Korea, Sweden and the US between 1970 and 2019. Data from World Development Indicators, World Bank.

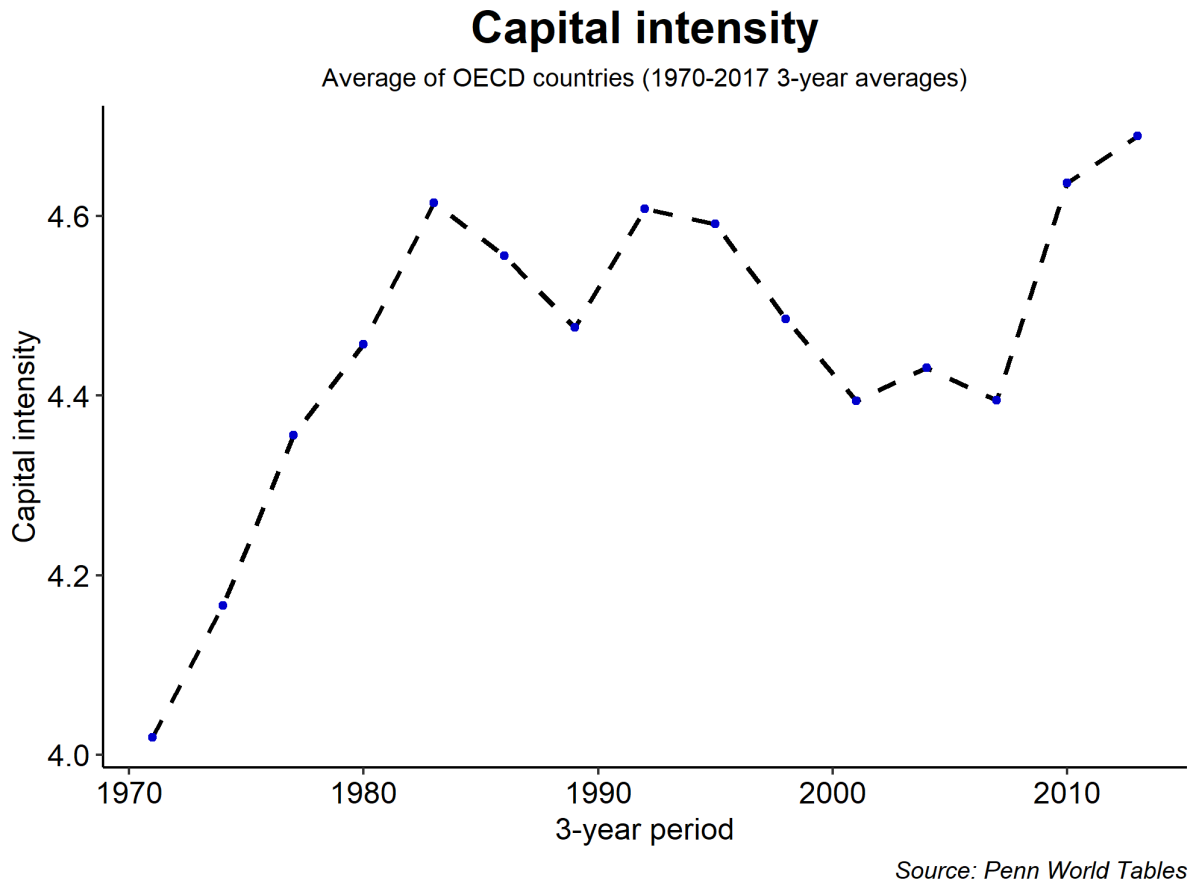

Figure A7: Capital intensity, unweighted average across OECD countries between 1970 and 2017. Data from Penn World Tables.

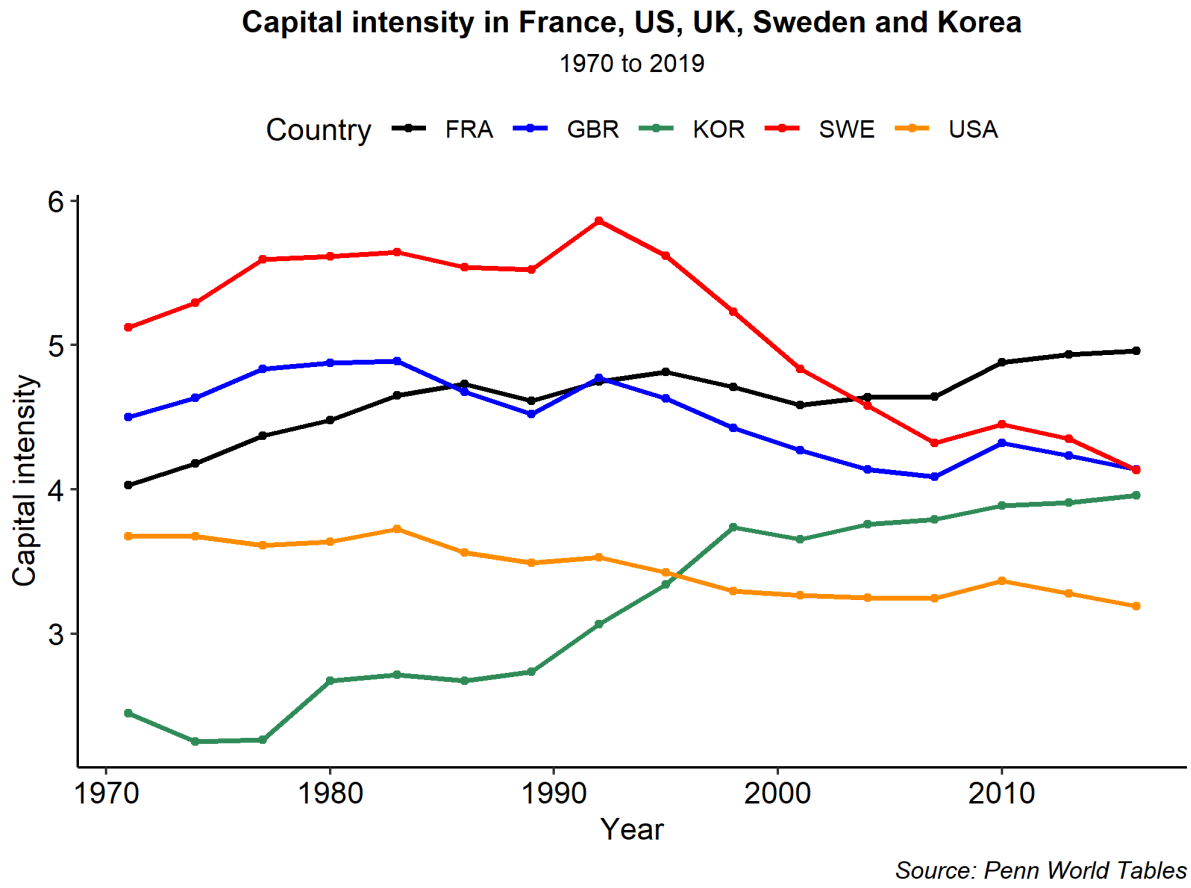

Figure A8: Capital intensity in France, the UK, South Korea, Sweden and the US between 1970 and 2017. Data from Penn World Tables.

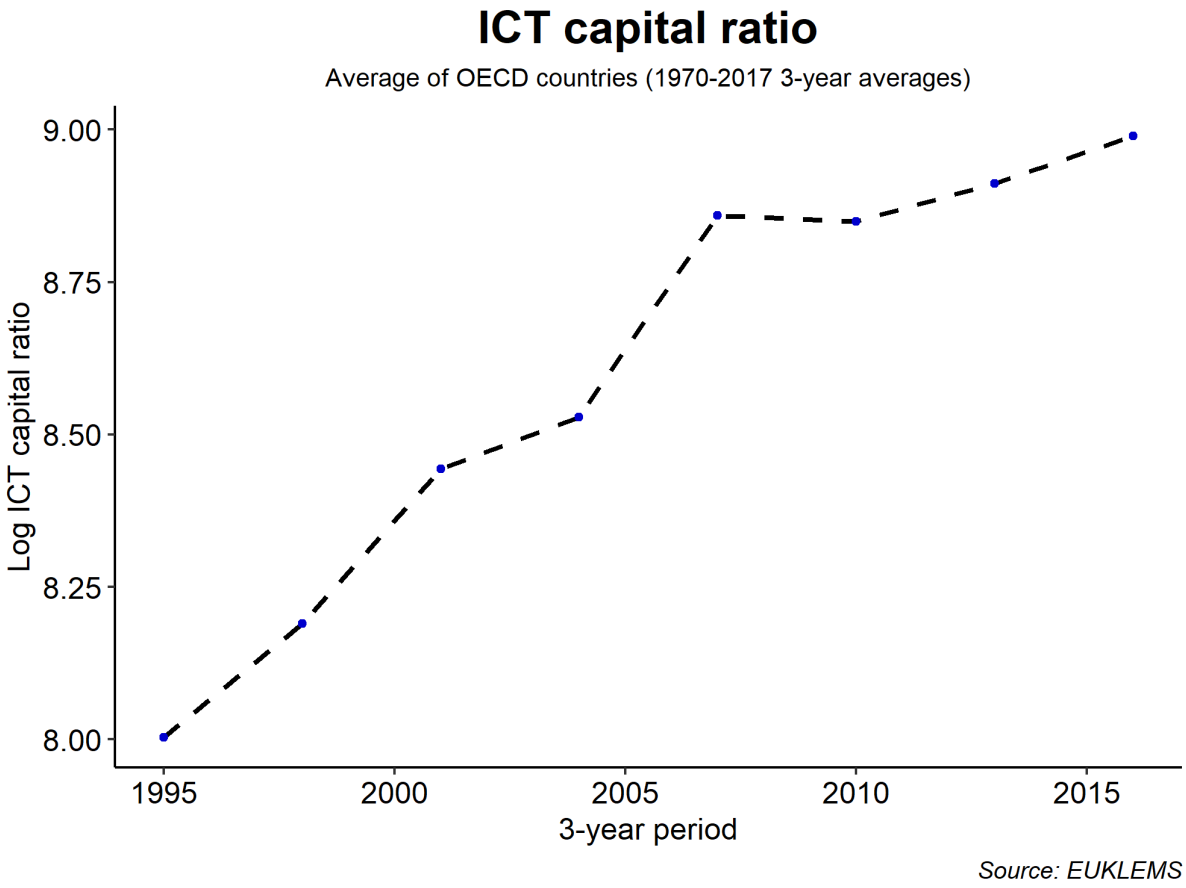

Figure A9: ICT capital ratio, unweighted average across OECD countries between 1970 and 2017. Data from EUKLEMS.

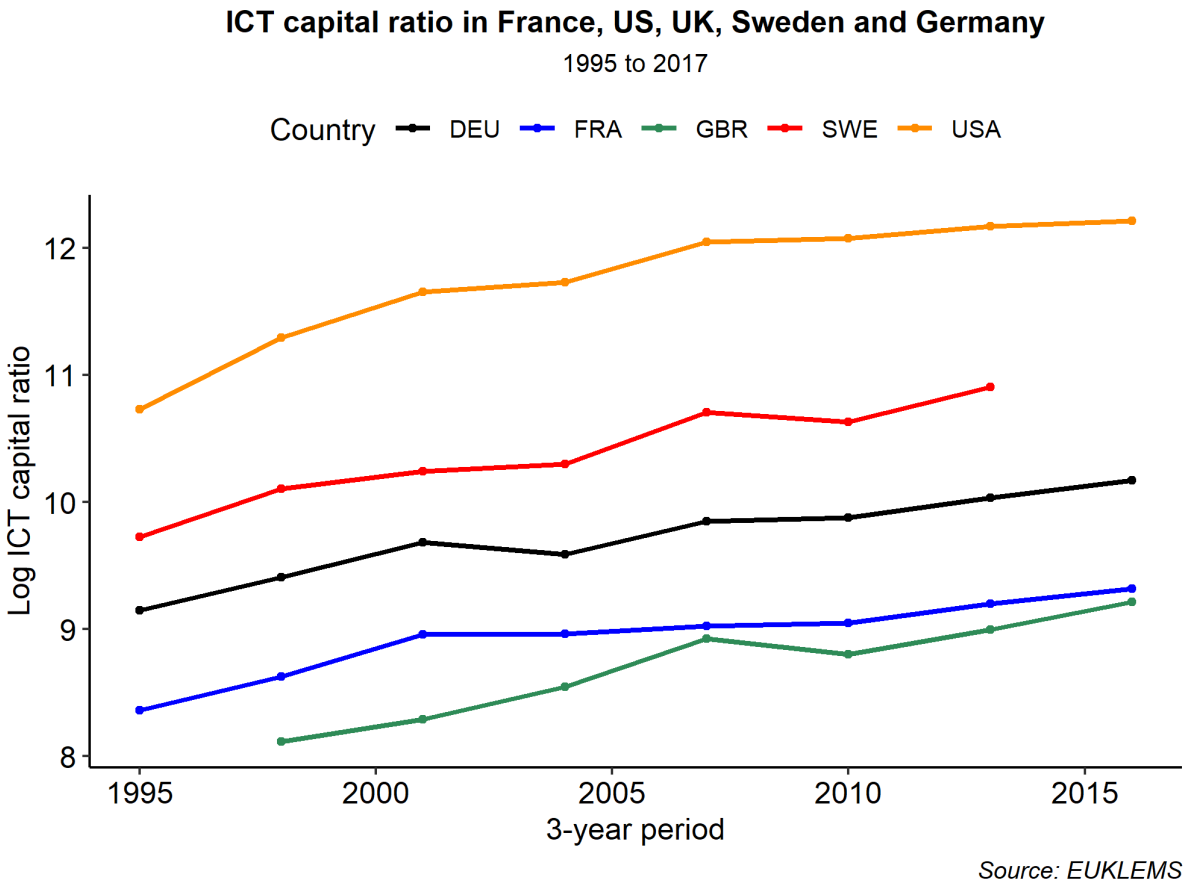

Figure A10: ICT capital ratio in France, the UK, Germany, Sweden and the US between 1995 and 2017. Data from EUKLEMS.

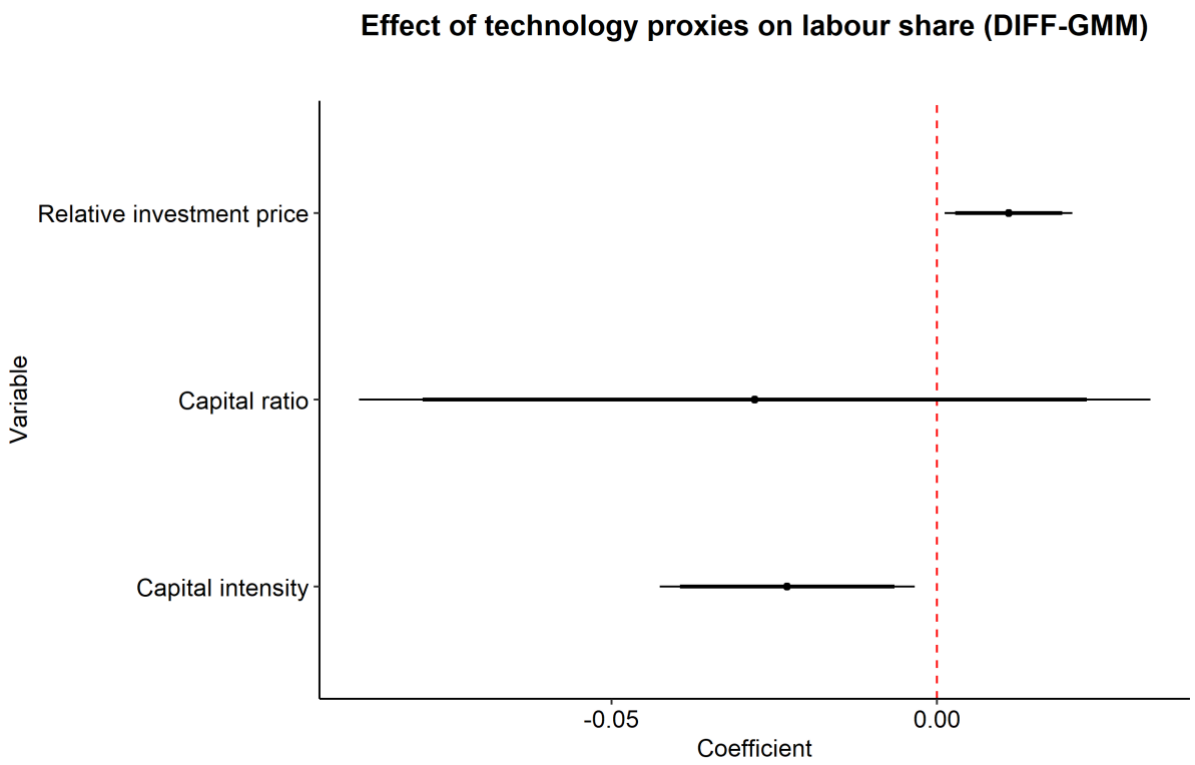

Figure A11: Estimated effect of relative investment prices, capital intensity and capital ratio on the labour share in Difference Generalized Method of Moments (DIFF-GMM) regression models.

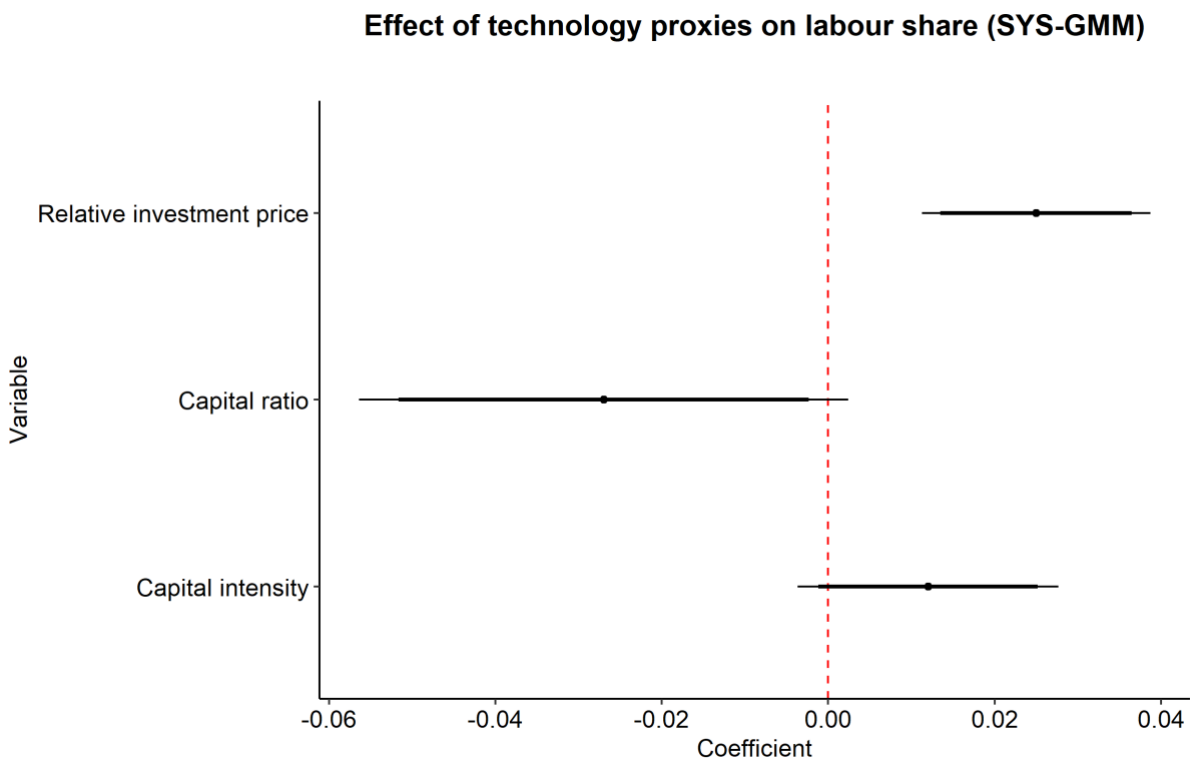

Figure A12: Estimated effect of relative investment prices, capital intensity and capital ratio on the labour share in the System of Generalized Method of Moments (SYS-GMM) regression models.

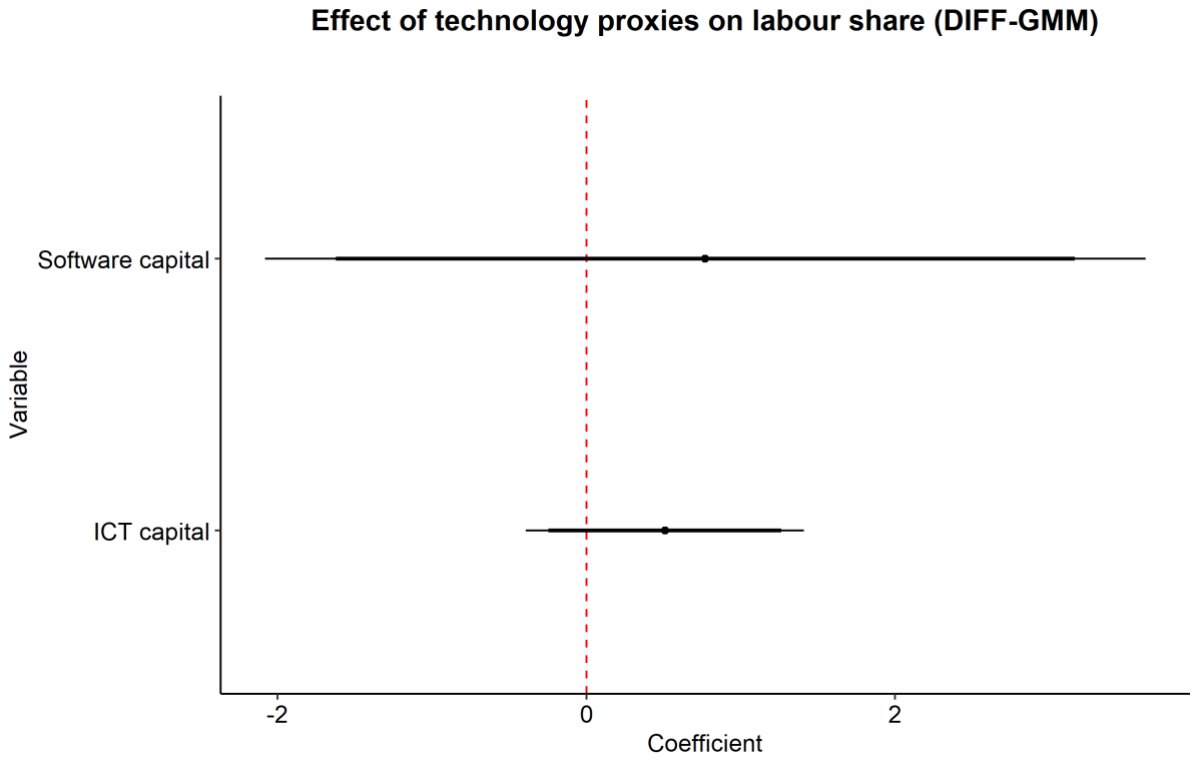

Figure A13: Estimated effect of ICT capital and software capital on the labour share in the Difference Method of Moments (DIFF-GMM) regression models.

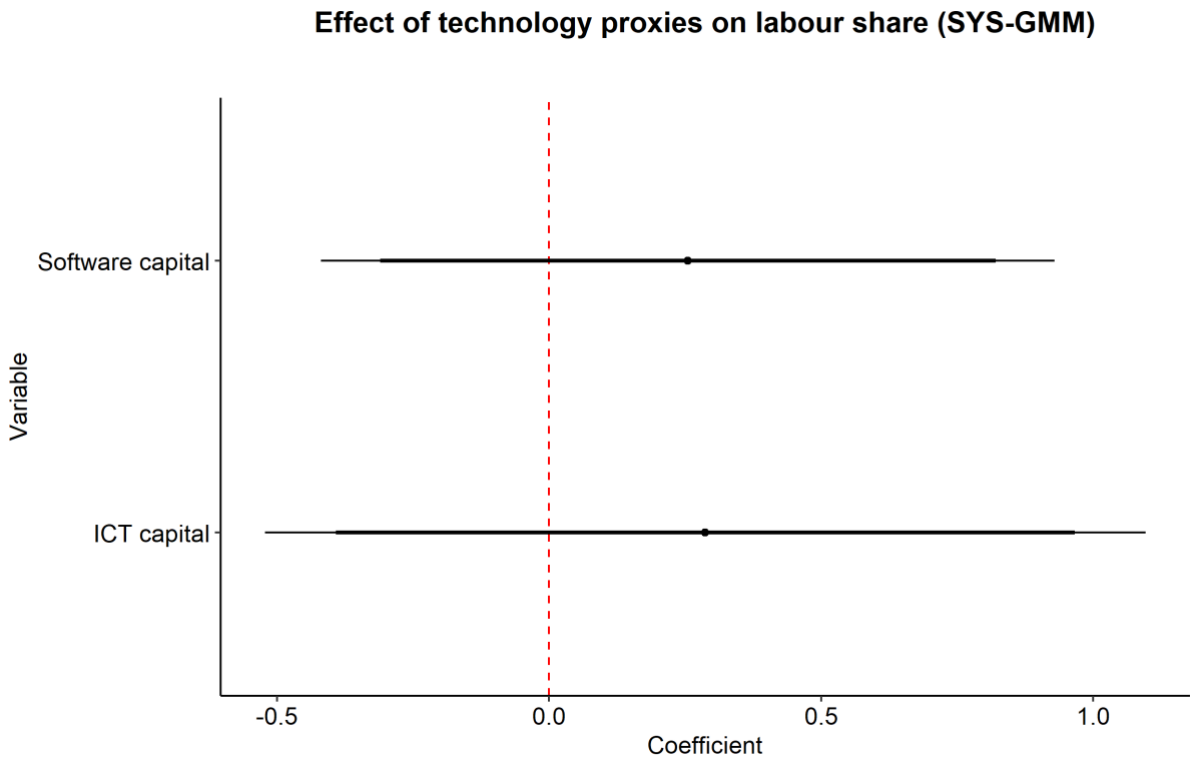

Figure A14: Estimated effect of ICT capital and software capital on the labour share in the System of Generalised Method of Moments (SYS-GMM) regression models.

Table A1: OLS and two-step GMM estimations of the labour share of high-skilled workers, 1995-2009

Variables	[1] HS-OLS	[2] HS-OLS	[3] HS-OLS	[4] HS-OLS	[5] HS-2GMM	[6] HS-2GMM	[7] HS-2GMM	[8] HS-2GMM
Relative investment prices	-0.109*** (0.012)				-0.286*** (0.046)			
Capital stock/ value added		0.002 (0.004)				0.404** (0.169)		
ICT/ value added			0.153** (0.063)				3.265** (1.303)	
Software/ value added				0.643*** (0.123)				8.948*** (2.169)
Trade openness	0.028 (0.033)	0.011 (0.033)	0.072* (0.037)	0.054 (0.038)	-0.071* (0.042)	0.240* (0.127)	0.022 (0.073)	-0.047 (0.062)
Financial integration	0.085** (0.033)	-0.127*** (0.029)	-0.141*** (0.030)	-0.137*** (0.030)	0.163*** (0.051)	-0.119* (0.068)	-0.018 (0.066)	-0.045 (0.049)
Union density	-0.602*** (0.107)	-1.106*** (0.103)	-0.855*** (0.121)	-0.826*** (0.119)	0.344 (0.258)	-0.638*** (0.236)	-0.585** (0.290)	-0.105 (0.242)
Age dependency ratio	0.220* (0.124)	0.426*** (0.126)	0.500*** (0.130)	0.453*** (0.129)	-0.910*** (0.314)	0.117 (0.282)	0.748*** (0.276)	-0.186 (0.313)
Constant	0.639*** (0.064)	0.779*** (0.065)	0.619*** (0.076)	0.613*** (0.075)				
Observations	3,644	3,235	2,963	2,975	2,820	2,580	2,167	2,576
R-squared	0.966	0.966	0.969	0.969				
F-test					24.05	10.87	14.450	14.45
Hansen test					0.459	0.249	0.066	0.111

--- Robust standard errors for GMM estimations. ***p < 0.01, **p < 0.05, *p < 0.1 ---

Table A2: OLS and two-step GMM estimations of the labour share of low-skilled workers, 1995-2009

Variables	[1] LS-OLS	[2] LS-OLS	[3] LS-OLS	[4] LS-OLS	[5] LS-2GMM	[6] LS-2GMM	[7] LS-2GMM	[8] LS-2GMM
Relative investment prices	0.142*** (0.012)				0.187*** (0.046)			
Capital stock/ value added		0.004 (0.006)				0.213** (0.091)		
ICT/ value added			-0.437*** (0.097)				-2.707*** (0.994)	
Software/ value added				-0.225* (0.131)				-5.561*** (2.025)
Trade openness	-0.132*** (0.042)	-0.138*** (0.048)	-0.195*** (0.060)	-0.177*** (0.060)	-0.096** (0.039)	0.019 (0.087)	-0.231*** (0.060)	-0.219*** (0.060)
Financial integration	-0.162*** (0.031)	0.028 (0.031)	0.059* (0.032)	0.064** (0.032)	-0.090* (0.048)	0.179*** (0.042)	0.146*** (0.048)	0.158*** (0.050)
Union density	-0.048 (0.108)	0.558*** (0.098)	0.287** (0.118)	0.310*** (0.116)	-0.488** (0.245)	0.376** (0.147)	-0.120 (0.166)	-0.438** (0.202)
Age dependency ratio	-0.902*** (0.208)	-1.363*** (0.233)	-1.516*** (0.242)	-1.493*** (0.242)	-0.255 (0.350)	-0.997*** (0.280)	-1.023*** (0.256)	-0.228 (0.358)
Constant	0.725*** (0.069)	0.619*** (0.084)	0.832*** (0.092)	0.794*** (0.089)				
Observations	3,644	3,235	2,963	2,975	3,055	2,580	2,364	2,376
R-squared	0.971	0.967	0.968	0.968				
F-test					25.170	15.600	18.130	15.000
Hansen test					0.057	0.054	0.054	0.105

--- Robust standard errors for GMM estimations. ***p < 0.01, **p < 0.05, *p < 0.1 ---

Table A3: OLS and two-step GMM estimations of the labour share of medium-skilled workers, 1995-2009

Variables	[1] MS-OLS	[2] MS-OLS	[3] MS-OLS	[4] MS-OLS	[5] MS-2GMM	[6] MS-2GMM	[7] MS-2GMM	[8] MS-2GMM
Relative investment prices	-0.038*** (0.010)				0.032 (0.043)			
Capital stock/ value added		0.010** (0.005)				0.040*** (0.015)		
ICT/ value added			0.305*** (0.062)					0.916** (0.459)
Software/ value added				-0.329*** (0.104)				3.812* (2.014)
Trade openness	-0.083** (0.037)	-0.031 (0.041)	-0.078 (0.052)	-0.082 (0.052)	-0.040 (0.038)	-0.004 (0.044)	-0.078 (0.063)	-0.130* (0.070)
Financial integration	-0.064** (0.027)	-0.017 (0.025)	-0.011 (0.026)	-0.020 (0.026)	-0.155*** (0.043)	-0.098*** (0.034)	-0.043 (0.030)	-0.024 (0.036)
Union density	0.542*** (0.106)	0.471*** (0.098)	0.407*** (0.120)	0.350*** (0.121)	0.494** (0.248)	0.685*** (0.128)	0.518*** (0.146)	0.721*** (0.206)
Age dependency ratio	0.188 (0.163)	0.436** (0.178)	0.499*** (0.186)	0.511*** (0.185)	0.309 (0.328)	0.227 (0.226)	0.219 (0.227)	-0.171 (0.316)
Constant	0.625*** (0.064)	0.509*** (0.073)	0.586*** (0.085)	0.630*** (0.085)				
Observations	3,644	3,235	2,963	2,975	3,055	2,795	2,563	2,574
R-squared	0.991	0.991	0.991	0.991				
F-test					10.000	9.990	6.650	5.550
Hansen test					0.349	0.299	0.205	0.398

--- Robust standard errors for GMM estimations. ***p < 0.01, **p < 0.05, *p < 0.1 ---

Table A4. Effect of technology on the labour share by growth regime, three-years average 1995 – 2009

Variables	[1]	[2]	[3]	[4]
	Total labour share			
	Total	Nordics	High-tech manufacturing	Publicly financed
Relative price of investment goods	0.043* (0.021)	-0.046 (0.036)	0.014*** (0.005)	0.111*** (0.008)
Observations	960	300	300	285
R-within	0.314	0.725	0.907	0.905
Control variables	YES	YES	YES	YES
Country-industry FE	YES	YES	YES	YES
Time FE	YES	YES	YES	YES

--- Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1---

Table A5. Effect of ICT on the labour share by growth regime, estimations 1995 – 2017

Variables	[1]	[2]	[3]	[4]	[5]	[6]
	OLS regressions			Two-step GMM estimations		
	Total	Nordics	High-tech manufacturing	Total	Nordics	High-tech manufacturing
ICT relative prices	0.003 (0.002)	0.015*** (-0.005)	-0.045*** (-0.013)	0.005 (-0.005)	0.024* (-0.014)	-0.055** (-0.025)
Observations	4260	1129	780	3445	962	742
R-squared				0.048	0.087	0.106
R-within	0.0454	0.0699	0.0599			
Control variables	YES	YES	YES	YES	YES	YES
Country-industry FE	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES
Hansen-J				8	3.781	7.684
P-value				0.0916	0.286	0.053

--- Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1---

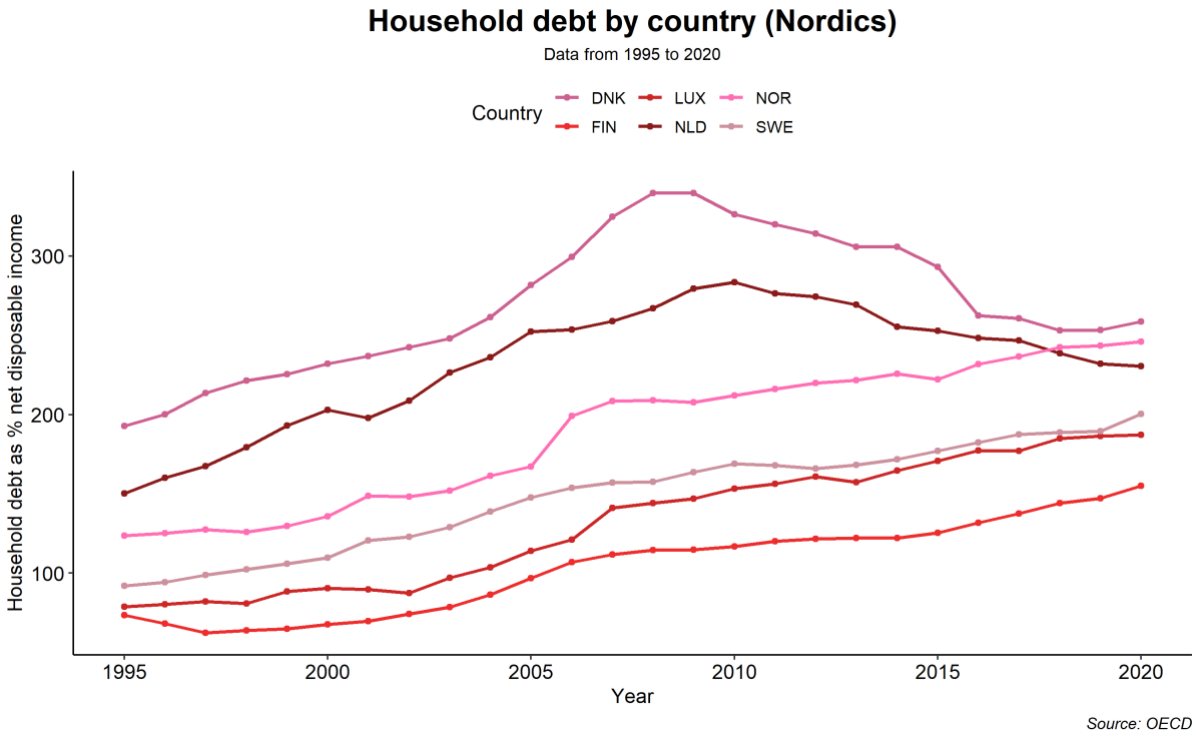

Figure A15: Household debt as a percentage of net disposable income in Denmark, Luxembourg, Norway, Finland, Netherlands and Sweden.

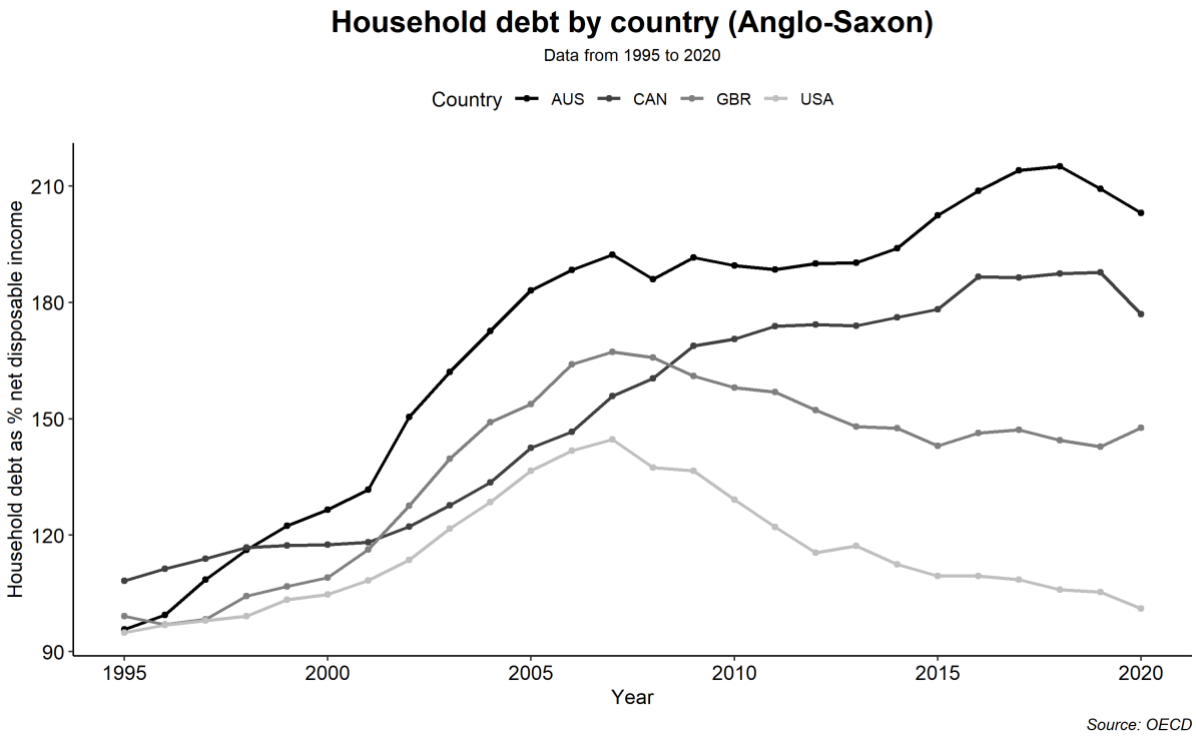

Figure A16: Household debt as a percentage of net disposable income in Australia, Canada, the UK and the US.

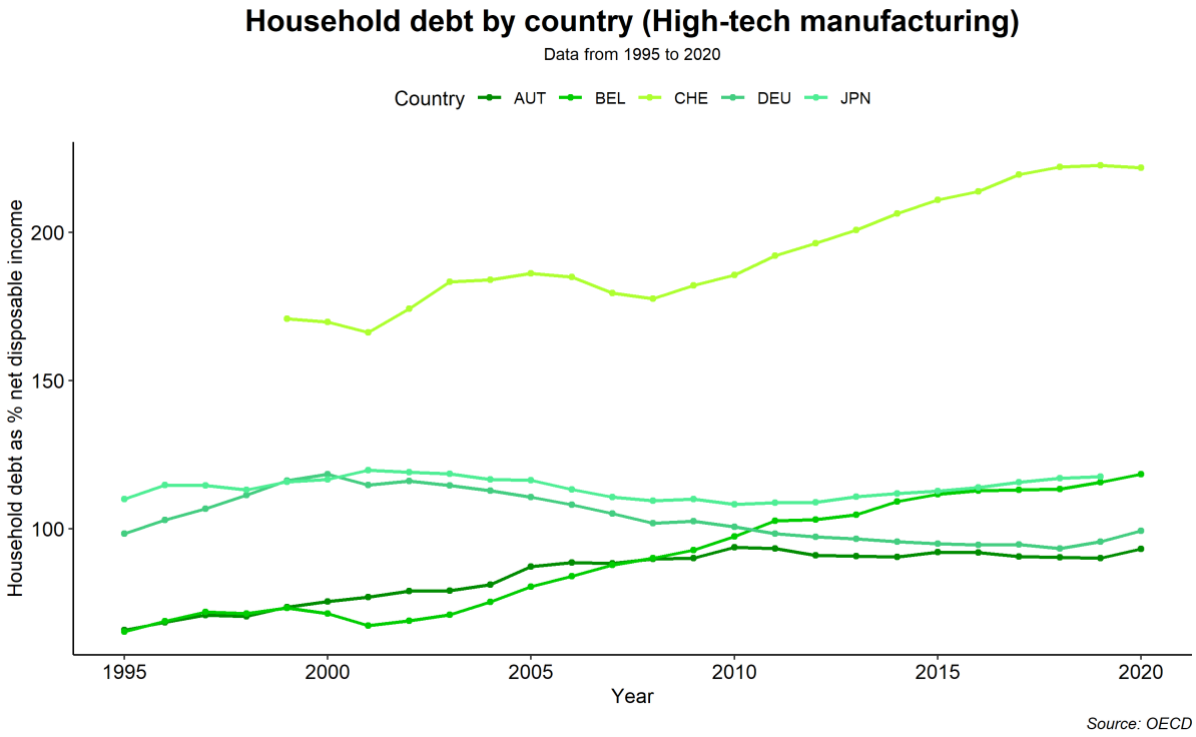

Figure A17: Household debt as a percentage of net disposable income in Austria, Belgium, Switzerland, Germany and Japan.

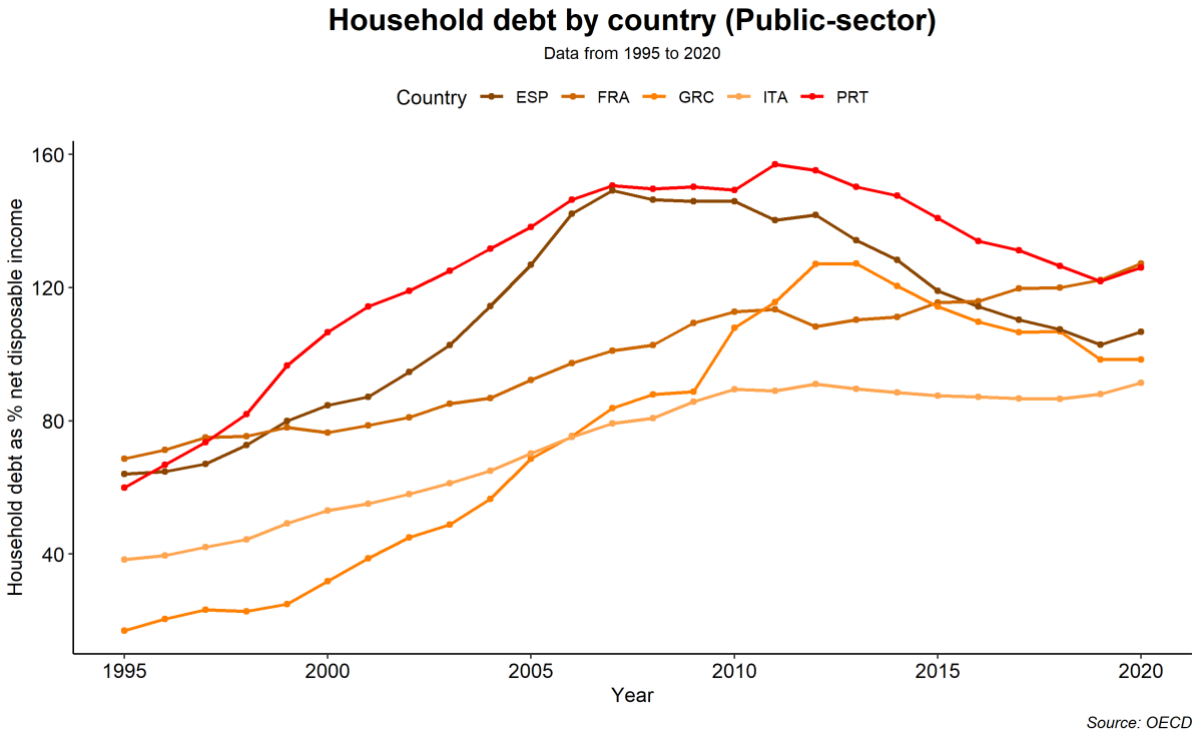

Figure A18: Household debt as a percentage of net disposable income in Spain, France, Greece, Italy and Portugal.

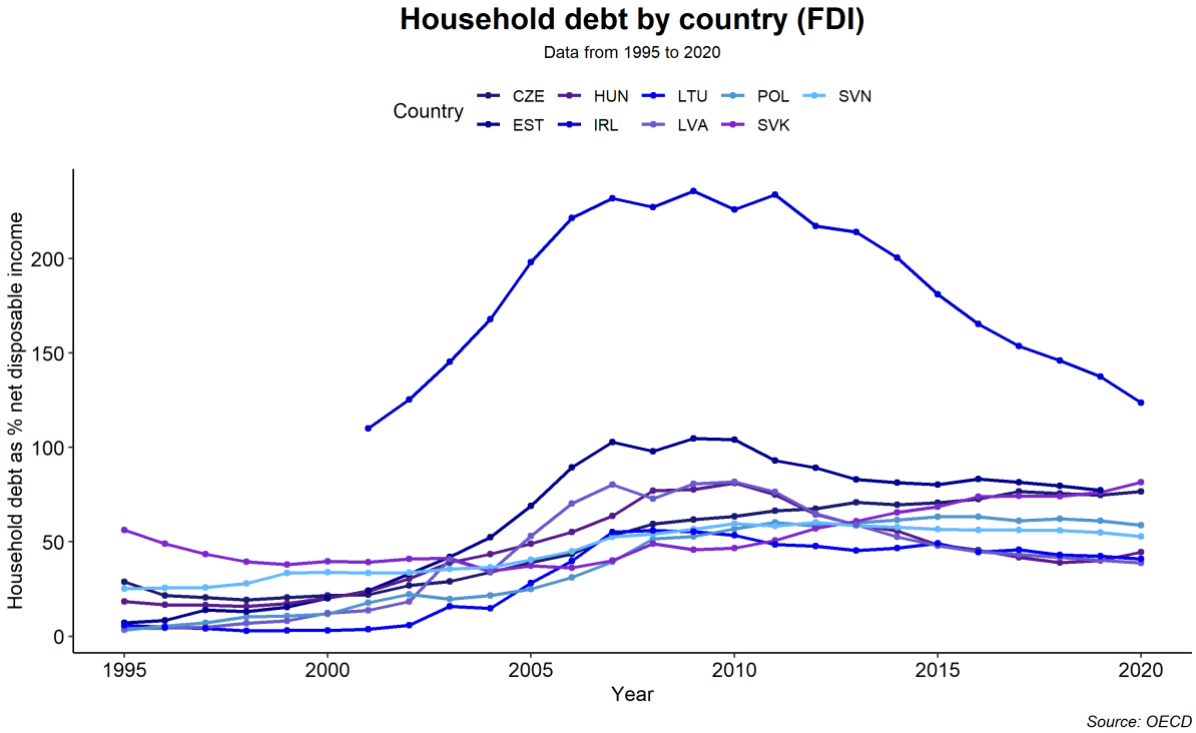

Figure A19: Household debt as a percentage of net disposable income in Czechia, Hungary, Lithuania, Poland, Slovenia, Estonia, Ireland, Latvia and Slovakia.

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