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MARKET POWER IN THE MIDDLE EAST*

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Abstract

The Middle East (ME) is often perceived as a region with rentier economies and uncompetitive markets. Evidence of market power in the region however is scant. In this paper, we ask the following three broad questions: Is the ME uniquely uncompetitive? Has the evolution of market power in the region traced the global rise in market power? What government policies and actions influenced the market power in the region and can taxes be a way to even the playing field? To answer these questions, we utilize comprehensive firm-level data from Compustat between 2004 and 2022 and employ two methods for estimating markups (production function and cost-share approach). We document that market power among listed firms in the ME is higher than in the US, but on a downward trend. We find that the VAT reforms introduced by some Gulf states from 2018 to 2022 resulted in a reduction of market power, an additional benefit beyond increasing fiscal space. While policymakers should continue to use available regulatory levers to achieve economic efficiency and a level playing field, value-added taxes (VATs) could be considered as an alternative instrument.

Keywords: Middle East; Market Power; Markups; Firm Behaviour.

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1 Introduction

The Middle East (ME) is often perceived as a region with rentier economies and uncompetitive markets. The perception is attributed to several factors, including: a large dependence on natural resources and commodities revenue (in particular in Gulf Cooperation Council (GCC) countries) despite decades of policy efforts to diversify the economies; the presence of significant market distortions; and, a large presence of State-Owned Enterprises (SOEs) that have weakened efforts to develop a competitive private sector; and a need for stronger governance and institutions (Chaudhry 1997).[1]

In this paper, we ask a few main questions: Is the Middle East uniquely uncompetitive? How has market power in the region evolved in light of the multiple reform phases? Are the mark-ups of the GCC countries different from the rest of the Middle East countries? Has the region seen a marked trend of rising market power similar to the rest of the world? Did markups add to inflationary pressures in the Gulf Cooperation Council and the rest of the ME?[2] Additionally, we answer the question of whether, in a context with limited capacity to enforce antitrust laws, VAT policy can act as a backstop to the limited antitrust capacity by placing a restriction on corporate market power. Answering these questions has serious implications for the role and importance of antitrust, taxation, and product market reforms in the region. While research on market power has gained prominence recently, few studies have examined market power and its evolution in the Middle East to date.[3] In contrast, a growing

[1] This perception has frequently fed into policy decisions relating to the region. The most recent example is the IMF's reform recommendation on Egypt to strengthen its antitrust laws and to release a government strategy for an 'SOE-exit' from economic sectors.

[2] Our estimates additionally include Kazakhstan from the Central Asian region since the Kazakh economy relies significantly on natural resources.

[3] Robinson & Acemoglu (2012) provide a historical account of the development of the market economy in the region during the Ottoman Empire. Furthermore, Diwan et al. (2020) highlighted the prevalence of crony activities by politically connected companies in the Middle East, which hindered competition and impeded economic growth. In fact, Acemoglu et al. (2017) suggest that the Arab spring protests served as a partial check on rent seeking and wonder if the protests were caused by rent seeking. None of these estimate market power in the region and contrast it with estimates in the US or the EU.

body of research has identified a trend of increasing corporate market power both in the US and across the world (De Loecker et al. 2020, Diez et al. 2018, Autor et al. 2020).

To answer these questions, we employ the production function approach (pioneered by De Loecker & Warzynski (2012)) and the cost-share approach (as suggested by Bond and Gottardo, (*Forthcoming*)) to estimate firm-level corporate markups for the Middle East between 2004 and 2022 using comprehensive firm accounts from Compustat.[4,5]

We find that corporate market power among listed firms in the Middle East is indeed higher than in the US, but it is on a downward trend (except for the COVID-19 period).[6] Like the rest of the world, the Middle East is experiencing a superstar firm phenomenon, which explains two simultaneous trends: the rise in market concentration and the fall in labor shares. Within the region, GCC countries have higher corporate markups (including or excluding oil companies) than the rest of the Middle East countries in our sample, and their markups shot up immediately after the pandemic but are converging to the US and the rest of the Middle East since then. Our main results are robust to the choice of markup estimator. The cost-share markup estimator requires the additional assumption of constant returns to scale. However, it relaxes the need to identify the output elasticity of production which is heavily disputed in the literature.

Against the backdrop of global inflation during 2021-22, we examine whether in-

[4]Markups are defined as the ratio of firms' prices to their marginal cost. In a neoclassical world with perfect competition firms price their products equal to marginal cost. Markups then measure the extent to which firms deviate from this competitive environment.

[5]We use the cost-share approach in order to avoid the critiques documented in the literature by Bond et al. (2021). To ensure the robustness and validity of the results for ME countries, we expand our sample to non-listed companies using the BvD Orbis data and re-run the estimates using both estimators. To strengthen our claims, we also provide alternative measures of market power including market concentration for example.

[6]When comparing our estimates with the literature on European firms, we find that the aggregate markups we have in the Middle East are higher than those reported by Loecker & Scott (2017). Loecker & Scott (2017) is the closest method to our implementation.

flation has been passed on to consumers. Our findings suggest that GCC countries appear to have absorbed some of the price rises by lowering their markups following inflation surprises, unlike other countries in the region. The significance of this result varies by country, but the relationship remains negative. Generally, we do not find evidence of "greedflation" in the Middle East.

Since our sample coverage expands over the period analyzed, it is possible that the (net) entry of more productive firms drives the decline in our markup measures. To rule out this possibility, we demonstrate that within-firm markups are falling and driving a significant portion of the decrease in aggregated weighted markups for both measures. According to one of the markup measures, net entry also contributes to the falling markups over the period. However, for the other measure, net entry plays a very limited role in the evolution of markups in the region.

We also examine whether there is any heterogeneity across sectors and firms with different degrees of international market exposure. Companies operating in marketable services sectors and oil and utilities industries in the Middle East typically have higher markups relative to other industries. While firms with zero foreign currency exposure (more domestically focused) generally have lower markups, the overall dynamic of markups is driven by firms with larger foreign exposures (particularly for non-energy companies). This has two implications. First, lower corporate markups of domestically oriented firms are benefiting domestic consumers in the Middle East. Second, the reduction in markups is likely attributable to firms in the region gaining global competitive efficiency, which could have positive productivity externalities on the rest of the ME firms.

In terms of policies that influenced market power, our findings suggest that first-generation trade and financial market reforms, as well as improvements in property rights in ME region, have contributed to the falling markups trend. To examine

whether VAT policy can serve as a backstop to antitrust efforts in promoting competition, we utilized the cross-country variation in VAT adoption in GCC. Our results indicate that the VAT reforms introduced and adjusted by some GCC countries from 2018 to 2022 led to a reduction in market power, an additional benefit beyond increasing fiscal space.

The rest of the paper is organized as follows. Section 2 provides a background literature overview. Section 3 describes the markup estimation methodology and the challenges in adopting the estimation procedure, including the costs and benefits of adopting an alternative method described in Annex III. Section 4 describes the sample and data source. Section 5 discusses the results, including stylized facts about market power in the GCC and the rest of the Middle East and their macroeconomic implications. Section 6 concludes.

2 Background Literature

This paper relates and contributes to several strands of literature. First, this study contributes to the literature on rent-seeking in the ME region by providing comprehensive firm-level estimates of market power in the region. The estimates of firms' markups and their dynamics can help determine whether the Middle East truly exhibits a unique lack of competition, which, in turn, can inform the necessity for strengthening antitrust laws and regulations to ensure a level playing field for all market participants (Gigineishvili and others 2023, IMF ME REO 2023). This study enhances the understanding of the region's market competition and competitiveness.

Our research also makes a significant contribution to the literature on the development of global corporate market power, as evidenced by the works of Akcigit et al. (2021), Qureshi (2019), and Diez et al. (2018). Specifically, this study aims to assess whether a significant regional economic bloc, such as ME, is experiencing a similar

trajectory of rising corporate market power as the rest of the world. Earlier qualitative work suggested such a trend for the region (Diwan et al. 2020). Building upon this, our quantitative analysis adds empirical evidence to the discussion, while also challenging previous views.

Third, to corroborate our estimates and address criticisms related to markup estimation using the production function approach (De Loecker et al., 2017), we employ an alternative adjusted markup estimator. This methodology addresses concerns raised in recent work by Bond et al. (2021), Raval (2023), ensuring the robustness and reliability of our findings.

Our research also makes a significant contribution to the literature on the macroeconomic implications of corporate market power in the ME and the GCC, in particular. The recent rise in global inflation is often attributed to corporate greed, which is seen as a key driving force behind rising prices. Therefore, from a policy perspective, understanding the contributing role of the dynamics of market power to inflation is important. We use the markup estimates for ME countries and relate them to headline inflation in the region. Our analysis suggests that a rise in corporate market power did not contribute to the inflation surge in GCC countries in 2022. These findings are consistent with the findings for advanced economies (Chapter 1, October 2023 World Economic Outlook).

Besides to documenting the dynamics of market power in the ME, we also explore policies that could enhance competition and contribute to the economic diversification of the region adding to the literature on economic diversification and competition. We argue that tax policy, particularly value-added tax (VAT), could be used to deter market power in the region and promote competition. Our analysis suggests that VAT reforms have had unintended benefits, such as reducing market power, in addition to increasing fiscal space in GCC countries. While policymakers should continue to use

available antitrust levers to deter market power and achieve economic efficiency, the VAT tax could be a novel additional instrument to consider. This builds up on theoretical work by Delipalla & Keen (1992) on the efficiency of ad valorem taxes. It also builds on empirical work by Benzarti et al. (2020).

3 Methodology

3.1 Markup Estimation: Production Function Approach

A sizeable literature starting from Hall (1988) recognised that price-marginal cost markups can be recovered as

$$\mu_{it} =: \frac{P_{it}}{MC_{it}} = \epsilon_{it} \cdot \left[\frac{S_{it}}{R_{it}}\right]^{-1}, \tag{1}$$

where ϵ_{it} is the output elasticity of the variable input s, S_{it} is the expenditure on input s, and R_{it} is sales or turnover. This follows from the cost minimisation problem of a firm with variable costs described by

$$\min_{\boldsymbol{s}} C(\boldsymbol{s}) \quad \text{s.t.} \quad Q = F(\boldsymbol{s}) \quad \& \quad Q \geq 0$$

where $C(\boldsymbol{s})$ is the cost function of a vector of inputs, Q is the quantity of output produced, and $F(\boldsymbol{s})$ is the production function of Q. The first order condition is thus

$$\boldsymbol{P_s} = \lambda \frac{\boldsymbol{\partial Q}}{\boldsymbol{\partial s}},$$

where $\boldsymbol{P_s}$ is a vector of containing the price of the inputs s, λ is the shadow cost of an extra unit of output (the marginal cost), and $\frac{\boldsymbol{\partial Q}}{\boldsymbol{\partial s}}$ is a vector of the derivative of quantity with respect to the variable inputs s. Dividing and multiplying by P (the price of the output good) on the right hand side and rewriting $\frac{\boldsymbol{\partial Q}}{\boldsymbol{\partial s}}$ as an elasticity, one obtains equation 1.

Equation 1 has attractive features for estimating markups. Firstly, we do not require any data relating to the demand schedule of the output product market. Secondly, we only require data on expenditure share on a variable input, s, relative to total sales and an estimate for the output elasticity of the same input. There are challenges however in estimating ϵ_{it}. We typically observe revenue data and, hence, can only estimate revenue elasticity, η_{it}, as opposed to output elasticity, ϵ_{it}. For example, De Loecker & Warzynski (2012), De Loecker et al. (2020) use revenue measures from Compustat to estimate corporate markups, based on equation 1. This creates multiple challenges in the estimation procedure relating to the identification of the markup parameters (Bond et al. 2021). The literature usually places restrictions on the relationship between η_{it} and ϵ_{it}. These concerns are discussed in the next subsection.

Note that the production function approach is in contrast to another approach in the literature that estimates the demand schedule and uses that to back out industry- or firm-level markups (Syverson 2019, Berry et al. 1995).

To estimate η_{it}, in our baseline specifications, we adopt the following auxiliary regression for η_{st}.

$$y_{ist} = \eta^{v}_{st} v_{ist} + \eta^{x}_{st} x_{ist} + \eta^{k}_{st} k_{ist} + \omega_{ist} + u_{ist} \qquad \forall s,t \tag{2}$$

where lowercase letters denote logs, y_{it} is logged realised firm revenue assuming $y_{it} = ln(Q_{it} exp(u_{it}))$, v_{ist} is the log of a composite of cost of goods sold, x_{it} is the log of a composite measure of overhead expenses, k_{it} is the log of firm's capital stock, ω_{it} is the log of a hicks neutral productivity shock. Relying on the insight of Olley & Pakes (1996) that productivity, ω_{it}, can be expressed as a semi-parametric function of a firm's

state variables and observables, we model ω_{it} as

$$\omega_{it} = \phi_{st}(i_{ist}, k_{ist}, z_{ist}) + u_{ist} \tag{3}$$

These restrictions allow us to estimate equation 2 as a simple semi-parametric regression. Assuming v_{ist} is a variable cost, we can then use, η^v_{st} to recover markups. To identify η^v, we need to assume that the variable cost bundle, v, is non-dynamic and chosen at t, after the investment decision, made at $t-1$, while allowing productivity shocks to hit the firm in between those two periods. Aside from its easy implementation, there are two reasons we adopt this approach. Firstly, this (control function) approach is not very data-demanding relative to GMM methods like Ackerberg et al. (2015). This is important given our small sample as discussed later. Secondly, in practice as confirmed in previous analysis for the US (De Loecker 2021), the difference in revenue elasticities estimated based on competing approaches such as Ackerberg et al. (2015) is not large.

In our baseline specification, we estimate a unique, η_{st} for each sector, holding it constant across the entirety of the sample again in order to increase the effective sample size. This effectively assumes that the production function is constant over the sample period, $\eta_{st} = \eta_s$. We also run a variety of estimation techniques to confirm our results.

3.2 Challenges to the Adopted Estimation Procedure

- **Sample size.** Our research aims to estimate the output elasticity η_s of firms in the region, which has few listed firms. To reduce the data requirements for the estimation procedure, we adopt multiple solutions. Firstly, we estimate the output elasticity assuming η_s varies across more aggregated sectoral classifications, instead of the 2-digit sectoral classifications used in the literature. This increases the statistical power of the estimator in the auxiliary regression. Sec-

ondly, we assume the production function is constant over the sample period to allow the sample to be larger. We use an estimation procedure that relies on less data restrictions. Lastly, we expand the sample size by including non-listed firms from BvD Orbis database to estimate the same parameters for non-listed firms. This is one of the few papers that has expanded in this direction, the other being Raval (2023). While we achieve a larger sample, we also introduce more heterogeneity by expanding the sample, which needs to be treated with caution.

- **Methodology.** There are two further critiques levelled against the production function approach. Firstly, Raval (2023) finds that production function estimation based on different inputs yields different markup distributions. This fact may be related to the necessary assumption that the procedure ought to use only variable costs. In practice, some costs used to estimate markups might be not be variable, leading to this discrepancy. Secondly, firm accounts does not feature output data but rather revenue data. Hence, the estimated markups are based on revenue elasticities. This leads to a downward bias in the estimated markups as suggested by Klette & Griliches (1996). Additionally, Bond et al. (2021) outline a host of problems in estimating markups when only revenue and expenditure data is available. These criticisms are generally because of the omitted price bias concerns. In Appendix C, we study the impact of estimating of placing different assumptions on the estimation of the revenue elasticity to explore robustness of the main results reported.

3.3 Markup Estimation: Cost-Share Approach

We additionally estimate markups using an alternative cost-share approach that relies on the key assumption of constant returns to scale. The benefit of this approach is that it relaxes the need to identify the widely disputed output elasticity using the production function approach relying on revenue accounting as opposed to production data.

Assuming cost minimization and constant returns to scale, we can show that an estimate for the output elasticity for input s, ϵ^s_{it}, is given by

$$\epsilon^s_{it} = \frac{\boldsymbol{E}[w_s \cdot s_{it}]}{\boldsymbol{E}[\sum_j w_j \cdot j_{it}]}.$$

Based on this result we can recover markups using equation 1 as:

$$\mu_{it} = \frac{R_{it}}{\boldsymbol{E}[\sum_j w_j \cdot j_{it}]}. \tag{4}$$

Equation 4 intuitively suggests that markups are identified as the ratio of revenue to the expected value of variable costs. This alternative method places an additional assumption of constant returns to scale. However, the benefit is this method relaxes the need to identify output elasticity using the production function approach.

4 Firm-Level and Macroeconomic Data

We use comprehensive consolidated accounts of publicly listed firms from Compustat Global restricting our sample to firms whose main headquarters is in one of 13 ME economies (including all six Gulf states) between 2000 and 2022. Appendix A reports the coverage of the sample relative to the size of these economies over time and by country using profits and sales data.

We deflate firm accounts using country-level deflators from the IMF World Economic Outlook (WEO) database and convert them to USD in order to allow for cross-country comparison. In line with the literature (for e.g. Hennessy & Whited (2005), we drop observations with negative sales or cost of goods sold. We also winsorize the ratio of sales-to-costs of a goods sold at the 1% double-sided in order to remove outliers. This results in a sample of approximately 1300 firms and 20,700 firm-year ob-

servations. Appendix B.1 reports summary statistics on sales, cogs, profits, firm-year observations by country. Appendix B.2 reports the country composition of the firms' location. Appendix B.3 reports the industry composition of these firms per country.

To benchmark the results, we construct a sample of US-incorporated publicly listed firms from Compustat in order to compare markups in the region with those for the US firms. We apply the same sample restrictions for this sample of US firms.

Other macroeconomic variables, such as gross domestic product, production by industry, inflation, and value-added tax (VAT) rates, are utilized to construct our variables. These are available from the IMF WEO database.

5 Main Results

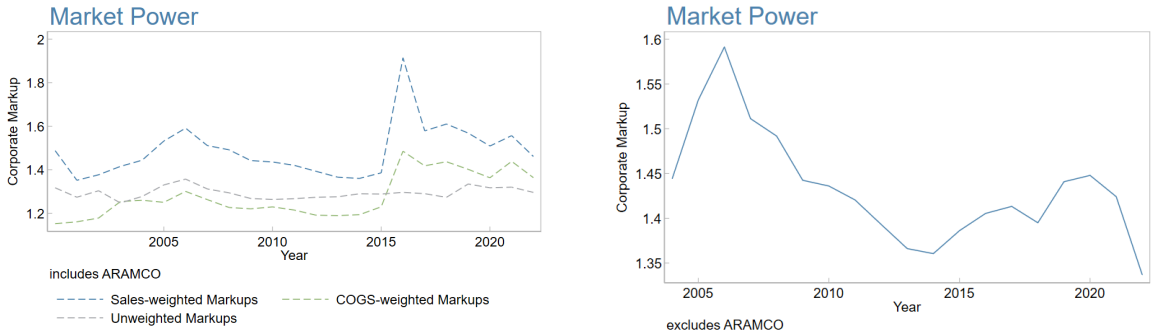
5.1 Market Power in the Middle East and Central Asia

Market power in the GCC and the rest of ME region has been higher than in the US.[7] This result is consistent with other measures of markups, profit shares, dividend payouts, and market concentration (see Appendix C, E, and G). However, unlike the US, GCC market power has not shown an upward trend over the last twenty years. A significant spike in market power in 2016 is observed after the listing of Saudi Arabia's ARAMCO. Despite the rising global trends of corporate market power, the GCC and the ME have escaped the trend (Figure 1 and 2). In a perfectly competitive market, markups should be equal to 1. Deviations from 1 indicate market power. The average markup in the GCC was close to 1.6 around 2010. Excluding ARAMCO, there is a downward trend until 2010 and stablility around 1.45 between 2010 and 2020. To mitigate the criticism summarized by Bond et al. (2021) on the bias of markup estimation in the absence of quantity data, we estimate markups for the ME using an alternative

[7] Our markup estimates for the ME are also higher than those reported in the literature for European countries (Loecker & Scott 2017).

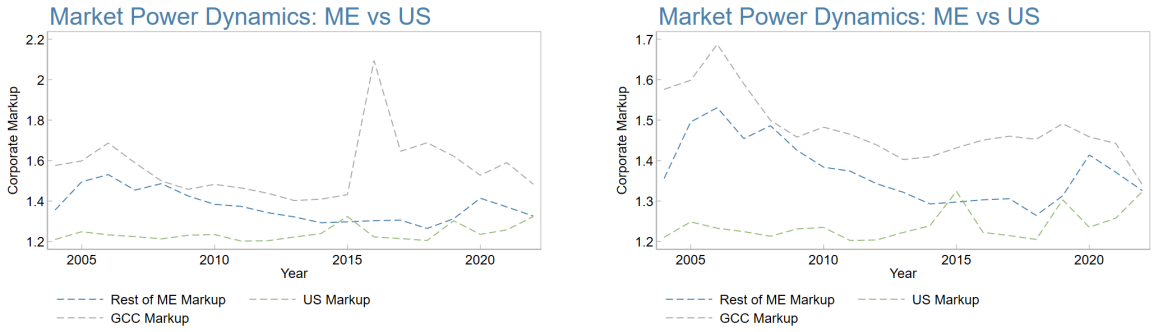
method (Figure 3). This method, described in Appendix E, assumes constant returns to scale, which imposes additional structure on the problem and obviates the need for quantity data. The alternative method reveals a similar dynamic for the ME region, with markups decreasing over time.

Figure 1: The ME Markups : Different Weights.



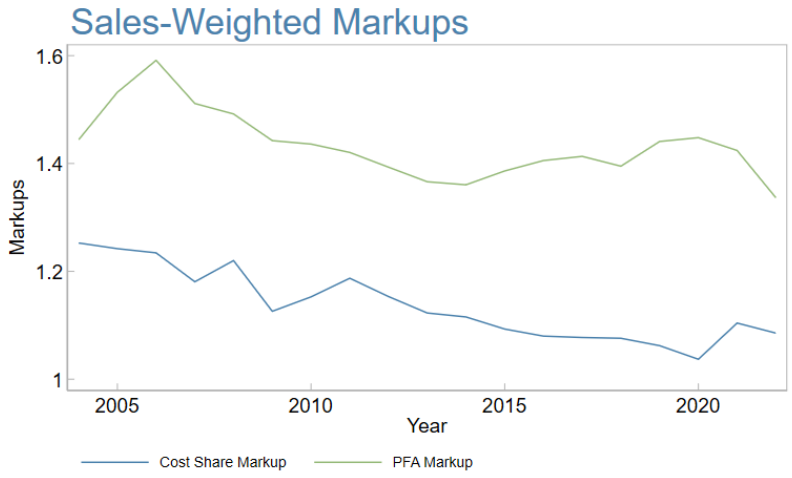
(i) Including ARAMCO (ii) Excluding ARAMCO

Figure 2: Sales-weighted average ME and US Markups.



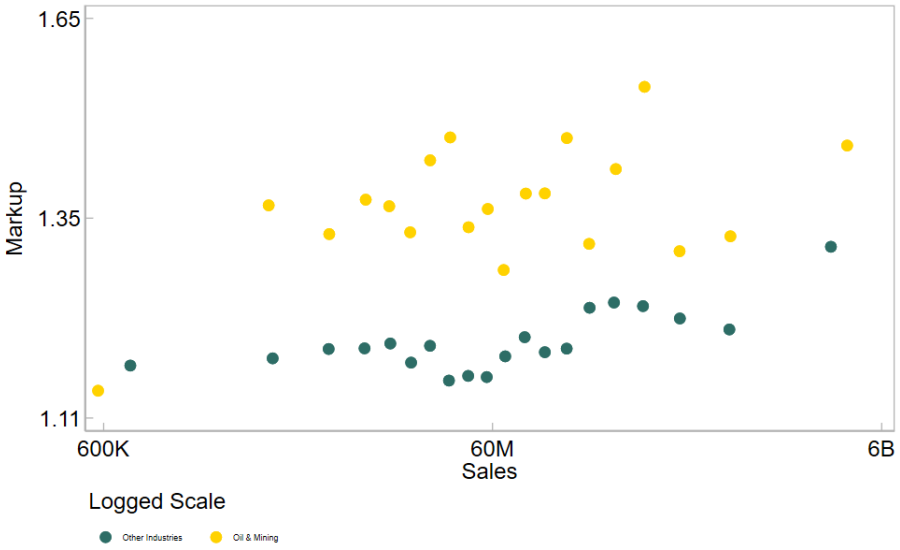
(i) Including ARAMCO (ii) Excluding ARAMCO

Figure 3: Markups Estimates using Different Methods (excluding ARAMCO).



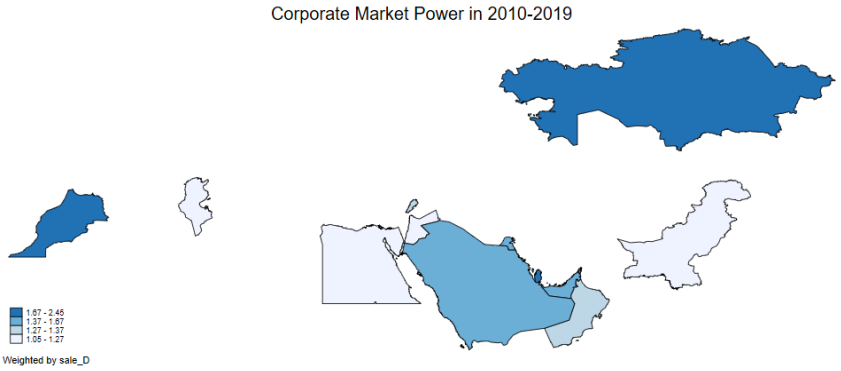
Listed firms in the ME display a "superstar" phenomenon, where firms with higher sales have higher market power. This is true for both the oil, mining, and utilities sector and other sectors (Figure 4). The oil, mining, and utilities sector has higher market power than other sectors across the entire sales distribution, indicating some unique market dynamics associated with OPEC+. Resource-rich countries in the ME are also the ones with higher average markups. Morocco is the only non-oil country in the sample with comparable level of markups (Figure 5).

Figure 4: The ME Superstar Firm Phenomena.



Note. Oil, Mining, & Utilities are yellow & Other Industries are teal.

Figure 5: Map of Markups in the ME in 2010-2019.



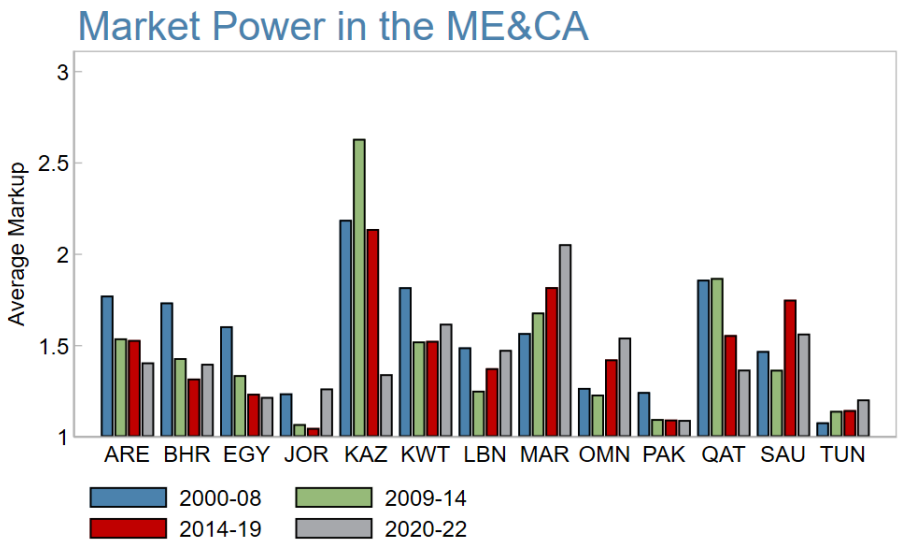
Within the GCC, average markups did not change much over the period, but they showed a weak upward trend in the Bahrain, Kuwait, and Oman in recent years (Figure 6). Conversely, Qatar, Saudi Arabia, and the UAE showed a downward trend. This fact can have multiple explanations. First, one can argue that some countries succeeded in implementing structural reforms to enhance market competitiveness and strengthen antitrust laws.

The passage of several laws across the region, such as Qatar's competition law of 2006 and Saudi's competition law of 2019, might explain some of the falling trends in some countries. While there's no single reform that directly reduces mark-ups across the board in the region, several initiatives might contribute to a more competitive market environment, potentially leading to lower mark-ups. Some key channels and reforms with this potential impact include: through increasing competition, for example, trade liberalization (reducing trade barriers such as tariffs and quotas that allows for more competitive imports and puts pressure on domestic businesses to become more efficient and potentially lower prices), regulatory reforms (streamlining regulations and simplifying business registration that attract new entrants into various sectors and fosters competition), foreign direct investment (FDI) promotion (attracting foreign companies can introduce new technologies and business practices that leads to increased competition); through enhancing market efficiency, for example, e-commerce development (encouraging e-commerce platforms that creates price transparency), antitrust regulations (strenthening antitrust laws and enforcement that prevents dominant companies from setting artificially high prices); through reforming financial sector, for example, improving access to finance for SMEs (making it easier for small and medium-sized enterprises to access loans that increases competition in the market).

It is important to note that the effectiveness of these reforms in reducing mark-ups depends on various factors, including the specific reform implemented, the level of competition in the market, and the overall economic environment. Additionally, some reforms might have unintended consequences, so a comprehensive approach is crucial. Second, markups and market power are closely related to the price elasticity of demand: one possible reason for such trends are underlying changes in the elasticity of demand within the countries. A decrease in the price elasticity of demand means that a firm with market power can charge higher prices since demand does not adjust as much. Third, an increase in licensing agreements to build and run certain indus-

tries would also lead to an increase in market power. This can be rationalized as the government allocating incentives to diversify out of the oil sector.

Figure 6: Markup Heterogeneity by Country over time.

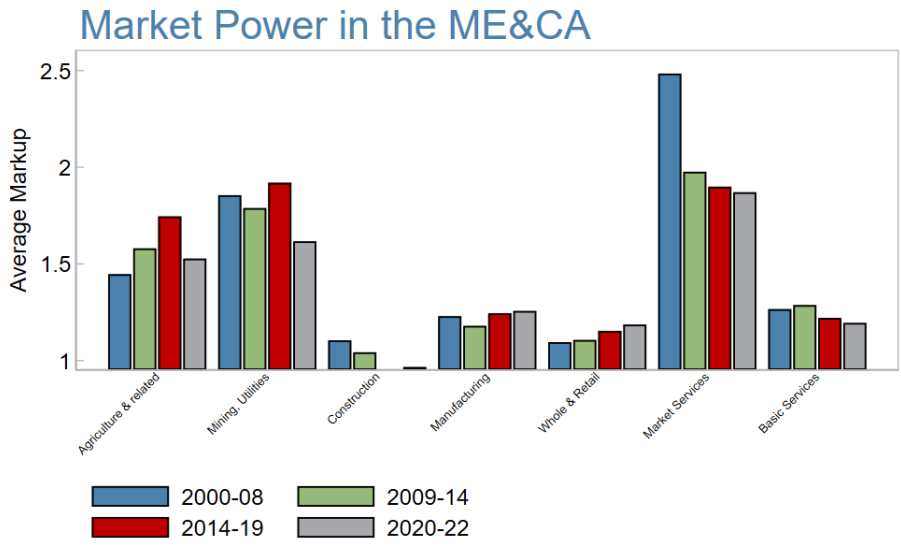


Note. Markups are weighted by sales.

Among listed firms, the construction sector has the lowest average markups, while the oil, mining, and utilities sector has the highest (Figure 7). An important reason for the low markups in construction is the absence of some large construction firms in the region from our sample. This might have reduced the weighted average markups of construction firms in our sample. Consistent with previous findings in the US, market services seem to have higher markups than other industries (De Loecker 2021)[8]. This result is robust to the use of the alternative estimation of markups as seen in Appendix E.2.

[8]Note that our definition of market services does not exactly coincide with that of De Loecker (2021) since we use an alternative industry classification code.

Figure 7: Markups heterogeneity by industry over time.



Note. Markups are weighted by sales.

5.1.1 Who benefit from the Welfare Gain of Falling Corporate Markups in ME?

The reduction in Markups in the region implies a welfare gain for the customers who buy corporate goods and services from the ME. Conversely, a firm like ARAMCO charging higher markups for global (non-ME) markets implies welfare gains for the owners of ARAMCO. Who then benefits from the falling market power in ME? In this section, we plot markup evolution by firms exposed to foreign income shocks to proxy for whether the firm sells primarily to domestic consumers (Appendix H). While this is an imperfect measure in answering the question of who are the customers of ME listed firms, it is the only available marker in our data for whether a firm is foreign or not. In both of our methods, markups of firms with no FX exposure are lower than markups of firms with FX exposure. For the cost-share method for estimating markups, both types of firms show a very similar reducing trend, implying that both foreign consumers and domestic consumers benefited equally from the falling trend in markups. While using

the Production Function Approach method, markups for firms with no FX exposure fluctuate around a flat level, implying that domestic consumers did not benefit from the trend fall in markups.

5.1.2 Dissecting Markup Evolution in ME

Appendix I reports the results of a decomposition of markup evolution into 3 terms: evolution due to net firm entry, evolution due to within firm reduction in markups, and evolution due to reallocation of economic activity. The green line in both figures reports our headline weighted markup estimators. The dashed lines present alternative scenarios starting from 2004.

The dashed red line presents a scenario where the only component of markups allowed to change is within firm markups. In both markup measures provided, the red dashed line drives the reduction in markups. This implies that, in the absence of the other changes in markups due to entry and reallocation, market power would have been lower in the region. The dashed grey line presents a scenario where the relocation of economic activity is the only term allowed to evolve whereas the rest are held constant. The relocation term stagnates in the production function approach markups and rises in the cost-share markups. For the former measure of markups, this implies that reallocation did not play a part in the evolution of markups in the region. For the latter, this means reallocation of market shares to firms with higher markups led to an increase in markups. Net entry (black dashed line) remained broadly constant along the first measure of markups and fell similarly to within.

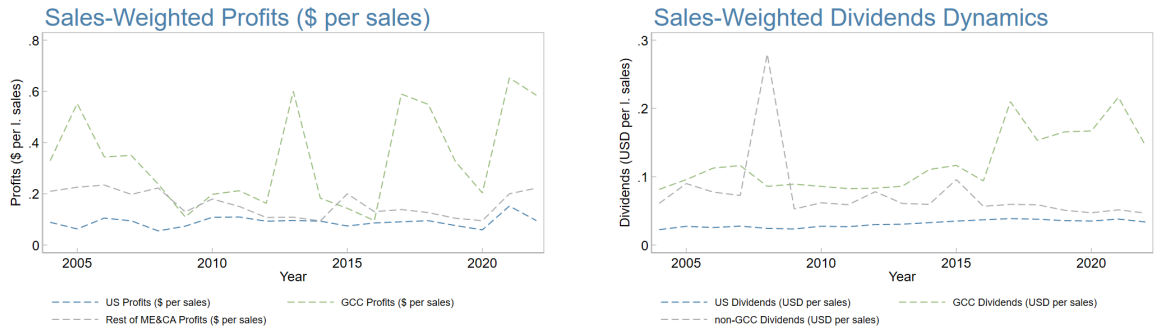
In summary, for both estimates of markups, the declining evolution is partly determined by within firm changes in markups as opposed to entry on its own. In fact, for one of the measures of markups, net firm entry plays an extremely limited role in the change of markups.

5.2 Markups in ME and Their Macroeconomic Implications

5.2.1 Markups and Inflation in ME

Our analysis suggests that a rise in global market power did not contribute to the GCC inflation surge of 2022. Corporate profits and dividend payouts in the GCC have increased robustly over 2021-2022 (Figure 8), while wages have risen relatively slowly compared to prices (IMF ME REO October 2023). The rise in profits does not necessarily imply increases in monopoly power with firms deliberately raising prices above the cost of producing an additional unit of output (marginal costs). Based on our analysis of firm-level data, we have found that there has been little or no change in the markups of firms across various sectors in the ME countries (Figure 7), and the overall markups have exhibited a downward trend (with an exception of COVID years).

Figure 8: ME Profits and Dividend Payouts.



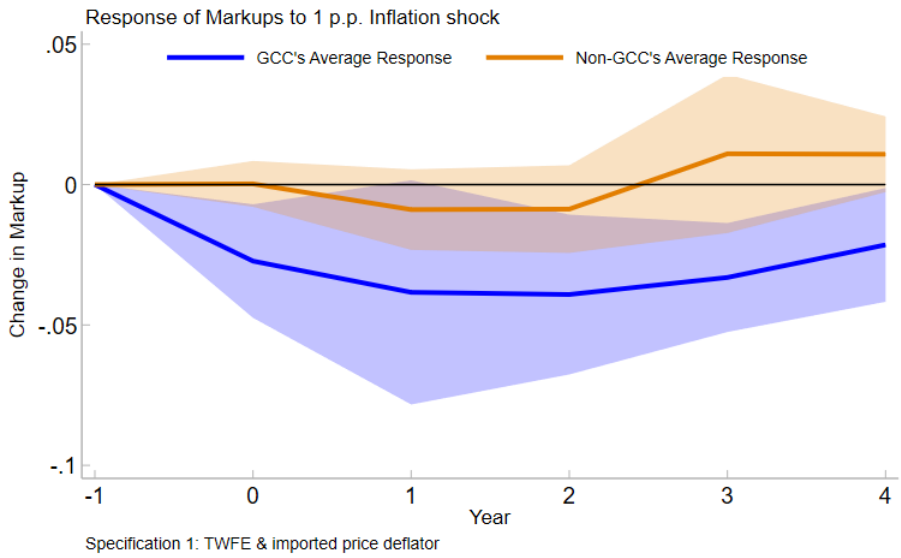
(i) Profits (USD per lagged Sales) (ii) Dividend Payouts (USD per lagged Sales)

Note. Both Profits and Dividends (per lagged sales) are sales weighted.

There is also an evidence, that markups in the GCC decrease in response to a positive inflation shock, whereas in the rest of the ME markups do not change in response to inflation shocks. Figure 9 shows the results of a local projection exercise of the effect of an inflation shock on sales-weighted markups using a panel of GCC and non-GCC

ME countries. The result indicates that after a 1 percent inflation shock, firms in the GCC reduce their markups by 0.05 units relative to an average of 1.3 after two years of the shock. This implies that local firms absorb some of the inflationary pressures and pass less of the price changes onto consumers. However, this is not the case in the non-GCC ME sample, where firms do not seem to adjust their markups in response to an inflationary shock, indicating that they pass on price rises to their customers.

Figure 9: Markup Impulse Response Function (IRF) to an Inflation Shock.



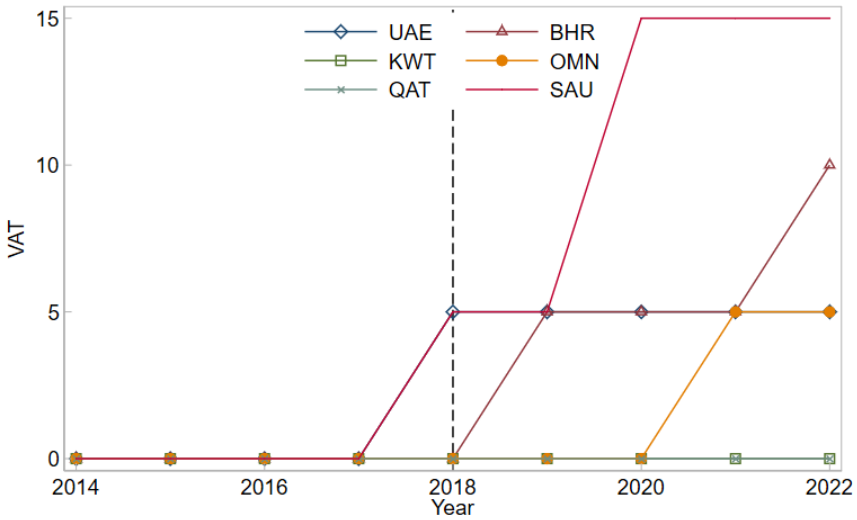
Note. This figure follows from a Jordà (2005) local projections method based on a panel of country-level sales-weighted markups and inflation over time. The sample period excludes the COVID period (data from 2020 onward).

6 Market Power Implications of VAT Adoption

6.1 VAT Introduction in GCC

In 2017, the GCC countries agreed a unified value-added tax (VAT) framework between the six sovereign states that make up the council. In line with unifying legislation and bolstering economic unity among its member states, the framework aimed to allow the oil dependent GCC countries to mobilize and diversify their government revenue sources. The framework stipulates a set of common legislative provisions for the application of the tax, the ability of member states to exempt certain sectors from the tax, and the registration requirements for businesses. Crucially, the treaty has two key articles. Firstly, it mandates that the signatories adopt a standard rate for VAT at 5 percent. Secondly, it requires the introduction of local laws within the signatories to facilitate the implementation of the treaty.

Figure 10: VAT adoption by Gulf states.



Note. VAT standard rates are shown in percentage points. GCC economies adopted the Unified VAT Framework in 2017. Kuwait and Qatar are yet to implement the tax framework of 2017. Saudi Arabia and the United Arab Emirates were the first to implement in 2018. The black dotted line indicates the year where the first set of firms were treated. See Table 2 for VAT rates by country & year.

In practice, six years after the signing of the treaty, as shown in Figure 10, only four out of the six countries implemented the tax. In fact, Saudi Arabia in 2020 and Bahrain in 2022 hiked the rates after the initial introduction, contrary to expectations. This staggered implementation of the VAT reform and the unique regional integration initiatives allows us to study the impact of value-added taxes on firm-level market power using multiple staggered difference-in-difference identification strategies, as described in the next subsection.

Although, the main aim of the tax reform was to diversify revenue sources and enhance revenue mobilization, here we study the unintended behavioural impact the VAT reform had on firms market power in GCC. A long tradition in economics has noted that deviations from competitive behavior leads to welfare loses theoretically and empirically (see for example, Carson (1975), and Bilbiie et al. (2008)). Studying the ability of VAT reforms to reduce noncompetitive behavior of firms can aide policymakers in reducing welfare loses. VAT, although not the exact lever usually used to reduce market power (normally seen as the role of antitrust), can still play a role in reducing inefficiencies related to the product markets. In fact, it has been noted in the optimal tax literature that in the presence of market power, using VAT to raise revenue is optimal since it serves the dual purpose of raising revenue and reduces firm incentives to have positive markups.

6.2 Identification Strategy

We adopt multiple identification strategies to identify the effect of the VAT reform on market power in the Gulf. Those identification strategies rely on slightly different assumptions for identifying the effect.

6.2.1 Theoretical Model

We start by defining the behaviour of a profit maximising firm choosing its price level in the presence of a final good consumption tax and facing an inverse demand schedule Q(P). The firm optimises its profit function by choosing its producer price as follows

$$\max_P P \cdot Q(P(1+\tau)) - C(Q(P(1+\tau))). \tag{5}$$

The first order condition implies

$$\mu_{it} =: \frac{P_{it}}{C'(Q(P(1+\tau))} = \left[1 + \frac{1}{(1+\tau)\gamma}\right]^{-1} \tag{6}$$

where $\gamma =: \frac{Q_{it}}{P \cdot Q'_p}$. Hence, the effect of a tax increase on logged firm markups is given by

$$\frac{\partial ln(\mu_{it})}{\partial \tau} = \frac{\gamma \cdot [\gamma(1+\tau)]^{-2}}{1 + [\gamma(1+\tau)]^{-1}} \tag{7}$$

The numerator of equation 7 is negative since $\gamma < 0$. The sign of the denominator thus determines whether or not the tax has a correcting effect on markups. In particular, assuming demand is sufficiently elastic implies[9]

$$\frac{\partial ln(\mu_{it})}{\partial \tau} < 0$$

This result shows that VAT reduces the wedge between output prices and marginal costs. This result was noted in previous theoretical work on optimal taxes as Delipalla & Keen (1992) noted, since intuitively the incentive to overcharge consumers is diminished as the VAT rate rises.

[9] Elasticity of demand has to satisfy $\gamma \cdot (1+\tau) < -1$ for revenue maximisation.

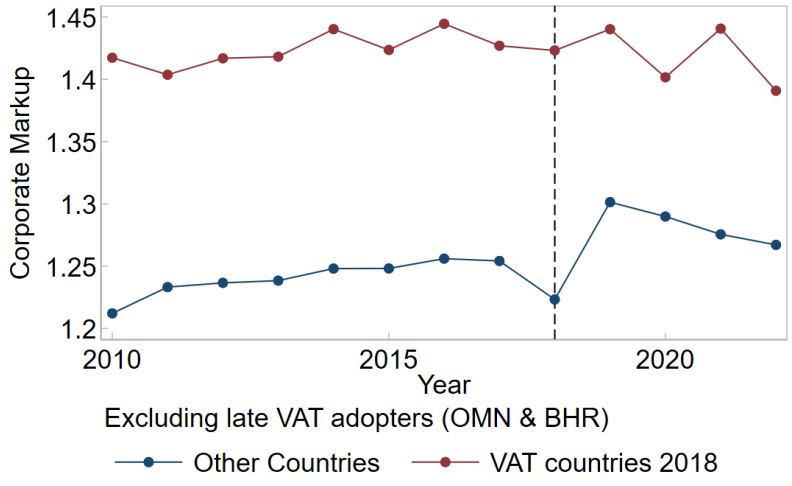
6.2.2 Staggered Adoption Diff-in-Diff

As shown in Figure 10 , VAT adoption was staggered over countries, despite all GCC states committing to the introduction of the VAT rate in the 2016 treaty. Our first research design relies on this staggered adoption. Specifically we assume the following parallel trends assumption

$$\mathbb{E}[\Delta ln\mu_{it}^{0}|\tau_t = d] = \mathbb{E}[\Delta ln\mu_{it}^{0}|\tau_t = 0] \tag{8}$$

This assumption stresses that the counterfactual changes in logged markups in the absence of VAT would have been the same as changes in logged markups under no VAT implementation. We investigate robustness of our result by conducting pre-trends tests of this assumption and assuming a conditional form of this assumption based on a matched sample of firms in the treatment and control group.

Figure 11: Markups in GCC countries that adopted VAT vs countries that did not.



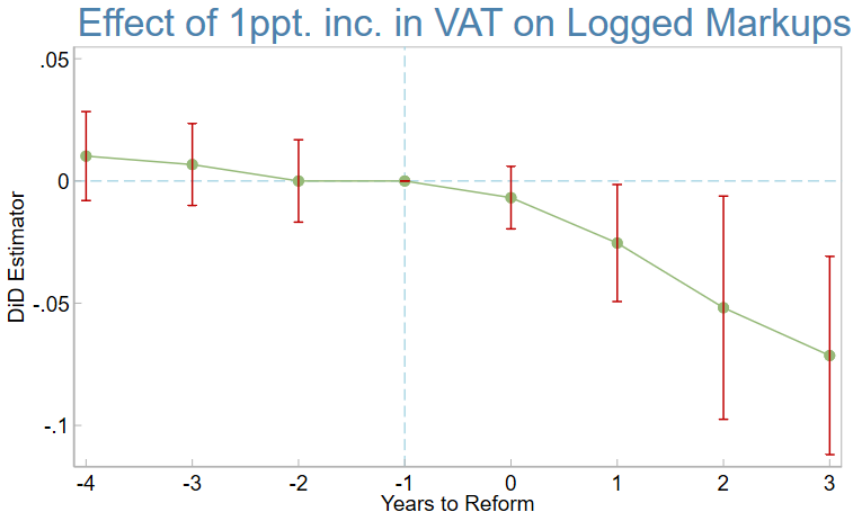
Note. Time series plot of sales-weighted markups in countries that haven't adopted (Kuwait & Qatar) compared to countries that adopted a VAT reform (Saudi Arabia & the United Arab Emirate).

6.3 Main Results: Staggered Adoption Diff-in-Diff

Based on the staggered Diff-in-Diff estimator, we find evidence of a response to the VAT reforms in the GCC states. A 1% point increase in the VAT rate causes a 5% reduction in markups. The effect is not immediate and adjustment occurs dynamically as reported in Figure 12. The figure also shows no evidence of the violation of the common trends assumption (asserted in equation 8) in the pre-reform period. We investigate multiple robustness checks around these figures. We cannot trace the effects beyond 3 years after the reform since there is not enough firms accounts after 2018 yet.

Table 3 provides evidence for internal validity of the estimates reported in Figure 12. The headline average impact reported in Column (1) of the table shows that the impact of an additional 1% point of VAT is a reduction of 1% in markups estimated using the production function approach in the GCC sample. This result is robust to different specifications, weighting methods, and the alternative markup measure we constructed.

Figure 12: Staggered Diff-in-Diff estimator for impact of VAT adoption on Markups in the GCC.



Note. Staggered Diff-in-Diff event study of an increase in VAT by 1 p.p. on GCC markups. This event study relies on the estimator by de Chaisemartin & D'Haultfœuille (2020). The dependent variable is logged markups, estimated using the production function approach. We allow for firm-specific linear time trend. We control for the sales-cost of goods sold ratio, firm's sales fraction of industry, and firm's sales ratio to total sales. Standard errors are clustered at the firm level. Observations are weighted by deflated sales to study the effect of the tax policy on aggregate logged markups.

6.3.1 Alternative Identification Strategy: Intermediate-Final Goods Diff-in-Diff

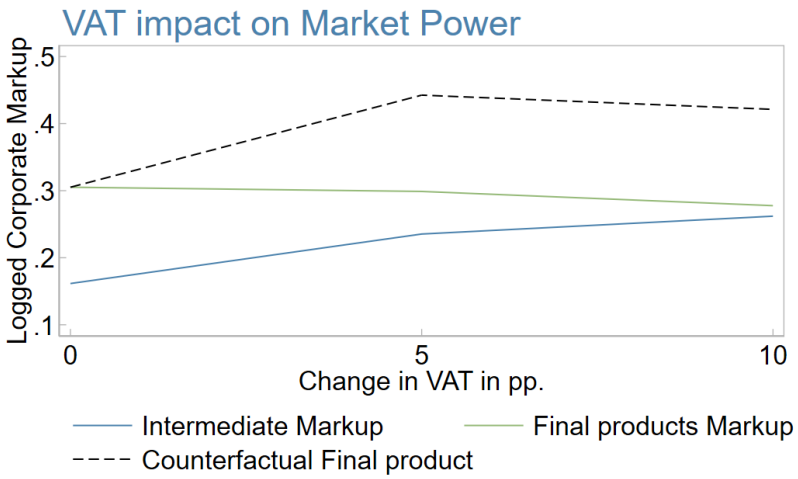
In the second exercise, we use an identification strategy that relies on a within country comparison. Firms in the intermediate sectors do not end up paying VAT and claim back their tax payments. These firms are treated as a control group for firms that pay VAT in the final sector. To define firms as intermediate or final, we use an indicator for firms operating in sectors traditionally seen as final sectors as our treatment variable.[10] The identifying assumption for the treatment effect is thus that

[10]This include firms operating market services and the retail trade sector.

logged markups would have trended similarly in treated firms when compared to non-treated firms had the VAT reform not been implemented. This is stated in equation 9. Figure 12 presents stylized evidence of the potential impact of VAT on markups.

$$\mathbb{E}[\Delta ln\mu_{it}^{0}|\tau_t - \tau_{t-1} = d, \text{final}] = \mathbb{E}[\Delta ln\mu_{it}^{0}|\tau_t - \tau_{t-1} = d, \text{intermediate}] \tag{9}$$

Figure 13: Markup wedge between final goods and intermediate goods upon the tax introduction.



Note. Non-linear plot of logged markups against changes in GCC VAT rates. Counterfactual markups in the final products sector would have been higher (black line) compared to the observed level of final products markups (green line).

7 Conclusion

Our study sheds light on corporate market power in the Middle East and Central Asia (ME) region. We find that corporate markups in the ME are higher compared to the US (and Europe), for both GCC and non-GCC countries, but there has been a downward trend over the years, with the exception of the COVID-19 period. This suggests that while market power exists in the region, it can be influenced by implemented reforms and policies.

Additionally, we observe that GCC countries have higher corporate markups compared to the rest of the ME countries. However, there has been a convergence of GCC markups towards the US and the rest of the ME region since the onset of the COVID-19 pandemic. This suggests that external shocks and changing market dynamics can impact market power levels, even in countries with traditionally higher markups.

Furthermore, our research highlights the presence of superstar firms in the ME region, where larger firms with higher sales tend to have higher market power. This phenomenon holds true across sectors, with the oil, mining, and utilities sector exhibiting particularly high market power. Although GCC have higher markups than the rest of ME, this result is not unique to GCC. This finding underscores the importance of addressing market concentration and promoting competition to ensure a level playing field for all market participants.

Moreover, our analysis reveals that marketable services sectors and the oil, mining, and utilities industries generally have higher markups compared to other industries in the ME region. This finding highlights the need for targeted policies and regulations to ensure fair competition and prevent the concentration of market power in these sectors.

Our study finds no evidence of "greed-flation" in the ME region, indicating that the relationship between market power and inflationary pressures is not significant or even negative for the GCC. This finding contributes to the understanding of the macroeconomic implications of market power in the region and suggests that other factors may be driving inflationary pressures.

Finally, our research demonstrates the potential of value-added tax (VAT) policy reforms to act as an additional deterrent of corporate market power. The introduction

of VAT in some Gulf states from 2018 to 2022 has led to a reduction in market power, in addition to increasing fiscal space. This finding highlights the additional benefits of implementing VAT in promoting competition in the region.

Our study provides valuable insights into the dynamics of corporate market power in the ME region. The findings underscore the need for effective policies and regulations to address market concentration, promote competition, and ensure a level playing field for all market participants. By understanding the factors influencing market power and its implications, policymakers can design targeted interventions to foster competitive and resilient economies in the ME region.

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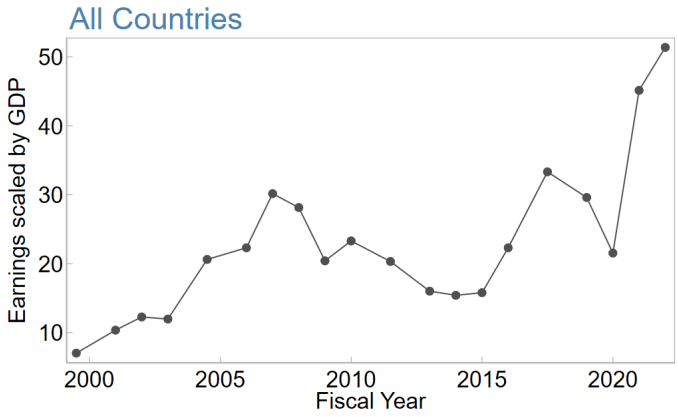
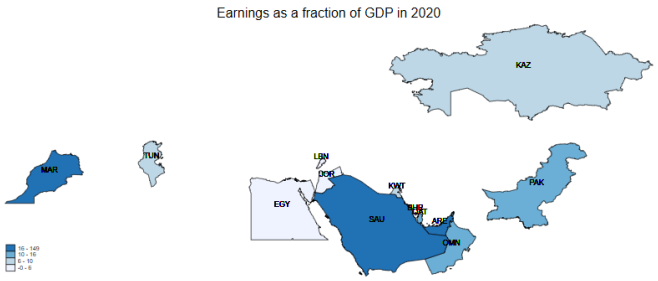
A Sample Representativeness

A.1 Earnings relative to GDP

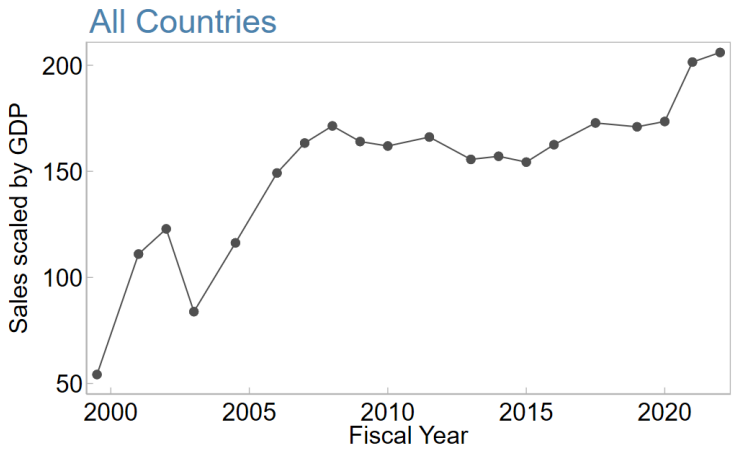


Aggregated country-level average Earnings relative to GDP.

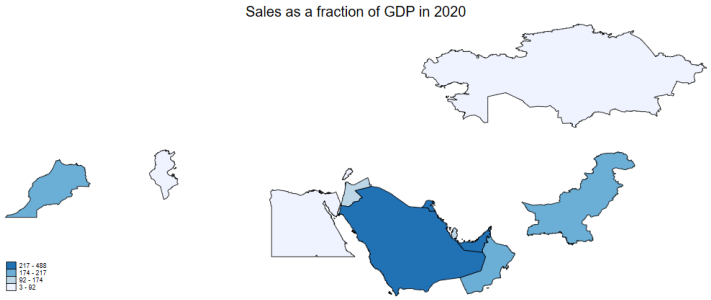


Map of average Earnings relative to GDP in 2020.

A.2 Sales relative to GDP



Aggregated country-level average Sales relative to GDP.



Map of average Sales relative to GDP in 2020.

B Sample Description

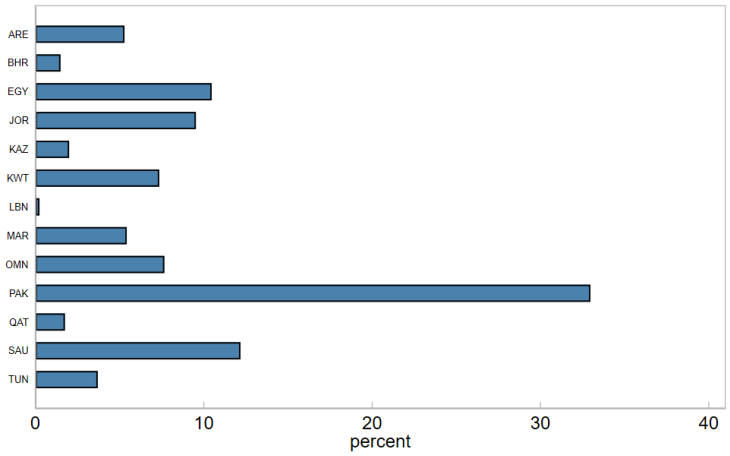
B.1 Summary Statistics

Table 1: Summary statistics for sample between 2004 and 2022

	Count of Firm-year	Sales	COGS	Pretax Income	PFA Markups	Share Markups
ARE	1018	897804	518217	149467	1.51	1.15
BHR	278	271782	173070	39566	1.42	1.09
EGY	2064	302459	210498	45091	1.38	1.13
JOR	1693	129969	103593	10066	1.12	1.06
KAZ	380	602456	259910	177650	2.25	1.66
KWT	1466	284078	181791	30654	1.62	1.14
LBN	46	135524	90256	15971	1.33	1.03
MAR	980	447442	261570	69099	1.77	1.26
OMN	1372	152126	104384	12022	1.39	1.07
PAK	5587	231704	186559	21435	1.15	1.12
QAT	348	895081	530403	177973	1.58	1.14
SAU	2377	1657932	884909	577603	1.61	1.32
TUN	730	110941	80482	5347	1.16	1.12

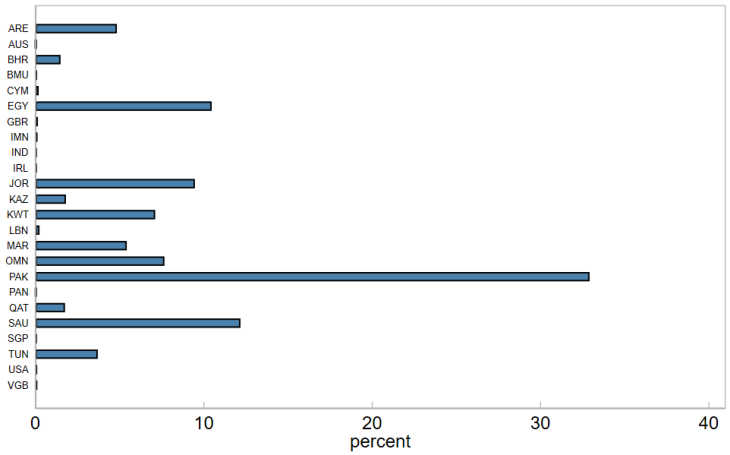
Note. This table reports summary statistics for the main sample of listed firms headquartered in the ME. Sales, COGS, and Pretax income are reported in '000s of 2015 USD. PFA markup estimation is explained in the text. Share estimator of markups is reported in Appendix E.

B.2 Location Composition



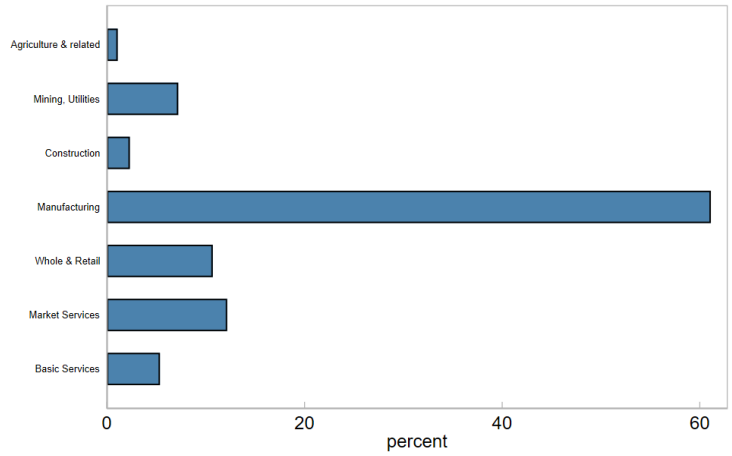
Fraction of Sample by Location of Headquarter of firm.

B.3 Incorporation Country Composition



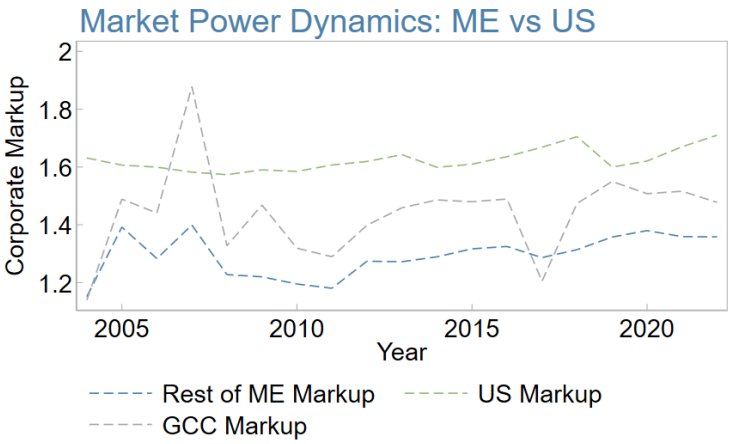
Fraction of Sample by firm's incorporation country.

B.4 Industry Composition

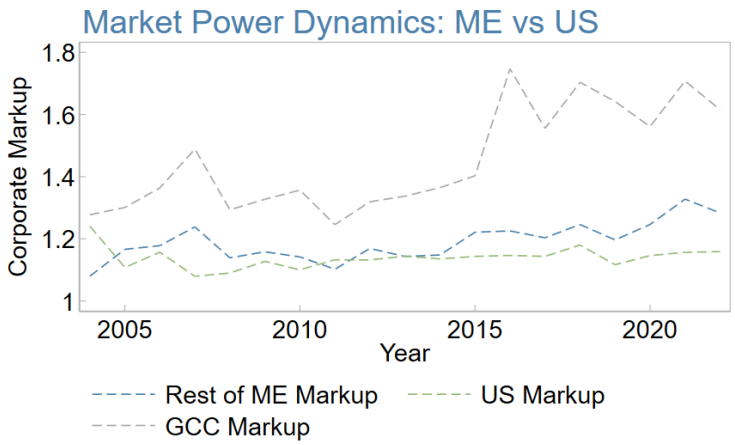


Fraction of Sample by Industry Composition.

C PFA: excluding XSGA



Unweighted Markups using production function approach excluding XSGA.



COGS-weighted Markups using production function approach excluding XSGA.

D ORBIS sample

To study the relevance of our results for an unlisted sample of firms across both the ME and the US. We ran a PFA markup estimator using ORBIS. Note XSGA is not reported in ORBIS & so we cannot compute PFA in our baseline. So we construct PFA (excluding XSGA) like the previous Appendix C. Note we also cannot construct the share estimator given the absence of XSGA.

E Revenue-Variable Costs ratio

E.1 Rationale

Assuming cost minimisation and constant returns to scale, we can show that an estimate for the output elasticity for input s, ϵ^s_{it}, is

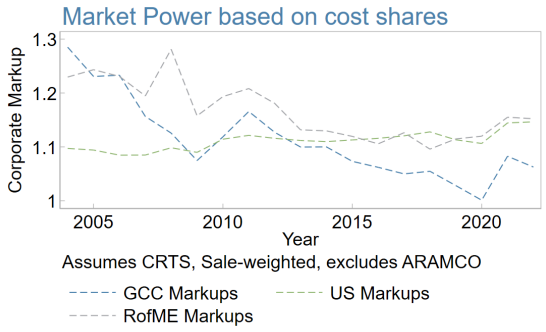
$$\epsilon^s_{it} = \frac{\boldsymbol{E}[w_s \cdot s_{it}]}{\boldsymbol{E}[\sum_j w_j \cdot j_{it}]}.$$

Based on this result we can recover markups using equation 1 as:

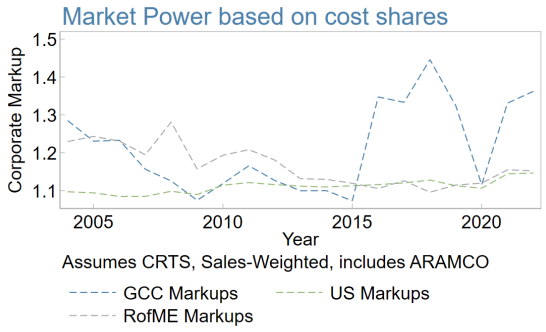
$$\mu_{it} = \frac{R_{it}}{\boldsymbol{E}[\sum_j w_j \cdot j_{it}]}. \tag{10}$$

Equation 10 intuitively suggests that markups are identified as the ratio of revenue to the expected value of variable costs. This alternative method places an additional assumption of constant returns to scale. However, the benefit is this method relaxes the need to identify output elasticity using the production function approach relying on expenditure data. Bond et al. (2021) emphasise the need for quantity data to identify output elasticity for markups and also highlight that using expenditure data instead leads to biased markups.

E.2 Results

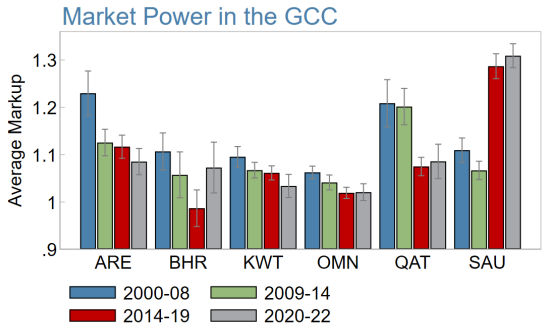


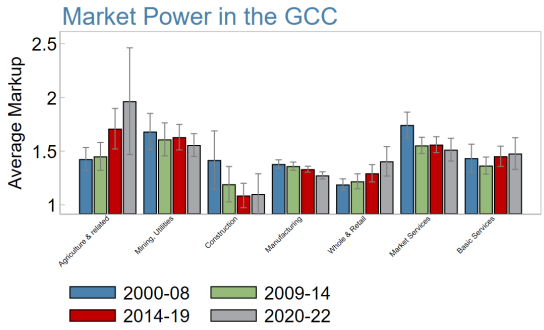
Excluding ARAMCO



(i) Including ARAMCO

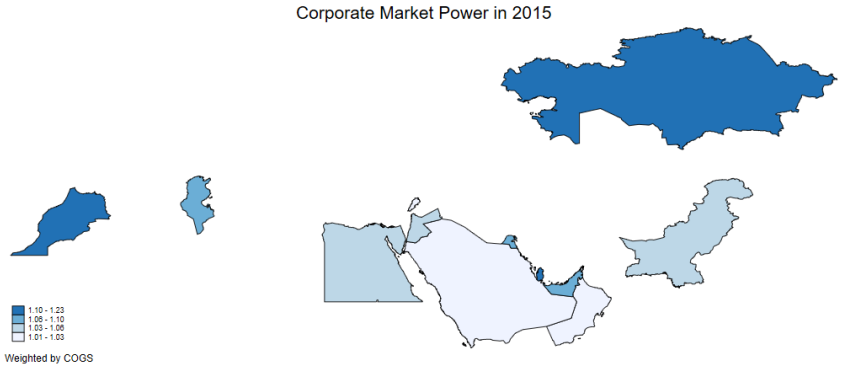
Markups based on Sales-Variable costs ratio.



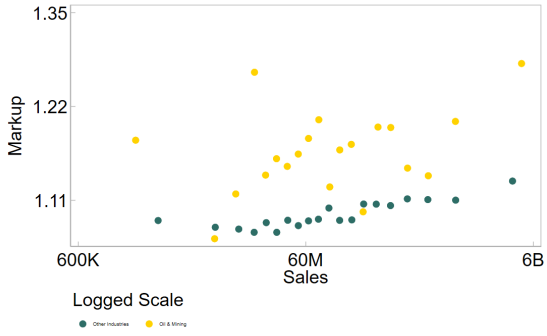


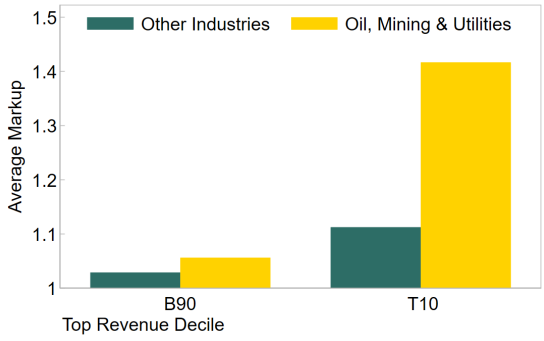
(i) GCC country (ii) Industries in GCC

Markups based on Sales-Variable costs ratio.



Markups based on Sales-Variable costs ratio.





(i) Superstar Phenomena (ii) Deciles of Revenue

Markups based on Sales-Variable costs ratio.

F VAT

Table 2: VAT rates and adoption by country & year.

Year	UAE	Bahrain	Kuwait	Oman	Qatar	SAU
2017	0	0	0	0	0	0
2018	5	0	0	0	0	5
2019	5	5	0	0	0	5
2020	5	5	0	0	0	15
2021	5	5	0	5	0	15
2022	5	10	0	5	0	15

Note. Table reports VAT adoption rates by country. VAT framework agreement is in 2017. First Countries adopt VAT in 2018. Adoption cells are colored in red. VAT increases are colored in blue.

F.1 Robustness Table

Table 3: VAT Result Robustness

	(1)	(2)	(3)	(4)	(5)	(6)
DV	$log(\mu_{PFA})$	$log(\mu_{PFA})$	$log(\mu_{CS})$	$log(\mu_{PFA})$	$log(\mu_{PFA})$	$log(\mu_{PFA})$
VAT	-0.0117**	-0.00798**	-0.00667***	-0.00159**	-0.00148**	-0.00728**
	(0.00461)	(0.00352)	(0.00247)	(0.000738)	(0.000734)	(0.00315)
Constant	0.503***	0.382***	0.263***	-0.176***	-0.134**	18.11
	(0.0280)	(0.0206)	(0.0150)	(0.0636)	(0.0642)	(11.62)
Observations	3,691	3,691	3,606	3,691	3,691	3,691
R-squared	0.809	0.870	0.909	0.983	0.984	0.818
Firm FE	Y	Y	Y	Y	Y	Y
Year Trend	N	N	N	N	N	Y
Controls	N	N	N	Y	Y	N
Weight	Sales	COGS	Sales	Sales	Sales	Sales
GCC Sample	Y	Y	Y	Y	Y	Y
Oil	N	N	N	N	Y	Y

Note. This table reports robustness of main VAT result to different controls. The table reports the effect of a 1% point increase in value-added tax on market power. The table focuses on the sample of GCC headquartered firms. PFA markup estimation is explained in the text. Share estimator markups is explained in Appendix E. Clustered standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

G Country Results

G.1 Saudi Arabia

Figure 17: Markups using Production Function Approach in Saudi Arabia.

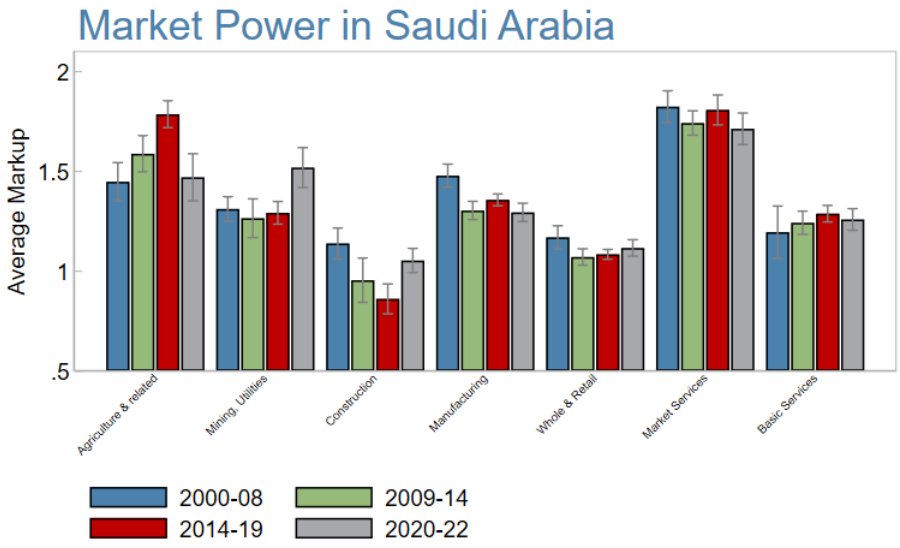
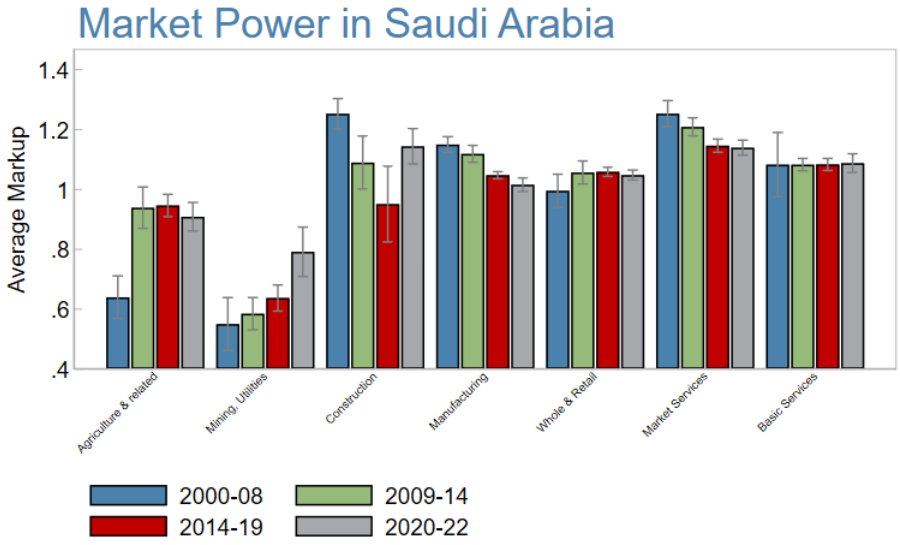


Figure 18: Markups based on Sales-Variable costs ratio in Saudi Arabia.



G.2 Egypt

Figure 19: Markups using Production Function Approach in Egypt.

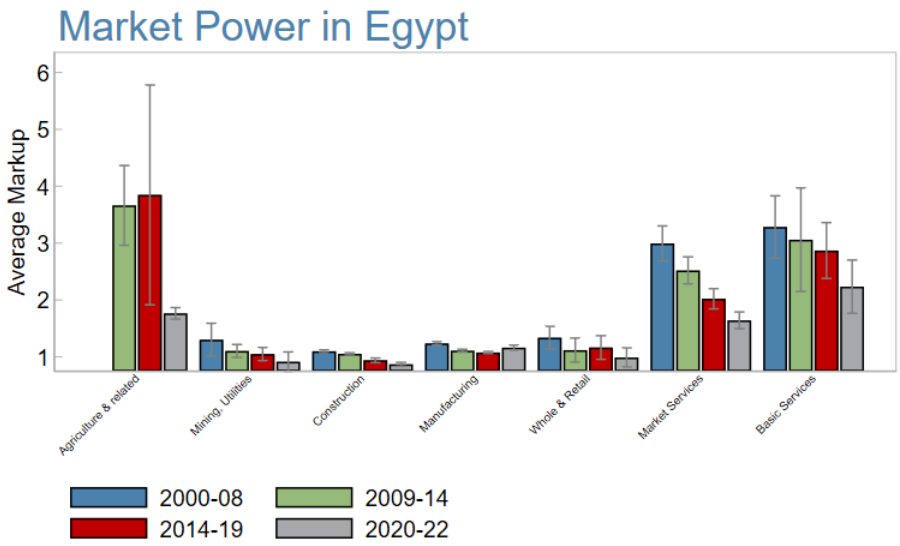
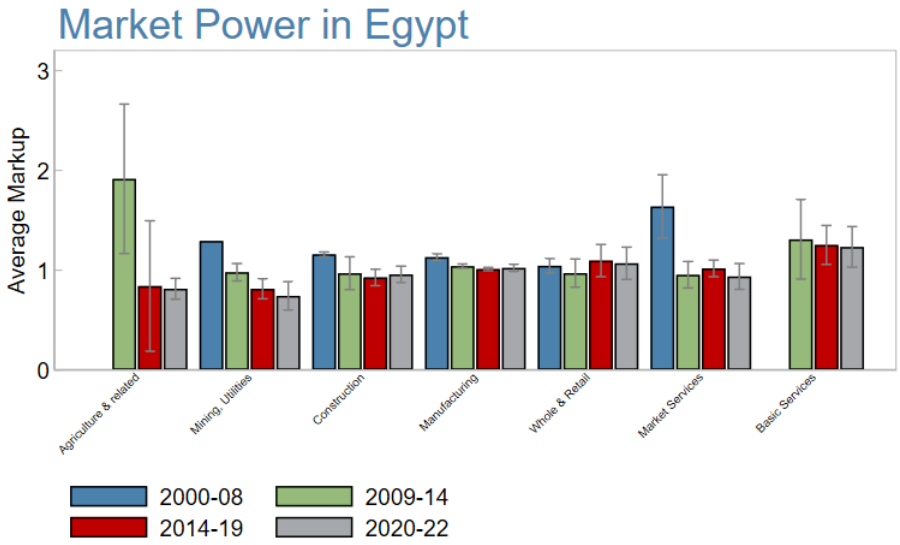
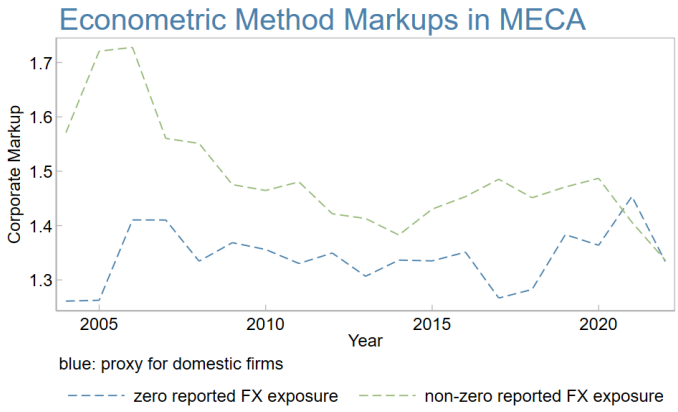


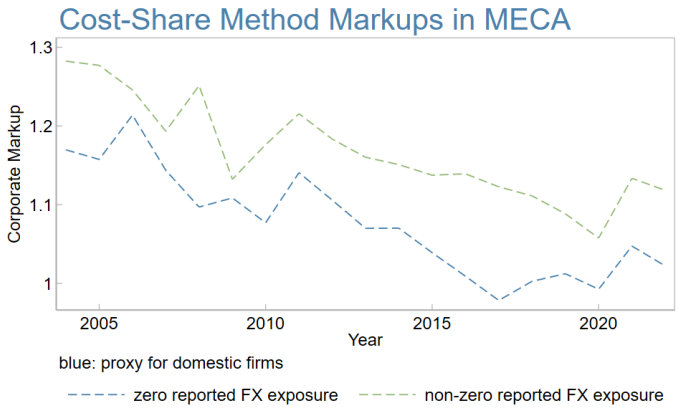
Figure 20: Markups based on Sales-Variable costs ratio in Egypt.



H Marker for firms with foreign exchange gain or loss in determination of income

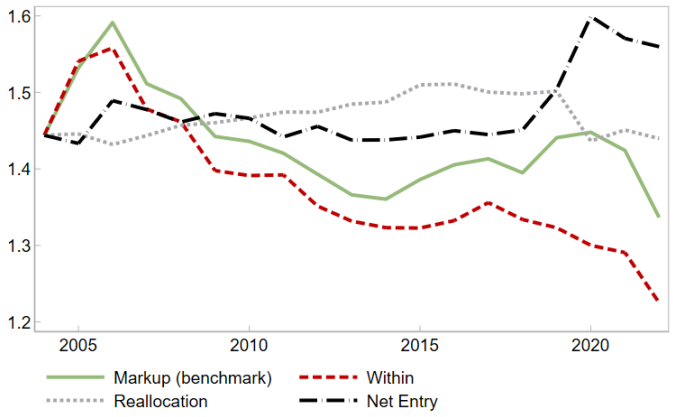


PFA markups excluding ARAMCO.

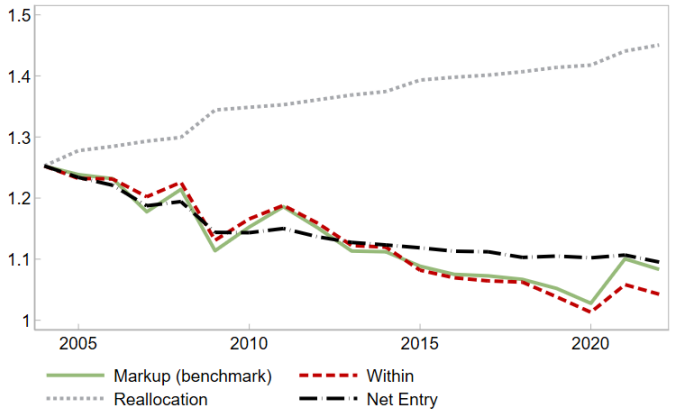


CS-markups excluding ARAMCO.

I Breakdown of Dynamics of Markups

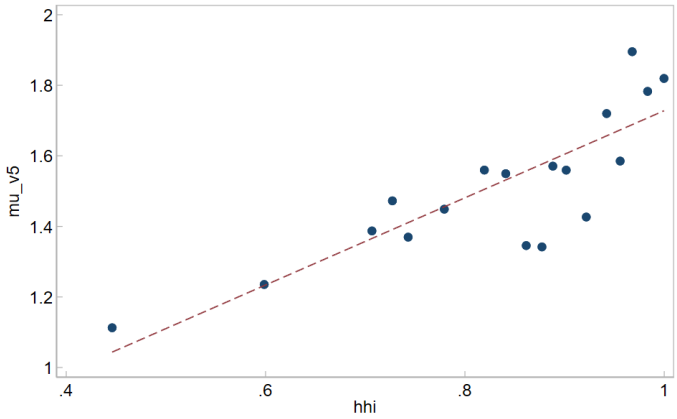


PFA markups excluding ARAMCO.

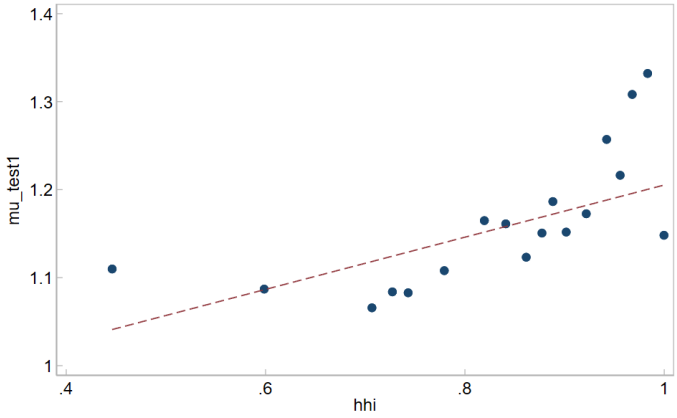


CS-markups excluding ARAMCO.

J Correlation between Markup measures and HH-index measure of concentration

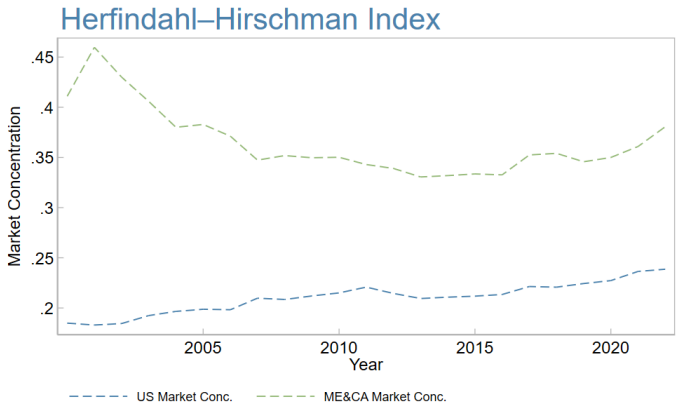


PFA markups excluding ARAMCO.

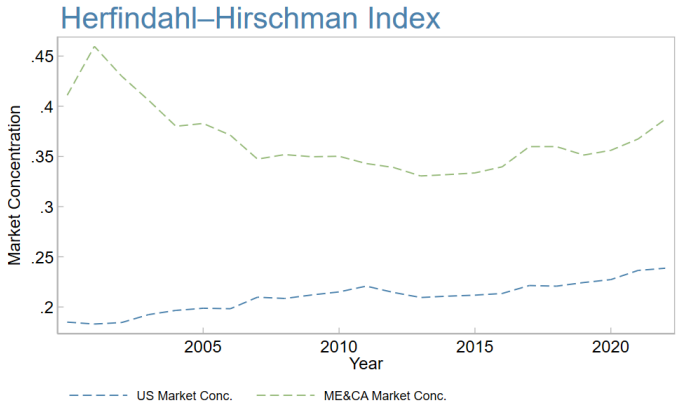


CS-markups excluding ARAMCO.

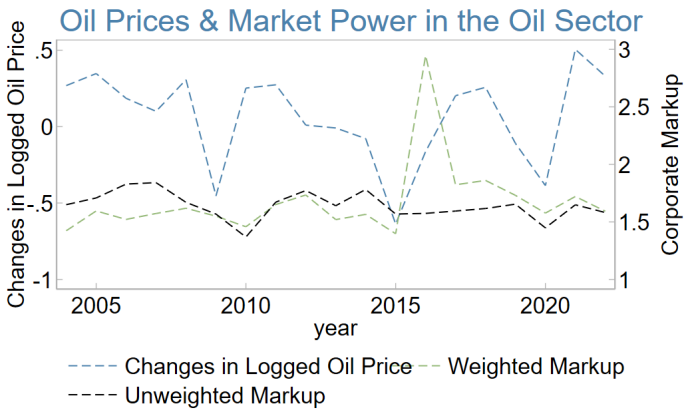
K Other Results of Interest



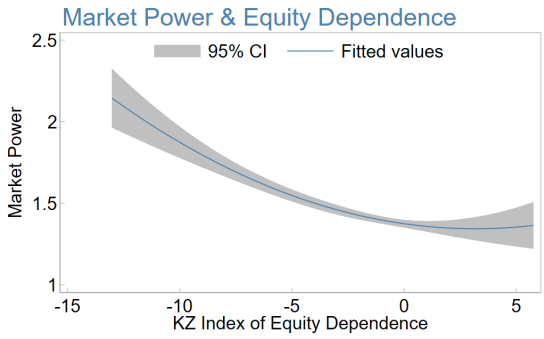
HH-index based on 4-digit industry classification excluding ARAMCO.



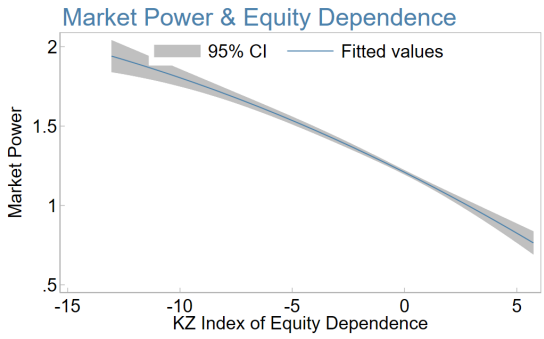
HH-index based on 4-digit industry classification including ARAMCO.



Correlation between unweighted markups & price is 0.23; weighted markups & price is -0.04



(i) Gulf Cooperation Council



(ii) Rest of Middle East & Central Asia

KZ-index of equity dependence is negatively correlated with PFA Markups.