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UK Markups and Profit Margins during the pandemic and its aftermath

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Abstract

We analyse UK markups and profit margins for the pandemic period and its aftermath using unconsolidated balance sheets of non-financial corporations for both listed and unlisted firms. The markup increases by 14.7% between 2014 and 2022, exceeding any previously documented growth rate for UK markups, despite major economic, ecological and geo-political crises. The rise in markups is driven by both increasing markups within UK companies and a reallocation of output towards high-markup firms. However, the within effect has dominated since 2020, driven by large firms. In this regard, the UK is different from the US, where the reallocation effect has been more prominent. Since 2014, the markup distribution of firms has become more polarised. Increasingly more firms are at risk of financial difficulties due to low profit margins while at the same time some firms are charging historically extraordinarily high markups and reap high profits. This contributes to bankruptcy risk and economic instability while exacerbating pricing power for some companies. Preventing markup increases during macroeconomic shocks should be a priority for policymakers seeking to reduce inflationary pressure and adverse effects on income inequality.

Keywords: markup, profit margin, market power

JEL codes: D4, J3, L1

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Executive summary

- We provide the first comprehensive analysis of markups and profit margins for the pandemic period and its aftermath in the UK using i) unconsolidated balance sheets of non-financial corporations, ii) data for both listed and unlisted firms, iii) the period of 2014 to 2022. Our sample consists of up to 68,600 firms per year.
- The markup increases by 14.7% in nine years between 2014 and 2022. This exceeds any previously documented growth rate for UK markups, despite a pandemic and major economic, ecological and geo-political crises.
- The rise in markups in 2020 was largely an attempt to cover extraordinary costs that arose in the first year of the pandemic. Firms, on average, were not successful in covering these costs, as indicated by a strong decline in the 2020 profit margin. However, markups remain elevated and did not return to their pre-pandemic average. Consequently, by 2022 profit margins have reached their historical peak, and indicative evidence for 2023 suggests that they might have risen even further since. This stands in contrast to the US where margins and markups returned to pre-pandemic levels.
- The markup increase is driven by both rising markups within UK companies and a reallocation of output towards high-markup firms. However, the within effect has dominated since 2020. In this regard, the UK is different from the US, where the reallocation effect has dominated.
- Since 2014 the markup distribution of firms in the UK has become more polarised. Increasingly more firms are at risk of financial difficulties due to low profit margins while at the same time, some firms are charging historically extraordinarily high markups and reap high profits. This contributes to bankruptcy risk and economic instability while exacerbating pricing power for some companies.
- Over 10,000 firms (15% of our sample) declared bankruptcy since March 2020, driven by pandemic-related restrictions, cost shocks, and rising interest rates. These are mostly small firms in service industries.
- Large firms have been the most consistent drivers of markup growth since 2014, but on average these are firms with relatively low markups.
- Key industries driving UK-wide markup dynamics include: IT, professional services, food, beverages, tobacco, and chemicals.

- There is indicative evidence that higher trade union density can constrain firms' markup power because within-firm increases in markups tend to be lower in industries with higher union density.
- Markups, once increased, remain at a higher level. This exacerbates inflationary pressure and contributes to a redistribution of income from labour to capital, which increases income inequality. Preventing markup increases during economy-wide cost shocks like in 2020 should be a priority for policymakers. Essential steps to controlling pricing power and inflation in the UK will be to identify systemically significant prices and industries and manage future price shocks through shock absorbers such as price gauging laws or price controls, buffer stocks, financial support for especially small businesses and windfall and wealth taxes coupled with transfers to low-income households (Onaran, 2023; Weber and Wasner, 2023; Wildauer et al. 2023).

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1. Introduction

Inflation has surged to levels not seen since the 1970s, while real wages remain below pre-pandemic levels in many industries. This coincides with a continuous increase in firms' pricing power, as evidenced by rising markups since 1996 in the UK (De Loecker et al., 2022, for the period until 2016). It is now, in the context of the pandemic and the Russian invasion of Ukraine, that the effects of the increased pricing power of firms become more visible. Despite extraordinary cost shocks, some firms have managed to increase their prices beyond the increase in costs, thus achieving strong increases in profits. At the same time other firms, particularly SMEs, have been hit with rising interest rates and falling profits, and are decrying increased bankruptcy risk. This raises urgent questions about the underlying drivers of these divergent outcomes.

Previous reports show that the UK profit margin is higher in the post-pandemic relative to the pre-pandemic period. Yet, existing analyses provide only a partial picture because they either rely on surveys (Bank Underground, 2023a, 2023b) or data limited to listed firms (Hayes and Jung, 2022; Jung and Hayes, 2023) or focus solely on profit margins and do not analyse markups (Unite, 2024). Crucial questions are left unanswered. Are markups increasing in line with profit margins in the UK? Are these dynamics driven by an increase in markups and profit margins within firms or by a reallocation of output towards more productive high-markup firms, as suggested by research on the US (De Loecker et al., 2020; Davis, 2024)? Which firms were able to increase their profitability and in which industries are they located? Were these large or small firms?

Answering these questions is particularly important for economic policy. An increase in markups and profitability across a wide spectrum of firms allows more broad-based measures, such as increases in taxes or minimum wages, that affect all firms. In contrast, if the increase in profitability is mainly driven by output reallocation towards high-markup firms, measures targeted at competition policy might be asked for. Similarly, differentiating results by industry and firm size allows for more targeted interventions focusing on parts of the corporate sector that have experienced drastic increases in market concentration and market power since the pandemic.

This report provides a comprehensive analysis of firm-level markups and profit margins in the UK for the pandemic period and its aftermath. Specifically, it examines whether the rise in markups and profitability stems from within-firm changes or reallocation effects and identifies which firms and industries have benefitted or suffered from recent economic shocks. We also analyse how bankruptcy risk has developed since the pandemic and investigate firms that went bankrupt since the first Covid-19 restrictions were introduced in March 2020. Additionally, we present preliminary evidence on the link between trade union presence and firms' pricing power by analysing how markups developed across industries with different rates of trade union density.

We use a large sample of 32-69 thousand UK companies per year, capturing both listed and privately owned (unlisted) non-financial firms during the 2014-2022 period.[1] We provide a snapshot for 2023, but at the time of writing, data are available for only a small sample and are thus not comparable to earlier years. An additional contribution is to develop a strategy for constructing consistent samples that prioritise either consolidated or unconsolidated accounts while maximising the coverage of relevant data.[2] Our analysis focuses on unconsolidated balance sheets, in contrast to existing studies which rely on consolidated accounts (Hayes and Jung, 2022; Jung and Hayes, 2023; Unite, 2024). Unconsolidated balance sheets allow a more meaningful interpretation of markups, given that consolidated accounts often span different industries. We present results for two main variables: the markup on costs, indicating the pricing power of firms, and the profit margin, assessing firms' profitability.

Our findings reveal that markups in the UK have risen steadily since 2014, with an accelerated increase in the past decade compared to the 1996–2016 period (De Loecker et al., 2022). This rise is driven by both within-firm effects and reallocation of output toward high-markup firms, marking a departure from the US, where reallocation is the dominant factor (Davis, 2024). The rise in markups has also been mirrored by profit margins, although to a lesser extent.

Markups increased particularly strongly in 2020, the first year of the Covid-19 pandemic. Again, in contrast to the US (Davis, 2024), this was mainly driven by the rise in markups within firms, rather than a reallocation of output towards firms with higher markups. Importantly, by

[1] The main sample excludes some industries that are challenging to measure such as the public sector and primary commodities following the usual practice in the literature, as discussed in Section 2 in detail.
[2] See appendix A1 for details.

definition, markups do not account for overhead costs or financial expenditures (e.g. interest payments), as these items do not generally affect the pricing decisions of firms as we discuss in more detail in Section 2. We show that the 2020 rise in markups was, on average, an attempt to cover unusual costs or financial losses that arose during the first year of the pandemic. In contrast, the average profit margin, which does account for these additional cost items, declined sharply in 2020. This is to be expected when firms shoulder part of the burden of cost shocks, rather than being able to pass costs on fully to workers and consumers. However, just like the 'rocket and feather' metaphor usually applied to oil prices, once markups increased in 2020, they did not come down again and thus high markups contributed to the sharp rebound in profit margins since 2021. Indeed, by 2022, profit margins exceed the 2019 level. Data available so far for 2023, albeit not comparable to the full sample for 2014-22, does not show any sign of markup or profit margin reversal.

Importantly, dynamics differ across firms and industries. Two types of firms gained from the economic crises: On the one hand, large to very large firms were the main drivers of the increase in the country-level markup since 2019. These firms typically have low markups and large sales, and thus they have a strong impact on the dynamics of the country-level markup. On the other hand, some small firms that had low or average markups in 2019 achieved high markups in recent years, in line with the proposition that some firms were able to use temporal pricing power (Weber and Wasner, 2023) during periods of economic turmoil.

Turning to industries, the largest sectors in the economy also had the strongest contribution to the UK-wide markup growth. These are service industries such as 'IT and other Information Services' and 'Professional Services', which were the main contributors to the rise in markups in 2020, again mainly driven by markup growth within firms within those industries, rather than a reallocation between firms or industries. In manufacturing, it was essential industries such as 'Food, Beverages and Tobacco' as well as 'Chemicals and Pharmaceuticals' that contributed most strongly to changes in the country-level markup. However, while experiencing rising markups in 2020, the same industries were behind the decline in markups in 2021. This is consistent with the proposition that firms in these industries were able to not only pass on but also increase prices by more than the increasing costs, potentially supported by shifts in demand towards their goods and services. In contrast, the decline of markups in 2021 was partly driven by the large number of firm bankruptcies, especially in the Professional Services and Manufacture of Textiles, Clothes and Leather industry. Additionally, once

lockdown restrictions and supply bottlenecks eased, firms had to adjust their pricing behaviour to the new environment, leading to some reduction in firm-level markups, in industries such as IT and Information Services. Yet, at the country level, there is clear evidence that markups have not declined from their 2020 levels on average. This is driven by industries such as 'Accommodation and Food Services', 'Wholesale Trade', as well as 'Manufacture of Wood and Paper Products', which contributed positively to markup growth in 2021, followed by 'Manufacture of Textiles and Clothes' and 'Professional Services' in 2022. Overall, no one industry drove markup dynamics. Instead, different industries appear to be behind changes in the markup at different points in time, and various factors ranging from reallocation effects to increases in firm-level markups are behind the trend, depending on the industry and period under consideration. This suggests that firm size is a better predictor of markup trajectories than industry affiliation.

Over ten thousand firms, constituting about 15% of our sample, declared themselves bankrupt since March 2020. These are usually small firms, mainly in service industries, although bankruptcies were also prevalent in the 'Manufacture of Transport Equipment' industry. On average, these firms had low and declining profit margins even before the pandemic and thus were unprepared to survive the post-2019 restrictions, cost shocks, and interest rate surges. Service sector firms in "Accommodation and Food Services" and "IT and other Information Services", as well as "Manufacture of Transport Equipment" firms were among those that were hit the hardest relative to the overall number of firms. Accommodation and food services suffered most strongly from pandemic-related restrictions, and subsequent declines in demand during the cost-of-living crisis. The high number of bankruptcies in the IT and transport manufacturing industries is less clearly related to the pandemic and could be the result of rising interest rates. In absolute terms, most bankruptcies happened in the 'Professional Services' industry, which is also the sector with the largest number of firms in our sample.

Additionally, we provide indicative evidence that workers' bargaining power can be a relevant factor in constraining the markup power of firms. Firms in industries with relatively high trade union density have, on average, lower increases in markups between 2014 and 2022. This is consistent with the proposition that firms are reluctant to increase their prices when this can trigger rising wage demands and industrial conflict (Guschanski and Onaran 2021, 2023; Wildauer et al., 2023). Yet, more research is needed to provide conclusive evidence.

Overall, this paints a diverse picture of markup and profit dynamics since the pandemic. Large firms in various industries are among those that have gained most consistently from the volatile economic environment. Policies seeking to reduce pricing power and excess profits should thus focus on these firms. However, there is a layer of SMEs, likely specialised firms mainly in Professional Services and IT and Information Services, which benefitted as well. Given the relatively high volatility of markups for SMEs, it remains to be seen if they will be able to maintain their high markups as inflation slowly recedes. Importantly, it is also the SMEs, and especially the small companies, which are at the largest risk of bankruptcy. This needs to be considered for policy choices to maintain economic stability. Lastly, our analysis provides indicative evidence that markups can be constrained not only by competition between firms but also by the bargaining power of workers. In the context of the declining bargaining power of labour across the OECD for the last decades (Guschanski and Onaran, 2021, 2024; Stansbury and Summers, 2020), this suggests that strengthening labour market institutions can limit inequality and constrain pricing power of high-markup firms.

The next section presents our data and methodology. Section 3 analyses markups, starting from an aggregate analysis at the country level, and subsequently looking at the markup trajectory across high- and low-markup firms, firm size, and industries. We also present a shift-share decomposition that analyses whether markup changes are driven by within-firm increases or reallocation effects. Section 4 provides an analysis of profit margins. Section 5 looks at firms that declared bankruptcy since the onset of the pandemic in March 2020, while Section 6 provides indicative evidence of markup trajectories across industries with different levels of trade union density. Section 7 concludes.

2. Data and methodology

2.1 Markups and profit margins

This report focuses on two variables that are crucial to analyse the relationship between firms' costs, profits and prices: the markup on operating costs (henceforth markup) and the profit margin (henceforth margin). The markup determines the price-setting behaviour of firms. For example, a markup of 20% indicates that the firm sets the price of its good or service by adding 20% on top of its variable unit costs. Markups are thus crucial parameters to determine the passthrough of costs to prices. Importantly, increasing markups indicate that prices are rising not solely because of an increase in costs, but because of a more aggressive pricing behaviour of firms.

According to economic theory, markups are generally estimated with respect to firms' variable costs, which are the most crucial element in price-setting behaviour. This excludes costs that do not depend directly on the amount of goods or services a firm produces, such as overhead costs (e.g. administrative expenses) or certain financial costs. There is an ongoing debate about which part of overhead costs should be included in the markup calculation (Traina, 2018). It is safe to assume that some part of overhead costs reported by firms are in fact variable costs, but it is less clear what this share is. We follow the De Loecker et al. (2020) approach of excluding overhead costs from the markup but provide a complimentary analysis based on profit margins, which do account for overhead costs (see below).

There is a large literature on how to estimate markups. The ideal case is when both quantity and price data are available, which allows to estimate the output elasticity of inputs directly (Bond et al., 2021). Other approaches have modelled the competition regime in a specific industry to estimate markups, but these approaches can usually not account for drastic changes in market conditions, such as those that characterised the post-pandemic years (Miller, 2024). Most recently, the influential papers by De Loecker and Warzynski (2012) and De Loecker et al. (2020) proposed an approach to estimate markups from accounting data (i.e. balance sheet data of firms) that are widely available. This sparked renewed interest in market power research in economics.

We follow the approach outlined in De Loecker et al. (2020) to calculate markups as operating revenues (OPRE) as a ratio to costs of goods sold (COST).[3] De Loecker et al. (2020) multiply this ratio with an estimated output elasticity, but show that the main variation in the markup does not come from changes in the output elasticity but rather from changes in the revenue-cost ratio. More precisely, they replicate their results by assuming the output elasticity is fixed at 0.85, the average estimate of their output elasticity. The same assumption of a fixed output elasticity of 0.85 is adopted in De Loecker et al. (2022), the most comprehensive empirical analysis of markups for the UK to date. For comparability with these studies, we also scale the revenues-cost ratio by 0.85.

The resulting markups are estimates of variable cost markups, and hence they do not consider overhead costs such as administrative expenses, financial payments or extraordinary items that are not related to the ordinary operations of the business. For this reason, rising markups do not necessarily imply that profits are rising – for example, if firms experience unusual increases in non-variable costs, a temporary increase in markups might be an attempt to cover these additional costs. To assess profitability more directly, we also analyse profit margins, measured as profit (or loss) before tax (PLBT) as a ratio to operating revenue (OPRE). The margin measures how many cents of profits a firm makes from £1 of revenue. PLBT is defined as operating revenue minus the sum of cost of goods sold (COST), other operating income and expenses (including overhead costs), and financial income and expenditure. In this way, PLBT presents the profit (loss) of a company after all relevant costs except for taxes and extraordinary items have been deducted. This is important because previous research has argued that overhead costs have increased in recent years, triggering a rise in prices (De Loecker et al. 2022; Traina, 2018).[4]

2.2 Data

We use data for listed and privately owned companies provided by Orbis. In theory, this covers the whole universe of firms registered with Companies House which is also one of the main

[3] In Orbis cost of goods sold (COST) occasionally includes depreciation and amortization (D&A), which should not be part of the markup estimation. Since this variable is rarely reported separately, we cannot do a consistent adjustment. This implies that we overestimate markups in cases where D&A is included.

[4] Orbis reports overhead costs within a bulk item called other operating expenses (OOPE). This item occasionally includes research and development (R&D) expenditures, which is arguably not part of 'overheads'. This implies that we underestimate profit margins in cases where R&D is included in OOPE.

sources for the balance sheet information used by Orbis. This is supplemented by other sources such as published company reports or media.

When firms have subsidiaries, they can report either consolidated or unconsolidated accounts. Consolidated accounts include the financial data from all subsidiaries in the balance sheet of the parent company. Unconsolidated accounts report the balance sheets of the subsidiary and the parent separately. This creates a problem insofar as including both consolidated and unconsolidated accounts of a corporate group would double-count the reported values.

We develop two strategies to deal with this issue that are detailed in Appendix A1. The first strategy prioritises unconsolidated accounts of corporate groups, while the second strategy prioritises consolidated accounts. Both strategies avoid (in the case of unconsolidated accounts) or minimise (in the case of consolidated accounts) double counting while trying to retain as much relevant data as possible.

Kalemli-Özcan et al. (2023) highlight that using consolidated or unconsolidated accounts can affect results. Unconsolidated accounts better reflect pricing behaviour and implications for inflation, as these accounts are more closely related to the analysis of firms that produce one particular (or set of) good. In contrast, consolidated accounts often span subsidiaries that operate in different industries. For this reason, we focus on unconsolidated accounts in this report, while selectively presenting results from analyses using consolidated accounts in the main text and appendix.

We follow De Loecker et al. (2022) and exclude a number of industries related to primary commodities (agriculture, mining), utility provision, industries where the public sector is a major provider (post, public administration and defence, health, education) and services provided by households as employers from our main analysis (we do provide some robustness tests including those industries). Table A2 in the appendix provides details on the industries that are included in the analysis. Additionally, we exclude outliers by dropping 1% of observations with the highest and lowest markup (margin) for each year.[5] We also exclude firms

[5] We also provide some selected analyses for the total sample, i.e. including all industries other than Finance. The cutoff values for winsorization are always established with respect to the sample with a restricted industry set based on De Loecker et al. (2022). This implies that for the results using the total sample we drop slightly more than 1% of all observations at the top and bottom of the distribution.

that have less than two employees. This is a relatively low threshold in comparison to other studies (De Loecker et al. 2022, focus on firms with more than ten employees). Therefore, we additionally exclude 1% of observations with the lowest revenues. We also exclude 0.5% of observations with the lowest and highest asset-to-liability ratios. None of these procedures have a significant impact on the results.

Table 1 reports the number of firms for which we are able to calculate markups. Our analysis for profit margins is based on a significantly larger sample, as more firms report profits before tax than costs of goods sold. The year in our analysis always refers to the accounts issued until March of the following calendar year. This means data for 2020 includes all accounts filed from March 2020 until March 2021.

Table 1: Number of firms in our sample

year	Markup	Margin
2014	36362	47994
2015	39318	52217
2016	43116	59233
2017	43338	62010
2018	43253	63437
2019	44107	66743
2020	45119	68433
2021	45465	68651
2022	43520	64987
2023	2999	4782

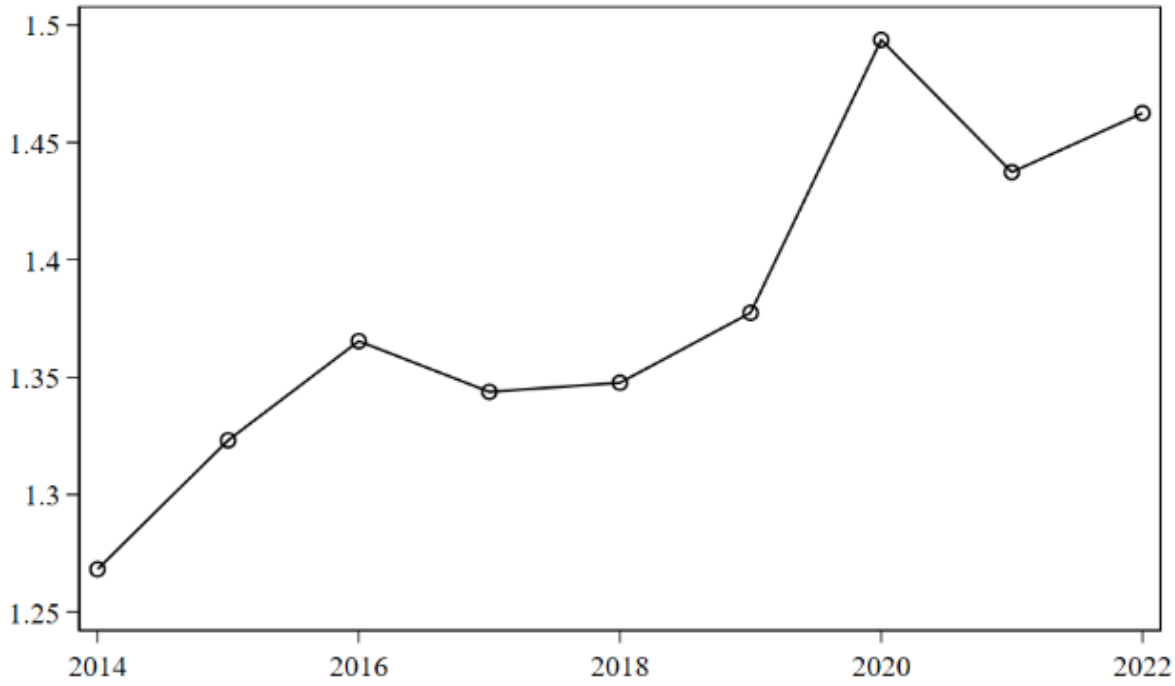
The resulting sample (after excluding outliers and with only specific industries included according to De Loecker et al., 2022) captures between 31% (for the markup sample) and 38.15% (for the margin sample) of UK operating surplus of non-financial corporations as reported by National Accounts in 2022 (ONS, 2024). This is a relatively high share for firm-level analyses and is in line with Kalemli-Özcan et al. (2023).

3. Markups

3.1 Aggregate Analysis

Figure 1 reports the revenue-weighted average markup for the UK, calculated by weighting the markup of each firm with its share in total revenues. The markup increases substantially between 2014 and 2022.

Figure 1: Revenue-weighted average markup in the UK



Putting this into historical context, De Loecker et al. (2022) highlight a consistent rise in markups in the UK between 1996 and 2016. More precisely, they show an increase of approximately 22.4% in 21 years. Our report is the first to document that the increase in the markup not only continues after 2016 but even accelerates. The increase is from 1.29 in 2014 to 1.48 in 2022, i.e. 14.7% in nine years. Importantly, this acceleration in markup growth continued throughout a period characterised by major economic, ecological, and geopolitical crises and severe cost shocks.[6] Strikingly, the markup is significantly higher in 2022 than in 2019 before the onset of the COVID-19 pandemic. Markups in 2023 are extraordinarily high

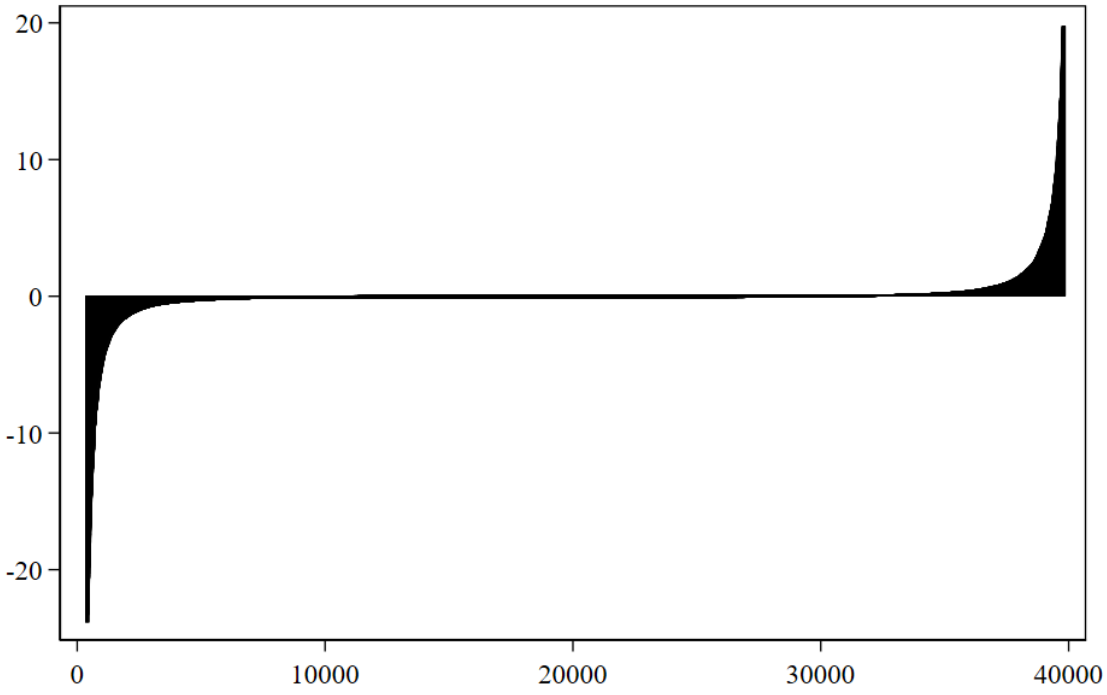
[6] The positive trend is replicated when using consolidated accounts. However, the increase in markups is slightly lower (12.8%), while the markup level is slightly higher (between 1.6 to 1.8) for consolidated accounts.

with a value of close to 2. Given the small number of observations for 2023, this year is omitted from the analysis below.

3.2 Markups across firms

Looking at changes in average markups across firms between the periods of 2014-2019 and 2020-2022, there is a huge divergence in markup trajectories with some clear winners and losers throughout this period, as reported in Figure 2. The same picture emerges when looking at profit margins (Figure A1 in the appendix) or changes in absolute profits (available upon request).

Figure 2: Change in markup 2014-2022



Notes: Each bar represents the difference between the average markup in 2020-2022 and 2014-2019 for a firm. Top and bottom 1% of markup change was dropped to improve readability.

Next, we analyse the two extremes of this bar chart, to gain a better understanding of firm sizes and industry representation. Figure 3 reports the distribution (kernel density) of revenues for all firms and firms in the top and bottom quintile of the distribution in terms of the change in markup, i.e. 20% of firms in the right and left end of the bar chart in Figure 2 above.

Figure 3: Distribution of revenues of firms which experienced large increases and decreases in markups in in 2020-2022 compared to 2014-2019

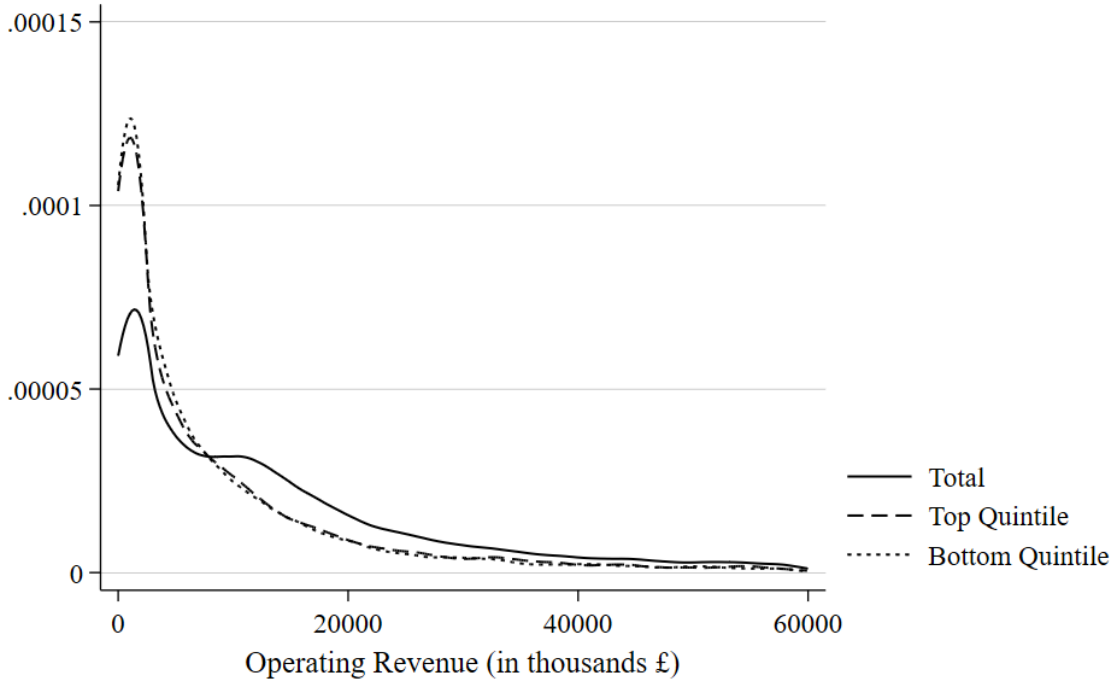
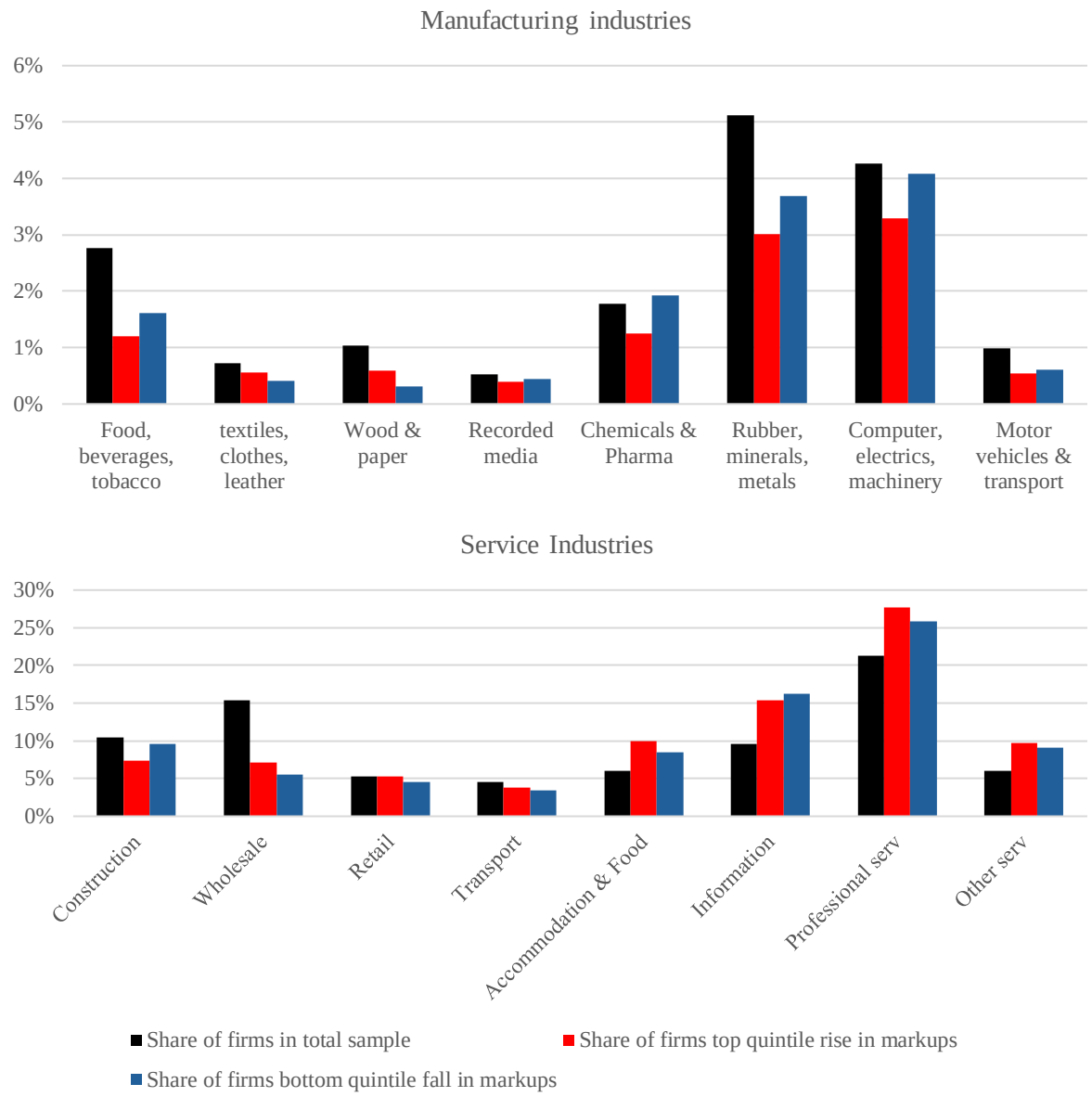


Figure 3 shows that firms that experienced extraordinarily large changes (positive and negative) in markups are much smaller than the average firm. This is evident because the bulk of the distribution (the area under the density curve) is much closer to zero for firms in the top and bottom quintile, i.e. firms that saw large changes in the markup. Figure A2 in the appendix confirms this result when looking at the change in markups as of 2022 compared to 2019 (i.e. without taking averages).

Next, we analyse the industry composition of firms with large changes in markups. Figure 4 plots the share of firms by industry and juxtaposes it with the percentage of firms that are in the top and bottom quintile of the distribution showing the average change in the markup.

Figure 4: Industry composition and average change in the markup, 2014-2022



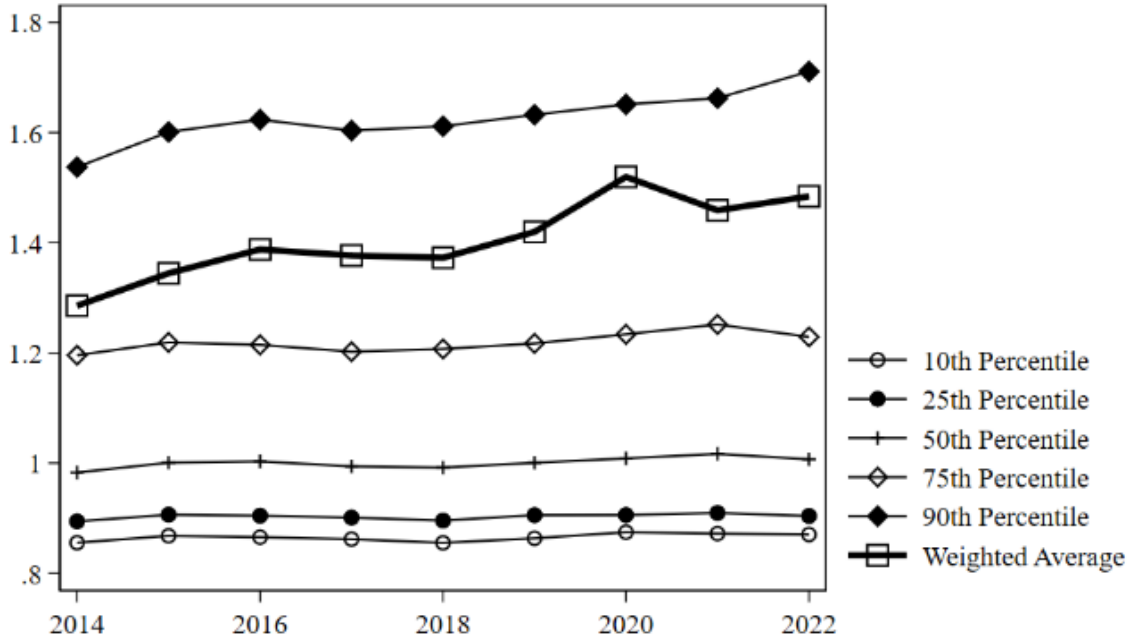
The industry composition of firms with high absolute changes in markups closely follows the overall industry composition. However, there are some exceptions. Within services, Wholesale has a relatively low share of firms with large changes in the markup, relative to its overall share in the sample. This suggests that the Wholesale industry was relatively sheltered from the drastic effects of the pandemic and subsequent crises. The same holds for the Manufacture of Food, Beverages and Tobacco industry, as well as the Manufacture of Rubber, Minerals and Metals products. In contrast, industries such as Accommodation and Food Services, IT and other Information Services and Professional Services have a very large share of both firms with extraordinarily high and low changes in the markup pre- and post-pandemic. This implies that

firms in these industries were either able to take advantage of the economic turmoil since 2020, or, alternatively, experienced financial strain in this period.

3.3 Markups along the distribution – different percentiles

The rise in the markup reported in Figure 1 leaves several questions unanswered. Did the markup rise due to an increase in top markups, i.e. a pulling-away at the top of the distribution? Or did low markups increase over time, signalling an equalisation of pricing power between firms? Figure 5 shows markups in different percentiles along the revenue-weighted markup distribution. In other words, rather than taking the 90th percentile of the markup distribution, the 90th percentile is determined by weighting the percentiles with the market share of each firm.[7]

Figure 5: Markup by (revenue-weighted) percentiles



Note: 2023 is omitted as it constitutes a large positive outlier as discussed in the text.

[7] This is done by the following procedure: 1) firms are ordered by markups (or margins in the appendix). 2) A running sum of the revenue share of the firms is constructed. 3) The 90th percentile is defined by the firm at which this running sum is equal to 0.9 (or as close as possible). This is the firm, where the sum of the revenues of all firms with smaller markups than this firm make up 90% of the overall revenues. This guarantees representativeness: if we have 100 firms ordered by markup, but the first 90 firms combined provide only 1% of total revenues while the top 10 firms generate a lot of revenue, the 75th percentile of the markup distribution (i.e. the 75th firm) might not be very relevant because it is a very small firm. Instead, based on this method, the 75th percentile would be the markup (margin) of a large and relevant firm.

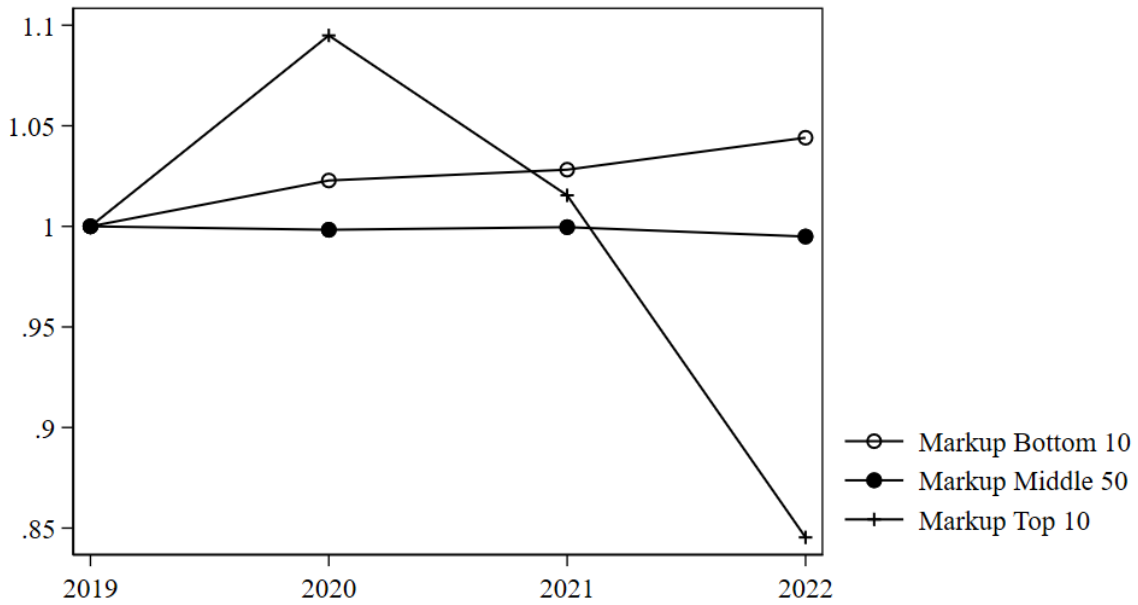
We observe strong inequality in the markup distribution. The revenue-weighted average markup is above the 75th percentile, and markups range from below one to above 1.6 for the top percentile, indicating more than a 60% markup of prices over costs.

The overall increase in markups since 2014 is primarily driven by the 90th percentile, meaning that the rise in markups is partly due to a pulling away of markups at the top of the distribution. This is also observed during the pandemic where the 90th and 75th percentiles maintain steady or even increasing markups. However, the 10th percentile, i.e. the lowest markups of the distribution, increase as well.

3.4 Tracking firms along the markup distribution

The previous analysis provides an overview of how the markup distribution changed since 2014. However, firms can move freely between the different markup percentiles in Figure 5, and a firm that has a low markup in one year can, in theory, end up in a higher percentile in the next year. To complement this analysis, we identify firms in the bottom, centre and top of the markup distribution in 2019 and track their markup trends over time in Figure 6, following Davis (2024).

Figure 6: Markup over time according to markup distribution in 2019



Notes: These graphs keep the firms that are tracked over time constant, except when firms exit the market. Markups within each stratum (bottom, middle and top) are revenue-weighted according to the share of firms' revenue in total revenue of the stratum. Markups are set to 1 in 2019.

Markups are generally very persistent for firms in the bottom 10 or mid-50 percentiles of the markup distribution. This does not hold, however, for high-markup firms, whose average (revenue-weighted) markups change much more strongly from year to year. This implies that temporary high markups, followed by lower markups in subsequent years, are a regular occurrence. It also signifies that the movement of firms between percentiles of the markup distribution in Figure 5 is to be expected, especially in the top decile of the distribution.
Similar to the analysis across percentiles, these figures confirm that the markup increase in 2020 is mirrored in the rise of markups of firms that were already in the top decile of the markup distribution in 2019. In other words, firms that had the highest markups in 2019 were able to increase these markups even further in 2020. However, there is also a notable increase in markups for firms in the bottom decile. Interestingly, the picture changes dramatically after 2020. Markups of firms in the bottom decile in 2019 keep increasing while there is a pronounced decline in top-decile markups in 2021 and 2022.

To understand how this behaviour is compatible with the trajectory of revenue-weighted aggregate markups in the UK, and to investigate the characteristics of high- vs low-markup firms, we analyse the size of firms at the top, middle and bottom of the markup distribution. Figure 7 plots the median turnover share of firms in the bottom, middle and top of the 2019 markup distribution.

Figure 7: Median firm's turnover share along the markup distribution

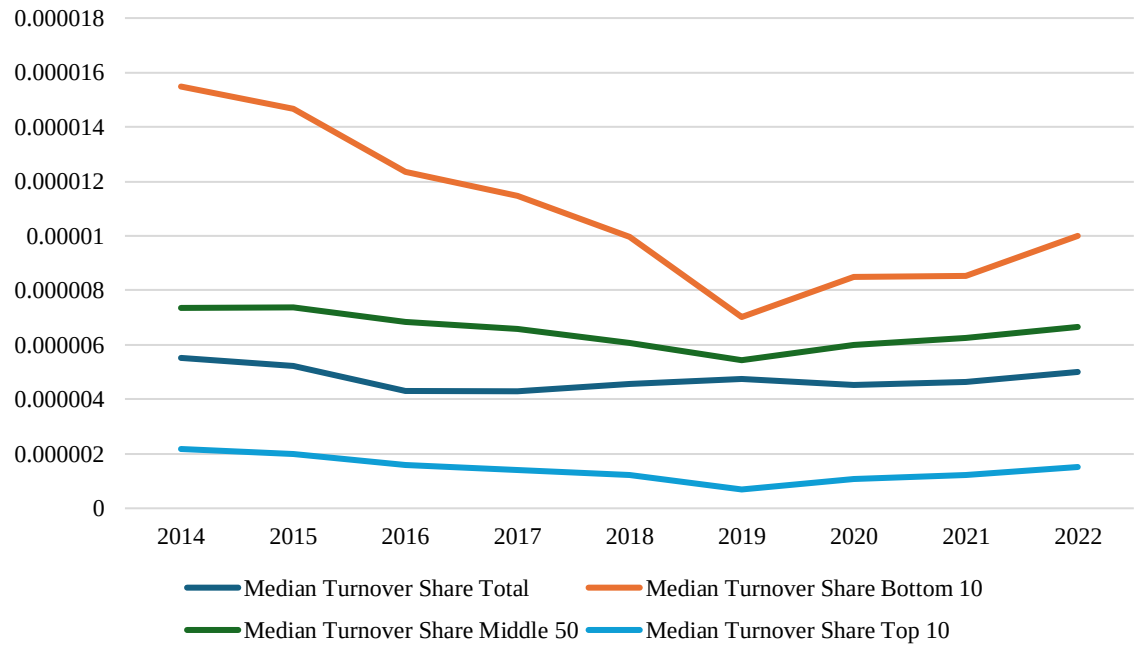
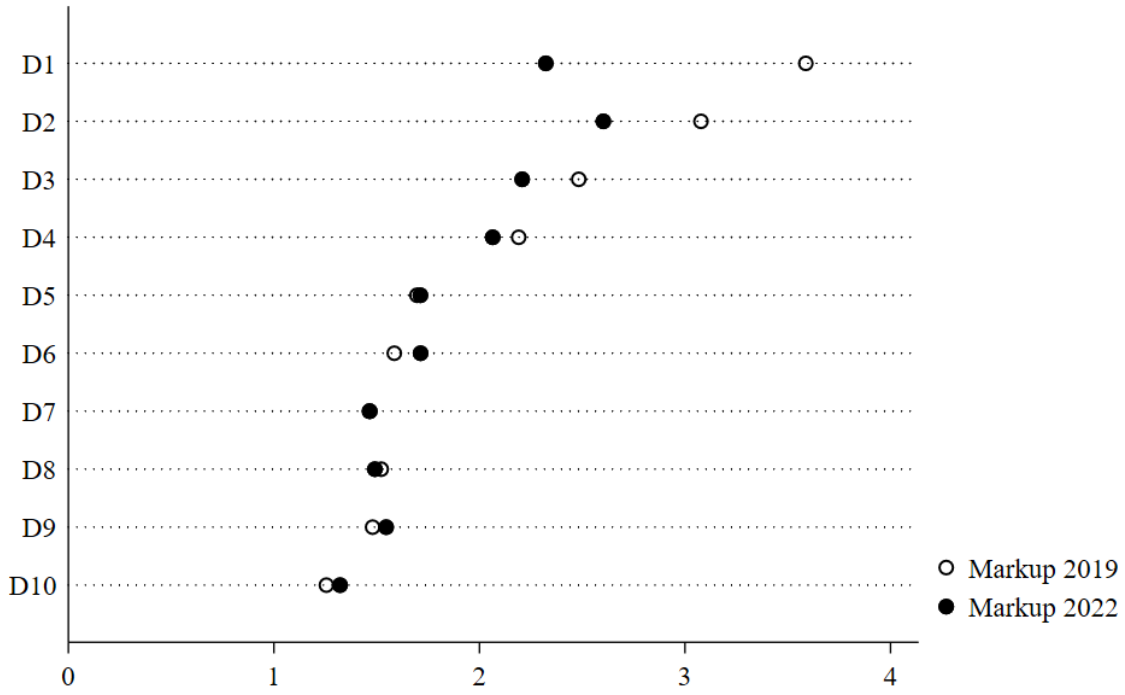


Figure 7 indicates that firms with the lowest markups in 2019 are usually significantly larger than the rest. In general, there appears to be a negative relation between firm size and markups. This suggests that, despite the dramatic increase of markups of firms at the top of the markup distribution, the low markup firms are larger and thus their behaviour is more important for the trajectory of the aggregate country-level markup. In other words, large-scale low-markup firms managed to increase their markups since 2019 and were a significant driver of the overall increase in country-level markups in the UK. Conversely, it's mainly small firms that have lost out in terms of markups relative to their 2019 level. However, some of these firms had very high markups to begin with and overall, their markups increased most drastically since 2014.

To assess the relation between firm size and markup performance in the overall sample, Figure 8 plots markups in 2019 and 2022 by firm size. Each row identifies a decile of the revenue distribution, meaning that D1 reports the revenue-weighted markup of firms in the first decile of the revenue distribution in 2019, while D7 captures firms in the 7th decile (60-69.9 percentile).

Figure 8: Markups by revenue decile in 2019



Notes: The figure is based on a sample of 34,837 firms for which we are able to calculate markups in both 2019 and 2022.

This confirms the intuition from Figure 7. Small firms generally have higher markups than large firms. On average, however, they experienced a decline in markups since 2019. The larger firms become the lower their markup is on average, but the more likely they are to increase the markups in the (post-)pandemic period.

3.5 Shift Share Decomposition: Markups

A major advantage of firm-level data is that it allows us to unpack whether the increase in the aggregate markup is driven by a simultaneous rise of markups within firms or a reallocation of output (revenue) towards firms with high markups. To investigate this, we conduct a shift-share decomposition of markup growth. We follow Davis (2024), De Loecker et al. (2020, p.581, eq. 9), and Haltiwanger (1997), and decompose the country-level markup (λ_t) in period t according to the following equation:

$$\Delta\lambda_t = \sum_{\text{i}\epsilon\text{Inc}}^{n} \omega_{i,t-1}.\Delta\lambda_{i,t} + \sum_{\text{i}\epsilon\text{Inc}}^{n} \Delta\omega_{i,t}.\tilde{\lambda}_{i,t-1} + \sum_{\text{i}\epsilon\text{Inc}}^{n} \Delta\omega_{i,t}.\Delta\lambda_{i,t} + \sum_{\text{i}\epsilon\text{Enter}} \omega_{i,t}.\tilde{\lambda}_{i,t} - \sum_{\text{i}\epsilon\text{Exit}} \omega_{i,t-1}.\tilde{\lambda}_{i,t-1} \quad (1)$$

$\omega_{i,t}$ is the firm's share of revenues (OPRE) in total revenues in year t. $\lambda_{i,t}$ is the firm-level markup, while $\tilde{\lambda}_{i,t}$ is the difference between the markup of the firm and the country level, constructed to correctly capture the 'between' term, according to Haltiwanger (1997; note that $\tilde{\lambda}_{i,t-1} = \lambda_{i,t-1} - \lambda_{t-1}$ and $\tilde{\lambda}_{i,t} = \lambda_{i,t} - \lambda_{t-1}$). $\Sigma_{\text{i}\epsilon\text{Inc}}$ refers to incumbents, i.e. all firms that are part of the sample in period (t-1) and (t). $\Sigma_{\text{i}\epsilon\text{Enter}}$ and $\Sigma_{\text{i}\epsilon\text{Exit}}$ refers to firms entering the sample in period t and firms exiting the sample between periods (t-1) and (t), respectively. The first term in equation (1) is the **within** component, capturing changes in the UK-wide markup that are driven by increasing markup in individual firms, weighted by the lagged share of the firm in total revenue. The second summand captures the **between** component, which measures the extent to which country-level markups are driven by a reallocation of revenues towards high-markup firms. The third summand, the **covariance term**, captures a simultaneous change in both within-firm markups and revenue shares – for example, it would be positive if firms increase their markup and revenue share jointly in one year. The fourth minus the fifth term is the **net entry component**, which assesses how markups are affected by the entry and exit of firms from the sample.

Figure 9a plots the aggregate markup and four counterfactual trends describing the aggregate markup's evolution if only within-firm changes, changes in market share, the covariance term, or net entry were to have affected its post-2014 development. Figure 9b repeats the same exercise but starting from 2019, to zoom in on the post-pandemic period.

Figure 9a: Shift-share decomposition of the markup 2014-2022

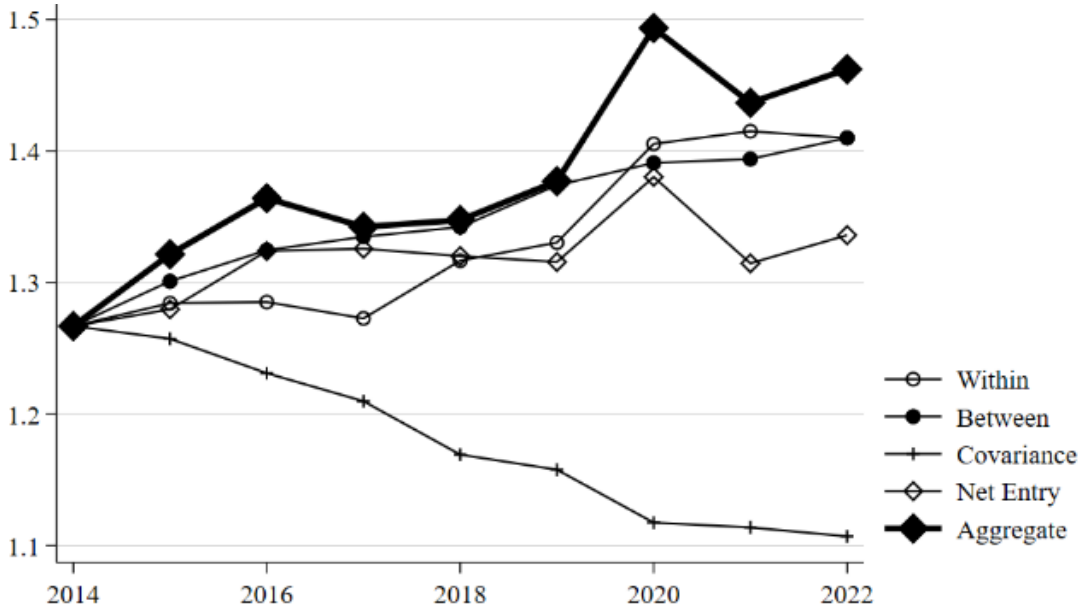
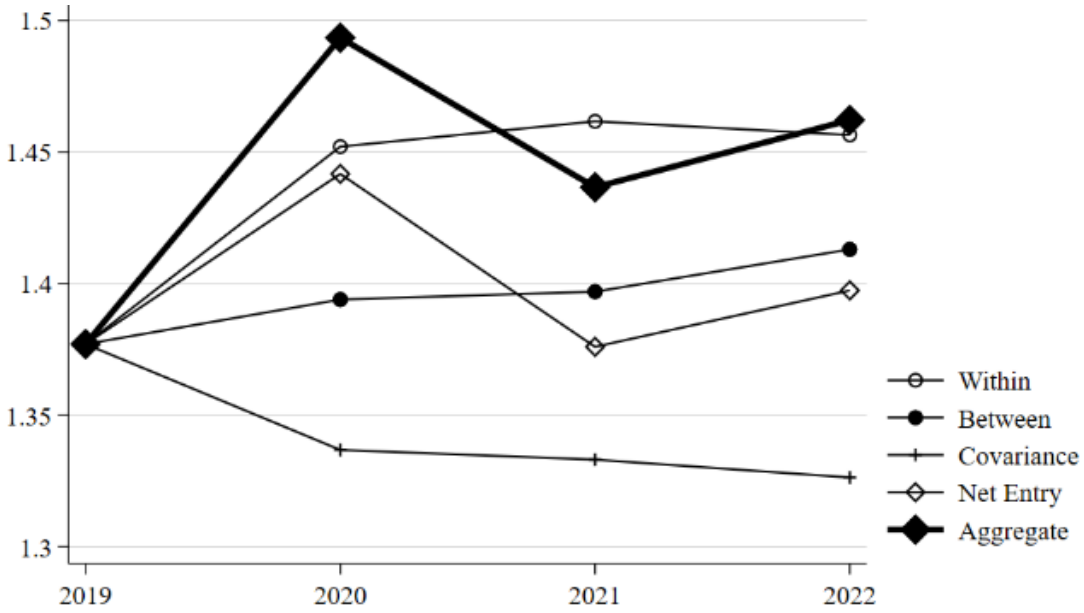


Figure 9b: Shift-share decomposition of the markup 2019-2022



The thick line reproduces the increase of the aggregate markup in Figure 1. Figure 9a demonstrates that the rise in the UK-wide markup was driven by both the within and the between components, implying that markups were increasing within firms, at the same time as high-markup firms were producing an increasing share of output. Turning to the pandemic and its aftermath, according to Figure 9b, the markup first increases in 2020, driven by the within-, the net-entry and, to a lesser extent, the between-effect. The decline in 2021 is driven almost exclusively by the net entry of firms. This could be related to some high-markup firms being

exposed to extraordinary costs in 2021, and thus leaving the sample. Notably, within-firm markups increase compared to 2019, implying that, in the absence of net-entry effects, the markup would have been even higher in 2022.

Overall, in contrast to evidence from the US (De Loecker et al., 2020; Davis, 2024), increases in markups within firms played an important role in the UK. Indeed, there is very little evidence of a within-firm decline in the markups. This is surprising given the extraordinary economic shocks since 2020, which should have contributed to a decline in markups over time if firms had absorbed part of the increase in costs. Instead, economic crises since 2019 did nothing to induce incumbent firms to lower their markups, after they took advantage and increased their markups in 2020. There was also some reallocation towards high-markup firms in 2020, although the contribution of this remained small.

3.6 Markup analysis by industries

The pandemic has hit many industries differently due to differential exposure to supply bottlenecks, the dependence on fossil fuels, and the effect of lockdowns on consumer behaviour which led to a shift away from services towards goods (Wildauer et al., 2023). Building on the previous shift-share decomposition, we first analyse how changes within- and between firms relate to the sectoral composition of the UK. To do so we again follow De Loecker et al. (2020) to analyse markup changes within and between industries. This essentially introduces another layer into the shift-share decomposition (equation 1), by aggregating changes at the industry level:

$$\Delta\lambda_t = \sum_{s} m_{s,t-1}.\Delta\lambda_{s,t} + \sum_{s} \Delta m_{s,t}.\lambda_{s,t-1} + \sum_{s} \Delta m_{s,t}.\Delta\lambda_{s,t} \qquad (2)$$

where $\lambda_{s,t}$ is the revenue-weighted markup in industry s, aggregated from firm data, and $m_{s,t}$ is the share of industry s in total revenue in year t. The industry aggregation mainly follows the NACE rev. 2 2-digit categorisation, but some industries are further aggregated to facilitate graphic illustration (see appendix Table A2 for details). The first, within-industry term of equation (2) measures markup changes within industries, maintaining each sector's share of total revenue constant. It indicates a positive trend when markups increase broadly across economic sectors. Importantly, this does not tell us whether markups are increasing within an

industry due to an increase in markups within firms or due to a reallocation of revenue between firms towards high-markup firms within the industry. The second, between-industry term captures changes in markups due to a shift in market share toward high-markup sectors or away from low-markup ones. A positive value occurs when high-markup sectors expand their share of total revenue. Lastly, the covariance term represents simultaneous changes in markups and market share of industries. Naturally, there is no net-entry term since all industries are present for each year. Table 2 reports the results of this decomposition for the UK.

Table 2: Industry-level shift-share decomposition

	UK markup	Δmarkup	Within (% of Δmarkup)	Between (% of Δmarkup)	Covariance (% of Δmarkup)
2014	1.267				
2015	1.322	0.055	69.558	26.699	3.743
2016	1.364	0.043	84.874	11.050	4.076
2017	1.342	-0.022	96.801	5.965	-2.766
2018	1.347	0.005	60.751	30.961	8.288
2019	1.377	0.030	73.740	26.863	-0.603
2020	1.493	0.116	83.799	9.167	7.034
2021	1.437	-0.057	100.177	-1.418	1.241
2022	1.462	0.026	84.771	5.615	9.613
2023	2.074	0.612	152.416	9.409	-61.825

The within-industry term is the main driver of markup changes according to this decomposition. This indicates a widespread increase in market power across various sectors of the economy, rather than the growth of specific high-markup sectors or the decline of low-markup sectors. This is in line with results in De Loecker et al. (2020) and Davis (2024) for the US.

To assess the effect of individual sectors on aggregate markups in the (post-)pandemic years, the next section analyses how different industries contributed to the change in the country-level markup (Δmarkup in Table 2). Specifically, Figures 10a and 10b show the %-share that each industry contributes to the country-level increase in the markup and decompose this share into a within-industry, between-industries, and covariance-term. For example, in the first panel of Figure 10a, the Manufacture of Food, Beverages and Tobacco contributed approximately 3.8% to the country-level increase in markups in 2020 (black bar). This was mainly driven by a reallocation of revenues towards this industry from other, lower-markup industries (green bar), while the within-industry markup in Manufacture of Food products declined (small blue bar). The covariance term played a negligible role.

Figure 10a: Manufacturing: Industry-level shift-share decomposition

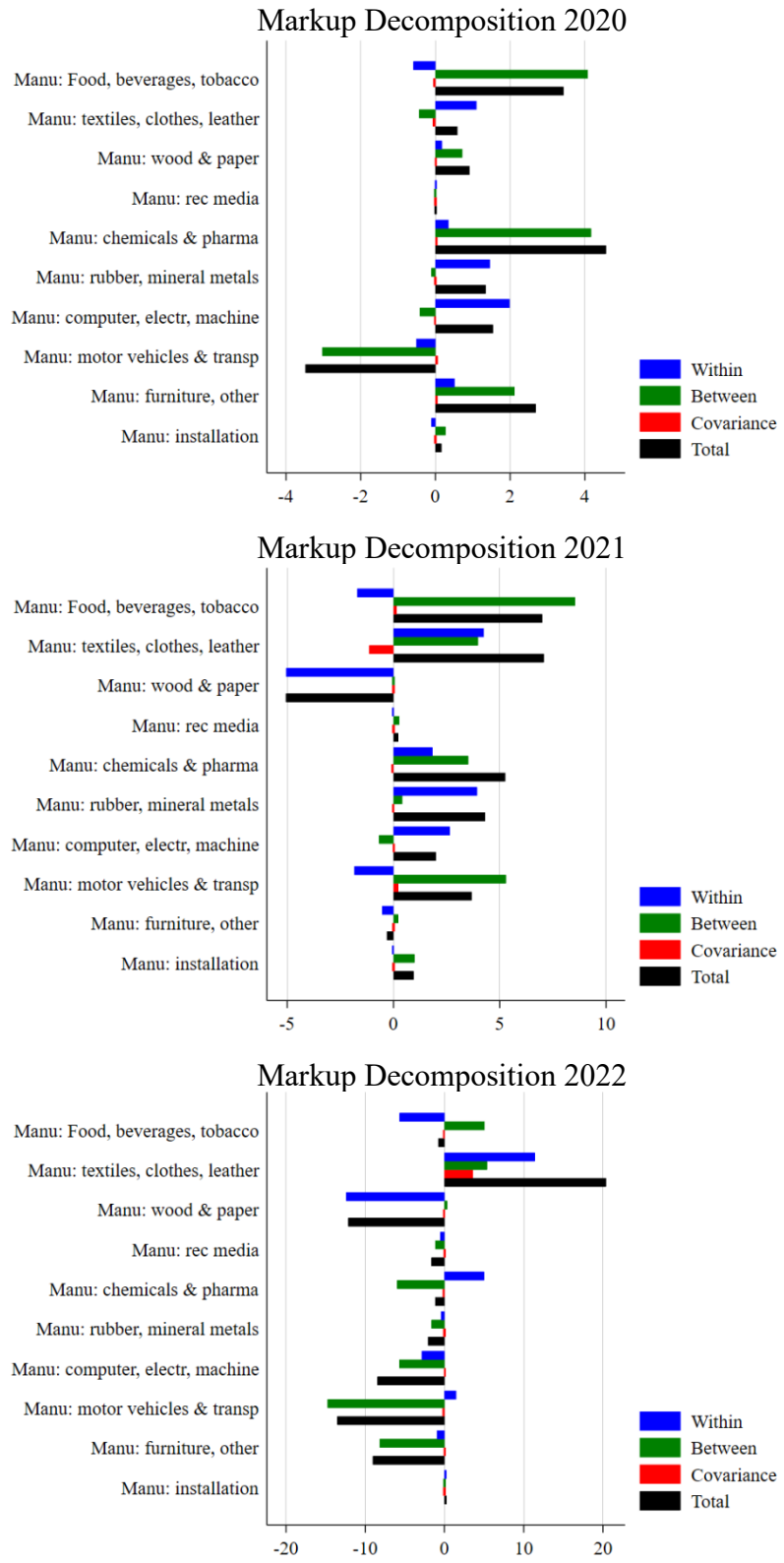
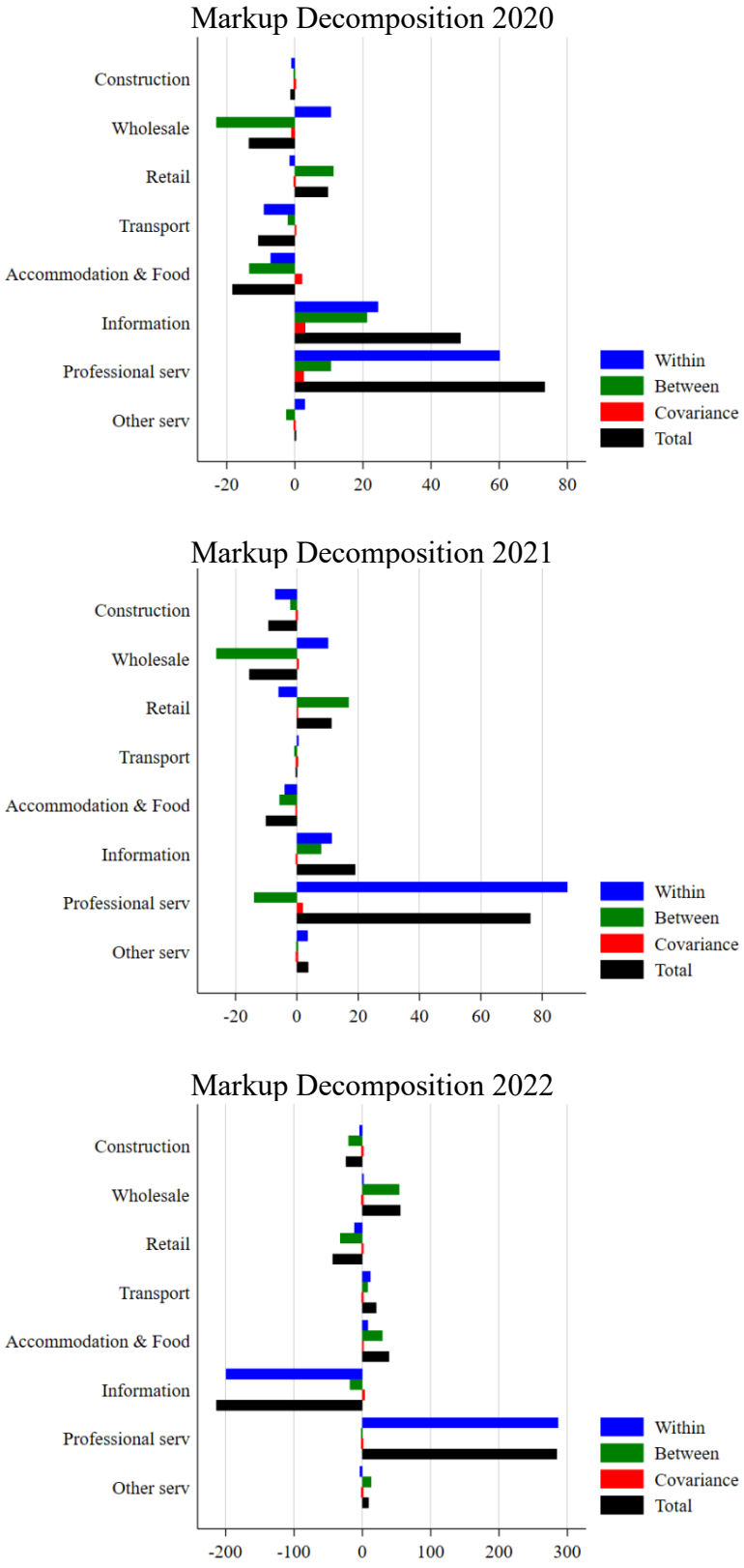


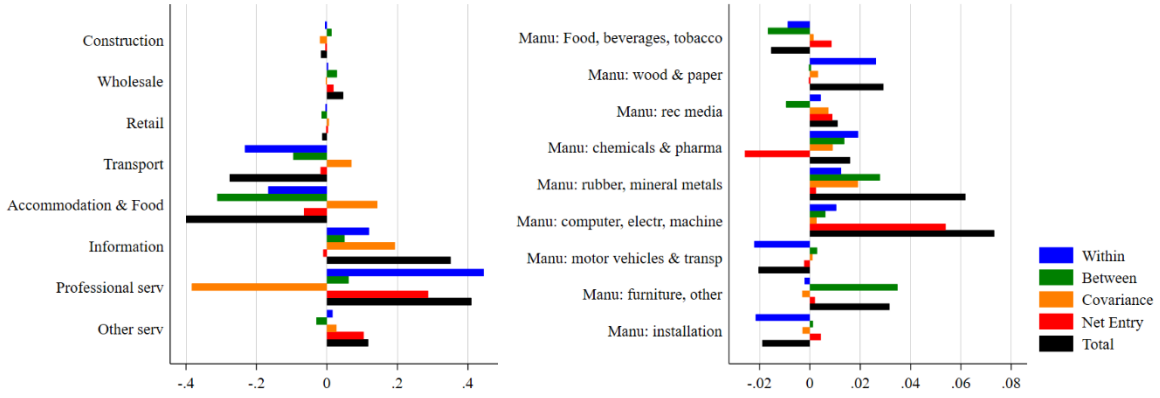
Figure 10b: Services: Industry-level shift-share decomposition in



This analysis illustrates that service industries were a much stronger driver of country-level changes in the markup than manufacturing industries, which is not surprising given that Services provide the dominant share of UK value added. The largest contributions to the rise in markups in 2020 come from Professional Services and IT and Other Information Services. Changes in both industries are dominated by a within-industry effect.

To analyse whether this was driven by rising markups within firms in those industries, we conduct a separate shift-share decomposition for individual industries in Figure 11, essentially replicating Figure 9 for each industry for a single year. This shows that indeed the within-firm component is the main driving factor behind the increase in markups in the Professional Services industry. It also plays a significant role for the Information industry, although the covariance term, indicating a simultaneous increase in markups and market shares, dominates. This provides clear evidence that firms in both industries managed to increase their within-firm markups in 2020, thus contributing more than any other industry to the rise in country-level markups in the UK.[8]

Figure 11: Within-industry decomposition of markup change in 2020



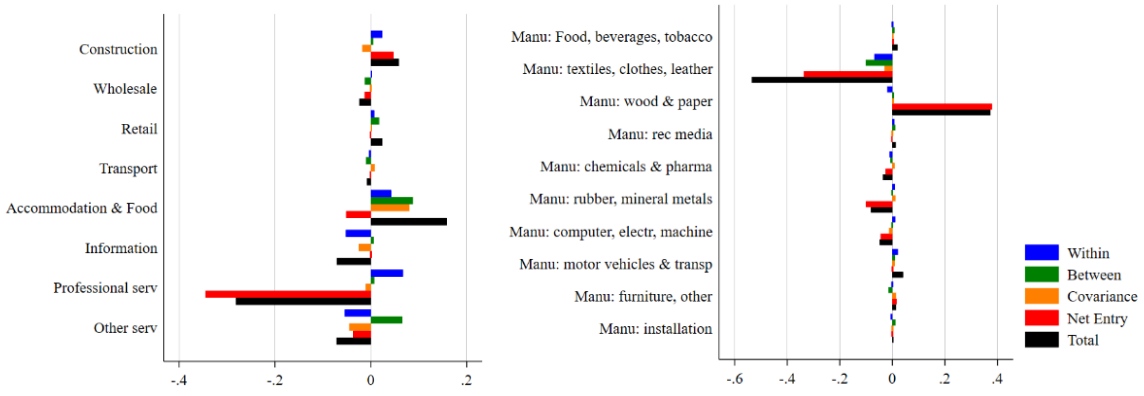
Within manufacturing, the Food, Beverages and Tobacco industry, as well as the Chemicals and Pharmaceutical industry contributed most strongly to the UK-wide increase in markups (Figure 10a). However, as shown in Figure 10a, in Food manufacturing this was mainly driven by a reallocation of output towards this industry, while the industry-level markup actually declined. This, in turn, was mainly driven by a reallocation of output towards large-scale low-

[8] Manufacture of Textiles, Clothes and Leather is excluded from the right panel of Figure 11 to increase readability. This industry experienced a large increase in markups, driven by within-firm changes. However, due to its relatively limited contribution to aggregate UK revenues, its effect is limited, as evident from Figure 10.

markup firms (Figure 11). In contrast, there is stronger evidence for increasing within-firm markups in Chemicals and Pharmaceuticals. The next largest contributors to rising UK-wide markups in manufacturing were Rubber, Minerals and Metals, as well as the Manufacture of Computers and Electrical Equipment.

2021 saw a significant decline in country-level markups, again driven mainly by Professional Services and, to a smaller extent, IT and Other Information Services. Interestingly, as can be seen in Figure 12, in Professional Services this is mainly driven by firm exit, and potentially related to the large share of firms in this sector that declared bankruptcy since the onset of the pandemic (see Section 5 below). In contrast, the fall in Information Services is largely driven by a decline within firms. Among manufacturing firms, it was again the Food industry that had the largest contribution to the fall in the country-level markup, and again, mainly driven by a reallocation effect, because of a fall in output in this industry in 2021. The second largest contributor within manufacturing in 2021 was the Manufacture of Textiles, Clothes and Leather industry, which experienced a strong decline in industry-level markups, mainly due to the exit of relatively high-markup firms.

Figure 12: Within-industry decomposition of markup change in 2021



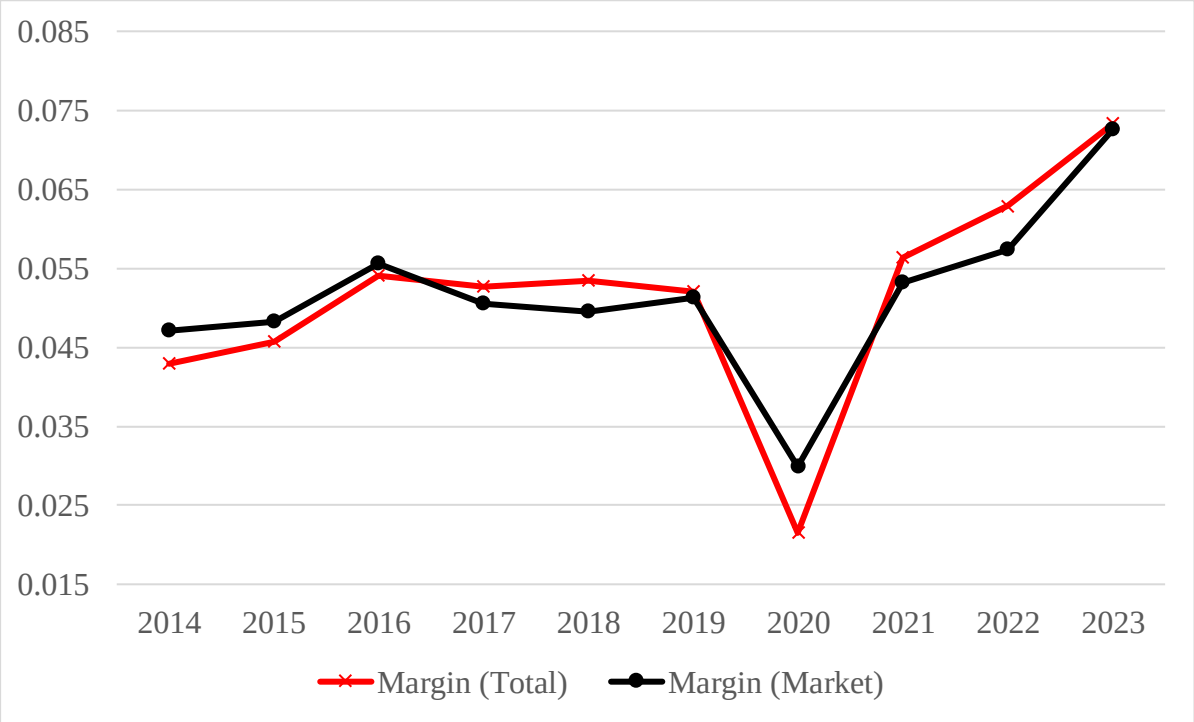
The UK markup barely changed from 1.44 to 1.46 between 2021 and 2022, but there were some changes at the industry level, including increasing within-industry markups in the Professional Services sector and the Manufacture of Textiles, Clothes and Leather industry. This was offset by a fall in the within-industry markup in the IT and other Information Services industries.

Overall, this analysis underscores the complex interplay between sectoral dynamics, firm-level strategies, and broader economic trends in shaping markup changes and output reallocation within the UK economy. It demonstrates the dominance of service industries in driving country-level markup changes and the observed increase in markups within firms in Professional Services and Information Services suggests that firms in these sectors successfully enhanced their pricing power throughout the pandemic and its aftermath. On the other hand, the significant decline in industry-level markups in 2021 in these two industries, driven respectively by firm exit in Professional Services and within-firm declines in Information Services, points to the vulnerability of these sectors to economic shocks, especially for small firms. Certain manufacturing industries such as Food, Beverages, Tobacco, and Chemicals and Pharmaceuticals, contributed to markup increases. However, in Food Manufacture, this was primarily driven by output reallocation rather than within-firm markup changes. This highlights the importance of structural shifts in production patterns for markup dynamics during the pandemic and its aftermath.

4. Profit Margins

As discussed in the introduction and Section 2, rising markups do not necessarily imply rising profits since they do not account for financial as well as other types of overhead costs. Especially at times of economic turmoil when firms are faced with unexpected costs that are not related to the normal functioning of the business, markups and profit margins can diverge for a period. To analyse this, we plot the revenue-weighted average profit margin in the UK in Figure 13. This is a different, larger sample compared to the previous analysis based on markups and includes between 47 and 69 thousand firms per year. The black line shows the profit margin according to our restricted 'market' sample, which omits several industries such as agriculture and mining, as discussed in Section 2. The red line includes all non-financial firms with sufficient data to calculate margins (after data cleaning procedures discussed in Section 2).

Figure 13: Sales-weighted average profit margin



The average UK profit margin for the 'market sample' (black line) reached its 9-year peak in 2022 and is 14% above its pre-pandemic (average of 2018-2019) value. Looking at all industries (red line) shows a similar trend and verifies that these dynamics are not driven by the particular industry selection. There is a sharp decrease in the margin by approximately

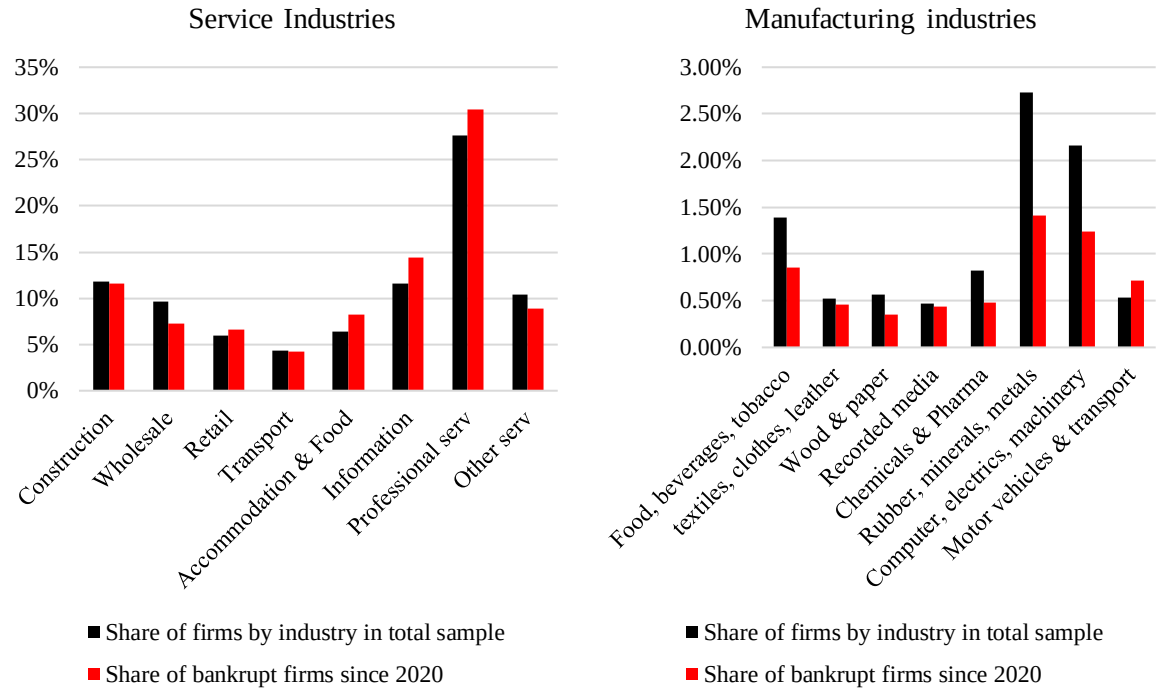
2.5%-points (42%) in 2020, the year the first Covid-19 restrictions were announced. However, already in 2021, the profit margin reaches above its 2019 level. This is remarkable given the enormous economic shocks in this period. These dynamics hold for both the consolidated and unconsolidated samples (available upon request). The year 2023 shows an unusually high profit margin. This data remains unrepresentative due to the small number of firms reporting (see Section 2) and is thus excluded from the subsequent analysis. However, it indicates that there is little evidence that margins are bound to decrease to pre-pandemic levels in 2023. An analysis of margins along the distribution (equivalent to Section 3.3 for markups) is reported and discussed in Figure A3 in the appendix. The analysis shows that the rise in profit margins between 2014 and 2019, i.e. before the pandemic, is mainly driven by an increase in margins at the top of the distribution, similar to the development of markups in Figure 5. In contrast, the decline in average profit margins in 2020 was mainly driven by unusually low margins at the bottom of the distribution, rather than, for example, falling top margins. In contrast, the recovery of profit margins in 2021 and 2022 was driven by a pulling away of top profit margins, indicating that the pandemic period induced a further polarization of the margin distribution across firms.

5. The post-pandemic period and financial fragility

A number of firms decried increased bankruptcy risk since the onset of the Covid-19 pandemic. In this section we analyse firms that declared themselves bankrupt since the 1st of March 2020 – these are 10257 firms in our sample.[9] Subsequently, we analyse them by industry, profit margin and size.

Figure 14 compares the share of firms in the overall dataset by industry with the share of firms that declared themselves bankrupt since 2020.

Figure 14: Share of firms that declared bankruptcy since March 2020 by industry



The black bars show the industrial composition of the UK economy, according to our sample.[10] The distribution of firms that declared bankruptcy since March 2020 closely follows the overall industry composition in the sample. The majority of firms are part of the service sector, and most firms that declared bankruptcy are situated in the professional services industry.

However, some interesting results stand out. Manufacturing industries such as Chemicals and Pharmaceuticals; Rubber, Minerals and Metals; Computer, Electrical Equipment and

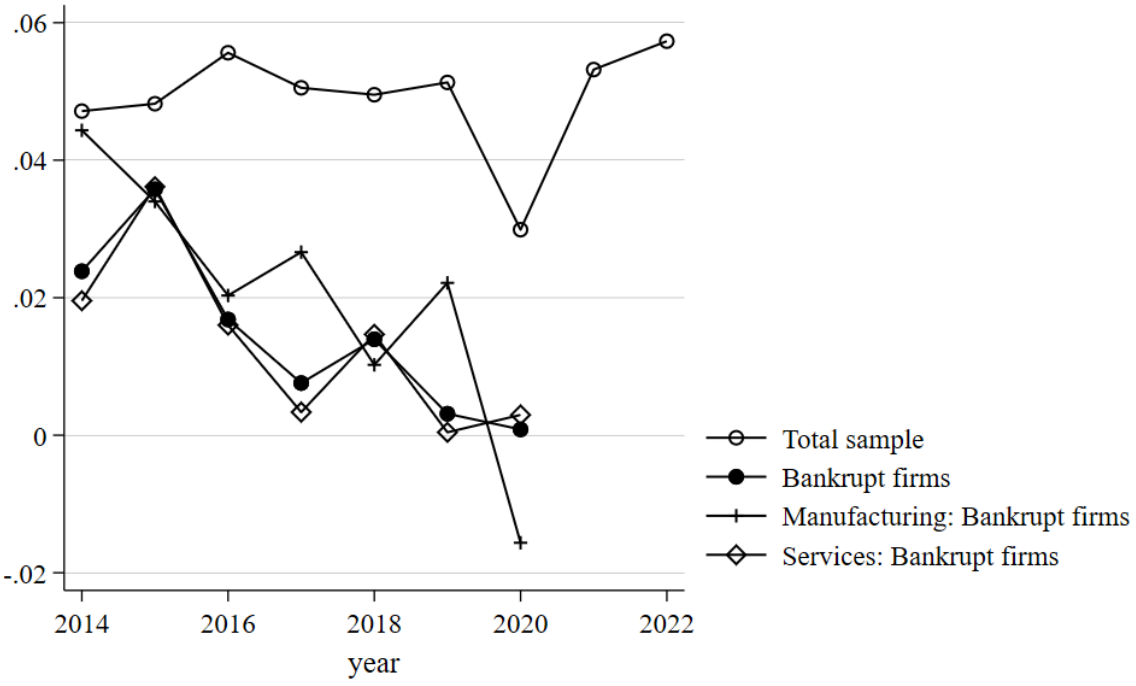
[9] This includes firms that are in the process of being liquidated but excludes firms that cease to exist because of (de)mergers.

[10] Since the graph solely reports the ratio of the number of firms in the industry as a ratio to the total number of firms, it does not provide direct evidence of how much value added is produced by each industry.

Machinery; and Food, Beverages and Tobacco had the fewest numbers of bankruptcies relative to the overall number of firms. The highest number of bankruptcies relative to the total number of firms was recorded in the Manufacture of Transport Equipment as well as service industries such as Accommodation and Food Services and IT and other Information Services. Overall, this suggests that on average firms in manufacturing industries suffered less than service industries from the negative economic effects of the pandemic. In the case of the Manufacture of Transport Equipment, it is possible that bankruptcies were related to the significant disruptions in their supply chains due to global lockdowns and trade restrictions.

Next, Figure 15 plots the revenue-weighted average profit margin of firms that declared bankruptcy since March 2020, and, for comparison, the profit margin in the overall (total) sample (reproducing Figure 13).

Figure 15: Sales-weighted profit margin of firms that declared bankruptcy since March 2020

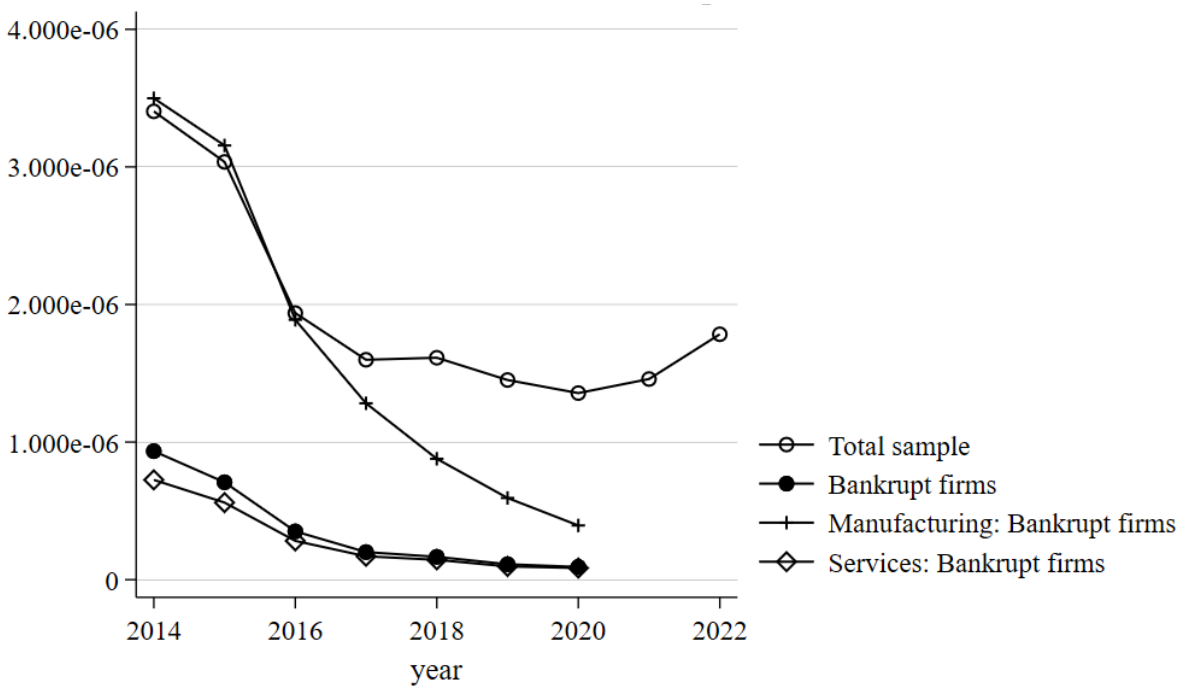


Given the dominance of firms in the service sector, the average profit margin for bankrupt firms (black circles as markers in Figure 15) closely follows the trajectory for bankrupt firms in the service sector (squares as markers in Figure 15). Figure 15 additionally shows that the sales-weighted average profit margin of bankrupt firms is lower than the sample average since 2014. The trend is also negative, indicating that the decline in profits was not solely a consequence of the 2020 pandemic and economic crisis, but rather that these firms were struggling

financially before 2020. In fact, for service industries, profit margins have been near zero since 2019. For 'bankrupt firms' in manufacturing industries, there is evidence of increasing profit margins in 2019 followed by a dramatic drop to a negative profit margin in 2020. This suggests that some manufacturing firms might have been on a path to recovery before the economic shocks of the post-2020 period.

Next, we look at the size of firms that declared bankruptcy since March 2020. Figure 16 reports the median sales share of all firms that report profit margins (total sample) and contrasts it with the median sales share of firms that declared bankruptcy since March 2020, split by manufacturing and services industries.

Figure 16: Median firm size (revenue share in total) of firms that declared bankruptcy since March 2020



In line with our analysis for markups in sections 3.2 and 3.4, firms that declared bankruptcy since March 2020 are usually small firms in the service sector. Among these firms, the median firm size declines over time, following the trajectory of the overall sample. Strikingly, the median firm size of bankrupt manufacturing firms closely follows the UK-wide median until 2016, suggesting that until this point size was not a reliable indicator for bankruptcy risk for manufacturing firms. However, median firm size diverges from 2016 onwards, implying an

increased risk of bankruptcy for smaller firms in manufacturing, equivalent to service industries.

Summing up, the majority of bankruptcies occurred in service industries, particularly in Professional Services, even beyond this industry's share in the overall sample. Conversely, manufacturing industries experienced few bankruptcies relative to their representation in the sample. This confirms that, on average, manufacturing firms were less impacted by the pandemic compared to service industries.

The analysis highlights the vulnerability of small firms, particularly in the service sector, to economic disruptions like the Covid-19 pandemic. It also suggests that pre-existing financial weaknesses, rather than solely pandemic-induced shocks, contributed to increased bankruptcy risk among firms.

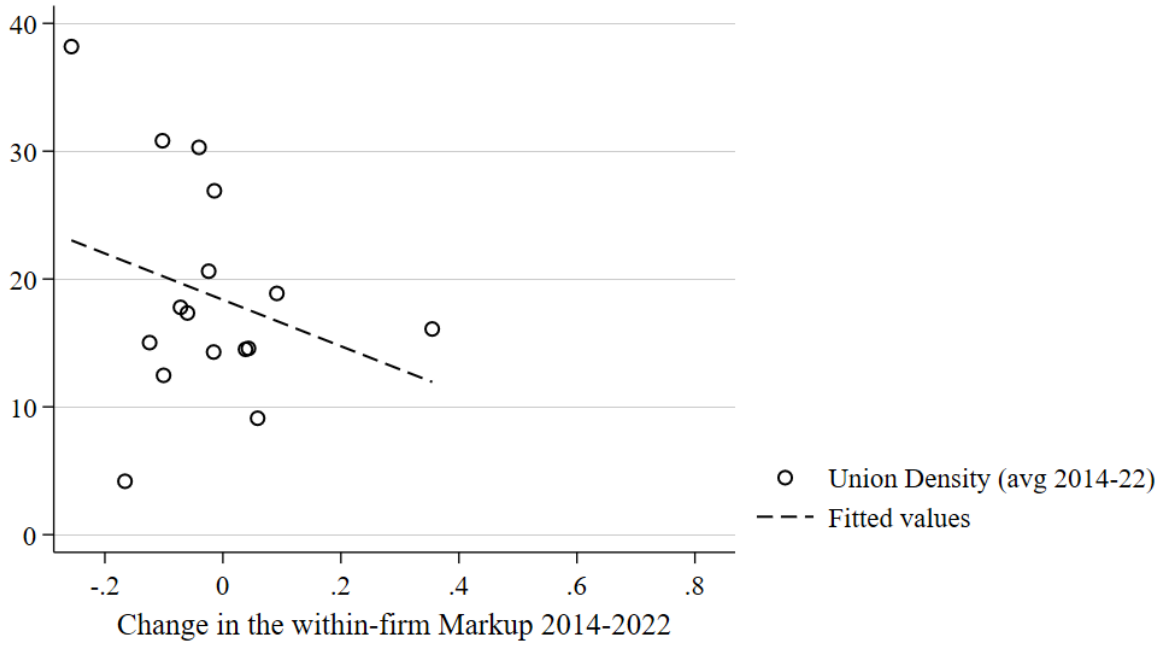
6. Markups and labour's bargaining power

The recent inflationary bout has led to a resurgence of conflict inflation theory in theoretical as well as empirical research (Rowthorn, 1977; Ratner and Sim, 2022; Lorenzoni and Werning, 2023; Wildauer et al. 2023). This theory understands the growth rates of nominal wages and prices as a result of conflicting claims over the distribution of income. According to this approach, firms will be limited in their ability to increase markups by the threat that workers will demand higher wages, which can develop into a price-wage spiral that both parties try to avoid. This suggests that the bargaining power of labour is relevant in moderating markups **within** firms.[11] At the same time, there is little reason to assume that workers have a strong impact on output reallocation between firms, such as a shift of output towards high-markup firms (see Guschanski and Onaran, 2021, for an equivalent argument at the industry level). To assess the relation between markups and labour's bargaining power, Figure 17 plots the change in markups between 2014 and 2022 against the trade union density at the industry level. We calculate the within-firm change in the markup in each industry (weighted by the share of the firm in the total revenues in the industry).

Figure 17 shows a negative correlation between markups and union density, implying that industries with higher union density experienced a smaller increase (or even decline) in the within-firm markup compared to industries with low union density. Each dot in Figure 17 represents an industry, as defined in Table A2 in the appendix. This correlation holds, albeit somewhat weaker, for the post-pandemic period 2019-2022 (results available upon request). While bivariate correlations do not imply causality and can only provide indicative evidence, this finding points towards a potential role for labour in constraining the pricing power of firms. However, more research is needed to assess which factors causally affect markup trajectories.

[11] Workers are often assumed to care more about the real consumption wage (i.e. the basket of goods they can afford with their salary) than the product wage (the level of wages relative to the price of the output sold by their employer; Wildauer et al. 2023). Nevertheless, rising prices and profits at the company level are often used to justify increased wage demands, especially if workers are well-organised. This implies that worker bargaining power can be relevant for firms' ability to raise their markups.

Figure 17: Change in the within-firm markup between 2014-2022 vs union density



Note: The within-firm change in the markup is calculated by adding up changes in the within-firm component from industry-specific shift-share decompositions in line with equation (1).

7. Conclusion

This report provides the first comprehensive analysis of markups and profit margins for the pandemic period and its aftermath in the UK using i) unconsolidated balance sheets of non-financial corporations, ii) data for both listed and unlisted firms, iii) the period covering up until 2022. In our sample the markup increases by 14.7% in nine years between 2014 and 2022. This implies that the rapid increase in markups in the UK that was highlighted by De Loecker et al. (2022) has accelerated in recent years, despite a pandemic and major economic, ecological and geo-political crisis. Importantly, this is to a large extent driven by rising markups within UK companies, especially since 2020. In this regard, the UK is different from the US where markup growth was strongly driven by a reallocation of output towards high-markup firms (Davis, 2024). Throughout this period, the markup distribution of firms in the UK became more polarised. Increasingly more firms are at risk of financial difficulties due to low profit margins while at the same time, more firms are charging historically extraordinarily high markups and reap high profits. This contributes to bankruptcy risk and economic instability while exacerbating pricing power for some companies.

Large firms have been the most consistent drivers of markup growth since 2014, but on average these are firms with relatively low markups. Firms with high markups tend to be smaller, and our evidence suggests that their markups are volatile. However, SMEs as a whole have on average experienced a fall in markups over the last decade. Small enterprises also dominate the group of firms that declared bankruptcy since 2020, in line with propositions that these firms were most strongly affected by rising costs and interest rates. Policy aiming at curtailing market power and markups should focus on large corporations and pay specific attention to the adverse economic effects on SMEs. However, we also highlight that there is a significant share of small firms among those that experienced the largest increase in markups after the pandemic. A careful approach to identifying these companies, assessing their financial vulnerability, and applying targeted policies will be essential to controlling pricing power while maintaining economic stability and dynamism.

The decomposition analysis indicates a widespread increase in markups across all industries of the economy since 2014, rather than the expansion of high-markup or the decline of low-markup industries. The service sector, being the largest sector in the economy, has been the strongest contributor to UK markup growth, but no industry stands out as the main driver of

the country-level markup trajectory. However, in periods of economic turmoil and large shifts in demand such as since 2020, UK markup dynamics are governed by both reallocation effects between industries and within-industry markup changes.

Importantly, our analysis shows that markups, once increased, tend to persist at a higher level. The rise in markups in 2020 was largely an attempt to cover extraordinary costs or losses that arose in the first year of the pandemic. Firms, on average, were not successful in covering these costs, as indicated by a strong decline in the 2020 profit margin. However, by 2022, markups and profit margins have increased beyond their historical peak, and indicative evidence for 2023 suggests that they might have risen even further since. This indicates that preventing markup increases during periods of economy-wide cost shocks like in 2020 should be a priority for policymakers. Essential steps to controlling pricing power and inflation in the UK will be to identify systemically significant prices and industries and to manage future price shocks through shock absorbers such as price gauging laws or price controls, buffer stocks, financial support for especially small businesses and windfall and wealth taxes coupled with transfers to low-income households (Onaran, 2023; Weber and Wasner, 2023; Wildauer et al. 2023). Our finding that markups have strongly increased within firms, rather than solely due to a reallocation of output between firms, indicates that broad-based excess profit taxes could be an efficient policy tool, as long as there is adequate consideration of businesses (especially SMEs) at risk of bankruptcy.

The rise in the markup has been ignored for too long. In addition to increasing pricing power of corporations and inflation risks that are amplified during times of crises, increasing markups contribute to a decline in the labour share and growing income inequality (De Loecker et al., 2020, 2022; Guschanski and Onaran, 2021). In this report, we provide indicative evidence that industries with higher trade union density have, on average, lower increases in markups between 2014 and 2022. This is consistent with the proposition that firms are reluctant to increase their prices when this can trigger rising wage demands and industrial conflict. Strengthening labour market institutions to bring the bargaining power of labour in balance with that of capital through increasing union density and collective bargaining coverage can thus be beneficial not only for income inequality but might also limit the pricing power of firms (Guschanski and Onaran 2021, 2023, 2024; Wildauer et al., 2023).

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Appendix

Appendix A1 – Data

Constructing samples of unconsolidated and consolidated accounts

We develop two strategies to deal with the issue of potentially double-counting data that arises if we were to include parent companies with consolidated accounts and subsidiaries with unconsolidated accounts. The first strategy prioritises unconsolidated accounts, while the second strategy prioritises consolidated accounts. We focus on unconsolidated accounts in this report, unless stated otherwise. Both strategies avoid (in the case of unconsolidated accounts) or minimise (in the case of consolidated accounts) double counting while trying to retain as much relevant data as possible. Both the consolidated and the unconsolidated sample retain all 'independent firms'. These are defined as firms with an empty value for the domestic ultimate owner (DUO), firms that are their own DUO and don't have any subsidiaries, or firms whose DUO occurs only once for a given year.

Since we focus our analysis on the UK, we also exclude consolidated subsidiaries of foreign firms from all samples (De Loecker et al. 2022).

Unconsolidated sample

To construct the unconsolidated sample, we keep all firms that report unconsolidated accounts. Additionally, we keep all firms with consolidated accounts that have zero subsidiaries, as there is no risk of double-counting data by keeping a parent with a consolidated account and a subsidiary with an unconsolidated account. Orbis also reports firms who report 'Limited Financials' (LF) as the consolidation code, making it impossible to assess whether these are consolidated or unconsolidated accounts. Following Kalemli-Özcan et al. (2023) we retrieve the consolidation code for these firms from the last two letters of the variable 'BVD Account Number'. However, only a small fraction of these firms report this variable. For the remaining LF firms, we keep them only if they are independent or have zero subsidiaries. This implies that we might be dropping some legitimate unconsolidated accounts. However, these firms often lack data for the variables we are interested in and thus they constitute only a small share of our final sample.

While avoiding double-counting data, this approach comes with two caveats. First, we might drop firms with consolidated accounts that should be part of the sample. This is the case, for example, when a second-level firm in a corporate group reports consolidated accounts, but none of its subsidiaries are part of the dataset. In this case, we would want to keep this

consolidated account, but we will exclude it because it has more than 0 subsidiaries. Second, we might include some data from non-UK firms, even though we exclude all consolidated subsidiaries of foreign firms in the first cleaning stage. This would happen if a firm at the lowest hierarchy level of a corporate group (i.e. with zero subsidiaries in the database) reports consolidated accounts and has subsidiaries outside the UK that are not included in Orbis.

Consolidated sample

We intermittently compare our results to an analysis using consolidated accounts. To construct the consolidated sample, we apply the following steps for every year in our database.

- We identify the DUO of each corporate group, and, if the DUO reports operating revenues, we drop all other firms in this corporate group.
- If the DUO does not exist for a given year, we keep all consolidated accounts for a given year (regardless of the number of subsidiaries) and drop all unconsolidated accounts.
- If there is no DUO and no consolidated firm available for a corporate group, we keep all unconsolidated firms. This also means that corporate groups that do not have a DUO or do not include firms with consolidated accounts in the database (i.e. all firms of this group report unconsolidated accounts) are kept.
- Firms with 'limited financials' are kept according to the same rules: if a DUO exists, we keep the DUO only. Otherwise, all LF firms are kept. This implies that we assume the LF DUO is consolidated. This implies that we could potentially double-count values if the LF firm has a consolidated account (which we cannot be sure of), and a subsidiary of the same corporate group is also in the database. However, there are only four firms with 'limited financials' in the sample that have more than 0 subsidiaries, so this risk is negligible.

This approach creates the following two issues. First, we will double count values when we have a firm with a consolidated account that is a subsidiary of another firm with a consolidated account. Second, we will drop firms with unconsolidated accounts that should have been in the database, because their parent is the DUO (level 2 firms), but the DUO does not report data and there are other firms with consolidated accounts of this corporate group in the database.

Table A1: Measurement & variables used

Code name	Name	Formula	Description
OPRE	Operating revenue (Turnover)		Total operating revenues (sum of Net sales, Other operating revenues and Stock variations). The figure does not include VAT, however, excise taxes and similar obligatory payments for some specific industries (e.g. tobacco and alcoholic beverage) may be included according to regional accounting practices
TURN	Sales		Sales net of any adjustments such as returns and excise tax
COST	Costs of goods sold		Costs directly related to the production of the goods and services sold. The related Depreciation and amortisation (D&A), if published as a standalone item in the main Income statement or its notes, is included in OOPE Other Operating Expenses and also published under memo item DEPR Depreciation & Amortization. If D&A is not available in the main Income statement, but is published in the notes, its value is subtracted from COST and added to OOPE. Note, that D&A can also be included into COST, if D&A value is not provided as a standalone item in the company's report
GROS	Gross profit	OPRE - COST	Total Operating revenue minus Cost of goods sold
OOPE	Other operating expense (income)		All costs not directly related to the production of goods sold such as commercial costs, administrative expenses, etc. plus depreciation of those costs. Income reported post Gross profit is netted here
OPPL	Operating profit (loss) [EBIT]	GROS - OOPE	Earnings Before Interest & Tax. All operating revenues minus All operating expenses
FIRE	Financial revenue		All financial revenues such as interest income, income from shares, gain on derivatives, etc. It may have negative values when net amount of income (expense) is reported
FIEX	Financial expenses		All financial expenses such as interest expenses, bank charges, write-off of financial assets, etc. It also includes other non-operating income (expenses) and unusual and exceptional income (expenses)
FIPL	Financial profit (loss)	FIRE-FIEX	Result from financial activities of the company (sum of Financial revenue and Financial expenses)
PLBT	Profit (loss) before tax [PBT]	OPPL+FIPL	Sum of Operating profit and Financial profit
TAXA	Income tax expenses (benefit)		All taxes related to the accounting period (paid, accrued or deferred)
PLAT	Profit (loss) after tax [PAT]	PLBT - TAXA	Profit before taxes [PBT] minus Tax expense
EXRE	Extraordinary revenues		All extraordinary revenues not belonging to the core activities of the company
EXEX	Extraordinary expenses		All extraordinary expenses not belonging to the core activities of the company
EXTR	Extr. and other P/L	EXRE - EXEX	All extraordinary and other results not belonging to the core activities of the company. This also includes minority interest
PL	Profit (loss) for the period [Net income]	PLAT + EXTR	Net income for the Year. Profit after tax including Extraordinary Revenue & Expense and After deduction of Minority interests and Preferred dividends but Before Ordinary dividends

Table A2: Industry classification

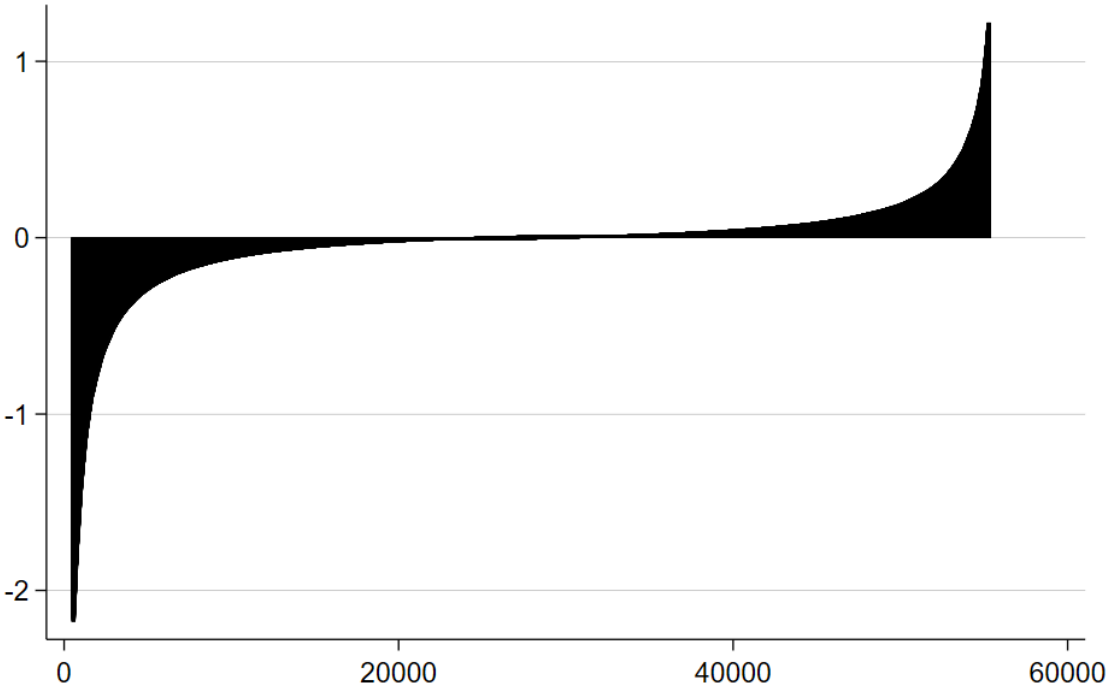
NACE	Description	Aggregation	Included
1	Crop and animal production, hunting and related service activities	1	N
2	Forestry and logging	1	N
3	Fishing and aquaculture	1	N
5	Mining of coal and lignite	2	N
6	Extraction of crude petroleum and natural gas	2	N
7	Mining of metal ores	2	N
8	Other mining and quarrying	2	N
9	Mining support service activities	2	N
10	Manufacture of food products	3	Y
11	Manufacture of beverages	3	Y
12	Manufacture of tobacco products	3	Y
13	Manufacture of textiles	4	Y
14	Manufacture of wearing apparel	4	Y
15	Manufacture of leather and related products	4	Y
16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	5	Y
17	Manufacture of paper and paper products	5	Y
18	Printing and reproduction of recorded media	6	Y
19	Manufacture of coke and refined petroleum products	7	N
20	Manufacture of chemicals and chemical products	8	Y
21	Manufacture of basic pharmaceutical products and pharmaceutical preparations	8	Y
22	Manufacture of rubber and plastic products	9	Y
23	Manufacture of other non-metallic mineral products	9	Y
24	Manufacture of basic metals	9	Y
25	Manufacture of fabricated metal products, except machinery and equipment	9	Y
26	Manufacture of computer, electronic and optical products	10	Y
27	Manufacture of electrical equipment	10	Y
28	Manufacture of machinery and equipment nec	10	Y
29	Manufacture of motor vehicles, trailers and semi-trailers	11	Y
30	Manufacture of other transport equipment	11	Y
31	Manufacture of furniture	12	Y
32	Other manufacturing	12	Y
33	Repair and installation of machinery and equipment	13	Y
35	Electricity, gas, steam and air conditioning supply	14	N
36	Water collection, treatment and supply	15	N
37	Sewerage	16	N
38	Waste collection, treatment and disposal activities; materials recovery	16	N
39	Remediation activities and other waste management services	16	N
41	Construction of buildings	17	Y
42	Civil engineering	17	Y
43	Specialised construction activities	17	Y

45	Trade and repair of motor vehicles and motorcycles	18	Y
46	Wholesale trade	18	Y
47	Retail trade	19	Y
49	Land transport and transport via pipelines	20	Y
50	Water transport	20	Y
51	Air transport	20	Y
52	Warehousing and support activities for transportation	20	Y
53	Postal and courier activities	21	N
55	Accommodation	22	Y
56	Food and beverage service activities	22	Y
58	Publishing activities	23	Y
59	Motion picture, video and television programme production, sound recording and music publishing activities	23	Y
60	Programming and broadcasting activities	23	Y
61	Telecommunications	23	Y
62	Computer programming, consultancy and related activities	23	Y
63	Information service activities	23	Y
64	Financial service activities, except insurance and pension funding	24	N
65	Insurance, reinsurance and pension funding, except compulsory social security	24	N
66	Activities auxiliary to financial services and insurance activities	24	N
68	Real estate activities	24	N
69	Legal and accounting activities	25	Y
70	Activities of head offices; management consultancy activities	25	Y
71	Architectural and engineering activities; technical testing and analysis	25	Y
72	Scientific research and development	25	Y
73	Advertising and market research	25	Y
74	Other professional, scientific and technical activities	25	Y
75	Veterinary activities	25	Y
77	Rental and leasing activities	25	Y
78	Employment activities	25	Y
79	Travel agency, tour operator and other reservation service and related activities	25	Y
80	Security and investigation activities	25	Y
81	Services to buildings and landscape activities	25	Y
82	Office administrative, office support and other business support activities	25	Y
84	Public administration and defence; compulsory social security	26	N
85	Education	26	N
86	Human health activities	26	N
87	Residential care activities	26	N
88	Social work activities without accommodation	26	N
90	Creative, arts and entertainment activities	27	Y
91	Libraries, archives, museums and other cultural activities	27	N
92	Gambling and betting activities	27	Y
93	Sports activities and amusement and recreation activities	27	Y

94	Activities of membership organisations (below subcategories of 94)	27	N
95	Repair of computers and personal and household goods	27	Y
96	Other personal service activities	27	Y
97	Activities of households as employers of domestic personnel	27	N
98	Undifferentiated goods- and services-producing activities of private households for own use	27	N
99	Activities of extraterritorial organisations and bodies	27	N

Notes: Aggregation indicates which NACE 2 codes were aggregated in our industry analysis to keep the number of industries manageable. We follow the industry classification in De Loecker et al. 2022 as closely as possible. This means that some 4-digit NACE sub-industries were included even though the 2-digit industry is indicated as excluded in Table A2. This is the case for example for industry 94, where we included sub-industries 9411 and 9412, but excluded sub-industries 9420, 9491,9492 and 9499.

Figure A1: Change in profit margin 2014-2022 (%-points)



Notes: Each bar represents the difference between the average margin in 2020-2022 and 2014-2019 for a firm. Top and bottom 1% of markup change was dropped to improve readability.

Figure A2: Distribution of revenues of firms which experienced large increases and decreases in markups in in 2022 compared to 2019

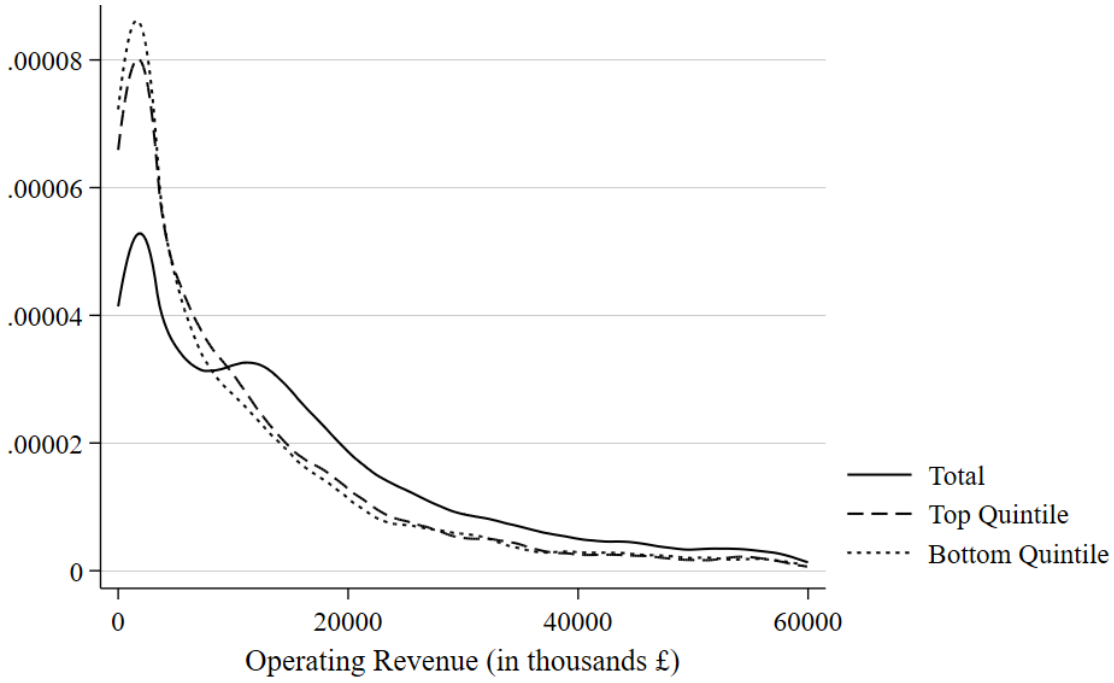
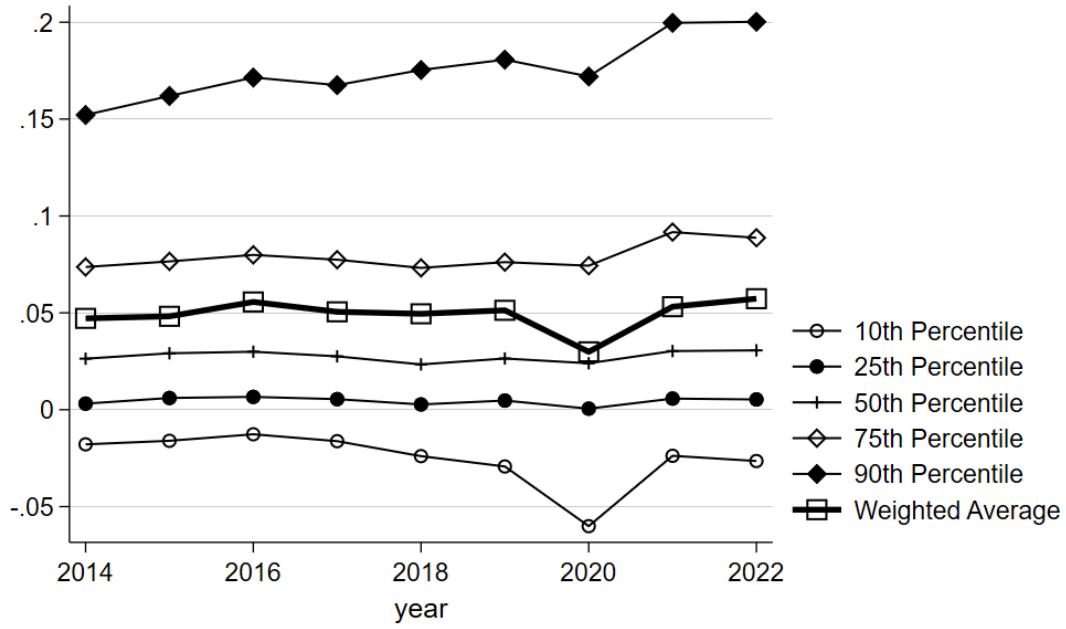


Figure A3: Margins by (revenue-weighted) percentiles



In Figure A3, we observe considerable inequality between high and low profit margins. The moderate rise in profit margins between 2014-2019 (for the 'market' sample), is mainly driven by an increase of margins at the top of the distribution, similar to the development of markups in Figure 5 in the main part. The decline in average profit margins in 2020 was mainly driven by unusually low (negative) margins at the bottom of the distribution. There is also a small decline in the 90th percentile. Additionally, the 10th percentile manages to merely recover to 2019 levels in 2021-22, while the 90th percentile exceeds the pre-pandemic margin significantly by 2021. The other parts of the distribution maintain stable margins. Overall, this suggests that the decline in aggregate profit margins was mainly driven by unusually low margins at the bottom in 2020 (rather than, for example, falling top margins). In contrast, the recovery of profit margins in 2021 & 2022 was driven by a further pulling away of top profit margins, indicating a further polarization of the margin distribution across firms.