University of Greenwich
Department of Economics

University of Greenwich

Business School

The School of Accounting, Finance and Economics

# The effects of financialisation on the labour share of income

Adam Al Kamil

# Table of Contents

# Abstract

Through panel data analysis, this paper explores the effect of financialistion on the labour share in a sample of 92 OECD and non-OECD countries during the time-period 1990-2020. Using the novel Financial Development index published by the IMF, this study finds that the depth of financial markets is negatively related to the labour share to a significant degree. Coupled with the estimated negative effects of internal rates of return and economic globalisation, the findings of this study assert the claim that the growing precedence of shareholder value orientation and capital-labour substitution elasticity continues to undermine the labour share. Due to imbalanced data, the theorised model is re-specified to show results are robust to a change in sample size. Previous research on this topic typically proxies for financialisation using the variables *stock market capitalisation* and *total debt to GDP ratio*, which although being the conventional choices to model the phenomenon, fail to capture the multi-faceted nature of financialisation (Zvirydzenka, 2016).

*Keywords*: financialisation, economic globalisation, the financial development index, capital mobility, shareholder value orientation.

# 1. Introduction

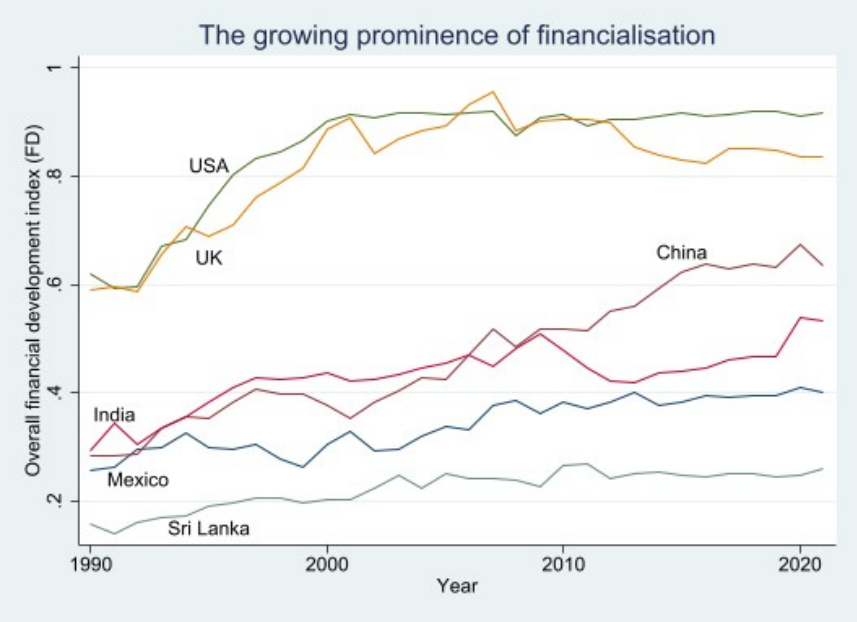


***Figure 1***. *Source*: *IMF*

It is well-established that the growing dominance of financial institutions and financial motives more broadly are aversely effecting labour market institutions (LMI's) in both higher and lower income economies. This erosion in LMI's was further exacerbated following the systematic upsurge of neoliberalist policies and economic globalisation in the 1980's. Figure 1 depicts the beginning of this global financial convergence characterized by increasing private-sector credit, and stock market capitalisation.

The relevant consequences behind favouring financial capital accumulation to labour is not commonly discussed in the literature, especially in a sample of higher and lower income countries. The forthcoming literature review guides the reader through three things: 1) how should financialisation be understood for the purposes of this study, since its use in the economic context can be rather ambiguous at times, 2) through which channels can financialisation affect the labour share, and 3) how can this effect be econometrically estimated.

# 2. Literature Review

## 2.1 Financialisation

The term financialisation is discussed across the bodies of literature in different ways. In its contemporary context, the word denotes an accompaniment of increased financial motives. Section 2.1 presents the various uses of the word and its definitions across the extant literature.

Epstein (2002) suggests three protagonists who have claimed the modern landscape of the world economy; neoliberalism, globalisation, and financialisation. This can very little be contested as market power has increased in places where government sovereignty formerly stood, and financial transactions have far surpassed those of commodified trade domestically and internationally (Baker et al, 1998). Epstein's definition of financialisation happens to take upmost precedence in forming the conventional understanding of the term; **he defines it as the increasing role of financial motives, actors, markets, and institutions in local and global economic operations** (Epstein, 2005). It is perhaps that most papers prefer Epstein's definition because it is, by far, the most relaxed definition prevalent in the literature as it does not restrict the term to any sole context as others do.

Greta Krippner (2005) offers an alternative definition. In her publication "financialization of the US economy", Krippner criticizes one aspect of the works of two renowned predecessors, Arrighi (1994) and Phillips (2002). She claims that their insistence on the presence of financialisation is not well-informed because they provide no evidence for it. Now, Krippner bases much of her paper on the writings of

Arrighi[1] so, her criticism does not come without a point; she is trying to outline the unignorable difficulties scholars faced at the time in methodologically observing and measuring financialisation. For this reason, she defines the word in accordance with the closely monitored, and very measurable *capital accumulation* indices which had been relevant to the structural change literature. **Krippner formally defines financialisation as a *pattern of accumulation* in which profits amass due to financial means and not from the trade and production of real commodities** (Krippner, 2005). She further evidences the need for this definition by referencing the fact that the earliest literature on financial structural change, notably Clark (1940), Bell (1973); and Castells (1996) was characterised by the Classical measures of employment and the production of goods and services. She rebukes this approach on the grounds that these are not appropriate places to directly observe the influence of finance, and she references Block (1987) in aid of this point. This 'accumulation-centred' approach, as she coins it, drastically shifts the paradigm of financialisation towards one centred around structural change. The reader is urged to see appendix A to visualise Krippner's point here; when the FIRE (finance, insurance, and real estate) industries are presented as a share of GDP, it is surpassed by the services industry. When presented as a share of employment, it has nearly no dominance at all. However, when presented as a share of profits, it is fully hegemonic by the 2000's beyond expectation, making Krippner's claim most pressing.

Stockhammer (2004) transmits what remains from the list of most prominent definitions for financialisation in the economic context, while offering a definition of his own which has grown in use

[1] As well as Boyer (2000), but he is introduced later for continuity.

across multiple studies including but not limited to Mader et al. (2019). He starts by citing three commonplace academic discussions for which the term was central.

The first discussion he recalls is that of *corporate governance and labour relations*. It is this mode of discourse which begot the argument that shareholder value orientation is the resultant motive of financialised corporations in the modern age. He references Froud et al (2000) and Lazonick & O'Sullivan (2000) as distinguished academics in the discussion. In regard to Lazonick & O'Sullivan's work, they conclude that shareholder value maximisation has become entrenched post-1980's as a clear form of corporate governance. Another important take-away from this paper is the authors' suggestion that corporate management strategy began shifting from "retain and reinvest [earnings]" in the 1970's to "downsize [corporate labour forces] and distribute [earnings to shareholders]". This marked the start of the dichotomy between declining managerial control and the increasing influence shareholders exert on top management. Froud et al (2000) further suggest that financialization does not self-actualise in real economic terms. The authors build upon the definition of Boyer (2000) but modify his implication[2] of financialisation as being this epochal, economy-wide phenomenon on the basis of belief that financialisation itself is subject to national structural impediments and not the other way around: "financialization is not an immanent principle because its spread is limited by structural barriers within, and by institutional differences between, national economies." (Froud et al, 2000). This permitted the writers to propose that they have no evidence to regard the UK and the US, two staple cases for

[2] He never explicitly defines it, but one can make out this inference.

financialisation, as financialised economies at all. The authors point to the English GNP to claim that, because only half of it is corporatized, the UK economy is far from financialised. This, Krippner would say, is most likely a spurious comparison because GNP is not the appropriate place to look for the effects of finance (Krippner, 2005). These things considered, Froud et al (2000) **define it as a form of competition**, and it is in this new competitive environment that companies reorient themselves in the effort of seeking financial outcomes.

The second discussion which Stockhammer (2004) notes is that of *macroeconomic dynamics of the effects of financial markets on business decisions*. He cites the two articles Boyer (2000) and Aglietta (2000). Boyer models the extent of financialisation in six OECD economies[3] with parameters such as the average propensity to consume, wealth in shares over disposable income, capital gains over disposable income, and the proportion of financial securities in household assets (Boyer, 2000). Thus, what one can understand from Boyer (2000), who strictly concerns his paper with investigating whether finance is a viable motive for economic growth instead of those behind Fordism, is that **a financialised economy is one in which demand absorbs the effects of financial hegemony in all cases.** This occurs by virtue of productive investment needing to meet a higher rate of profit than before, but in compensation, investors operate within a more favourable taxing system.

Upon reading the papers of Boyer and Aglietta, it is important to mention that at this point in the literature, the word which is now consolidated into the term 'financialisation' is at times understood by

[3] They are the US, UK, Canada, Japan, Germany, and France

them as 'finance-led growth', or as Hein (2013) describes it, "finance-dominated capitalism". This understanding of the very same phenomenon adds a layer of understanding to how it can be explored econometrically (i.e. via accumulation theories).

The third discussion addressed by Stockhammer (2004) is on the nature of *financial systems* with the key words 'bank-based' and 'market-based' beating at the heart of the debate. Bank-based systems are distinguished by banks' relations with firms over a long-term investment horizon, whereas a market-based system is one in which ownership is not so centralised, in the sense that banks share influence with the securities market in funnelling savings to firms (Demirgüç-Kunt & Levine, 1999).

Finally, Stockhammer himself defines financialisation as the "**engagement of non-financial businesses in financial markets.** These financial activities are… reflecting a shift in the firm's objectives and a rising influence of shareholder interests [i.e. shareholder value orientation] in the firm**"** (Stockhammer, 2004). Other writers also benefited from framing the phenomenon as an interaction between non-financial corporations (NFC's) and financial ones. Kohler *et al* (2018), for example, identify this interaction as a channel of influence between financialisation and income distribution. Orhangazi (2008), too, in fact centers his definition of financialisation around it: "I use financialisastion to designate the **changes…in the relationship between the non-financial corporate sector and financial markets**".

| Chronological progression in the definition of *financialisation* | |
|---|---|
| Boyer, 2000 | A financialised economy is one in which demand absorbs the effects of financial hegemony in all cases. |
| Froud et al, 2000 | A form of competition in which companies reorient themselves towards achieving financial results, and more rapid management works. |
| Stockhammer, 2004 | A phenomenon entailing the engagement of non-financial firms in the finance industry. This engagement causes firms to hold more financial objectives, such as increasing shareholder value |
| Epstein, 2005 | An increasing role of financial motives, actors, markets, and institutions in local and global economic operations. |
| Krippner, 2005 | A pattern of accumulation in which profits amass due to financial means and not from the trade and production of real commodities. |
| Orhangazi, 2008 | A change in the relationship between NFC's and financial markets. |

***Table 1***. Summary of the various meanings of the word 'financialisation' in economic literature

## 2.2 The labour share

It is two of Kaldor's (1957; 1961) six 'stylised facts', as he calls them, which have set the trajectory of the labour share debate for years to come. The first is his postulation that capital-output ratios remain steady in the long-run. That is to say that income and capital both grow in the same rate over long time periods. The second, is his conclusion that in the long-run, the labour share tends to decline at a constant rate. However, this claim is inconsistent with observations in the labour share data globally following the 1980's. Of paramount relevance to the subject matter is the seminal work by Karabarbounis and Neiman (2014) wherein they posit that the elasticity of substitution between labour and capital[4] only increased in light of technological advancements, leading firms to favour the latter factor of production over the

[4] This is a reference to capital-labour substitution, a concept which suggests that firms can switch between hiring more labour, or acquiring more capital if the coefficient is elastic. If capital is favoured, unemployment and the deterioration of labour protection legislation typically follows.

former. The advent of capital preference would be the spark which accelerated the decline in the labour share, which might have otherwise been steady as Kaldor theorised had this not happened.

Based on the model for labour share introduced in Karabarbounis and Neiman (2014), Kheng et al. (2023) interrogate the falling labour share in a sample of both OECD and non-OECD countries starting from the 1980's as a benchmark year for the phenomenon. They detect the presence of capital-labour substitutability in both demographics, however it is the drivers behind this substitution which differs between OECD and non-OECD countries. In higher income nations, it is exports and the undertaking of economic risks (which the authors measure via *real GDP volatility*) which exert significantly negative influences on the labour share. Whereas in lower-income countries, the negative effect on the labour share was primarily due to financial liberalisation. Furthermore, being capital-intensive is of especial urgency to lower-income countries struggling to maintain a global presence in the competitive market, which would further explain the decline in labour share in non-OECD countries (Kheng et al., 2023).

In short, the historical decline in the labour share across both developed and developing countries must have began during the 1980's at the latest, and today, it is well-established that its decline was not constant as Kalmor (1961) suggested. To clarify, it would be misleading to claim that all labour shares across countries unanimously declined during this period, the literature does not suggest this. What it does suggest however, is that the substantial number of countries which did experience this decline experienced it at varying rates. Harrison (2002) observes that during the period of 1960-2000, the labour share in lower income countries fell, whereas it rose in higher-income countries. To conclude this point, it is a consensus from the literature that financialisation has systematically led to a rising profit-share, and thus a

plummeting labour share. This decline is non-constant, and is accompanied with inequal distribution of wages (Harrison, 2002; Jayadev, 2007; Sjöberg, 2008; Onaran *et al*, 2011; Hein, 2013; Dünhaupt, 2017; Haan & Sturm, 2016; Hung & Hammett, 2016; Young & Tackett, 2018; Kohler *et al*, 2018; Özdemir, 2019).

The final point to mention here is that the empirical literature on financialisation seldomly investigates its implications on the labour share, save a handful of prominent articles. What is more commonly explored is the relationship between financialisation and investment. To briskly summarise this part of the literature, Demir (2008), Orhangazi (2008), and Tori and Onaran (2017) uncover that fixed asset investment rates too have been decreasing. This has been the case since at least the 1990's in emerging countries like Argentina, Turkey, and Mexico (Demir, 2008). Hein (2013) explains this through saying that financialisaition nullified the 'animal spirits' of corporate management towards capital stock, which is a rewarding investment in the long-run, in preference for financial investments which yield more immediate profits. The study by Tori and Onaran (2017) reveals that financial payments (i.e. dividends and interest payments) and incomes share a negative relationship with investments in fixed assets amongst non-financial corporations. The authors cite Orhangazi (2008) for the theoretical justification: besides being more rewarding in the short-run, financial assets are reversible unlike long-term assets. In essence, it is this phenomenon which oriented investment preferences away from physical fixed assets to financial ones. As for the handful of articles which do explore financialisation on the labour share, they are the papers by Onaran et al (2011), Hein (2013), Dünhaupt (2017), and Kohler et al (2018), Haan et al (2019), and Özdemir (2019). Both Özdemir and Haan et al. acknowledge there is still a gap in the research.

## 2.3 Channels of influence

Firstly, Darcillon (2015) suggests that the **channel of influence between financialisation and the labour share can be explored through labour market institutions**. He explicitly refers to shareholder value orientation as the main driver behind financialisation which continues to undermine collective bargaining and employment protection. Boyer (2006) cites the case of Germany for this years prior, so it is an evidently well-established proposition. The idea, as explained by Darcillon (2015) goes like this: for a firm to increase its shareholders' stake in the company, executive management pursue financial means to ensure that the stock value of the company grows year-on-year. In doing so, wages naturally are given newfound room to fluctuate and the average length of employment gets shorter over time. This is because shareholder value orientation implies that the bargaining power of capital is now stronger than that of labour. Only in this context, the capital in question is of the financial kind. Hein (2013) also makes note of this short-termism in employment, and attributes it to financialisation for the very same reason. Because of this net negative effect on collective bargaining from shareholder value orientation, downward pressure is exerted on the labour share. Beside shareholder value, capital account openness is also thought to negatively effect the labour share (Jayadev, 2007). This is eloquently conveyed in Kohler *et al* (2018) as "enhanced exit options for capital". As Jayadev (2007) explains it, financial liberalisation in the 1980's has allowed capital to increase in mobility, and so the influx in foreign investment made rent accruals from

capital more profitable than that from labour[5]. Consequently, the labour's share of income within firms decreased and in effect, the labour's share of national income also decreased. Capital mobility is recognised as an integral part of financialisation (ILO, 2008). In addition to Kohler *et al* (2018), Hugon (2011), Sjöberg (2009), and Goyer (2011) are all in agreement on the negative influence that capital mobility exerts on employment protection and labour market institutions.

To summarise the discussion thus far, the first channel of influence between financialisation and the labour share is through labour market institutions. From the reviewed literature, there are two possible scenarios: 1) shareholder value orientation increases which causes an erosion of labour market institutions, thus pushing the labour share down (Boyer, 2006; Darcillon, 2015; Hein, 2013), or 2) capital mobility increases, facilitating greater profit-shares which lead to a proportionate decrease in the labour share (Jayadev, 2007; Kohler *et* al, 2018; Hugon, 2011; Sjöberg, 2009; Goyer, 2011).

The second channel of influence is based on the observation that financial liberalisation was the primary contributor to the plummeting labour share of the 1980's (in agreement with the findings of Karabarbounis and Neiman, 2014). Hein (2013) identifies three channels in his work as for why the era characterised by neoliberalism brought with it the decline of labour share. It is the second one that is relevant: **rising overheads and profit claims to rentiers**. This is an allusion to the argument proposed by Kalecki (1969), which outlines that firms operate as part of an oligopoly (or more properly, under

[5] Which is to say that economic rentiers (the word, in this paper, denotes shareholders and investors) started experiencing greater returns from investing in financial capital than they did from hiring more labour.

incomplete competition) and that these firms mark-up their prices according to the degree of monopolistic power that they hold. If the firm's degree of monopoly increases, so do its prices. It is this rise in prices, referred to in other papers as a mark-up, that decreases real wages[6] and thus increases the profit share (Kohler *et al*, 2018). Lazonick and O'Sullivan (2000) further explain that it is shareholder value orientation which causes firms to bear higher overheads, and consequently obliges them to maintain raised prices in the stock market, hence the mark-up. Moreover, Kohler *et al* (2008) and Hein (2013) both mention that firms, in attempts to keep their share prices high, increase the dividend pay-out ratio to satisfy shareholders, and even at times resort to buying back stocks thriugh debt-financing. Özdemir (2019) and Dünhaupt (2017) also base their theoretical approaches on the Kaleckian price mark-up proposition, and these are only two examples. There are more for which this Kaleckian approach is central. Given its prevalence, the second channel of influence considered for this study between financialisation and the labour share is the **price mark-up due to raised overheads and increased profit claims to rentiers.**

## 2.4 Econometric Methods

There are two primary obstacles behind time-series cross-section (TSCS) data, or panel data, which are of specific interest to econometricians and political scientists more broadly. The first challenge, ironically, is the OLS assumption of independent and identically distributed (i.i.d.) error terms. This assumption is most likely to be violated in the context of TSCS data. There are three consequences to

[6] Since $real\ wage \propto {}^{1}/_{P}$

this violation: 1) heteroskedasticity; 2) contemporaneously correlated error terms, also known as cross-section dependence (CD); and 3) autocorrelation. These three interferences must be tested for, and if they are detected then the ordinary least squares (OLS) method is no longer the best linear unbiased estimator. Typically, researchers then resort to feasible generalised least squares (FGLS) or panel corrected standard errors (PCSE) in order to execute the regression while addressing these three issues.

The second challenge is controlling for the unobservable individual-specific effects which naturally come with panel data. If not properly addressed, the system will suffer endogeneity as a consequence, and in return, the model will produce biased and unreliable results.

This following section guides the reader through the econometric methodologies of Dünhaupt (2017) and Özdemir (2019) in estimating the effect of financialisation on the wage share.

Dünhaupt (2017)- a sample of 13 countries from 1986-2007

Dünhaupt's model for the adjusted wage share is composed of trade openness, foreign direct investment, import prices, unemployment rate, labour market institution measures, net dividend and interest payments, and government activity.

He begins by running a F-test for joint significance to conclude whether the year and country dummies are significant. Then, to address the expected issues that accompany panel data, which again for reference are heteroskedasticity, cross-section dependence, and autocorrelation, a modified Wald test for groupwise heteroskedasticity is executed on an OLS regression. The test

indicates the presence of non-constant variance. Next, the Breusch-Pagan and Pesaran CD tests are applied to detect contemporaneous correlation. The results of both tests confirm the notion that residuals across entities are correlated. Lastly, a Wooldridge test affirms to the presence of autocorrelation.

Based on these diagnostic tests, Dünhaupt has sufficient evidence against using OLS to estimate the model. Therefore, he decides to estimate the model using FGLS and PCSE, informed by (Beck and Katz, 1995). He displays the results produced by both models since the difference in estimation techniques did not impact key findings.

The final issue to be resolved is that of unit root. It is not as threatening in the context of panel data as the three issues already mentioned, but it is a good cautionary measure. Most time-series tend to portray non-stationarity (Smith, 2001). Therefore, Dünhaupt deploys the first-generation unit root test[7] detailed in Maddala and Wu (1999), as well as the Im-Perasan-Shin (IPS) unit-root test identified in Pesaran (2007). The Im-Perasan-Shin test accounts for the dependent nature of panel data cross-sectionally. Dünhaupt finds that the some variables display series which are I(1), so the model is re-estimated in first differences. In this re-estimated model of first differences, heteroskedasticity and CD are still detected, so FGLS and PCSE are still used to estimate the model.

---

[7] This refers to the very first-generation of unit-root tests which were developed. They maintained the strict (and easily falsifiable) assumption that entities in a panel are fully independent of one another. A contrast from the second-generation of tests which assumes there is some dependence between different individuals. Thus, the Im-Perasan-Shin test is of the second-generation, and is effective in the presence of cross-section dependence.

**Özdemir (2019)**- sample of 52 countries from 1992-2012 with 1,092 observations

Özdemir's paper proxies for financialisation using three stock market indicators from the Global Financial Development Database: 1) stock market capitalisation to GDP, 2) Stock market total value traded to GDP, and 3) Stock market turnover ratio. Besides these measures for financialisation, his model of labour share also encompasses globalisation, which he proxies for using financial liberalisation, trade openness, and foreign direct investments. The final variables controlled for are unemployment rate, labour force participation rate, human capital, welfare-relevant total factor production, government expenditure, real exchange rate stability, GDP, and a number of interaction terms.

The diagnostics begin with a modified Wald test for groupwise heteroskedasticity, and the null of constant variance is rejected. Then, two tests for cross-section dependence are executed: a Free CD test and Pesaran CD test. The results show that the residuals are cross-sectionally correlated. Thirdly, two tests for autocorrelation are executed, the Baltagi-Wu test and Wooldridge test, both of which show there is first-order autocorrelation in the specification.

In response to OLS's invalidity, Özdemir deploys the Driscoll-Kaay (1998) method, which is an estimation technique based on a Newey-West correction for three things in the average cross-section series: 1) within-group heteroskedasticity, 2) contemporaneous correlation of errors, and 3) autocorrelation. Özdemir uses the Driscoll-Kaay (1998) correction for the fixed effects model, but still cites Beck and Katz's (1995) method of PCSE estimation because he proceeds to use it when the model is re-estimated in first differences (after testing for stationarity).

Now, two tests for unit-root are deployed: the Levin-Lin-Chu (LLC) test, and the IPS test (Levin *et al*, 2002; Im *et al*, 2003). The latter test is more relaxed in its assumptions, as explained in footnote 7, and allows each panel to have its own autoregressive parameter. It also does not require a strongly balanced dataset to make proper inferences. The results of the test show the series is I(1). So, when model is re-estimated in first differences, FGLS and PCSE is used. In all cases, heteroskedasticity and cross-sectional correlation are detected.

## 2.5 Section Summary

The findings discussed in section 2 can be summarised in three:

1. Financialisation is a multi-faceted phenomenon which places emphasis on the role of banks as economic agents in offering long-term relationships with economic rentiers. It also increases capital mobility, causes more non-financial firms to partake in financial activities, and most prevalently, changes competition dynamics to be oriented towards increasing shareholder value. In a broader sense, firms become financially-driven, and their methods of capital accumulation reflects this; financial assets have won the favour of corporate management in place of fixed assets and more importantly, labour.
2. The effect of financialisation on labour's share of income has systematically been negative. The channels that facilitate this influence are: 1) **increased capital mobility** has caused corporate management to prioritise profits instead of income equality. Thus, a greater share of the firm's income goes towards profit-claiming economic rentiers (i.e. shareholders), and an increasingly smaller share of that income goes towards labour. On the aggregate level, a greater share of national income gets channelled towards profit-claimers, while the remaining portion, humble as it may be, is funnelled towards labour; 2) **increased shareholder value orientation** causes capital to hold bargaining power against labour, in effect, encouraging short-termism and the erosion of labour market institutions. Thus, the labour share declines; 3) **financialisation, through more ways than one, causes firms to mark-up their prices.** The Kaleckian approach proposes that firms mark-up their prices based upon the monopolistic power they hold in the market. This price

mark-up decreases real wage, which increases the profit-share and puts a downward pressure on the labour share. Kalecki also expresses the view that this mark-up may also be caused by heightened overhead costs, in which case, the implication on the labour share is the same.

3. All the articles reviewed which pertain to the effect of financialisation on the labour share rely on panel data estimators. From the reviewed literature, researchers resort to manual means of measuring the extent of financialisation by using variables such as credit to GDP ratio, or stock market capitalisation to proxy for the phenomenon of financialisation. None of the papers identified in this literature review have used an index for financialisation. Moreover, the OLS assumption of i.i.d errors is most likely to be violated when a TSCS panel is in use. Consequently, there are three error-related issues that must be addressed with earnest: 1) heteroskedasticity, or non-constant variance in the residuals amongst countries, 2) contemporaneous correlation between errors across panels, and 3) serially correlated errors.

# 3. Data Sources

## 3.1 Review of the Data Sources

The dataset utilised in this study is the aggregation of four separate datasets: the IMF's Financial Development Index, the ILO's trade union density rate dataset, the KOF's globalisation index, the Penn World Table (PWT) v.10.01, and the WIPO granted patents dataset.

***The Financial Development index***

Former empirical studies on financialisation would typically compile several notable variables that reflect certain aspects of increasing financial dominance. Such often-cited variables in the literature proxy for financial development with *the ratio of private credit to GDP*, or *stock market capitalisation to GDP*. Older papers use indices of *globalisation* to proxy for the presence of financialisation. Of all the studies reviewed, there has not been an example of a paper which uses an inclusive index to capture financialisation in the study of the labour share decline.

This paper utilises the IMF financial development index, which is a more intricate regressor than those used by previous papers as it captures the multidimensional nature of financial development (Zvirydzenka, 2016).

The index divides financial development (FD) into two platforms: financial institutions and financial markets. Both of these platforms are studied through depth, access, and efficiency. Out of the nine indices approximated in the dataset, this paper borrows only two: financial markets depth (FMD), and financial

institutions depth (FID). Depth is defined by the Zvirydzenka's (2016) working paper of the dataset as being a measure which captures market size and liquidity. The breakdown of the two variables is displayed in table 2. Notice that the two variables not only include the common proxies stock market capitalisation and private-sector credit, but also consider a handful of other factors which are significant in the financialisation process. The dataset covers 192 countries from 1980-2021.

| Financial Institutions Depth (FID) | Financial Markets Depth (FMD) |
|---|---|
| 1. Private-sector credit to GDP | 1. Stock market capitalisation to GDP |
| 2. Pension funds assets to GDP | 2. Stocks traded to GDP |
| 3. Mutual funds assets to GDP | 3. Intl. debt securities of gov. to GDP |
| 4. Insurance premiums, life and non-life to GDP | 4. Total debt securities of fin corps to GDP |
| - | 5. Total debt securities of non-fin. corps to GDP |

***Table 2***. Components of FMD and FID, source: Zvirydzenka (2016)

### *The ILO's Trade Union Density dataset*

The ILO depicts the number of employed union members as a percentage of the total employed workforce in a country. Unlike other datasets publicly available for researchers, this one covers a wider range of countries, 139 in total from 2000-2020. Given this paper's interest in investigating the decline in labour share globally, the availability of international trade union data is good news. However, what this dataset offers in country range, it lacks in time-period and observations. This dataset on trade union density published by the ILO is infamously imbalanced. This paper resorts to interpolating the missing observations, discussed in further detail in section 4.4.

***The KOF Globalisation index***

In the context of globalisation, the KOF index has offered a seminal contribution. It accounts not only for the monetary aspect of globalisation, but also reports its social effects. Explicitly speaking, the dataset is divided into *de facto* and *de jure* measures of trade globalisation, financial globalisation, interpersonal globalisation, informational globalisation, cultural globalisation, and political globalisation.

De facto measures are better capable at conveying certain observed trends reflected from the data. De jure measures, on the other hand, evaluate the relevant legislation and policies which may contribute to the variation in the data. Foreign direct investment, for example, is a de facto measure of financial globalisation. Capital account openness however is a de jure measure of financial globalisation. This paper borrows the economic globalisation index (KOFEcGI), which is composed of the de facto measures, and de jure measures outlined below.

| **KOFEcGIdf** | **KOFEcGIdj** |
|---|---|
| 1. Foreign direct investment | 1. Investment restrictions |
| 2. Portfolio investment | 2. Capital account openness |
| 3. International debt | 3. international investment agreements |
| 4. International reserves | 4. Trade regulations |
| 5. International income payments | 5. Trade taxes |
| 6. Trade in goods | 6. Tariffs |
| 7. Trade in services | 7. Trade agreements |
| 8. Trade partner diversity | |

**Table 3.** Source: KOF

The KOF index has proven itself invaluable to the research on globalisation. From the literature reviewed in this paper, the two papers, Young et al. (2018) and Özdemir (2019) use the index for their empirical study of the phenomenon.

### *The Penn World Table (PWT) v. 10.01*

The PWT covers a total time-period from 1950-2019 for 183 countries. Of all the variables it covers, this study borrows its measures of labour share, human capital, population, internal rate of return, and real national total factor production. The study by Young (2018), which studies the effects of globalisation, uses the labour share data from the PWT. There is not much to add here other than that the PWT is widely-used and the developing team frequently publishes updated versions with continued improvements. The version of the PWT used in this study accounts for a newer method of measuring the labour share first introduced in v.8.00. The data now allows for factor substitution elasticity to differ across countries (i.e. between panels) and over time (i.e. within panels) (Feenstra et al, 2015).

### *The WIPO dataset*

Finally, the WIPO panel offers data on the total number of patents granted across 193 countries between the years 1990 and 2019. Given that this study explores both higher and lower income economies, this dataset is not strongly balanced due to the difficulty in gathering patent data in countries where intellectual property rights are not firmly institutionalised. However, the imbalance does not justify an interpolation of the missing values.

## 3.2 Section Summary

Section 3 gives the reader preliminary information on the datasets borrowed for this study. The final merged dataset is not balanced, primarily due to attritions in the data on trade unions and patents granted. This paper is ambitious in its goal of exploring the labour share-financialisation relationship past only OECD countries, so the challenges posed by imbalanced data were foreseen. If this study is replicated in the future, it should be done so with a better measure for labour market institutions, as the one used in this paper severely lacks observations. In the meantime, there is no cause to worry. Measures are taken to compensate for this imbalance in the data, like interpolating the missing values and, as explained further in section 4.3, the imbalanced data panels are removed from the model altogether to showcase that the obtained results are robust to a change in sample size.

# 4. Methodology

## 4.1 About panel data estimators

The two most common estimators for TSCS data are the fixed effects (FE) and random effects (RE) estimators. As previously stated, a major challenge with panel data estimators comes with the individual-specific characteristics they bring along with them. Giving these characteristics a formal definition; they are the time-invariant features unique to each entity in a dataset. They are unobservable, and while they remain constant over time for any given entity, they very well may differ across entities. A helpful analogy to illustrate this would be if one country in the panel is primarily agrarian, while another is export-led. The panel assumes that these characteristics do not change for the duration of the time-period, but the problem here is figuring out a way to logically control for these country-specific features into our model for each entity. These country-specific, time-invariant features are better known as *heterogeneity*, and it is of paramount importance to understand how different panel estimators account for it (Stock and Watson, 2007).

***Fixed effects estimators***

The fixed effects model addresses this heterogeneity by assuming that it is a non-random, time-invariant feature unique to each panel. By virtue of this, the heterogeneity is captured by the intercept coefficient ($\beta_{0i}$). The intercept coefficients for each panel are also known as *fixed effects*, in the estimator's namesake, because of the fundamental assumption that these individual-specific features are fixed,or remain constant throughout time for each individual. Now, if this is the assumption then it follows that as long as the

intercept term remains in the model, the regressors will be systematically correlated with the heterogeneity captured by the intercept term, and thus the system will be endogenously defined leading to biased and inconsistent results. To remedy this problem, the FE estimator executes what is called the *within group transformation*, which involves subtracting the observations of each variable from its mean. Because the coefficient is constant and does not vary over time, it gets dropped when the model is de-meaned, omitting the threat of endogeneity posed by the intercept.

$$\begin{gathered} y_{it} = \beta_{0_i} + \beta_1 x_{1_{it}} + \beta_2 x_{2it} + \cdots + e_{it} \\ -(\bar{y}_{it} = \beta_{0_i} + \beta_1 \bar{x}_{1it} + \beta_2 \bar{x}_{2it} + \cdots + \bar{e}_i) \\ \hline \tilde{y}_{it} = \beta_1 \tilde{x}_{1it} + \beta_2 \tilde{x}_{2it} + \cdots + \tilde{e}_i \end{gathered}$$

***Equation 1.****Within-group transformation. The differenced result is the fixed effects model*

### *Random effects estimators*

The random effects model is similar in that it also assumes that the panel-specific heterogeneity is captured by the intercept coefficient, however it postulates that this heterogeneity is the product of a randomly realised process. Thus, this heterogeneity is treated like a random variable with its own independent and identical distribution, understood by the RE estimator as a 'random error component'. The random effects estimator is also known as the *error components* model because it assumes that within the residual there are two distinct error components: one error pertaining to the model estimation itself, and another representing entity-specific heterogeneity. It is important to note that because the error component which captures heterogeneity is assumed to be randomly realised, the RE estimator therefore also assumes that the unobservable heterogeneity is strictly exogenous and shares no correlation with the regressors. This is

a wishful postulation nevertheless and whether it holds must be tested through a Hausman test, proposed in Hausman (1978).

In contrast to the FE estimator, the RE model is written as:

$$y_{it} = \dot{\beta}_0 + \beta_1 x_{1it} + \beta_2 x_{2it} + \cdots + (u_i + e_{it})$$

***Equation 2.*** *Random effects model.* $\dot{\beta}_0$ *depicts the intercept term devoid of any captured heterogeneity.* $(u_i + e_{it})$ *are the two error components*

***Panel-corrected standard errors and feasible generalised least squares***

The pivotal work by Beck and Katz (1995) has been cited multiple times in this paper, but why it is so pivotal has not been discussed yet. The authors begin by refuting the common estimation technique outlined in Parks (1967), which they prove through Monte Carlo experiments that it produces consistently incorrect results from understated errors. The method first described in Parks is based on the generalized least squares (GLS) assumptions which Beck and Katz (1995) rightfully claim are rarely ever fulfilled in TSCS data. Feasible generalised least squares (FGLS) is a more practical application of the GLS estimator since it does not make such strict assumptions regarding the error process. Where GLS is rigid, FGLS allows for errors that are heteroskedastic, and serially correlated.

The main contributions Beck and Katz (1995) offer is in their development of an estimation technique which accounts for cross-section dependence in addition to heteroskedasticity and serial correlation. Contemporaneous correlation has far more threatening implications to a model than heteroskedasticity or serial correlation so it is important to undergo the appropriate diagnostics. The authors develop so-called 'panel-corrected standard errors" (PCSE) which are robust to heteroskedasticity, autocorrelation,

and cross-section dependence. The PCSE estimator went on to be known for its reliable performance under the undesirable conditions of panel data.

## 4.2 Estimated model specification

***Model 1***, *uses de facto measures for globalisation*

$$labsh_{it} = \beta_{0i} + \beta_1 FMD_{it} + \beta_2 FID_{it} + \beta_3 KOFEcGIdf_{it} + \beta_4 TUDrate_{it} + \beta_5 PatentsGranted_{it} + \beta_6 HumanCapital_{it} + \beta_7 InternalRateReturn_{it} + \beta_8 TotalFactorProductivity_{it} + e_{it}$$

***Model 2***, *uses de jure measures for globalisation*

$$labsh_{it} = \beta_{0i} + \beta_1 FMD_{it} + \beta_2 FID_{it} + \beta_3 KOFEcGIdj_{it} + \beta_4 TUDrate_{it} + \beta_5 PatentsGranted_{it} + \beta_6 HumanCapital_{it} + \beta_7 InternalRateReturn_{it} + \beta_8 TotalFactorProductivity_{it} + e_{it}$$

These two models are in-line with the theoretical specifications outlined in Dünhaupt (2016), Köhler et al (2018), and Özdemir (2019). The common proxies for financialisation in the literature on its effect financialisation on the labour share are stock market capitalisation and debt to GDP, which both the financial markets depth (FMD) and financial institutions depth (FID) indices capture, amongst other variables never before specific in previous studies (like pension funds to GDP and the total debt payments of non-financial corporations to GDP).

The KOF economic globalisation index (KOFEcGI) captures foreign direct investment, capital account openness, and trade openness more broadly. The index also accounts for other variables, but it is worth noting that it is these three mentioned which reoccurs in the literature.

The trade union density rate (TUDrate) is included to control for the influence labour market institutions exerts on the labour share. Due to lack of available data, only one measure of labour market institutions is used. Besides labour market institutions, human capital is controlled for because it too influences the labour share, and the literature on this is lively. Human capital is also a clever way to control for the institutional differences between the developed and developing countries in the panel.

The inclusion of total factor productivity is commonplace amongst previous studies, the conventional purpose of it is to reflect the effects of technological progress and the variations in production processes that remain unexplained by increases in labour and fixed capital. What is not mainstream in the literature is the additional inclusion of patents data to further proxy for innovation and technological progress.

Finally, the internal rate of return (IRR) is used in place of real GDP, which is more commonly found in the literature. This is for one reason: the IRR reflects the financial returns for firms from investing in either human labour or capital stock. Since this is a labour share model, depending on the IRR's coefficient, the implications on the capital-labour substitution elasticity is quite simple to infer: if IRR is negative on the labour share, then it is only rational to deduce that capital is favoured over labour, meaning that the two are substitutable. If IRR exerts a positive influence on the labour share, this may imply that either labour is preferred to capital, or that the two are complementary.

Informed by the literature, three hypotheses are formed:

***H1*:** An increase in shareholder value orientation will cause an increase in stock market capitalisation and in the total debt of non-financial corporations[8] (both captured by the variable FMD), exerting a negative influence on the labour share.

***H2***: An increase in shareholder value orientation will increase capital-labour elasticity, making the two highly substitutable. Therefore, the internal rate of return will exert a negative effect on the labour share.

***H3***: An increase in capital account openness and portfolio investment (both captured by the variable KOFEcGI) will cause a decrease in the labour share.

## 4.3 Estimation method

**Addressing the imbalanced data**

Regarding the irregular attritions found in the trade union density datasets, I interpolate the missing values to obtain a suitable 20-year time-period from 2000-2020. Interpolating the values still does not remedy the missing observations during the 1990's, nor does it remedy the omitted observations for countries included in this study but for which no union density data was collected. Interpolating the missing values leaves the panel still moderately imbalanced at best, so I address this issue by estimating the two models twice, once with and once without the variables *TUDrate_ip* and *Tot_Pat_Grant*. I show that the results are consistent and unaffected.

[8] This is because under shareholder value orientation, firms issue stock buybacks and increase dividend pay-outs even if it requires accruing debt to do so.

**Estimating using fixed and random effects**

I begin by checking if the models suffer any multicollinearity problems. In the presence of multicollinearity, it is not the results themselves which necessarily suffer a bias but their standard errors. It would thus be difficult to know with certainty whether results are statistically significant or if they suffer inflated errors. Using the variance inflation factor (*vif*) postestimation, the mean *vif* is 2.14. By convention, values starting from 4 merit investigation. Next, I estimate the two models using a fixed effects estimator with robust standard errors.

To test for non-constant variance in the error terms, a modified Wald test for groupwise heteroskedasticity is executed and suggest the presence of heteroskedasticity. As for cross-section dependence, I could not run the tests proposed by Friedman (1937), Frees (1995; 2004), and Pesaran (2004) as outlined in Hoyos and Sarafidis (2006) due to the lack of sufficient joint observations (i.e. imbalanced data). I could, however, execute the test identified in Pesaran (2015), as it checks the residuals for weak cross-section dependence. This test uses all available observations, and therefore supports imbalanced panels. The null hypothesis of the test is that there is weak cross-section dependence, which means that the correlation between the residuals at each time-period converges to zero as the number of cross-sections increase. The alternative hypothesis to this is that the correlation converges to a constant term, signalling the presence of strong dependence. The results of the test suggests the rejection of the null hypothesis, and thus cross-section dependence is detected. Lastly, I execute two tests for autocorrelation: a modified Bhargava et al. (1982) Durbin-Watson statistic, and the Wooldridge (2002) test. I could not execute the Baltagi-Wu (1999) test as in Özdemir's (2019) methodology because the statistical program used does not compute a table of

critical values to infer significance, but Baltagi and Wu (1999) do indeed derive a table in their paper but it is not applicable in the case of this dataset. Nevertheless, serial correlation is detected.

This is where I modify the fixed effects specification and append the Driscoll-Kaay (1998) standard errors to the fixed effects estimates. The Driscoll-Kaay method, to remind the reader, addresses for heteroskedasticity, autocorrelation up to some lag, and cross-section dependence. The method is robust to broad forms of correlation between panels when the time-period is large.

Next, I estimate the models using random effects. A Breusch-Pagan Lagrange Multiplier test for random effects is executed, as identified in Breusch and Pagan (1980). The results conclude that the random effects are significant (ruling out any prospect of pooling the data). The Wooldridge test still implies the presence of autocorrelation. A Hausman test is executed for both models, and in both cases the difference in coefficient estimates are found to be systematic. This means that the coefficients measured by the random effects model are systematically different from those measured by the fixed effects, implying that endogeneity is at play. For reference, table C1 in the appendices presents the results of these fixed and random effects estimations.

**My verdict is that neither the fixed effects nor the random effects estimators are preferrable in our case.** It is true, the fixed effects model with Driscoll-Kaay corrections does address the issues of heteroskedasticity, autocorrelation, and to a general degree, cross-section dependence, but at the cost of omitting the country-specific heterogeneity altogether. On the other hand, the random effects method retains this heterogeneity, but the Hausman test suggests that this retention most likely introduces

endogeneity to the system making the results inconsistent. In addition to that, the random effects estimation is not fortified at all to the symptomatic issues that arise from the detected heteroskedasticity, autocorrelation, and cross-section dependence. Therefore, I decide to re-estimate the two models using the FGLS and PCSE estimation techniques which are better equipped to deal with these issues.

**Estimating using FGLS and PCSE**

I estimate the two models using FGLS. Due to the imbalanced structure of the dataset, the FGLS method can only account for heteroskedasticity and autocorrelation, not cross-sectional correlation. Had the dataset been balanced, the FGLS method would be capable of being robust to all three issues. Nevertheless, I specify the FGLS regression inclusive of heteroskedasticity and autocorrelation.

As for the PCSE estimation, the statistical program by default assumes that the panels are contemporaneously-correlated and heteroskedastic, so I further specify the need to accommodate for the presence of autocorrelation as well. Finally, I test for unit root to be in accordance with the literature. I could not execute the Levin-Lin-Chu (2002) test due to imbalanced data, so I resort to the Im-Pesaran-Shin (2003) test. The results infer stationarity for most variables, so I decide not to re-estimate in first differences.

The final preferred models showcased in section 5 are the ones estimated using FGLS and PCSE. I display both because key findings were not affected by the method of estimation.

## 4.5 Section summary

To lessen the biases imposed by the imbalanced dataset, I do two things: 1) I interpolate the missing observations of TUDrate, and 2) I regress both models twice wherein I omit the problematic variables in one of them to see whether the results are sensitive to the number of observations in the sample.

Then, I begin by estimating the models using the fixed effects estimator with Driscoll-Kaay standard errors, and the random effects estimator. Due to the detected presence of heteroskedasticity, cross-sectional correlation, and autocorrelation, I conclude that the use of the FGLS and PCSE estimators will yield more consistent, less biased results due to their robustness to all three issues.

# 5. Empirical results and discussion

## 5.1 Descriptive statistics

**Table 3:** Descriptive panel-specific statistics

| Variable | Obs. | Mean | Std. Dev. | Min. | Max. | Source |
|---|---|---|---|---|---|---|
| labsh | 3869 | .514 | .121 | .15 | .903 | PWT v.10.01 |
| FMD | 5696 | .177 | .248 | 0 | 1 | IMF |
| FID | 5696 | .225 | .243 | 0 | 1 | IMF |
| KOFEcGIdf | 5492 | 55.246 | 17.414 | 8.094 | 98.848 | KOF |
| KOFEcGIdj | 5310 | 51.616 | 20.176 | 11.634 | 96.717 | KOF |
| TUDrate_ip^ | 1525 | 23.727 | 17.403 | .2 | 93.34 | ILO |
| Tot_Pat_Grant^^ | 3187 | 154.688 | 390.481 | .005 | 3592.914 | WIPO |
| hc | 4200 | 2.395 | .697 | 1.03 | 4.352 | PWT v.10.01 |
| irr | 3869 | .114 | .075 | .01 | 1.091 | PWT v.10.01 |
| rtfpna | 3334 | .988 | .209 | .202 | 2.308 | PWT v.10.01 |

^_ip stands for interpolated. See section 4.4
^^ The variable is measured in millions, and is divided by population in millions (from the PWT)
***labsh*** is the share of labour compensation; ***FMD*** is financial markets depth; ***FID*** is financial institutions depth; ***KOFEcGIdf*** is the economic globalization index, de facto; ***KOFEcGIdj*** is the economic globalization index, de jure; ***TUDrate_ip*** is the trade union density rate with interpolated values; ***Tot_Pat_Grant*** is the total number of patents granted in a country; ***hc*** is human capital based on years of schooling and returns to education; ***irr*** is the internal rate of return; ***rtfpna*** is total factor productivity at constant national prices

There are no time-invariant variables, attested by the fact that all values of standard deviation are non-zero. This justifies having tested the viability of the fixed effects estimator in the first place, which de-means the observations. In the fully-specified model where all variables are included, the sample is composed of 92 countries from 1990-2020, using 1,204 observations. As for the model which does not specify TUDrate_ip and Tot_Pat_Grant, the sample size cover 112 countries using 3,304 observations.

.

## 5.2 Results and discussion

**Table 4.** FGLS and PCSE estimations, de facto measures

| | FGLS1df | FGLS2df | PCSE1df | PCSE2df |
|---|---|---|---|---|
| | b/se | b/se | b/se | b/se |
| **FMD** | **-0.0092*** | **-0.0210***** | **-0.0243*** | **-0.0452***** |
| | (0.0044) | (0.0039) | (0.0103) | (0.0085) |
| **FID** | **0.0732***** | **0.0671***** | **0.0958***** | **0.1128***** |
| | (0.0068) | (0.0067) | (0.0142) | (0.0131) |
| **KOFEcGIdf** | **-0.0004***** | **-0.0005***** | **-0.0002** | **-0.0005***** |
| | (0.0001) | (0.0001) | (0.0002) | (0.0001) |
| **TUDrate_ip** | **0.0003*** | | **0.0003** | |
| | (0.0001) | | (0.0002) | |
| **Tot_Pat_Grant** | **0.0000**** | | **0.0000*** | |
| | (0.0000) | | (0.0000) | |
| **hc** | **-0.0145***** | **0.0069**** | **-0.0337***** | **0.0084** |
| | (0.0026) | (0.0026) | (0.0066) | (0.0071) |
| **irr** | **-0.9931***** | **-0.4057***** | **-0.9912***** | **-0.2362***** |
| | (0.0263) | (0.0151) | (0.0914) | (0.0305) |
| **rtfpna** | **-0.0065** | **-0.0051** | **-0.0067** | **-0.0575***** |
| | (0.0110) | (0.0060) | (0.0525) | (0.0114) |
| _cons | 0.6764*** | 0.5660*** | 0.7170*** | 0.5817*** |
| | (0.0115) | (0.0082) | (0.0514) | (0.0229) |
| **N** | **1198.00** | **3334.00** | **1198.00** | **3334.00** |
| **df_m** | • | • | 8.000 | 6.000 |
| **rmse** | • | • | 0.0152 | 0.0206 |
| **r2** | • | • | 0.9771 | 0.9009 |

**Table 5.** FGLS and PCSE estimations, de jure measures

| | FGLS1dj b/se | FGLS2dj b/se | PCSE1dj b/se | PCSE2dj b/se |
|---|---|---|---|---|
| **FMD** | **-0.0127**** | **-0.0251***** | **-0.0304**** | **-0.0449***** |
| | (0.0043) | (0.0039) | (0.0097) | (0.0081) |
| **FID** | **0.0694***** | **0.0638***** | **0.0838***** | **0.0953***** |
| | (0.0065) | (0.0066) | (0.0111) | (0.0131) |
| **KOFEcGIdj** | **0.0003***** | **-0.0001*** | **0.0006**** | **-0.0000** |
| | (0.0001) | (0.0001) | (0.0002) | (0.0001) |
| **TUDrate_ip** | **0.0002*** | | **0.0002** | |
| | (0.0001) | | (0.0002) | |
| **Tot_Pat_Grant** | **0.0000**** | | **0.0000*** | |
| | (0.0000) | | (0.0000) | |
| **hc** | **-0.0201***** | **0.0081**** | **-0.0415***** | **0.0033** |
| | (0.0027) | (0.0026) | (0.0083) | (0.0077) |
| **irr** | **-0.9726***** | **-0.3972***** | **-0.9993***** | **-0.2153***** |
| | (0.0261) | (0.0153) | (0.0937) | (0.0299) |
| **rtfpna** | **-0.0171** | **-0.0112** | **-0.0089** | **-0.0587***** |
| | (0.0110) | (0.0060) | (0.0500) | (0.0115) |
| _cons | 0.6636*** | 0.5498*** | 0.6968*** | 0.5769*** |
| | (0.0107) | (0.0078) | (0.0485) | (0.0226) |
| **N** | **1198.00** | **3334.00** | **1204.00** | **3334.00** |
| **df_m** | • | • | 8.000 | 6.000 |
| **rmse** | • | • | 0.0152 | 0.0204 |
| **r2** | • | • | 0.9785 | 0.8947 |

Table 4 displays the FGLS and PCSE estimations using de facto measures of economic globalisation, whereas table 5 displays the FGLS and PCSE estimations using de jure measures of economic globalisation. The incomplete specification (where TUDrate and Tot_Pat_Grant are omitted) of both models are displayed primarily to show the robustness of the results despite a change in sample size.

The first thing to note is the consistent significance of the financial variables, FMD and FID. The negativity of the FMD variable conforms to *H1*[9], which is that increased shareholder value orientation has averse effects on the labour share. The PCSE specification estimates this effect at a stronger magnitude, and it is even stronger with the absence of labour market institutions and granted patents. Nevertheless, the variable is always negative and significant. Not only can this be explained through shareholder value orientation, but also through the Kaleckian price mark-up theory introduced by Kalecki (1969). The monopolistic tendencies that arise in financialised economies lead to firms maintaining higher prices in the stock market, and thus a higher profit share. This negativity in the FMD variable may also reflect the Kaleckian approach detailed in Lazonick and O'Sullivan (2000), which is that firms mark-up prices due to raised overheads, and thus real wage decreases.

The coefficient estimates on the FID variable were not in-line with expectations given that they are consistently positive and significant. The magnitude of this effect is most strong under the incomplete PCSE specification. The positivity of the sign however might be explained in the variable's capturing of

[9] That increase in stock market capitalisation and the total debt of non-financial corporations have negative effects on the labour share, due to shareholder value orientation.

private-sector credit to GDP. Since the data panel consists of both developed and developing countries, the unexpected positive effect maybe because developing countries, where the labour share is lower overall, also tend to have lower private credit to GDP ratios. Conversely, developed countries which experience higher labour shares also have higher private-sector credit to GDP ratios. The results displayed in table 5 are also positive and significant.

On the one hand, the globalisation variable is in agreement with *H3*[10]. The coefficient estimates on the de facto measures of economic globalisation are consistently negative and significant, as expected. This reflects the idea that the increased portfolio investment and foreign direct investment captured by *KOFEcGIdf* cause downward pressure on the labour share as economic rentiers claim increasingly more profits from their investments. On the other hand, economic globalisation as understood through de jure measures is found to have a positive and significant effect on the labour share (except in the incomplete FGLS specification). This is against expectations because capital account openness, included in this variable, is theorised to have a negative effect as informed by the reviewed literature. In every case where the estimate is significant the magnitude is miniscule. Nevertheless, a possible explanation behind the positivity of its effect might be because the de jure measure of economic globalisation also captures trade regulations, trade taxes, and investment restrictions. In which case, the results are in-line with what one would expect from placing such constraints on profit-seekers, since they increase labour's bargaining

[10] That capital account openness and portfolio investment are inversely proportional to the labour share.

power vis-a-vis capital. To arrive at a conclusive statement regarding the relationship between capital account openness and the labour share, it may be best regressed on its own apart from any index.

It is most likely due to the imbalanced data that the effects of trade union density and patents are mostly miniscule, however they are positive and significant (except under the full PCSE specification) in both models. In case of more balanced data however, one should expect a stronger positive correlation between the labour share and labour market institutions, because with the increased bargaining power of workers through union density and collective bargaining coverage comes a greater compensation for labour. As for the positive patents coefficient, it can be argued that this positive effect is because stronger intellectual property rights nurture innovation and productivity gains. However, the case for patents is similar to that for R&D in that if they disproportionately encourage automation and monopolistic markets, which increases capital-labour substitution elasticity, thus eroding the bargaining power of workers.

The coefficients on total factor productivity are largely insignificant, but the estimated effect of internal rates of return is systematically negative and significant. The magnitude of its effect is relatively strong too, and this is in accordance with *H2*[11]. This trend can be explained by capital-labour substitution elasticity. Given the rise in shareholder value orientation and capital mobility, coupled with the erosion of labour market institutions, capital has become the more favourable investment and not labour. The negativity in the internal rate of return reflects the fact that firms globally are systematically choosing to invest more in capital and not in workers, thus decreasing the labour share. A similar explanation can be

[11] That due to shareholder value orientation, labour becomes substitutable for capital, and the returns on investment in human labour is negative.

drawn for the coefficients on human capital in both models, which are largely negative and significant (except under the incomplete FGLS specification). Though one would expect that human capital should be positively correlated to the labour share, there is a logical interpretation behind it being negative. It happens that countries with higher values of human capital, also seem to be the countries in which capital and labour have become highly substitutable. On the other hand of the same argument, lower-income countries with weaker human capital also happen to be the countries in which labour's bargaining power holds precedence over capital. Besides this however, there are multiple other reasons as to why the coefficient on human capital is negative. One example is the increasing cost of higher education in developed countries where the labour share is higher overall, hindering human capital development and the negative sign reflects this.

**5.3 Section Summary**

Overall, the effect of financial markets depth on the labour share has been consistently negative in both models. The positive effect exerted by the financial institutions depth variable is explained by the fact that countries with lower private-sector credit to GDP ratios also happen to be countries where the labour share is systematically lower. The hypotheses formulated in section 4.2 can be retained, with exception to *H2*. This hypothesis was formed on the basis of the capital mobility literature which suggests a negative relationship between capital account openness and the labour share, but my findings do not refute this. The study utilises the KOFEcGIdj index, which includes a measurement of capital account openness as well as several other variables. The positive sign on the de jure measure of economic globalisation is

explained through increased trade regulations, trade taxes, and restrictions on trade, all of which have positive implications on the labour share.

By displaying the incomplete specification where TUDrate_ip and Tot_Pat_Grant are omitted, it is evident that the results obtained by the FGLS and PCSE estimators are largely robust to the sample size and are not highly sensitive to the number of observations in the sample.

# 5. Conclusion

The findings of this paper conclude that the depth of financial markets negatively effects the labour share. The panel used in this study covers a wide range of countries within and without the OECD. Indeed, the theories which claim that shareholder value orientation has been a leading catalyst in the plummeting labour share since the 1980's have merit. Corporate governance is on the rise, favoring the interests of profit-seeking rentiers at the cost of labor and the institutions that regulate employment.

This paper did not find a negative relationship between capital account openness and the labor share. However, this may very well be due to the use of the KOF index for economic globalization which accounts for more than only capital mobility. It would be interesting to see a study which regresses using not only indices for globalization and financialization but also pairs them with stand-alone measures in the same regression. The literature is very helpful in identifying what these stand-alone variables are. Typically financialization is approximated using *stock market capitalisation*, and the *total debt to GDP ratio*. Globalisation is conventionally proxied for using *trade openness*, *financial liberalization*, *foreign direct investment*, and of course, *capital account openness*.

A major drawback has been the imbalanced dataset primarily introduced by the ILO's trade union density data. If this study is replicated, the use of multiple measures for labour market institutions is advised to obtain consistent results and to more precisely estimate the theorized positive effects of labour market institutions on the labour share. Nevertheless, this papers shows that the obtained results are robust to sample size.

# References


Aglietta M. (2000), 'Shareholder value and corporate governance: some tricky questions'. Economy and Society, pp. 146-159

Baker D., G. Epstein and R. Pollin (1998), 'Introduction', *Globalization and Progressive Economic Policy*, Cambridge: Cambridge University Press.

Baltagi, B. H., & Wu, P. X. (1999). 'Unequally Spaced Panel Data Regressions with AR(1) Disturbances'. Econometric Theory, pp. 814–823.

Beck, N., and Katz. J. N. (1995). 'What to do (and not to do) with Time-Series Cross-Section Data'. The American Political Science Review, pp. 634-647.

Boyer, R. (2000). Is a finance-led growth regime a viable alternative to Fordism? A preliminary analysis'. Economy and Society, 29(1), 111–145.

Chen, X., Lin S., and Reed W. R. (2006), 'ANOTHER LOOK AT WHAT TO DO WITH TIME-SERIES CROSS-SECTION DATA', Department of Economics, College of Business and Economics University of Canterbury, working paper no. 04.

Darcillon, T. (2015). 'How does finance affect labor market institutions? An empirical analysis in 16 OECD countries'. Socio-Economic Review, pp. 1–28.

Decreuse B., and Maarek P. (2015), 'FDI and the Labor Share in Developing Countries: A Theory and Some Evidence'. ANNALS OF ECONOMICS AND STATISTICS NUMBER, pp 289-319

Demir F. (2009), 'Financial liberalization, private investment and portfolio choice: Financialization of real sectors in emerging markets', Journal of Developmental Economics, pp. 314-324.

Demirgüc-Kunt A., and Levine R. (1999), 'Bank-Based and Market-Based Financial Systems: Cross-Country Comparisons'. Policy Research Working Paper, The World Bank

Driscoll J., and Kraay A. (1998), 'Consistent Covariance Matrix Estimation with Spatially Dependent Panel Data'. The Review of Economics and Statistics, pp. 549-560.

Dünhaupt P. (2017) 'Determinants of labour's income share in the era of financialisation'.Cambridge Journal of Economics, pp. 283-306

Elsby, M., Hobijn, B., Sahin, A., (2013), 'The Decline of the U.S. Labour Share'. Brookings Papers on Economic Activity.

Epstein G. (2002), 'Financialization, Rentier Interests, and Central Bank Policy'. Department of Economics and Political Economy Research Institute

Epstein G. (2005), 'Introduction: Financialisation and the world economy'. unpublished

Feenstra, R. C., Inklaar, R., and Timmer, M. P. (2015). 'The Next Generation of the Penn World Table'. American Economic Review, pp. 3150–3182.

*Froud J.*, *Haslam C.*, *Johal S.*, *and Williams K.* (*2000*), 'Shareholder value and financialization: consultancy promises, management moves'. *Economy and Society*, *pp. 80–110*

Guscina A. (2006), 'Effects of Globalization on Labor's Share in National Income'. IMF Working Paper

Gygli S., Haelg F., Potrafke N., and Sturm J. (2019): 'The KOF Globalisation Index Revisited'. Review of International Organizations, pp. 543-574

Gygli, S., Haelg, F., Potrafke, N., & Sturm, J.-E. (2019). The KOF Globalisation Index – revisited. The Review of International Organization, pp. 543–574.

Haan J., and Sturm J. (2016), 'Finance and Income Inequality: A Review and New Evidence', Centre for Economic Studies and ifo institution.

Halaby, C. N. (2004). 'Panel Models in Sociological Research: Theory into Practice'. Annual Review of Sociology, pp. 507-544.

Harrison A. (2005), 'Has Globalization Eroded Labor's Share? Some Cross-Country Evidence', Munich Personal PePEc Archive, paper no. 39649

Hausman, J. A. (1978). Specification Tests in Econometrics. Econometrica, pp. 1251-1271.

Hein, E. (2015). 'Finance-dominated capitalism and re-distribution of income: a Kaleckian perspective'. Cambridge Journal of Economics, pp. 907-934.

Hoyos, R. and Sarafidis V. (2006), 'Testing for cross-sectional dependence in panel-data models'. The Stata Journal, pp. 482–496.

Hugon P. (2011), Review of 'Les financiers détruiront-ils le capitalisme? Afrique contemporaine' by Boyer R., pp. 147-149

Hung, J. H., & Hammett, P. (2016). 'Globalization and the Labor Share in the United States'. Eastern Economic Journal, pp. 193-214

ILO (2008), 'Income Inequalities in the Age of Financial Globalization'. World of Work Report.

International Labour Organization (ILO). (2023). Trade Union Density Dataset.

Jayadev A., (2007), 'Capital account openness and the labour share of income'. Cambridge Journal of Economics pp. 423–443.

Kaldor, N. (1957). 'A Model of Economic Growth'. The Economic Journal, pp. 591-624. Published by Oxford University Press on behalf of the Royal Economic Society.

Kalecki M. (1954), 'Theory of Economic Dynamics An Essay on Cyclical and Long-Run Changes in Capitalist Economy', Routledge

Kalor, N. (1961). 'Chapter 10: CAPITAL ACCUMULATION AND ECONOMIC GROWTH', The Theory of Capital, International Economic Association.

Karabarbounis, L., and Neiman, B. (2014), 'The Global Decline in the Labour Share'. The Quarterly Journal of Economics, pp. 61-103.

Kheng, V., McKinley, J., and Pan, L. (2023). 'The decline of labor share in OECD and non-OECD since the 1980s'. Applied Economics, Routledge.

KOF Swiss Economic Institute. KOF Globalisation Index

Kohler, K., Guschanski, A., and Stockhammer, E. (2018). 'The impact of financialisation on the wage share: a theoretical clarification and empirical test', Post-Keynesian Economics Society, Working Paper No. 1802.

Krippner, G. (2005), 'The financialization of the American economy'. Socio-Economic Review, pp. 173–208

Lapavitsas C., and Soydan A. (2020), 'Financialisation in developing countries: approaches, concepts, and metrics'. SOAS Department of Economics.

Lazonick W., and O'Sullivan M. (2002), 'Maximizing Shareholder Value: A New Ideology for Corporate Governance'. *Economy and Society*, *pp. 13–35*

Levy-Orlik N., 'Financialization and Economic Growth in Developing Countries: The Case of the Mexican Economy'. International Journal of Political Economy. pp. 108-127

Mader P., Mertens D., van der Zwan N. (2019), 'Financialization: An Introduction'. *The Routledge International Handbook of Financialization*, pp. 1-16

Onaran, Ö., Stockhammer, E., & Grafl, L. (2011). 'Financialisation, income distribution and aggregate demand in the USA'. Cambridge Journal of Economics, pp. 637-661.

Orhangazi, Ö. (2008). 'Financialisation and capital accumulation in the non-financial corporate sector: A theoretical and empirical investigation on the US economy: 1973–2003'. Cambridge Journal of Economics, pp. 863-886.

Özdemir, O. (2019), 'Financialisation and the labour share of income'. Review of Economic Perspectives, pp. 265-306.

Parks, R. W. (1967). 'Efficient Estimation of a System of Regression Equations when Disturbances are Both Serially and Contemporaneously Correlated'. Journal of the American Statistical Association, pp. 500-509.

Pesaran, M. H. (2007). A Simple Panel Unit Root Test in the Presence of Cross-Section Dependence. Journal of Applied Econometrics, pp. 265-312.

Potrafke N. (2015), 'The Evidence on Globalisation'. The World Economy, pp. 509-552

Sjöberg, O. (2009). 'Corporate Governance and Earnings Inequality in the OECD Countries 1979–2000'. European Sociological Review, pp. 519-533

Smith, J. (2012). Review of 'Contingent Capital: Short-term Investors and the Evolution of Corporate Governance in France and Germany' by Michel Goyer. Administrative Science Quarterly, pp. 696-699.

Stockhammer E. (2004), 'Financialisation and the slowdown of accumulation', Cambridge Journal of Economics. pp. 719-741

Stockhammer, E. (2004). 'Financialisation and the slowdown of accumulation'. Cambridge Journal of Economics, pp. 719-741.

Svirydzenka, K. (2016), 'Introducing a New Broad-based Index of Financial Development', IMF Working Paper No. 16/5. Strategy, Policy, and Review Department, International Monetary Fund.

Tori. D., Onaran, Ö, (2017). 'The effects of financialisation and financial development on investment: Evidence from firm-level data in Europe'. Greenwich Papers in Political Economy, no. 44.

World Intellectual Property Organization (WIPO). WIPO patents dataset, retrieved from: https://www3.wipo.int/ipstats/ips-search/patent

Young A.T., and Tackett Y. Maria (2018), 'Globalization and the decline in labor shares: Exploring the relationship beyond trade and financial flows'. European Journal of Politial Economy, pp. 18-35.

# Appendices

## Appendix A

From Krippner (2005). The FIRE (finance, insurance, and real estate) industry is hegemonic by 2000 only when financial measures are used. Using real measures, Krippner argues, are not appropriate.


***Table A1.*** *Relative industry shares of current-dollar GDP in US. Source*: *Krippner* (*2005*).

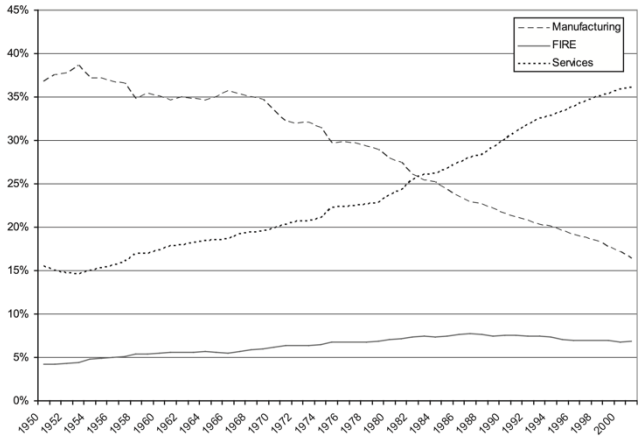


***Table A2****. Relative industry shares of employment in the US. Source*: *Krippner* (*2005*)


***Table A3.*** *Relative industry shares of corporate profits in US. Source*: *Krippner* (*2005*)

**Appendix B**

The PWT reflects the global labour share decline.

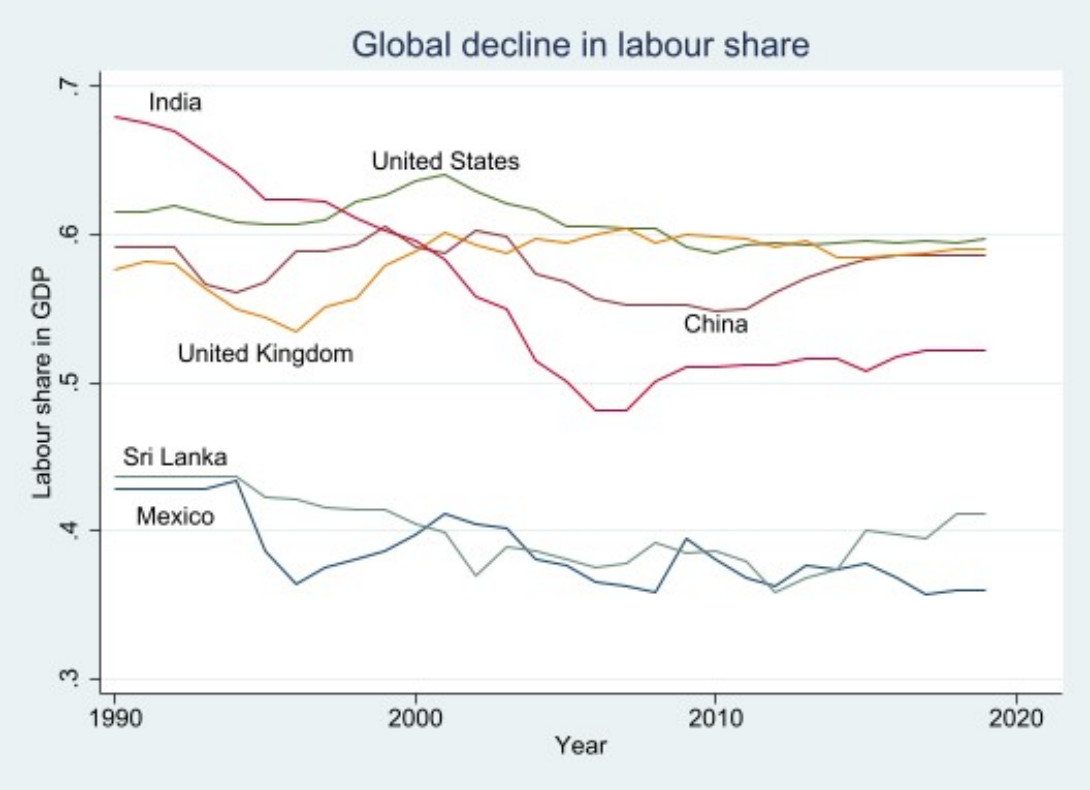


***Figure B1.*** *Source*: *PWT v.10.01*

**Appendix C**

**Table C1.** Labour share estimated using fixed effects with Driscoll-Kaay SE and random effects

| | FEdf_DK<br>b/se | FEdj_DK<br>b/se | REdf<br>b/se | REdj<br>b/se |
|---|---|---|---|---|
| **FMD** | **-0.0198*** | **-0.0553***** | **-0.0209*** | **-0.0491***** |
| | (0.0077) | (0.0098) | (0.0099) | (0.0100) |
| **FID** | **0.0752**** | **0.0620*** | **0.0833***** | **0.0685***** |
| | (0.0212) | (0.0260) | (0.0124) | (0.0131) |
| **KOFEcGIdf** | **-0.0019***** | | **-0.0017***** | |
| | (0.0004) | | (0.0002) | |
| **TUDrate_ip** | **-0.0001** | **0.0003** | **-0.0000** | **0.0003** |
| | (0.0002) | (0.0002) | (0.0002) | (0.0002) |
| **Tot_Pat_Grant** | **-0.0000*** | **-0.0000**** | **-0.0000** | **-0.0000** |
| | (0.0000) | (0.0000) | (0.0000) | (0.0000) |
| **hc** | **-0.0054** | **-0.0151** | **-0.0076** | **-0.0194***** |
| | (0.0060) | (0.0095) | (0.0052) | (0.0053) |
| **irr** | **-0.9010***** | **-0.9376***** | **-0.9148***** | **-0.9458***** |
| | (0.1173) | (0.1085) | (0.0402) | (0.0422) |
| **rtfpna** | **0.0999***** | **0.0889***** | **0.0936***** | **0.0820***** |
| | (0.0166) | (0.0140) | (0.0129) | (0.0135) |
| **KOFEcGIdj** | | **0.0002** | | **0.0002** |
| | | (0.0002) | | (0.0001) |
| _cons | 0.6434*** | 0.5650*** | 0.6352*** | 0.5768*** |
| | (0.0408) | (0.0460) | (0.0211) | (0.0217) |
| **N** | **1204.00** | **1204.00** | **1204.00** | **1204.00** |
| **df_m** | 8.000 | 8.000 | 8.000 | 8.000 |
| **rmse** | • | • | 0.0199 | 0.0209 |
| **r2** | • | • | • | • |
| **r2_w** | 0.3980 | 0.3305 | 0.3964 | 0.3296 |

**Table C2.** FGLS estimation

| | FGLS1df<br>b/se | FGLS2df<br>b/se | FGLS1dj<br>b/se | FGLS2dj<br>b/se |
|---|---|---|---|---|
| **FMD** | **-0.0092*** | **-0.0210***** | **-0.0127**** | **-0.0251***** |
| | (0.0044) | (0.0039) | (0.0043) | (0.0039) |
| **FID** | **0.0732***** | **0.0671***** | **0.0694***** | **0.0638***** |
| | (0.0068) | (0.0067) | (0.0065) | (0.0066) |
| **KOFEcGIdf** | **-0.0004***** | **-0.0005***** | | |
| | (0.0001) | (0.0001) | | |
| **TUDrate_ip** | **0.0003*** | | **0.0002*** | |
| | (0.0001) | | (0.0001) | |
| **Tot_Pat_Grant** | **0.0000**** | | **0.0000**** | |
| | (0.0000) | | (0.0000) | |
| **hc** | **-0.0145***** | **0.0069**** | **-0.0201***** | **0.0081**** |
| | (0.0026) | (0.0026) | (0.0027) | (0.0026) |
| **irr** | **-0.9931***** | **-0.4057***** | **-0.9726***** | **-0.3972***** |
| | (0.0263) | (0.0151) | (0.0261) | (0.0153) |
| **rtfpna** | **-0.0065** | **-0.0051** | **-0.0171** | **-0.0112** |
| | (0.0110) | (0.0060) | (0.0110) | (0.0060) |
| **KOFEcGIdj** | | | **0.0003***** | **-0.0001*** |
| | | | (0.0001) | (0.0001) |
| _cons | 0.6764*** | 0.5660*** | 0.6636*** | 0.5498*** |
| | (0.0115) | (0.0082) | (0.0107) | (0.0078) |

**Table C3.** PCSE estimations

| | PCSE1df | PCSE2df | PCSE1dj | PCSE2dj |
|---|---|---|---|---|
| | b/se | b/se | b/se | b/se |
| **FMD** | **-0.0243*** | **-0.0452***** | **-0.0304**** | **-0.0449***** |
| | (0.0103) | (0.0085) | (0.0097) | (0.0081) |
| **FID** | **0.0958***** | **0.1128***** | **0.0838***** | **0.0953***** |
| | (0.0142) | (0.0131) | (0.0111) | (0.0131) |
| **KOFEcGIdf** | **-0.0002** | **-0.0005***** | | |
| | (0.0002) | (0.0001) | | |
| **TUDrate_ip** | **0.0003** | | **0.0002** | |
| | (0.0002) | | (0.0002) | |
| **Tot_Pat_Grant** | **0.0000*** | | **0.0000*** | |
| | (0.0000) | | (0.0000) | |
| **hc** | **-0.0337***** | **0.0084** | **-0.0415***** | **0.0033** |
| | (0.0066) | (0.0071) | (0.0083) | (0.0077) |
| **irr** | **-0.9912***** | **-0.2362***** | **-0.9993***** | **-0.2153***** |
| | (0.0914) | (0.0305) | (0.0937) | (0.0299) |
| **rtfpna** | **-0.0067** | **-0.0575***** | **-0.0089** | **-0.0587***** |
| | (0.0525) | (0.0114) | (0.0500) | (0.0115) |
| **KOFEcGIdj** | | | **0.0006**** | **-0.0000** |
| | | | (0.0002) | (0.0001) |
| _cons | 0.7170*** | 0.5817*** | 0.6968*** | 0.5769*** |
| | (0.0514) | (0.0229) | (0.0485) | (0.0226) |