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RESEARCH ARTICLE

Market power and income disparities: How can firms influence the gap between capital and labor earnings

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Abstract

This paper investigates the effects of market power on income disparities when firm-specific parameters are considered to test how they shape the gap between capital and labor earnings through their pricing decisions. The dataset consists of 2895 UK manufacturing and services firms over 2010–2019. The results provide the following insights: (a) There is a strong positive association between market power and income disparities across the market, (b) liquidity constraints exert a positive effect on the asset-based disparities ratio, but a negative effect on the profit-based ratio. The robustness of the results is also checked when market-specific characteristics are included in the process.

KEYWORDS
firms, income disparities, liquidity constraints, markup ratio, panel data

JEL CLASSIFICATION
C23, D22, L11, L13, O14

1 | INTRODUCTION

There is a growing literature focusing on the entrepreneurial decisions of firms and the exploitation of their market power. It is expected that as consumption for certain commodities increases, firms will be able to exploit consumer surplus through higher markup ratios especially when demand with respect to the price level is inelastic. This outcome may provide market power to firms with access to credit or asymmetric information which may lead to market dominance in the long run and, thus, to a widening gap between capital and labor earnings (Ennis et al., 2019; Rotemberg & Saloner, 1986). For this reason, several empirical studies suggest that liquidity constraints may provide competitive advantage to some firms with higher access to credit by increasing their power and establishing their presence in the market through higher investment and short-run consumer-friendly strategies (Bernanke et al., 1996; Braun & Larrain, 2005; Badinger, 2007; Bellone et al., 2016).

As access to liquid funds may increase the power of some firms, the presence of income inequality may be significantly influenced by the dynamic process of demand and supply interactions. Ayres (2007) mentioned that income inequality and anticompetitive behavior have a positive relationship in many countries as firms can charge low markup ratios by reducing their labor compensation. This means that they may gain competitive advantage over normal periods by offsetting low selling prices with reduced wages, but, in the long run, they increase the price–cost margin without any significant improvements in labor compensation (Borjas & Ramey, 1994). Therefore, an increasing gap between capital and labor earnings may result from higher acquisition of market power and restrict competitive conduct in liquidity-constrained markets.

This paper investigates the effects of market power on the dynamics of income disparities when liquidity restrictions are considered. The main rationale of the underlying process lies on the assumption that as credit restrictions tend to increase, less liquidity-constrained firms will engage in price wars to force the weakest participants to exit the market, thus increasing their market share and the power of the incumbent firms (Rotemberg & Saloner, 1986). As firms may be able to subsidize the cost of lower markup ratios through lower wages, income disparities tend to get worse as income is transferred from consumers to producers (Botasso & Sembenelli, 2001; Busse, 2002; Chevalier & Scharfstein, 1995, 1996).

To this end, the empirical study consists of several manufacturing and services firms across the UK economy over 2010–2019 to investigate the effects of market power and liquidity restrictions on income disparities when certain control parameters are taken into consideration.[1,2] The contribution of the study lies on the fact that it considers a firm-level analysis to test this relationship by focusing on the importance of liquidity constraints and, whether, they exert a significant effect on income disparities. The findings attempt to investigate the results of several papers attempting to capture the dynamics of entrepreneurial decisions and their effect on the gap between capital and labor earnings (Alvarez, 2015; Ennis & Kim, 2017; Foellmi & Zweimüller, 2003; Furman & Orszag, 2018). Therefore, the main aim of this paper is to investigate the research questions raised by the current literature under the context of a firm-level analysis focusing on how liquidity con-

[1] The manufacturing and services industries have been selected in the current case study because their combined contribution to UK GDP per annum is 92% (Office for National Statistics, 2023).

[2] Many studies have found significant evidence of higher competitive conduct in the UK economy compared to other OECD markets as the average price-cost margin is relatively low and closer to the value of perfect competition (Görg & Warzynski, 2003, 2006; Christopoulou & Vermeulen, 2012; Afonso & Costa, 2013; Polemis & Fotis, 2016; Amountzias, 2018). This characteristic makes the UK economy an interesting case study, especially when many regions have been quite resilient to recessionary shocks compared to regions across the EU (Fingleton et al., 2012).

straints affect firms' decisions to exploit their power and shape the gap between labor and capital earnings.

This paper is organized as follows: Section 2 provides the theoretical and empirical literature on income inequality and market power; Section 3 presents the methodological approach and data collection; Section 4 discusses the empirical findings; and Section 5 offers a conclusion.

2 | LITERATURE REVIEW

One of the most crucial mechanisms that firms use to compete in markets is the price level of the final product. As consumers wish to minimize their spending, firms may try to charge a relatively lower price level than their competitors to attract more customers and increase their market share. Stigler (1964) and Green and Porter (1984) supported that firms may follow this strategy in normal periods where consumers have a higher purchasing power parity compared to downturns. This means that as consumers are willing and able to spend more for consumption, firms will attempt to reduce the price–cost margin significantly. Such strategies will result in price wars where consumer surplus exploitation is minimized as firms compete for market share.

Rotemberg and Saloner (1986) also argued that such behavior may be adopted by colluding oligopolies to minimize any breakup incentives by the participants when demand conditions are relatively high. On the other hand, if firms secure their market share, they can exploit consumer surplus over downturns by charging higher markup ratios, especially when the number of substitute products is quite limited. In that economic environment, firms will attempt to acquire profits to increase their liquidity and enhance their reserves so they can keep operating in the long run and obtain an advantage over their competitors.

Nicoletti and Scrapetta (2005, 2006) provided evidence that firms operating in less concentrated sectors tend to invest in technological advancements to improve the quality of their products, boost the efficiency of the production process, and, ultimately, expand their market share.[3] Furman and Orszag (2018) and Furman (2018) supported that market concentration is a significant contributor to rising income inequality as firms tend to exercise their power on the price level and, thus, increase their profits. Palley (2019) provided evidence that disparities between wages and profits tend to increase income inequality as the growth rate and capacity utilization of economies tend to fall. The only strategy to overcome this pattern is to increase the labor earnings-to-operating surplus ratio and boost productivity overall through motives and regulations promoting competition (Baker & Salop, 2015). Foellmi and Zweimüller (2003, 2004) highlighted the importance of increasing patterns of income inequality and how overpricing strategies force some consumers to reduce their quantity demanded for certain products. They mention that even if income inequality may boost growth rates in the short run due to higher profit shares, poor people will be excluded from certain markets as they will not be able to afford products with a high selling price level.

Leigh and Triggs (2016) commented on the importance of restricting consumer surplus exploitation as firms in concentrated markets exercise their power on the price level by increasing income inequality in the long run if left unchecked. They argue that competition must be boosted through various regulations that prevent incumbent firms from erecting barriers to entry or engaging in long-term price wars as a tool of market share expansion. Additional regulations should be focused

[3] Cavalleri et al. (2019) mention that firms in the Euro Area markets follow this strategy as they wish to increase their operational growth rates and expand their activities to international markets.

on laws protecting consumers from predatory prices or providing funding to liquidity-constrained firms to be able to cope up with their competitors. Such policies will significantly control the level of the markup ratio and, thus, the wage-to-profit ratio. Han and Pyun (2021) also supported that stricter labor protection laws tend to reduce the price–cost margin as extra profits from overpricing strategies tend to concentrate among the higher top-income earners. Markets with limited competition tend to be associated with rising income inequality as low-income households face a higher welfare loss compared to high-income households (Creedy & Dixon, 1998, 1999).

As competitive interactions may vary according to the state of the economy, an important determinant of income disparities corresponds to the level of available funding that firms have access to invest in the production process. Banerjee and Newman (1993) and Galor and Zeira (1993) argued that the significance of the financialization and inequality nexus is very important in many economies as more developed and resilient financial markets can reduce income inequality. For this reason, when firms face reduced barriers to credit acquisition, they can improve their reserve requirements in the securities markets and, thus, increase their production by investing and utilizing their resources to deliver the final product to consumers. Hamori and Hashiguchi (2012) also highlighted the importance of trade openness and international transactions; however, asymmetric effects on income disparities persist in some markets as firms may be able to use revenue obtained in international markets to fund their strategies and obtain a competitive advantage in domestic markets (Bellone et al., 2010).

Firms with liquidity constraints also face a significant effect on their pricing decisions that influence their presence in the market and, ultimately, their earnings. Chevalier and Scharfstein (1995, 1996) argued that liquidity-constrained firms tend to shape their pricing decisions according to the state of the economy. They intend to expand their market share in normal periods because they may not be able to compete equally with less liquidity-constrained firms, especially in downturns (Rotemberg & Saloner, 1986). This rationale supports the narrative presented by Campello (2003) under which firms relying on external financing may suspend their investment activities in the presence of negative demand shocks. Braun and Raddatz (2016) also argued that firms with higher liquidity-constraints operating in competitive markets tend to increase their markup ratios. This shows that in less concentrated markets, firms charge higher markups as they wish to boost their profitability but maintain their share over downturns. Therefore, more financially independent firms may attempt to subsidize any revenue loss with additional funding to force their liquidity-constrained competitors to exit the market.

Moreover, Campello et al. (2010) and Liu and Mello (2017) argued that limited funding opportunities may force firms to reduce the volume of capital and labor overall, thus reducing their supply. In presence of such investment cuts, liquidity-constrained firms will increase their price–cost margin to exploit surplus from their current customers and use that revenue to improve production. Alvarez (2015) also supported this outcome by highlighting the fact that as firms become more dependent on earnings through financial channels, they tend to reduce the wage share, thus reducing labor bargaining power. This means that as firms acquire credit through various financial intermediaries, they tend to shift their focus on profitability by resulting in increasing disparities between labor and capital earnings (Lin & Tomaskovic-Devey, 2013).[4]

Kazakis (2022) highlighted the fact that a major contributor to income disparities is the increasing growth rate of the top executive pay-to-employee salaries ratio. It is mentioned that the rate of increase of that gap is positively associated with increasing rates of market power. This means

[4] Some studies find that financial development may not always exert a direct effect on income inequality as various policies and benchmarks will provide mixed results (Kim & Lin, 2011; Park & Shin, 2017; Christopoulos & McAdam, 2017; Paramati & Nguyen, 2019).

that as firms exercise their power in markets, they enjoy higher profitability from which only a small percentage is distributed toward employees. To this end, oligopolies do not distort markets through their pricing decisions only but also through their distribution of their revenue, thus increasing within-firm inequality. Moreover, Blanchet and Toledano (2023) and Zwick (2023) argued that individuals with higher earnings tend to invest in bonds, stock, and property, through which they boost their income and wealth. This shows that many individuals may be excluded from such markets, and thus, they may be trapped in a low-wage spiral when capital owners continuously keep on increasing their earnings through dividends or any other financial activities.

The production decisions of firms are heavily influenced by their access to credit offered by financial institutions which can shape their strategies through the dynamics of the markup ratio. Consequently, the degree of competition in various markets shaped by credit accessibility significantly influences income disparities and, thus, the dynamics of demand and supply through pricing decisions.

3 | METHODOLOGY AND DATA COLLECTION

The objective of this study is to investigate how the degree of market power exercised by firms affects the gap between capital and labor earnings. The formulation of the markup ratio, which is one of the main parameters of interest in the model, utilizes the mechanics De Loecker and Warzynski (2012) according to which the production function is given by

$$Q(A,V,K) = AQ(V,K) \tag{1}$$

where $Q(.)$ is the production function, A is the Hicks-neutral productivity factor, V is a scalar vector including a set of variable inputs, and K is the capital stock. If it is assumed that the only source of entrepreneurs' income comes from profits, the function is captured by

$$\pi(Q) = P(Q)Q - P_V V - rK \tag{2}$$

where $P(.)$ is the inverse demand function, P_V is the price of variable input V, and r is the user cost of capital.[5] Moreover, N heterogeneous firms operate within an industry, and they have access to a common production technology captured by Equation (2). If the cost function of firms is considered, the Lagrangian objective function is given by

$$L(V,K,\lambda) = PVV + rK - \lambda[Q(A,V,K) - Q] \tag{3}$$

where λ is the Lagrange multiplier (LM), and Q is a scalar for the volume of production.

If Equation (3) is first order differentiated with respect to variable input V, it is obtained

$$\frac{\partial L}{\partial V} = P_V - \lambda\left(\frac{\partial Q(A,V,K)}{\partial V}\right) \tag{4}$$

[5] According to De Loecker and Eeckhout (2017), if input markets are perfectly competitive, the price of variable inputs and the user cost of capital are equal to marginal revenue. If, however, the market structure is imperfectly competitive, the selling price will be higher than the average cost of inputs, thus resulting in consumer surplus exploitation (De Loecker et al., 2016).

When this expression is multiplied by V_{it}/Q_{it} and rearranged, output elasticity with respect to variable input V is expressed as

$$\beta_V = \frac{\partial Q(A,V,K)}{\partial V}\frac{V}{Q} = \frac{1}{\lambda}\frac{P_V V}{Q} \tag{5}$$

Equation (5) captures the dynamics of the production process by including the share of input V in the final volume of production Q measured by λ which is the marginal cost of production. If P is the price of the final product, the ratio P/λ can be viewed as the price–cost margin.[6] To this end, the markup ratio is expressed as

$$\mu = \beta_V \frac{PQ}{P_V V} \tag{6}$$

The price–cost margin depends on the ratio of total revenue over the value of input V, multiplied by the elasticity of output with respect to the variable input. This means that the markup formulation provided by De Loecker and Warzynski (2012) takes into consideration both the revenue-to-variable cost ratio and the contribution of every variable input toward output.[7] As a result, this formulation does not require any additional information about the market demand function. If logarithms are added to Equation (1), it is transformed into a Cobb-Douglas production function of the following form:

$$q_{it} = a_{it} + \beta_v v_{it} + \beta_k k_{it} + u_{it} \tag{7}$$

where $i = 1, 2, \ldots, N$ and $t = 1, .., T$.

De Loecker and Eeckhout (2017) argued that Equation (7) must control for simultaneity and selection bias to obtain an unbiased output elasticity value with respect to variable inputs. This happens by taking into consideration Equation (6) to include the marginal cost parameter. If the unobserved productivity factor A also depends on the inputs used in the production process (Olley & Pakes, 1996), Equation (7) is transformed into

$$q_{it} = a_{it} + \beta_v v_{it} + \beta_k k_{it} + w_{it} + u_{it} = \psi_t(v_{it}, k_{it}) + u_{it} \tag{8}$$

where $w_{it} = w(v_{it}, k_{it})$ is the unobservable productivity term A. If it is assumed that it follows an $AR(1)$ process, the industry specific output elasticity is calculated by the moment condition:

$$E[w_{it}(\beta_v) v_{it-1}] = 0 \tag{9}$$

This formulation assumes that variable inputs are sensitive to productivity shocks at time t, especially when there is some form of serial correlation emerging between lagged values due to persisting shocks in the production process. To this end, the marginal product of variable input V

[6] If $P = \lambda$, the firm adopts a perfectly competitive conduct and thus, the markup ratio is equal to unity. In the case of imperfect competition, the price level exceeds the marginal cost of production, suggesting that overpricing decisions lead to supernormal profits.

[7] Bils et al. (2018) mention that intermediate inputs are very important in the formulation of any markup ratio as their exclusion may result in overestimated values.

is given by

$$P_{it,V} = \beta_v \frac{P_{it}Q_{it}}{V_{it}} \frac{1}{\mu_{it}} \tag{10}$$

The markup ratio is considered according to this rationale, and consequently, the empirical model is formulated based on the insights of Comanor and Smiley (1975) who argued that lack of competition in markets leaves consumers at a disadvantage as firms charge high markups. The explanatory variables of the model are categorized into three groups: The first group captures firms' market share and pricing decisions; the second group reflects their access to liquidity which can be used to fund the production process and their liabilities; and the third group includes the control variables of investment and profitability to check the robustness of the results. The studies of Braun and Raddatz (2016), and Han and Pyun (2021), Konings et al. (2005) are considered for the formulation of accurate and robust indicators to investigate how firms can affect income disparities across the UK markets. To this end, the functional equation of the model is given by

$$inq_{it} = b_0 + b_1\mu_{it} + b_2 cr_{it} + b_3 lc_{it} + b_4 dr_{it} + b_5 sl_{it} + b_6 inr_{it} + b_7 pr_{it} + u_{it} \tag{11}$$

where $i = 1, 2, \dots, N$ denotes the number of firms in the UK markets, $t = 2010, \dots, 2019$ is the number of years, and u_{it} is the error term. The dependent variable inq captures the gap between capital and labor earnings, μ is the markup ratio, cr is the concentration ratio in the UK markets, lc reflects firms' liquidity constraints, dr is an indicator of indebtedness, sl is a solvency ratio, inr is an investment ratio, and pr corresponds to a profitability indicator. All variables are expressed as logarithms.

The formulation of Equation (11) intends to capture the effects of market power and liquidity restrictions on income disparities.[8] As market power is usually associated with lower restrictions to available funding (Amountzias, 2019), less liquidity constrained firms may take advantage of their position in concentrated markets by increasing their profitability and, thus, income disparities. This means that firms with higher liquidity reserves may enjoy a competitive advantage in the market, and through their pricing decisions, they may increase their market share and, thus, their profits. If the gap between capital and labor earnings keeps on widening in the long run, such firms will dominate the market by acquiring monopoly power through overpricing strategies (Ayres, 2007). When such specific firm characteristics are taken into consideration, Equation (11) can be rewritten as

$$inq_{it} = f\left(\mu_{it}, dr_{it},\ sl_{it},\ inr_{it},\ pr_{it}, cr \times lc_{it}\right) \tag{11a}$$

$$inq_{it} = f\left(cr_{it}, \mu_{it}, dr_{it},\ inr_{it},\ pr_{it}, lc \times sl_{it}\right) \tag{11b}$$

[8] Firms that can exercise their power on the price level tend to charge higher markup ratios in normal periods, especially when demand is quite inelastic (Feenstra & Weinstein, 2010). This strategy ensures that they will exploit consumer surplus by minimizing any losses in market share. If they also face significant liquidity constraints, it is expected that their production decisions will be restricted, and they will be less competitive compared to firms with easier access to funding.

$$inq_{it} = f\left(cr_{it}, \mu_{it}, sl_{it}, \ inr_{it}, \ pr_{it}, lc \times dr_{it}\right) \tag{11c}$$

$$inq_{it} = f\left(\mu_{it}, lc_{it}, \ sl_{it}, \ inr_{it}, \ pr_{it}, cr \times dr_{it}\right) \tag{11d}$$

The dataset consists of 2895 UK manufacturing and services firms over 2010–2019 obtained by the Bureau van Dijk FAME and the World Bank databases.[9] Equations (11a)–(11d) follow the guidelines of Braund and Raddatz (2016) by incorporating the main rationale presented by Afonso and Costa (2013), Leigh and Triggs (2016), and Han and Pyun (2021) where competition and liquidity constraints are detrimental factors of income inequality.

The variable of income disparities reflects the gap between capital and labor earnings because, as firms increase their earnings, they might exercise their power on the final selling price and increase their profits (Leigh & Triggs, 2016). The main indicator of income disparities is tl expressed as the ratio of total assets over labor income. It reflects the valuation of a firm's total assets and compares it to the sum of wages and salaries. This is a robust indicator as the value of total assets is less sensitive to short-run fluctuations in the costs of production (Alvarez, 2015). Moreover, an additional indicator pl is considered expressed as the ratio of the sum of gross operating profit and labor income over labor income to check how profitability directly affects this ratio.[10,11]

The markup ratio is utilized according to the formulation of De Loecker and Warzynski (2012) reflecting the dynamics between operating revenue and the costs of production. Intermediate inputs and labor costs are the main variable inputs of the production function. Output is expressed as turnover; the value of intermediate inputs is measured by the cost of sales, and labor costs are captured by labor compensation. This approach is preferable compared to traditional approaches, such as the Lerner index, as it uses output elasticity with respect to production costs in the markup formulation.[12] To this end, the markup formulation used in this study is obtained by

$$\mu_{it} = \beta_v \frac{P_{it}Q_{it}}{\sum_j P_{it,Vj}V_{it,j}} \tag{12}$$

where β_v is the output elasticity of variable input V, $P_{it}Q_{it}$ is the revenue of firm i from selling the final product, and $\sum_j P_{it,Vj}V_{it,j}$ is the total variable cost of production. Equation (12) is estimated

[9] The dataset consists of firm-level balance sheets, profit and loss accounts and financial ratios of the UK manufacturing and services firms.

[10] One of the main weaknesses of the dataset is the lack of within-firm data that would capture the dynamics between different groups. The rate of income growth between employees, manager and CEOs would have been an exceptional indicator of income disparities; however, as there is lack of data, the best alternative is to employ the gap between capital and labor earnings (for more information, see Kazakis, 2022).

[11] Alternative indicators could be the top 1% and 5% shares of the income distribution (Atkinson & Morelli, 2015, Atkinson and Jenkins, 2020). However, given that this study is focused on a firm-level analysis, the firm-valuation measures-to-labor income ratios are more accurate as the main interest lies on the gap between the earnings of capital owners and workers.

[12] Alternative techniques for estimating the price-cost margin have been presented by Hall (1988) and Roeger (1995). However, De Loecker and Warzynski (2012) argue that when the growth rates of value added and production costs are used instead of variables in levels, the markup ratio may be underestimated because it focuses on first order differences.

by using the two-stage approach according to Ackerberg et al. (2015) and provides the final value of the price–cost margin as presented by De Loecker and Eeckhout (2017).[13]

The concentration ratio is calculated by dividing operating revenue obtained by firm i to the total value of a specified market. It reflects the share of revenue firms enjoy compared to the whole market, and it is expected that higher concentration ratios may significantly affect income disparities (Furman, 2018; Furman & Orszag, 2018). Various market concentration indicators have been employed by several studies (Amountzias, 2018; Ariga et al., 2019; Mishra & Mishra, 2008), and they seem to be robust as tools of interpreting pricing strategies.[14,15]

The indicator of liquidity constraints is formulated according to the insights of Braun and Raddatz (2016) for each firm i under which liquidity constraints are expressed by proxies of financial development and liquidity needs. Financial development is captured by the ratio of current liabilities-to-current liquid assets, showing that higher net liabilities will force firms to demand more liquidity. This indicator of financial development focuses on the firm-level, and it does not make any assumptions about the industry or the aggregate economy.[16]

The liquidity needs proxy corresponds to the cash conversion cycle presented by Raddatz (2006) and reflects the average time firms need to acquire revenue to finance their production process. It measures the time needed between the moment a firm purchases its intermediate inputs and the moment it is paid for selling the final product (Richards & Laughlin, 1980). Therefore, it depicts firms' funding availability and how they are affected by any gaps between giving and receiving cash throughout the course of their operational activities. The cash conversion cycle indicator is obtained as follows:

$$CCC = \frac{inventory \times 365}{cost\ of\ sales} + \frac{account\ receivables \times 365}{operating\ revenue} - \frac{account\ payables \times 365}{cost\ of\ sales} \tag{13}$$

The remaining variables depicting financial conditions are the indicators of indebtedness and solvency. The ratio of short-term debt to operating revenue is used as a proxy of indebtedness because it is expected that firms with higher debt ratios may attempt to expand their market share and increase their revenue in the long run. An indicator of firm solvency is also considered expressed by the ratio of net operating surplus after tax over total debt liabilities.[17] Finally, the control variables of investment and profitability are used as a tool of improving the robustness of the final estimates. The ratio of investment-to-operating revenue shows the dynamics of investment according to firms' earnings and whether innovation is a crucial determinant of the production process. Operating earnings before interest, taxes, depreciation, and amortization

[13] In the first stage, a translog production function with scalar Hicks-neutral productivity is assumed through which the elasticity values are obtained. In the second stage, the values of the production function are substituted in Equation (10) to acquire the markup ratios.

[14] Additional indicators of market concentration are the concentration ratio of the four biggest firms in a market or the limited competition indicator formulated by the average value of the markup ratios across an industry (Braun & Raddatz, 2016).

[15] Concentration ratios using operating revenue as a key component are reliable proxies of competitive interactions within an industry because they capture a form of firm-heterogeneity according to sales (Newbery et al., 2004).

[16] Alternative indicators of liquidity constraints could be used, such as loan application rejections and perceived constraints; however, lack of data dictate the current indicator as the most accurate of firm-level decisions.

[17] This parameter complements the argument that corporate equity is a significant factor of income inequality, especially between income earners and capital owners (Gans et al., 2019).

TABLE 1 Descriptive statistics.

Variables	Observations	Mean	Std. Dev.	Min	Max
operating profit over labour compensation (*rl*)	28,940	1.83	1.05	−1.70	9.14
total assets over labour compensation (*tl*)	28,939	1.94	0.87	−4.71	8.02
markup (μ)	28,939	0.04	0.28	−4.83	4.42
concentration (*cr*)	28,938	−6.74	2.04	−14.86	−0.16
liquidity constraints (*lc*)	28,936	5.90	1.03	1.61	15.19
cash conversion cycle (*ccc*)	28,936	5.98	0.92	0.90	15.35
solvency ratio (*sl*)	27,795	3.57	0.73	−3.91	4.58
debt to revenue ratio (*dr*)	28,827	2.01	1.84	−9.41	11.17
investment to revenue ratio (*inr*)	26,136	−4.08	2.92	−14.03	6.59
profitability (*pr*)	28,935	8.06	1.97	0	16.95

Note: Data obtained by the *FAME* database.

(EBITDA) is used as a proxy of profitability to test whether more profitable firms tend to charge higher markup ratios in normal periods.

The descriptive statistics are presented in Table 1. As the dataset consists of firm level observations over 2010–2019, it is expected that cross section dependency will emerge across the sample. For this reason, the LM and scaled tests developed by Pesaran (2004) are employed to test whether the residual terms of the cross sections suffer from contemporaneous correlation.[18] Subsequently, the constituent panel series of the model must be tested for stationarity to identify the order of integration. The unit root tests presented by Im et al. (2003) and Pesaran (2007) will be employed to identify the order of integration of the panel series when cross section dependency is taken into consideration.[19]

The estimation technique employed in this study is the Common Correlated Effects (CCE) presented by Pesaran (2006). Similar to the cross section ADF approach, CCE estimates are obtained when they are augmented by the cross section average values of the manufacturing and services industries over 2010–2019. If those values are omitted, the final estimates will be inefficient as they will fail to capture the presence of cross section dependence (Phillips & Sul, 2003).[20] The fixed effects model is also used by adding firm and time specific effects in Equation (11) to check whether there will be any significant changes to the parameters of interest. Finally, the two-step system generalized method of moments (GMM) estimation technique (Arellano &

[18] The test uses the average value of all pair-wise correlation coefficients of the OLS residuals obtained by the ADF regression for all panel series in Equation (11). The null hypothesis suggests the absence of cross section dependency, meaning that a pooled least squares estimator will suffice, if no additional issues emerge in the dataset. The alternative hypothesis suggests the presence of contemporaneous correlation under which a fixed or random effects model must be estimated (Baltagi, 2008).

[19] The former test assumes the absence of contemporaneous correlation, and thus, it may not provide accurate results. For this reason, the latter test is also employed by using cross section ADF tests (CADF) where the initial ADF regression is augmented by the cross section average values of lagged levels and first order differences.

[20] This estimation technique also allows individual specific error terms to be heteroskedastic and serially correlated; however, it does not embody the presence of any correlation between the regressors and the error terms directly.

Bover, 1995; Hansen, 1982) is employed to check the robustness of the results in the presence of endogeneity.[21]

4 | RESULTS AND DISCUSSION

The empirical process is based on the dynamics and the formulation of the markup ratio to investigate the main research question on how pricing decisions influence income disparities. The UK economy is an unequal economy according to OECD standards both in terms of labor-capital earnings and of wage inequality (Bell & Van Reenen, 2010; Fräßdorf et al., 2011; Machin, 2011). According to Dorling (2015), income inequality in the UK has been increasing over the last decades as the gap between the earnings of the richest 1%, and the remaining households has been significantly widening.[22]

As the UK markets are on average more competitive compared to the EU markets (Amountzias, 2019), it is expected that price setting strategies are highly influenced by production decisions reflecting consumer demand (Kim & Moon, 2017).[23] Figure 1 captures the dynamics between the markup ratio and income disparities across the regions of the UK economy. Although the outcome is not always clear, it appears that the relationship between those indicators is positive in many regions.[24]

Figures 2 and 3 also show the relationship between the markup ratio and the income disparities indicators for each region across 2010–2019. A positive relationship persists between those measures for both the manufacturing and the services industries. For the manufacturing industry, the highest markup ratios are observed in the areas of Outer London and East England, whereas the highest values of income disparities appear in East England. For the services industry, the region with the highest markup ratios is East England, whereas the region with the highest income disparities indicators is South England. This shows that market characteristics in those regions are different compared to the rest of the United Kingdom as they are concentrated around certain values. However, it appears that the services industry tends to persistently charge higher markup ratios compared to the manufacturing industry as the values in the latter industry are scattered around the competitive markup value, whereas, in the former industry, markups appear to be higher for a longer time. To this end, it is expected that a significant relationship persists between those indicators across regions according to firm and market characteristics.

The first step of the estimation process employs Pesaran's (2004) LM and CD tests to investigate the presence of cross section dependence across the sample. Table 2 presents the results for

[21] The two-step system GMM estimator is preferred because it estimates the dynamic panel and the difference equations as a system, thus accounting for both time series and cross-sectional variations in the dataset (Blundell & Bond, 1998).

[22] Kufel (2016) supported that markup ratios are significantly influenced by various market factors such as market structure or competitive conduct. Therefore, if capital earnings represent the earnings of the richest 1%, overpricing decisions are strongly associated with the widening gap of income inequality.

[23] Moreover, markup ratios may vary according to market conditions and the degree of price stickiness due to endogenous price setting dynamics. This may increase the risk of financial assets and, thus, the dependence of firms on liquid funds (Bils et al., 2018). Medium and small sized firms are more prone to competitive interactions trying to increase their market share.

[24] Osharin et al. (2014) mentioned that any policy focusing on income redistribution affects competitive conduct significantly across many markets. This happens because as consumers earn more income, they tend to increase their consumption, and thus, firms are willing to engage in an all-out competition or even extended price wars to attract them and increase their market share.

FIGURE 1 Markup ratio and total assets-to-labor compensation ratio across the UK manufacturing and services industries. *Source*: Data obtained by *FAME* database. [Colour figure can be viewed at wileyonlinelibrary.com]

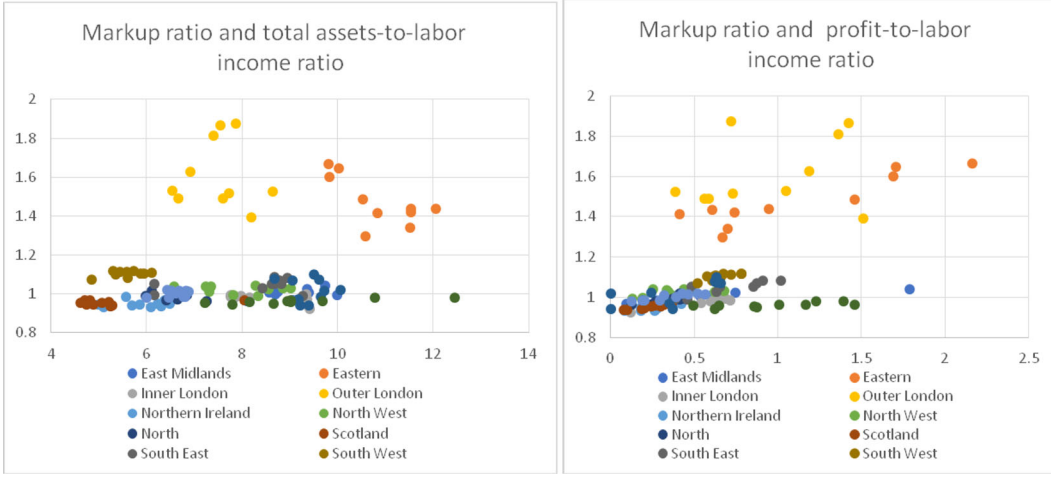

FIGURE 2 Markup and income disparities ratios across the UK manufacturing industry. *Source*: Data obtained by *FAME* database. [Colour figure can be viewed at wileyonlinelibrary.com]

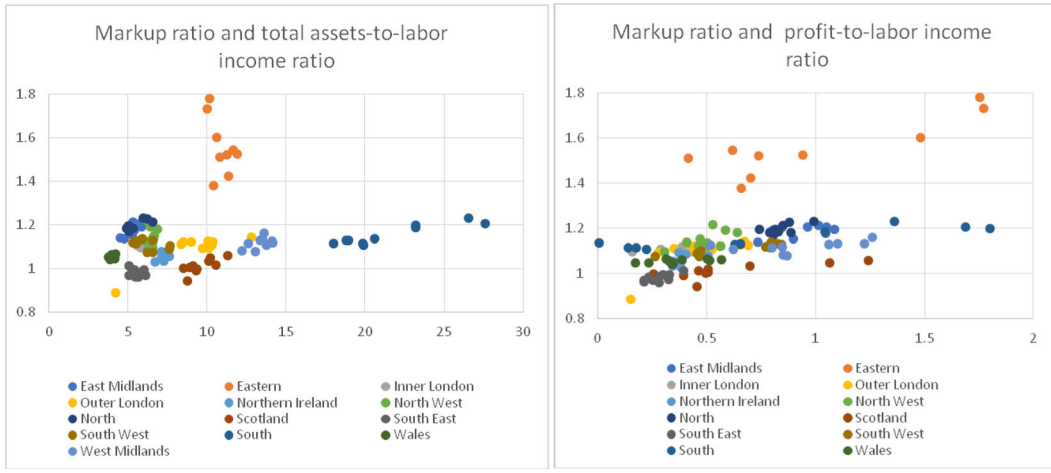

FIGURE 3 Markup and income disparities ratios across the UK services industry. *Source*: Data obtained by *FAME* database. [Colour figure can be viewed at wileyonlinelibrary.com]

TABLE 2 Pesaran's cross-section dependence tests.

Variables	Scaled LM test		CD test	
	1	2	1	2
operating profit over labour compensation (*rl*)	220.74**	268.78**	82.75**	104.52**
	[0.00]	[0.00]	[0.00]	[0.00]
total assets over labour compensation (*tl*)	203.51**	210.34**	13.36**	8.10**
	[0.00]	[0.00]	[0.00]	[0.00]
markup (μ)	226.08**	271.57**	19.88**	21.40**
	[0.00]	[0.00]	[0.00]	[0.00]
concentration (*cr*)	288.77**	293.69**	66.99**	72.25**
	[0.00]	[0.00]	[0.00]	[0.00]
liquidity constraints (*lc*)	258.33**	220.88**	22.27**	28.03**
	[0.00]	[0.00]	[0.00]	[0.00]
cash conversion cycle (*ccc*)	271.74**	219.94**	37.54**	36.91**
	[0.00]	[0.00]	[0.00]	[0.00]
solvency ratio (*sl*)	197.51**	225.70**	5.21**	3.69**
	[0.00]	[0.00]	[0.00]	[0.00]
debt to revenue ratio (*dr*)	226.20**	287.84**	17.74**	32.38**
	[0.00]	[0.00]	[0.00]	[0.00]
profitability (*pr*)	282.72**	265.01**	21.66**	37.58**
	[0.00]	[0.00]	[0.00]	[0.00]

Notes: The results are based on Pesaran's (2004) LM and CD tests. The null hypothesis reflects the absence of cross-sectional dependence in the series. Three models are estimated for each panel series including one and two lags respectively. The values in brackets are *p*-values. *Rejection of the null hypothesis at the 5% level of significance. **Rejection of the null hypothesis at the 1% level of significance.

TABLE 3 Panel unit root tests.

Variables	IPS	CIPS	CIPS*
pl	−40.71** [0.00]	−20.18** [0.00]	−47.31** [0.00]
tl	−18.04** [0.00]	−10.96** [0.00]	−14.80** [0.00]
μ	−22.49** [0.00]	−16.22** [0.00]	−23.49** [0.00]
cr	−9.53** [0.00]	−7.60** [0.00]	−8.25** [0.00]
lc	−28.58** [0.00]	−18.34** [0.00]	−29.49** [0.00]
ccc	−31.06** [0.00]	−13.74** [0.00]	−23.47** [0.00]
sl	−21.93** [0.00]	−22.38** [0.00]	−35.32** [0.00]
dr	−30.20** [0.00]	−20.36** [0.00]	−38.40** [0.00]
inr	−39.55** [0.00]	−18.27** [0.00]	−27.09** [0.00]
pr	−33.87** [0.00]	−16.30** [0.00]	−31.40** [0.00]

Notes: IPS is the Im et al. (2003), CIPS is the cross-section Im, Pesaran and Shin and CIPS* is the truncated cross-section Im, Pesaran and Shin unit root test (Pesaran, 2007). The values are *t*-statistic values. **Δ denotes first differences. The tests are conducted including an intercept only. Rejection of the null hypothesis suggests stationarity in at least one industry of the panel. The IPS results are reported at lag $k = 3$. The critical values for the CIPS test are −2.28 at 1% and −2.10 at 5% level of significance. **Rejection of the null hypothesis at the 1% level of significance.

TABLE 4a Long-run estimates for the manufacturing and services industry under the Common Correlated Effect (CCE) estimation technique.

Variables	*Total assets indicator*	*Operating profit indicator*
tl	1.00	–
pl	–	1.00
μ	0.104** (13.56)	0.514** (37.85)
cr	0.001 (0.74)	−0.034** (−16.19)
lc	0.011** (4.59)	−0.029** (−6.85)
dr	0.013** (10.32)	0.003 (1.94)
sl	0.006* (2.21)	0.023** (5.27)
inr	0.009** (12.46)	0.001 (0.53)
pr	0.003** (2.79)	0.088** (41.25)
Wald test	2818.59** [0.00]	1651.65** [0.00]
Observations	22,604	21,886

Notes: The results of the CCE are obtained by employing the common correlated effects technique proposed by Pesaran (2006). The numbers in parentheses are *t*-statistics. The numbers in brackets are *p*-values. *Rejection of the null hypothesis at the 5% level of significance. **Rejection of the null hypothesis at the 1% level of significance.

the panel series included in Equation (11), and they are found to be subject to contemporaneous correlation. Subsequently, the unit root tests developed by Im et al. (2003) and Pesaran (2007) are used to check the panel series' order of integration. The results are presented in Table 3, and they significantly reject the null hypothesis of unit roots in any of the panel series, suggesting the presence of a long-run relationship. Consequently, Equation (11) is estimated by employing the CCE estimation technique and the fixed effects model due to the presence of cross-section dependence.

Tables 4A, 4B, 4C, 5A, 5B and 5C present the long run estimates of Equation (11) for the UK manufacturing and the services firms of the sample. The estimation techniques correspond to the Common Correlated Effects (CCE) and Fixed Effects (FE). The results appear to be similar across

TABLE 4b Long-run estimates for the manufacturing industry under the Common Correlated Effect (CCE) estimation technique.

Variables	*Total assets indicator*	*Operating profit indicator*
tl	1.00	–
pl	–	1.00
μ	0.090** (4.87)	0.697** (23.16)
cr	0.001 (0.05)	−0.035** (−8.46)
lc	0.020** (3.73)	−0.068** (−8.19)
dr	0.013** (5.24)	0.010** (2.84)
sl	0.014** (2.65)	0.023** (3.00)
inr	0.009** (7.27)	0.003* (1.98)
pr	0.005* (2.07)	0.079** (20.25)
Wald test	5923.96** [0.00]	5872.65** [0.00]
Observations	5717	5549

Notes: The results of the CCE are obtained by employing the common correlated effects technique proposed by Pesaran (2006). The numbers in parentheses are *t*-statistics. The numbers in brackets are *p*-values. *Rejection of the null hypothesis at the 5% level of significance. **Rejection of the null hypothesis at the 1% level of significance.

TABLE 4c Long-run estimates for the services industry under the Common Correlated Effect (CCE) estimation technique.

Variables	*Total assets indicator*	*Operating profit indicator*
tl	1.00	–
pl	–	1.00
μ	0.107** (12.46)	0.474** (31.42)
cr	0.001 (0.48)	−0.038** (−13.90)
lc	0.010** (3.47)	−0.021** (−4.36)
dr	0.013** (8.81)	0.002 (1.03)
sl	0.004 (1.27)	0.019** (3.60)
inr	0.009** (10.29)	0.001 (1.16)
pr	0.008* (2.29)	0.209** (34.98)
Wald test	2172.25** [0.00]	1175.66** [0.00]
Observations	16,889	16,338

Notes: The results of the CCE are obtained by employing the common correlated effects technique proposed by Pesaran (2006). The numbers in parentheses are *t*-statistics. The numbers in brackets are *p*-values. *Rejection of the null hypothesis at the 5% level of significance. **Rejection of the null hypothesis at the 1% level of significance.

the industries, suggesting a coherent pattern of pricing strategies according to specific market characteristics. The markup ratio appears to exert a positive and significant effect on both indicators. Under both estimation techniques, the effect of the markup ratio appears to be more inelastic on the total assets-based ratio, equivalent to 0.1 and 0.59. On the other hand, the effect on the profit-based indicator is equivalent to 0.51 and 0.85, showing that operating profits are less rigid to changes in pricing decisions. This outcome suggests that as firms charge higher markup ratios, the gap between capital and labor earnings tends to increase as the growth rate of both operating profit and asset valuation exceeds the one of labor compensation. The results persist across both industries, thus supporting the findings of Han and Pyun (2021) on a firm-level that overpricing

TABLE 5a Long-run estimates for the manufacturing and services industry under the fixed effects model.

Variables	*Total assets indicator*	*Operating profit indicator*
tl	1.00	–
pl	–	1.00
μ	0.590** (7.73)	0.855** (17.55)
cr	−0.089** (−3.70)	−0.301** (−15.24)
lc	0.106** (6.52)	−0.148** (−12.23)
dr	0.042** (9.22)	0.022** (7.34)
sl	0.027* (2.12)	−0.037** (−5.33)
inr	0.044** (10.27)	0.001 (0.07)
pr	0.018** (3.68)	0.010** (2.99)
Hausman test	526.44** [0.00]	637.33** [0.00]
Wald test	125.02** [0.00]	157.09** [0.00]
Observations	25,084	24,954

Notes: The model is estimated using both firm and year fixed effects, along with clustered standard errors at the firm level. The Hausman test checks the null hypothesis of H_0 : random effects versus the alternative of H_1 : fixed effects in the model. The numbers in parentheses are *t*-statistics. The numbers in brackets are *p*-values. *Rejection of the null hypothesis at the 5% level of significance. **Rejection of the null hypothesis at the 1% level of significance.

TABLE 5b Long-run estimates for the manufacturing industry under the fixed effects model.

Variables	*Total assets indicator*	*Operating profit indicator*
tl	1.00	–
pl	–	1.00
μ	0.616** (3.86)	0.856** (8.43)
cr	−0.105* (−2.11)	−0.285** (−8.66)
lc	0.106** (3.22)	−0.100** (−4.95)
dr	0.045** (5.77)	0.022** (4.16)
sl	0.036 (1.79)	−0.024* (−2.41)
inr	0.052** (6.43)	0.001 (0.58)
pr	0.012 (1.19)	0.013* (2.01)
Hausman test	189.92** [0.00]	176.34** [0.00]
Wald test	88.15** [0.00]	145.78** [0.00]
Observations	6347	6122

Notes: The model is estimated using both firm and year fixed effects, along with clustered standard errors at the firm level. The Hausman test checks the null hypothesis of H_0 : random effects versus the alternative of H_1 : fixed effects in the model. The numbers in parentheses are *t*-statistics. The numbers in brackets are *p*-values. *Rejection of the null hypothesis at the 5% level of significance. **Rejection of the null hypothesis at the 1% level of significance.

decisions lead to higher income disparities. This means that as firms acquire market power, they can charge higher selling price levels, while keeping the cost of their inputs unchanged or by facing a smaller increase rate. To this end, they can exploit consumer surplus and use any additional profit to gain an advantage over their competitors in various markets (Ennis et al., 2019; Harrington & Skrzypacz, 2011).

On the contrary, the results obtained by the market concentration index in Equation (11) suggest that firms operating in concentrated markets tend to be more competitive by reducing the capital-to-labor earnings ratio. The results are significant for the operating profit-to-labor

TABLE 5c Long-run estimates for the services industry under the fixed effects model.

Variables	*Total assets indicator*	*Operating profit indicator*
tl	1.00	–
pl	–	1.00
μ	0.596** (7.24)	0.865** (16.51)
cr	−0.085** (−3.09)	−0.310** (−13.30)
lc	0.105** (5.67)	−0.157** (−11.43)
dr	0.041** (7.50)	0.022** (5.98)
sl	0.024 (1.50)	−0.039** (−4.53)
inr	0.041** (8.26)	−0.001 (−0.15)
pr	0.048** (3.56)	0.021* (2.20)
Hausman test	393.95** [0.00]	373.24** [0.00]
Wald test	133.60** [0.00]	158.77** [0.00]
Observations	18,739	18,513

Notes: The model is estimated using both firm and year fixed effects, along with clustered standard errors at the firm level. The Hausman test checks the null hypothesis of H_0 : random effects versus the alternative of H_1 : fixed effects in the model. The numbers in parentheses are *t*-statistics. The numbers in brackets are *p*-values. *Rejection of the null hypothesis at the 5% level of significance. **Rejection of the null hypothesis at the 1% level of significance.

compensation ratio and equivalent to −0.03 and −0.30, suggesting that firms intend to attract consumers through various strategies and secure their customer base (Görg & Warzynski, 2003, 2006). This outcome could be due to procompetitive policies introduced by the UK market authorities and an incentivized competitive conduct utilized by UK firms to increase their market share through consumer-friendly strategies.[25] Therefore, it can be concluded that firms charging high price–cost margins do not necessarily operate in highly concentrated industries.

Moreover, firms facing liquidity constraints struggle to obtain resources that can be used to fund their operational activities and the production process overall. The current indicator captures the short-term liquidity gap of firms when they have already paid for the production costs without receiving payment from sales yet, in conjunction with their liquidity ratio. The results show that when firms face higher liquidity constraints because of this mechanism, income disparities do not always increase. The value of their total assets tends to increase faster than labor income given that it is less sensitive to fluctuations in the costs of production as the coefficients are quite inelastic and equal to 0.01 and 0.10 (Adams et al., 2009; Alvarez, 2015).

On the other hand, the operating profit-to-labor income ratio seems to slowly fall as the effect of liquidity constraints is equal to −0.02 and −0.14 under both estimation techniques. This happens because as more funds are allocated towards the improvement of the production process, firms aim to increase their market share even if profits grow at a slower rate than their input costs. This means that firms are willing to focus on investment opportunities, such that their asset valuation will increase by ultimately leading to higher returns in the long run. This outcome complements the argument of Chiu (1998) who supports that liquidity constraints shape the dynamics of income inequality by significantly affecting human capital accumulation, investment decisions, and the performance of the economic system.

[25] The UK supermarket sector is an example of a concentrated market with highly competitive conduct (Amountzias, 2020).

The degree of firms' indebtedness is also a crucial parameter to the dynamics of the model as it is expected that liquidity constraints may also result from liabilities, thus necessitating the transfer of funds to creditors. The results depict a positive and inelastic effect toward income disparities, ranging between 0.01 and 0.04, suggesting that more indebted firms tend to increase the gap between capital and labor earnings. It is expected that liquid assets will be utilized to invest in activities that will provide higher long-run returns and improve their fundamental value so they can repay their liabilities.[26] Moreover, the solvency ratio expressed by firms' net operating surplus with respect to their debt captures their ability to fund their liabilities according to their earnings. It is found that more solvent firms tend to increase income disparities as they focus on their profitability and slow down the growth rate of labor compensation. Consequently, higher solvency ratios increase the growth rate of returns by a faster pace compared to the one of labor income.[27]

The control variables of investment and profitability also depict a positive effect on income disparities ranging between 0.01 and 0.08 for the aggregate industry. This outcome complements the main findings for the UK firms according to the dynamics of their markup ratios, as investment decisions shape the production process by aiming to boost returns in the long run. To this end, the two-step system GMM estimation technique is applied to check the robustness of the results and whether the presence of endogeneity may lead to a different outcome. As the solvency ratio is expressed by net operating surplus after taxes and the profitability proxy is given by EBITDA, it is expected that there may be correlation with the operating profit-to-labor income indicator. If there is bilateral correlation between the dependent variable and any of the regressors of the model, the problem of endogeneity arises. This means that the results obtained by the CCE estimator and the fixed effects model may not be consistent, and thus, the long run effects between the explanatory variables and the income disparities indicators may change.

The results obtained by the two-step system GMM estimation technique are presented in Table 6A–C for the UK manufacturing and services industries.[28] The estimates point to the same direction as the CCE and the FE model, thus confirming that any potential presence of endogeneity does not have a major effect on the final values of the model. The only notable difference between the estimators is the insignificant values obtained for the solvency ratio, but the remaining parameters are in accordance with the CCE and fixed effects estimates. To this end, higher markup ratios are associated with higher income disparities, and liquidity constraints tend to force firms to acquire additional funds through various investment opportunities to increase their returns in the long run.

According to Braun and Raddatz (2016), heterogeneity across firms is an important concept as it depends on the characteristics of firms according to the industry they operate within, their financial decisions, their competitive interactions, and any market factors influencing their decisions. For instance, liquidity constrained firms may face more difficulties when they operate in highly

[26] Lin and Tomaskovic-Devey (2013) also argued that firms with a high indebtedness ratio focus on acquiring more profits to improve their economic outlook, without considering the growth rate of labor income.

[27] Gans et al. (2019) argued that corporate equity indicators are quite significant in shaping the dynamics of income inequality because, as firms acquire more funds, they may exercise their power on the price level through higher markup ratios.

[28] According to Blundell and Bond (1998) and Alonso-Borrego and Arellano (1999), the two-step system GMM estimator accounts for cross-section variations. Given that the dataset consists of a small number of years and a high number of cross-sections, the system GMM estimator combines the regression in levels with the regression in the second step in first order differences and estimates them as a system.

TABLE 6a Long-run estimates for the manufacturing and services industry under the generalized method of moments (GMM) estimation technique.

Variables	*Total assets indicator*	*Operating profit indicator*
tl	1.00	–
pl	–	1.00
μ	0.288* (2.03)	1.437** (4.77)
cr	−0.231** (−3.28)	−0.137 (−1.66)
lc	0.012 (0.38)	−0.191** (−3.75)
dr	0.055** (5.21)	0.026** (3.71)
sl	0.001 (0.10)	−0.051 (−1.76)
inr	0.033** (4.49)	−0.005 (−1.34)
pr	0.166** (4.21)	0.127** (3.99)
Wald test	1544.51** [0.00]	557.08** [0.00]
Observations	22,604	21,886

Notes: The two-step system GMM estimator is obtained according to Arellano and Bover (1995). The instruments list in the GMM system consists of the lagged values of the endogenous explanatory variables using robust standard errors. The numbers in parentheses are *t*-statistics. The numbers in brackets are *p*-values. *Rejection of the null hypothesis at the 5% level of significance. **Rejection of the null hypothesis at the 1% level of significance.

TABLE 6b Long-run estimates for the manufacturing industry under the generalized method of moments (GMM) estimation technique.

Variables	*Total assets indicator*	*Operating profit indicator*
tl	1.00	–
pl	–	1.00
μ	−0.165 (−0.57)	2.089** (7.10)
cr	−0.318** (−3.67)	−0.048 (−0.47)
lc	0.004 (0.17)	0.174** (−3.62)
dr	0.074** (3.41)	0.029** (3.15)
sl	0.004 (0.11)	−0.015 (−0.47)
inr	0.028* (2.47)	−0.008 (−1.65)
pr	0.252** (4.39)	0.112** (2.38)
Wald test	483.66** [0.00]	186.10** [0.00]
Observations	5717	5549

Notes: The two-step system GMM estimator is obtained according to Arellano and Bover (1995). The instruments list in the GMM system consists of the lagged values of the endogenous explanatory variables using robust standard errors. The numbers in parentheses are *t*-statistics. The numbers in brackets are *p*-values. *Rejection of the null hypothesis at the 5% level of significance. **Rejection of the null hypothesis at the 1% level of significance.

competitive environments as their competitors attempt to increase their market share. This means that the probability of exiting the market is higher compared to a noncompetitive or stagnant environment when firms are used to a specific operating pattern.

To this end, Equations (11a)–(11d) capture specific heterogeneous effects in the estimation process and observe firm behavior and its effect on income disparities when certain conditions are met. Those conditions refer to firms with the following characteristics: liquidity constrained firms

TABLE 6c Long-run estimates for the services industry under the generalized method of moments (GMM) estimation technique.

Variables	*Total assets indicator*	*Operating profit indicator*
tl	1.00	–
pl	–	1.00
μ	0.400** (2.72)	1.118** (4.69)
cr	−0.191** (−2.64)	−0.201* (−1.96)
lc	0.011 (0.32)	−0.158** (−3.25)
dr	0.048** (4.18)	0.012 (1.36)
sl	−0.018 (−0.57)	−0.074 (−1.76)
inr	0.033** (3.87)	−0.007 (−1.25)
pr	0.330** (3.47)	0.344** (4.00)
Wald test	1481.1** [0.00]	346.4** [0.00]
Observations	16,888	16,338

Notes: The two-step system GMM estimator is obtained according to Arellano and Bover (1995). The instruments list in the GMM system consists of the lagged values of the endogenous explanatory variables using robust standard errors. The numbers in parentheses are *t*-statistics. The numbers in brackets are *p*-values. *Rejection of the null hypothesis at the 5% level of significance. **Rejection of the null hypothesis at the 1% level of significance.

operating in concentrated markets; solvent firms with significant liquidity constraints; firms with high indebtedness and significant liquidity constraints; and highly indebted firms operating in concentrated markets. The results are presented in Table 7A–C, and they seem to support the main findings of the model. The markup ratio exerts a positive effect on income disparities, whereas liquidity constraints are the main parameter considered for the investigation of the heterogeneous characteristics.

The first proxy considers the variable capturing the dynamics of liquidity constrained firms operating in concentrated markets. The results show that those firms tend to reduce income disparities as such constraints do not overrule the competitive conduct in concentrated sectors. This outcome is also supported when the dynamics of indebted firms operating in concentrated markets is considered. It can be argued that competitive interactions are quite intense across the UK manufacturing and services industries under which financial constraints do not necessarily lead to overpricing strategies.

Moreover, solvent firms facing significant liquidity constraints tend to increase income disparities. This happens because they face major restrictions in accessing liquid funds to cope up with competition especially when they operate in open markets (Athreye & Cantwell, 2007).[29] The same outcome is obtained when liquidity constrained firms with significant indebtedness are considered, supporting the main findings of Equation (11). This shows that the main concern of such firms is to generate revenue and thus, profit, to repay their liabilities without necessarily taking into consideration the growth rate of labor compensation. The two latter proxies have an insignificant effect on the profitability-based indicator of income disparities which may be due to its main weakness of omitting negative values when the logarithm formula is implemented across

[29] Bretschger and Hettich (2002) highlighted the importance of capital mobility as foreign direct investments (FDI) can significantly boost regional economic performance through spillovers and increase technological capabilities. However, it is likely that as such improvement in the production process is met by demand, additional earnings will mainly flow toward capital owners, thus increasing income inequality (Ezcurra & Rodriguez-Pose, 2013).

TABLE 7a Long-run estimates for the manufacturing and services industry.

Variables	*Total assets indicator*				*Operating profit indicator*			
tl	1.00	1.00	1.00	1.00	–	–	–	–
pl	–	–	–	–	1.00	1.00	1.00	1.00
μ	0.108**	0.110**	0.111**	0.102**	0.471**	0.478**	0.478**	0.543**
	(14.82)	(14.86)	(15.62)	(13.40)	(36.31)	(36.71)	(37.78)	(39.93)
cr	–	0.001	0.001	–	–	−0.032**	−0.031**	–
		(0.27)	(0.97)			(15.46)	(−14.97)	
lc	–	–	–	0.010**	–	–	–	−0.030**
				(4.03)				(−6.92)
dr	0.015**	0.015**	–	–	−0.006**	−0.006**	–	–
	(12.29)	(13.89)			(−3.44)	(−3.69)		
sl	0.003	–	0.005*	0.004	0.037**	–	0.032**	0.032**
	(1.33)		(1.97)	(1.48)	(8.51)		(7.42)	(7.29)
inr	0.009**	0.009**	0.009**	0.008**	−0.001	0.001	−0.001	0.001
	(12.30)	(12.65)	(12.42)	(12.16)	(−0.40)	(0.10)	(1.00)	(1.24)
pr	0.005**	0.003**	0.003**	0.005**	0.078**	0.087**	0.087**	0.070**
	(4.98)	(2.96)	(2.71)	(5.69)	(39.71)	(40.74)	(40.78)	(39.67)
$cr \times lc$	−0.001**	–	–	–	−0.001**	–	–	–
	(−3.42)				(−10.82)			
$lc \times sl$	–	0.001**	–	–	–	0.001	–	–
		(3.00)				(1.46)		
$lc \times dr$	–	–	0.001**	–	–	–	0.001	–
			(15.62)				(0.29)	
$cr \times dr$	–	–	–	−0.001**	–	–	–	−0.001**
				(−9.72)				(−7.13)
Wald test	28,778**	28,604**	28,677**	28,583**	28,371**	16,445**	16,461**	16,147**
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
Obs.	22,603	22,603	22,603	22,603	21,886	21,886	21,886	21,886

the sample. Overall, market power and liquidity constraints exert a significant effect on income disparities, showing that operational decisions across industries can shape income disparities and, possibly, the dynamics of several policy parameters.

5 | CONCLUSION AND POLICY IMPLICATIONS

The main scope of this study was to investigate the relationship between market power and income disparities when liquidity restrictions are considered along with specific market factors. The findings show a strong positive association between the markup ratio and the gap between capital and labor earnings across the UK manufacturing and services industries over 2010–2019. Liquidity constraints are found to exert a significant effect on income inequality subject to the formulation of capital earnings. Indebted firms tend to increase income disparities, whereas firms operating in concentrated sectors adopt a procompetitive conduct which has a less pronounced

TABLE 7b Long-run estimates for the manufacturing industry.

Variables	*Total assets indicator*				*Operating profit indicator*			
tl	1.00	1.00	1.00	1.00	–	–	–	–
pl	–	–	–	–	1.00	1.00	1.00	1.00
μ	0.097**	0.098**	0.103**	0.084**	0.644**	0.633**	0.634**	0.736**
	(5.37)	(5.40)	(5.75)	(4.65)	(21.69)	(21.39)	(21.69)	(24.63)
cr	–	−0.001	0.001	–	–	−0.033**	−0.031**	–
		(−0.29)	(0.05)			(−8.07)	(−7.51)	
lc	–	–	–	0.019**	–	–	–	−0.069**
				(3.56)				(−8.24)
dr	0.016**	0.016**	–	–	−0.008*	−0.010**	–	–
	(7.25)	(7.90)			(−2.49)	(−3.38)		
sl	0.009	–	0.013*	0.011*	0.047**	–	0.039**	0.033**
	(1.80)		(2.58)	(2.28)	(6.15)		(5.05)	(4.27)
inr	0.009**	0.009**	0.009**	0.009**	−0.003	−0.003	−0.004*	−0.002
	(7.12)	(7.30)	(7.19)	(7.24)	(−1.86)	(−1.63)	(−2.22)	(−1.54)
pr	0.008**	0.005*	0.005*	0.008**	0.065**	0.077**	0.076**	0.059**
	(3.83)	(2.28)	(2.25)	(4.14)	(18.19)	(19.58)	(19.50)	(20.50)
cr × *lc*	−0.001*	–	–	–	−0.001**	–	–	–
	(−2.52)				(−4.16)			
lc × *sl*	–	0.001**	–	–	–	−0.001	–	–
		(2.82)				(−0.39)		
lc × *dr*	–	–	0.001**	–	–	–	−0.001	–
			(9.98)				(−1.94)	
cr × *dr*	–	–	–	−0.001**	–	–	–	−0.001**
				(−5.15)				(−4.57)
Wald test	5914.6**	5913.8**	5944.4**	5922.0**	5606.6**	5683.6**	5710.1**	5731.9**
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
Obs.	5717	5717	5717	5717	5549	5549	5549	5549

effect on the gap between capital and labor earnings. The results are robust to alternative estimation techniques, and they are similar across both industries, thus reflecting a common strategic pattern in operational activities that exert the same effect on income disparities.

The findings of this paper complement the suggestions of several studies according to which market power is a significant contributor to rising income disparities (Ennis & Kim, 2017; Ennis et al., 2019; Han & Pyun, 2021). One of the main contributions of the current model is that it utilizes a dataset comprising of individual firms across the UK economy, according to which liquidity constraints significantly affect the dynamics of income disparities by providing an outcome based on the microeconomic level. The formulation of income disparities indicators is important as the proxy variables for capital earnings could depict various effects according to their nature and the time horizon of firm decisions. Liquidity constraints and the financial state of firms overall also contribute to increasing income disparities given that firms adopt profit-seeking strategies. To this end, when firms exercise their power on the price level, consumer surplus is exploited, and income is transferred between those two groups. On the other hand, the concentration ratio

TABLE 7c Long-run estimates for the services industry.

Variables	*Total assets indicator*				*Operating profit indicator*			
tl	1.00	1.00	1.00	1.00	–	–	–	–
pl	–	–	–	–	1.00	1.00	1.00	1.00
μ	0.109**	0.112**	0.113**	0.107**	0.441**	0.449**	0.449**	0.500**
	(13.47)	(13.61)	(14.27)	(12.53)	(30.60)	(31.05)	(31.98)	(32.94
cr	–	0.001	0.001	–	–	−0.037**	−0.035**	–
		(0.23)	(0.68)			(−13.73)	(−13.00)	
lc	–	–	–	0.008**	–	–	–	−0.020**
				(2.91)				(−4.18)
dr	0.014**	0.015**	–	–	−0.005**	−0.005**	–	–
	(9.84)	(11.73)			(−2.60)	(−2.60)		
sl	0.001	–	0.003	0.002	0.033**	–	0.027**	0.031**
	(0.56)		(1.08)	(0.67)	(6.41)		(5.11)	(5.34)
inr	0.008**	0.009**	0.009**	0.008**	0.001	0.001	−0.001	0.003*
	(10.05)	(10.50)	(10.27)	(9.90)	(0.55)	(0.75)	(−0.10)	(2.22)
pr	0.013**	0.005*	0.007*	0.013**	0.183**	0.208**	0.207**	0.164**
	(4.21)	(2.28)	(2.22)	(4.59)	(33.71)	(34.84)	(34.67)	(33.39)
$cr \times lc$	−0.001**	–	–	–	−0.001**	–	–	–
	(−3.18)				(−9.22)			
$lc \times sl$	–	0.008**	–	–	–	0.001	–	–
		(2.37)				(1.01)		
$lc \times dr$	–	–	0.001**	–	–	–	0.001	–
			(12.73)				(0.75)	
$cr \times dr$	–	–	–	−0.001**	–	–	–	−0.001**
				(−8.67)				(−5.29)
Wald test	22,067**	21,963**	22,022**	21,962**	11,579**	11,722**	11,710**	11,455**
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
Obs.	16,888	16,888	16,888	16,888	16,338	16,338	16,338	16,338

provided significant evidence that UK firms operating in concentrated markets tend to reduce income disparities. This means that higher market share does not always imply higher markup ratios as competitive conduct may be intense across firms to establish their presence and become the market's biggest players in the long run.

According to such results, policy makers must be seeking to reduce consumer surplus exploitation and particularly, income transfer from labor to capital earners. Several studies have argued in favor of a tax and transfer system as income inequality has adverse effects on economic prosperity and productivity (Berg et al., 2018; Galor & Loav, 2004). However, as the current model focuses on firm decisions, it is evident that antitrust policies and legislations should be implemented to tackle corporate abuses of market power, especially in markets with highly imperfect competitive conduct. In light that UK markets are competitive (Görg & Warzynski, 2003, 2006), such measures must be enforced appropriately, and if required, they must be modified and adjusted according to

the market characteristics of each sector.[30] This means that current policies must be redesigned to reflect the conditions of each sector separately and a vigorous enforcement of antitrust policies should promote competitive conduct in the markets.

Moreover, such policies must not introduce barriers to entry for new firms but instead, they should encourage entrepreneurs to start operating in a business environment without being constrained by anticompetitive conduct or the threat of a collusion. Any limits to the protection of intellectual property rights could be reconsider or redesigned if they do not provide incentives to new firms to innovate out of uncertainty about their investments and their long-run returns. Finally, as Han and Pyun (2021) argued, even if antitrust policies promote competitive conduct and increased production opportunities, sustainable growth cannot be achieved without policy makers shifting their attention to pro-labor policies, such as higher minimum wages and improved statutory protection.

Even though this study provides significant insights to the current literature, there are limitations that could be addressed in the future. The model could be extended to incorporate additional market and financial characteristics that could highlight firm heterogeneity. More detailed parameters depicting employment relations and the implementation of labor protection policies could be considered to test their effect on income inequality and how they influence firm-specific characteristics in the market by shaping the markup ratio. Therefore, the institutional quality of firms or the degree of bargaining power within industries could be considered alternatives to labor compensation that may provide a better understanding of the dynamics of income disparities.

CONFLICT OF INTEREST STATEMENT

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DATA AVAILABILITY STATEMENT

The dataset generated and analyzed during the current study is not publicly available as they were used under license by the Bureau van Dijk FAME database. Data are available from the author with the permission of Bureau van Dijk.

PERMISSION TO REPRODUCE MATERIAL FROM OTHER SOURCES

Only with permission of the Bureau van Dijk FAME.

AVAILABILITY OF DATA AND MATERIAL

The data that support the findings of this study are available from the Bureau van Dijk FAME database but restrictions apply to the availability of these data, which were used under license for the current study, and so are not publicly available. Instructions for how other researchers can obtain the data, and all the information needed to proceed from the raw data to the results of the

[30] Stiglitz (2017) argued that in the US markets, the increase of market power and markup ratios is the result of the evolution of the economy. However, many aggressive pricing strategies come from the failure of market authorities to efficiently supervise and regulate the US sectors.

paper (including code) are, however, available from the authors upon reasonable request and with permission of the Bureau van Dijk FAME.

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REFERENCES

Ackerberg, D. A., Caves, K., & Frazer, G. (2015). Identification properties of recent production function estimators. *Econometrica*, *83*(6), 2411–2451.

Adams, W., Einav, L., & Levin, J. (2009). Liquidity constraints and imperfect information in subprime lending. *American Economic Review*, *99*(1), 49–84.

Afonso, A., & Costa, L. F. (2013). Market power and fiscal policy in OECD countries. *Applied Economics*, *45*(32), 4545–4555.

Alonso-Borrego, C., & Arellano, M. (1999). Symmetrically normalized instrumental-variable estimation using panel data. *Journal of Business & Economic Statistics*, *17*(1), 36–49.

Alvarez, I. (2015). Financialization, non-financial corporations and income inequality: The case of France. *Socio-Economic Review*, *13*(3), 449–475.

Amountzias, C. (2018). The effects of competition, liquidity and exports on markups: Evidence from the UK food and beverages sector. *Journal of Industry, Competition and Trade*, *18*(2), 187–208.

Amountzias, C. (2019). Pricing decisions and competitive conduct across manufacturing sectors: Evidence from 19 European Union manufacturing industries. *Journal of Industry, Competition and Trade*, *19*(3), 413–440.

Amountzias, C. (2020). Pricing decisions, competition and liquidity constraints: Evidence from the UK wholesale and retail food, beverages and tobacco sector. *Journal of Economic Studies*, *47*(2), 366–385.

Arellano, M., & Bover, O. (1995). Another look at the instrumental variable estimation of error-components models. *Journal of Econometrics*, *68*(1), 29–51.

Ariga, J., Mabaya, E., Waithaka, M., & Wanzala-Mlobela, M. (2019). Can improved agricultural technologies spur a green revolution in Africa? A multicountry analysis of seed and fertilizer delivery systems. *Agricultural Economics*, *50*, 63–74.

Athreye, S., & Cantwell, J. (2007). Creating competition?: Globalisation and the emergence of new technology producers. *Research Policy*, *36*(2), 209–226.

Atkinson, A. B., & Jenkins, S. P. (2020). A different perspective on the evolution of UK income inequality. *Review of Income and Wealth*, *66*(2), 253–266.

Atkinson, A. B., & Morelli, S. (2015). Inequality and crises revisited. *Economia Politica*, *32*(1), 31–51.

Ayres, I. (2007). Market power and inequality: A competitive conduct standard for assessing when disparate impacts are unjustified. *California Law Review*, *95*, 669.

Baker, J. B., & Salop, S. C. (2015). Antitrust, competition policy, and inequality. *Georgetown Law Journal*, *104*, 1462.

Baltagi, B. (2008). *Econometric analysis of panel data*. John Wiley & Sons.

Banerjee, A. V., & Newman, A. F. (1993). Occupational choice and the process of development. *Journal of Political Economy*, *101*(2), 274–298.

Badinger, H. (2007). Market size, trade, competition and productivity: evidence from OECD manufacturing industries. *Applied Economics*, *39*(17), 2143–2157.

Bell, B., & Van Reenen, J. (2010). *Bankers' pay and extreme wage inequality in the UK (No. 28780)*. London School of Economics and Political Science, LSE Library.

Bellone, F., Musso, P., Nesta, L., & Schiavo, S. (2010). Financial constraints and firm export behaviour. *World Economy*, *33*(3), 347–373.

Bellone, F., Musso, P., Nesta, L., & Warzynski, F. (2016). International trade and firm-level markups when location and quality matter. *Journal of Economic Geography*, *16*(1), 67–91.

Berg, A., Ostry, J. D., Tsangarides, C. G., & Yakhshilikov, Y. (2018). Redistribution, inequality, and growth: New evidence. *Journal of Economic Growth*, *23*(3), 259–305.

Bernanke, B. S., Gertler, M., & Gilchrist, S. (1996). Liquidity effects, monetary policy and the business cycle. *Review of Economics and Statistics*, *78*, 1–15.

Bils, M., Klenow, P. J., & Malin, B. A. (2018). Resurrecting the role of the product market wedge in recessions. *American Economic Review*, *108*(4–5), 1118–1146.

Blanchet, T., & Martínez-Toledano, C. (2023). Wealth inequality dynamics in Europe and the United States: Understanding the determinants. *Journal of Monetary Economics*, *133*, 25–43.

Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, *87*(1), 115–143.

Borjas, G. J., & Ramey, V. A. (1994). Time-series evidence on the sources of trends in wage inequality. *The American Economic Review*, *84*(2), 10–16.

Bottasso, A., & Sembenelli, A. (2001). Market power, productivity and the EU single market program: Evidence from a panel of Italian firms. *European Economic Review*, *45*(1), 167–186.

Braun, M., & Larrain, B. (2005). Finance and the business cycle: International, inter-industry evidence. *The Journal of Finance*, *60*(3), 1097–1128.

Braun, M., & Raddatz, C. (2016). Liquidity constraints, competition, and markup cyclicality. *Financial Management*, *45*(3), 769–802.

Bretschger, L., & Hettich, F. (2002). Globalisation, capital mobility and tax competition: Theory and evidence for OECD countries. *European Journal of Political Economy*, *18*(4), 695–716.

Busse, M. (2002). Firm financial condition and airline price wars. *RAND Journal of Economics*, *33*(2), 298–318.

Campello, M. (2003). Capital structure and product markets interactions: Evidence from business cycles. *Journal of Financial Economics*, *68*, 353–378.

Campello, M., Graham, J. R., & Harvey, C. R. (2010). The real effects of financial constraints: Evidence from a financial crisis. *Journal of Financial Economics*, *97*(3), 470–487.

Cavalleri, M. C., Eliet, A., McAdam, P., Petroulakis, F., Soares, A. C., & Vansteenkiste, I. (2019). Concentration, market power and dynamism in the euro area (Working Paper No. 2253). ECB.

Chevalier, J. A., & Scharfstein, D. S. (1995). Liquidity constraints and the cyclical behavior of markups. *The American Economic Review*, *85*(2), 390–396.

Chevalier, J. A., & Scharfstein, D. S. (1996). Capital-market imperfections and countercyclical markups: Theory and evidence. *The American Economic Review*, *86*(4), 703–725.

Chiu, W. H. (1998). Income inequality, human capital accumulation and economic performance. *The Economic Journal*, *108*(446), 44–59.

Christopoulos, D., & McAdam, P. (2017). Do financial reforms help stabilize inequality? *Journal of International Money and Finance*, *70*, 45–61.

Christopoulou, R., & Vermeulen, P. (2012). Markups in the euro area and the US over the period 1981–2004: A comparison of 50 sectors. *Empirical Economics*, *42*(1), 53–77.

Comanor, W. S., & Smiley, R. H. (1975). Monopoly and the distribution of wealth. *The Quarterly Journal of Economics*, *89*(2), 177–194.

Creedy, J., & Dixon, R. (1998). The relative burden of monopoly on households with different incomes. *Economica*, *65*(258), 285–293.

Creedy, J., & Dixon, R. (1999). The distributional effects of monopoly. *Australian Economic Papers*, *38*(3), 223–237.

De Loecker, J., & Warzynski, F. (2012). Markups and firm-level export status. *American Economic Review*, *102*(6), 2437–2471.

De Loecker, J., & Eeckhout, J. (2017). The rise of market power and the macroeconomic implications [Report No. w23687]. National Bureau of Economic Research.

De Loecker, J., Goldberg, P. K., Khandelwal, A. K., & Pavcnik, N. (2016). Prices, markups, and trade reform. *Econometrica*, *84*(2), 445–510.

Dorling, D. (2015). *Injustice: Why social inequality still persists*. Policy Press.

Ennis, S. F., & Kim, Y. (2017). Market power and wealth distribution. In *A step ahead: Competition policy for shared prosperity and inclusive growth* (pp. 133–153). OCED.

Ennis, S. F., Gonzaga, P., & Pike, C. (2019). Inequality: A hidden cost of market power. *Oxford Review of Economic Policy*, *35*(3), 518–549.

Ezcurra, R., & Rodríguez-Pose, A. (2013). Political decentralization, economic growth and regional disparities in the OECD. *Regional Studies*, *47*(3), 388–401.

Feenstra, R. C., & Weinstein, D. E. (2010). Globalization, markups, and the US price level [Report No. w15749]. National Bureau of Economic Research.

Fingleton, B., Garretsen, H., & Martin, R. (2012). Recessionary shocks and regional employment: Evidence on the resilience of UK regions. *Journal of Regional Science*, *52*(1), 109–133.

Foellmi, R., & Zweimüller, J. (2003). Inequality and economic growth-European versus US experiences [Working Paper Series]. Institute for Empirical Research in Economics.

Foellmi, R., & Zweimüller, J. (2004). Inequality, market power, and product diversity. *Economics Letters*, *82*(1), 139–145.

Fräßdorf, A., Grabka, M. M., & Schwarze, J. (2011). The impact of household capital income on income inequality—A factor decomposition analysis for the UK, Germany and the USA. *The Journal of Economic Inequality*, *9*(1), 35–56.

Furman, J., & Orszag, P. (2018). A firm-level perspective on the role of rents in the rise in inequality. In *Toward a just society* (pp. 19–47). Columbia University Press.

Furman, J. (2018). Testimony to hearing on market concentration. In *Testimony before the Organisation For Economic Co-Operation And Development,(OECD), June, 7 2018* (pp. 550–563). OCED.

Galor, O., & Moav, O. (2004). From physical to human capital accumulation: Inequality and the process of development. *The Review of Economic Studies*, *71*(4), 1001–1026.

Galor, O., & Zeira, J. (1993). Income distribution and macroeconomics. *The Review of Economic Studies*, *60*(1), 35–52.

Gans, J., Leigh, A., Schmalz, M., & Triggs, A. (2019). Inequality and market concentration, when shareholding is more skewed than consumption. *Oxford Review of Economic Policy*, *35*(3), 550–563.

Görg, H., & Warzynski, F. (2003). Price cost margins and exporting behaviour: Evidence from firm level data [Report No. 365]. DIW Berlin, German Institute for Economic Research.

Görg, H., & Warzynski, F. (2006). The dynamics of price cost margins: Evidence from UK manufacturing. *Revue de l'OFCE*, *97*(5), 303–318.

Green, E. J., & Porter, R. H. (1984). Noncooperative collusion under imperfect price information. *Econometrica: Journal of the Econometric Society*, *52*(1), 87–100.

Hall, R. E. (1988). The relation between price and marginal cost in US industry. *Journal of Political Economy*, *96*(5), 921–947.

Hamori, S., & Hashiguchi, Y. (2012). The effect of financial deepening on inequality: Some international evidence. *Journal of Asian Economics*, *23*(4), 353–359.

Han, M., & Pyun, J. H. (2021). Markups and income inequality: Causal links, 1975–2011. *Journal of Comparative Economics*, *49*(2), 290–312.

Hansen, L. P. (1982). Large sample properties of generalized method of moments estimators. *Econometrica: Journal of the Econometric Society*, 50(4), 1029–1054.

Harrington, J. E., & Skrzypacz, A. (2011). Private monitoring and communication in cartels: Explaining recent collusive practices. *American Economic Review*, *101*(6), 2425–2449.

Im, K. S., Pesaran, M. H., & Shin, Y. (2003). Testing for unit roots in heterogeneous panels. *Journal of Econometrics*, *115*(1), 53–74.

Kazakis, P. (2022). Market power and within-firm inequality. SSRN.

Kim, D. H., & Lin, S. C. (2011). Nonlinearity in the financial development—Income inequality nexus. *Journal of Comparative Economics*, *39*(3), 310–325.

Kim, S. H., & Moon, S. (2017). A map of markups: Why we observe mixed behaviors of markups. *Journal of Economics & Management Strategy*, *26*(2), 529–553.

Konings, J., Van Cayseele, P., & Warzynski, F. (2005). The effects of privatization and competitive pressure on firms' price-cost margins: Micro evidence from emerging economies. *The Review of Economics and Statistics*, *87*(1), 124–134.

Kufel, J. (2016). Cyclicality of markups in the EU food industry and the Michał Kalecki theory. *Acta Scientiarum Polonorum. Oeconomia*, *15*(1), 51–63.

Leigh, A., & Triggs, A. (2016). Markets, monopolies and moguls: The relationship between inequality and competition. *Australian Economic Review*, *49*(4), 389–412.

Lin, K. H., & Tomaskovic-Devey, D. (2013). Financialization and US income inequality, 1970–2008. *American Journal of Sociology*, *118*(5), 1284–1329.

Liu, X., & Mello, A. S. (2017). The creditor channel of liquidity crises. *Journal of Money, Credit and Banking*, *49*(6), 1113–1160.

Machin, S. (2011). Changes in UK wage inequality over the last forty years. In *T*he labour market in winter-the state of working *Britain*. Oxford Academic, 155–169.
Mishra, S. S., & Mishra, P. P. (2008). Price determination for an EOQ model for deteriorating items under perfect competition. *Computers & Mathematics with Applications*, *56*(4), 1082–1101.
Newbery, D., Green, R., Neuhoff, K., & Twomey, P. (2004). A review of the monitoring of market power. ETSO. https://www.etso-net.org
Nicoletti, G., & Scarpetta, S. (2005). Product market reforms and employment in OECD countries [Report No. 472]. OECD Publishing.
Nicoletti, G., & Scarpetta, S. (2006). Regulation and economic performance: Product market reforms and productivity in the OECD. *Institutions, Development, and Economic Growth*, *13*, 81.
Office for National Statistics (ONS). (2023). ONS website, statistical bulletin, GDP monthly estimate, UK.
Olley, G., & Pakes, A. (1996). The dynamics of productivity in the telecommunications equipment industry. *Econometrica*, *64*(6), 1263–1297.
Osharin, A., Thisse, J. F., Ushchev, P., & Verbus, V. (2014). Monopolistic competition and income dispersion. *Economics Letters*, *122*(2), 348–352.
Palley, T. (2019). Inequality and stagnation by policy design: Mainstream denialism and its dangerous political consequences. *Challenge*, *62*(2), 128–143.
Paramati, S. R., & Nguyen, T. P. T. (2019). Does financial market growth improve income distribution? A comparison of developed and emerging market economies of the global sample. *International Journal of Finance & Economics*, *24*(1), 629–646.
Park, D., & Shin, K. (2017). Economic growth, financial development, and income inequality. *Emerging Markets Finance and Trade*, *53*(12), 2794–2825.
Pesaran, M. H. (2004). General diagnostic tests for cross section dependence in panels [Cambridge Working Papers in Economics, No. 435 and CESifo Working Paper, No. 1229]. Cambridge Working Papers in Economics and CESifo.
Pesaran, M. H. (2006). Estimation and inference in large heterogeneous panels with a multifactor error structure. *Econometrica*, *74*, 967–1012.
Pesaran, M. H. (2007). A simple panel unit root test in the presence of cross-section dependence. *Journal of Applied Econometrics*, *22*(2), 265–312.
Polemis, M. L., & Fotis, P. N. (2016). Measuring the magnitude of significant market power in the manufacturing and services industries: A cross country approach. *Journal of Industry, Competition and Trade*, *16*(1), 51–79.
Phillips, P. C., & Sul, D. (2003). Dynamic panel estimation and homogeneity testing under cross section dependence. *The econometrics journal*, *6*(1), 217–259.
Raddatz, C. (2006). Liquidity needs and vulnerability to financial underdevelopment. *Journal of Financial Economics*, *80*(3), 677–722.
Richards, V. D., & Laughlin, E. J. (1980). A cash conversion cycle approach to liquidity analysis. *Financial Management*, *9*(1), 32–38.
Roeger, W. (1995). Can imperfect competition explain the difference between primal and dual productivity measures? Estimates for US manufacturing. *Journal of Political Economy*, *103*(2), 316–330.
Rotemberg, J. J., & Saloner, G. (1986). A supergame-theoretic model of price wars during booms. *The American Economic Review*, *76*(3), 390–407.
Stigler, G. J. (1964). A theory of oligopoly. *Journal of Political Economy*, *72*(1), 44–61.
Stiglitz, J. (2017). *Inequality, stagnation, and market power*. The Roosevelt Institute.
Zwick, E. (2023). Comments on "wealth inequality dynamics in Europe and the United States: Understanding the determinants" by Blanchet and Martínez-Toledano. *Journal of Monetary Economics*, *133*, 44–47.

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