MIDDLE EAST
AND CENTRAL ASIA
DEPARTMENT

Corporate Market Power in the Middle East & Central Asia

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Motivation

- Global market power is rising.
  (De Loecker et al 2020; Autor et al 2020)
  for other countries (Diez et al. 2018)
- Middle East often perceived as uncompetitive.
  (Chaudry 1997; Robinson & Acemoglu 2012)
- Rising global inflation post-2020 → "greedflation"?
  - Can a markup squeeze explain why the GCC had no "great inflation"?
- Increased interest in tax policy & fiscal capacity.
  - How does VAT impact Market Power?

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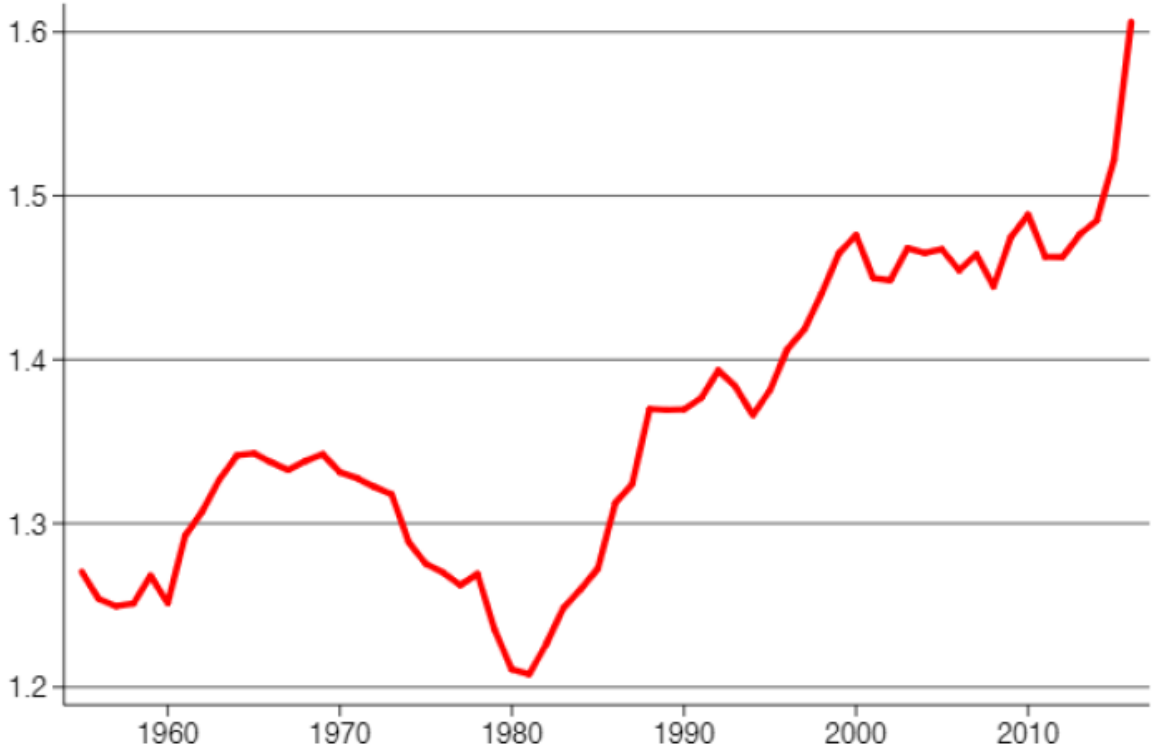

Source: De Loecker et al. 2020 QJE

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Contributions

1. Study MECA firm markups during 2000-22:
   $\Longrightarrow$ MECA markups higher than US, but declining.
2. Discuss alternative markup measure (Cost Share Approach).
3. Study the macroeconomic implications of Market Power in MECA:
   $\Longrightarrow$ Inflation and Market Power;
   $\Longrightarrow$ VAT introduction in GCC associated with reduced markups.

Outline

1. Methodology (Markup estimates)
2. Data
3. Facts about Market Power in MECA
4. Market Power and Inflation
5. VAT reforms & Market Power

Method

Aim is to identify:

$$\mu_{it} =: \frac{Price_{it}}{Marginal\ Cost_{it}} \qquad \text{(Market Power)}$$

For a cost minimising firm, i, with a variable cost, s, we can show

$$\mu_{it} = \boldsymbol{\theta^s_{it}} \cdot \left[\frac{E^s_{it}}{R_{it}}\right]^{-1} \qquad \text{(FOC)}$$

θ^s_{it} = output elasticity with respect to s
E^s_{it} = i's expenditure on input s
R_{it} = i's revenue.

Finding θ_{it}^s: Comparing 2 approaches

Approaches

Econometric Approach (PFA)

Assume $\theta_n^s = \theta_{it}^s$
Estimate θ_n^s with exp. data

Cost Share Approach (CSA)

Assume Constant RTS
Assumption identifies θ_{it}^s

Benefits

No need to assume CRTS

Identify firm-level θ_{it}^s

Costs

Assumes $\theta_n^s = \theta_{it}^s$.
Revenue Elasticity = Output Elasticity, given the absence of quantity data.

▸▸ PFA

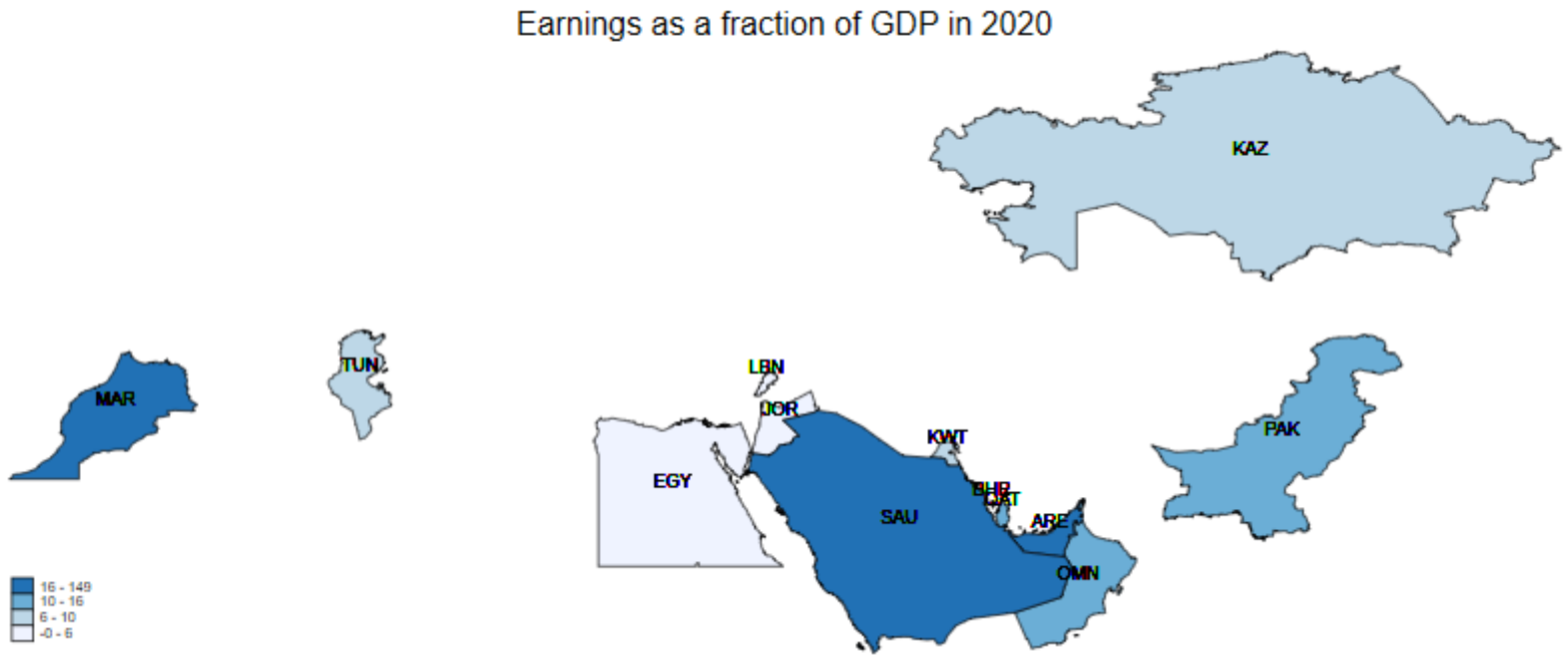
Assumes CRTS

▸▸ Share Estimator

Sample

- Consolidated annual accounts of firms in Compustat:
  - Listed firms
  - 2000-2022
  - 13 ME countries (6 GCC countries included)
  - Unbalanced panel of $\approx$ 1300 firms
  - 20.7k Obs
  - Accounts deflated using GDP deflator & converted to 2015 USD.
- Cleaning:
  - Drop if sales or cost of goods sold (cogs) are negative (Hennessy & Whited 2006).
  - Ratio of sales-cogs winsorized at 1%.

Sample Representativeness (cf. Economy)



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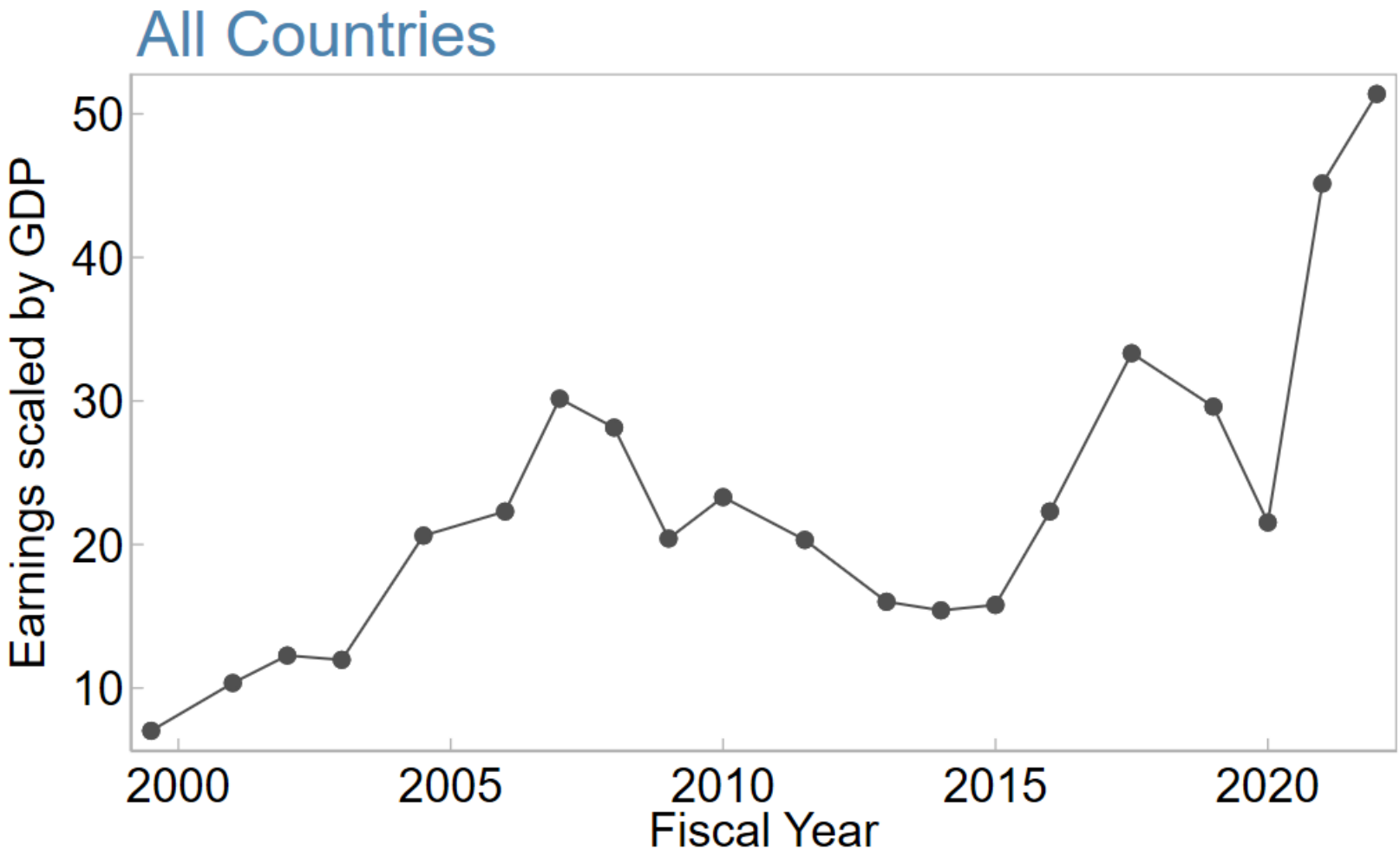
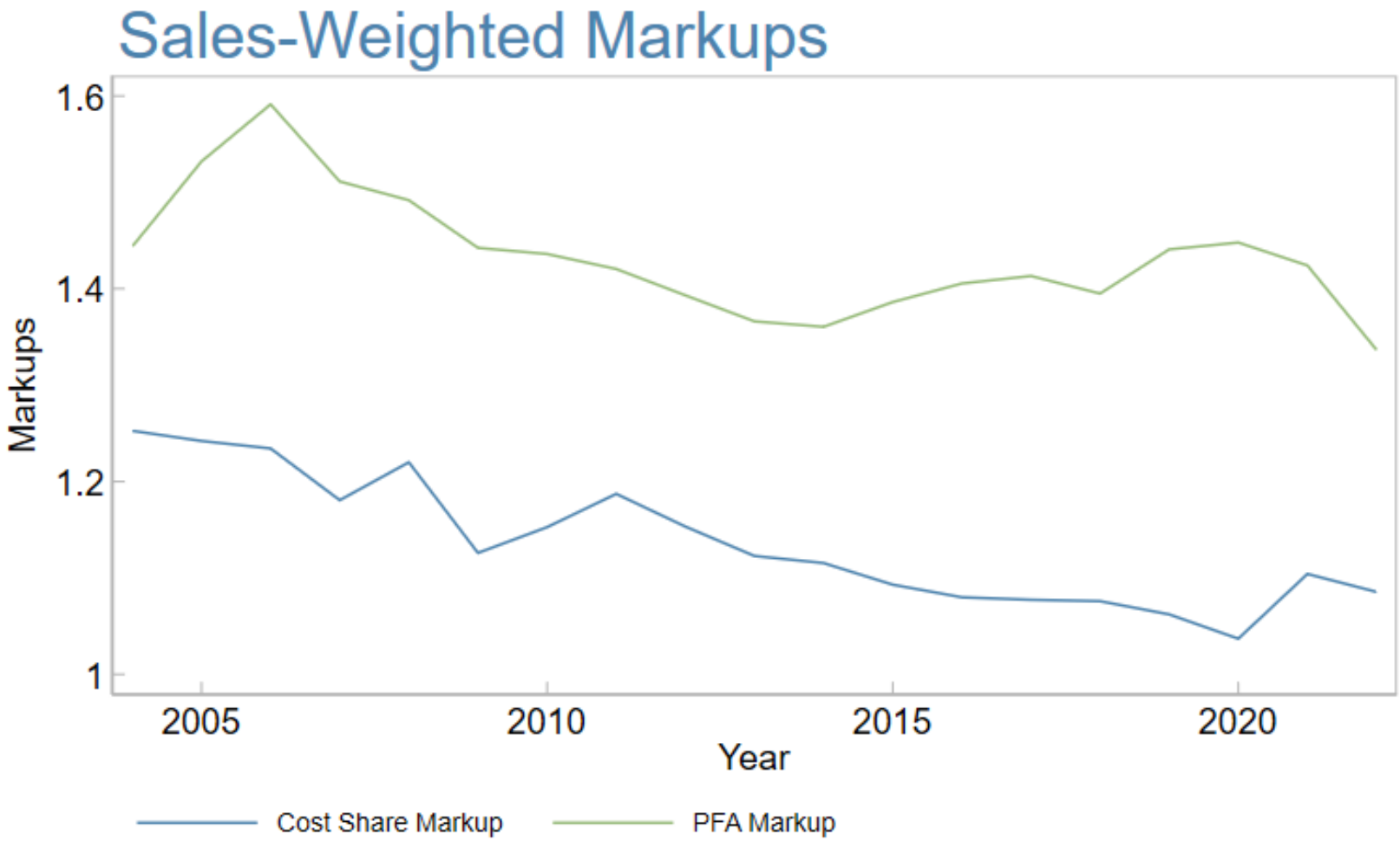
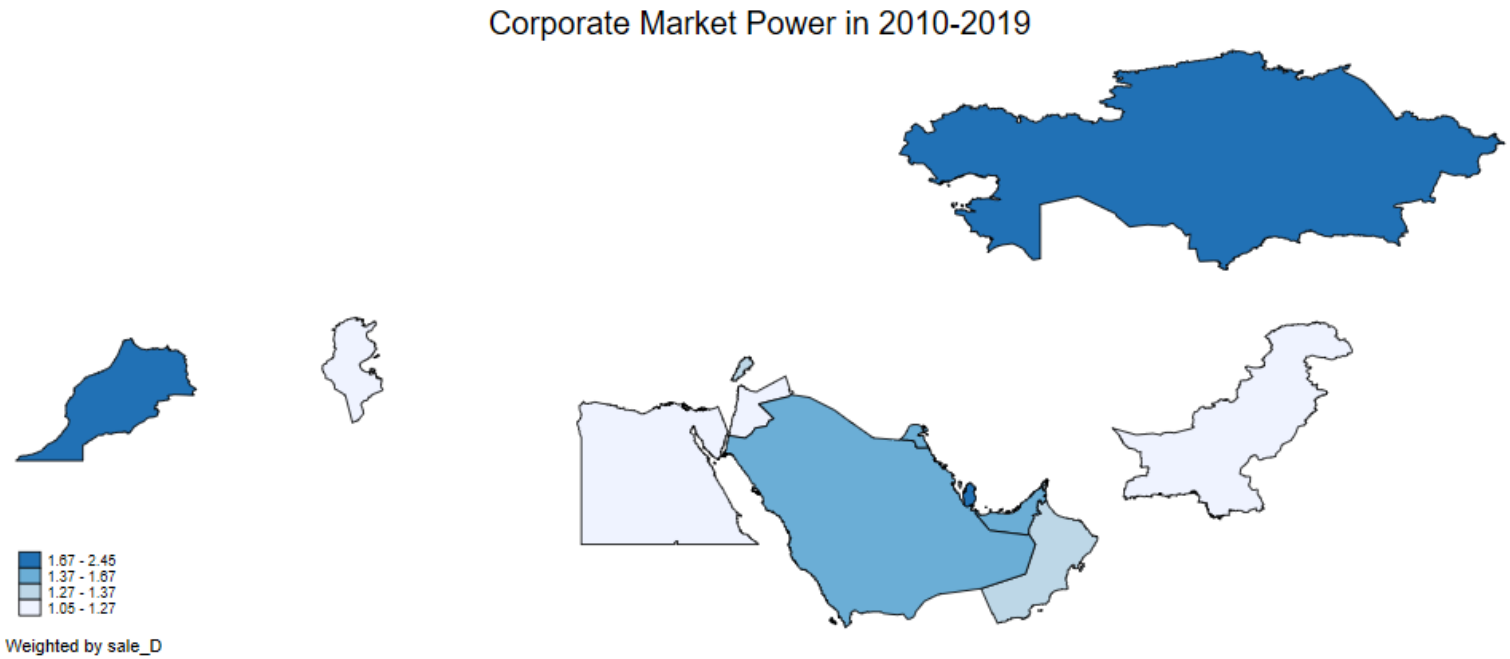


Trends in Market Power

[1] Market Power falling in the MECA among listed firms.

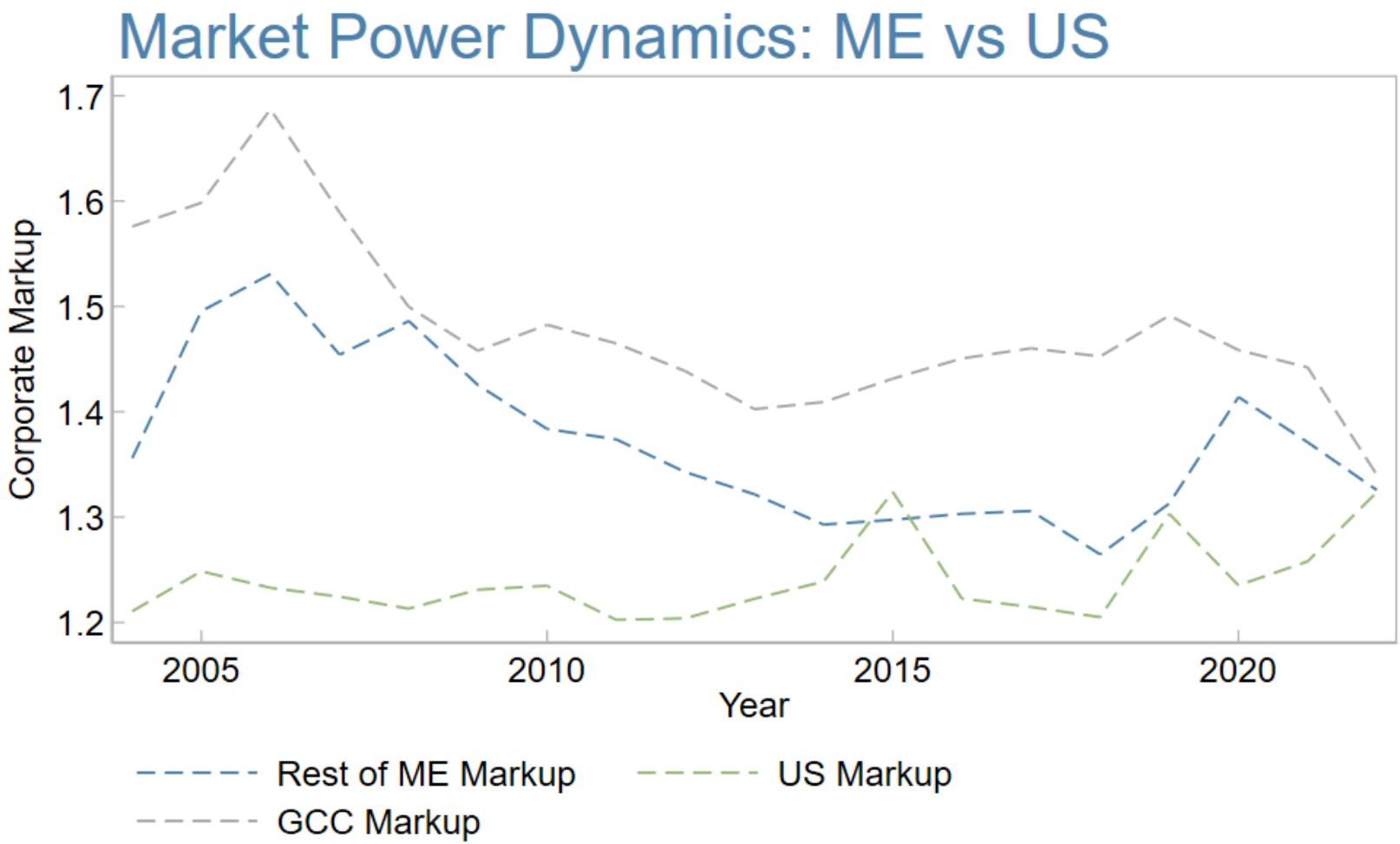


PFA Markups Map in MECA



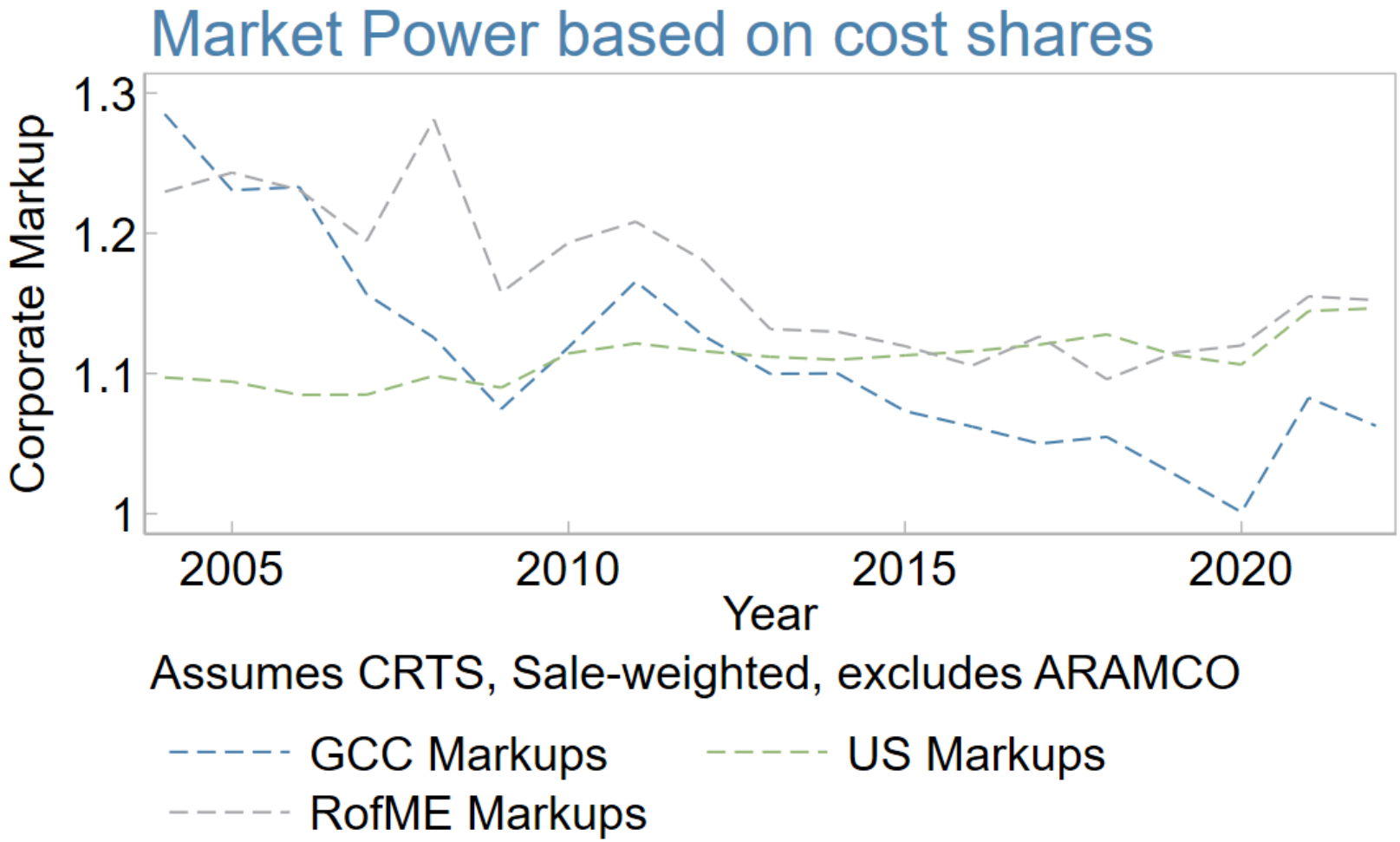
Trends in Market Power (PFA)

[2] MECA has *higher* markups than the US. ▸▸ Dividends



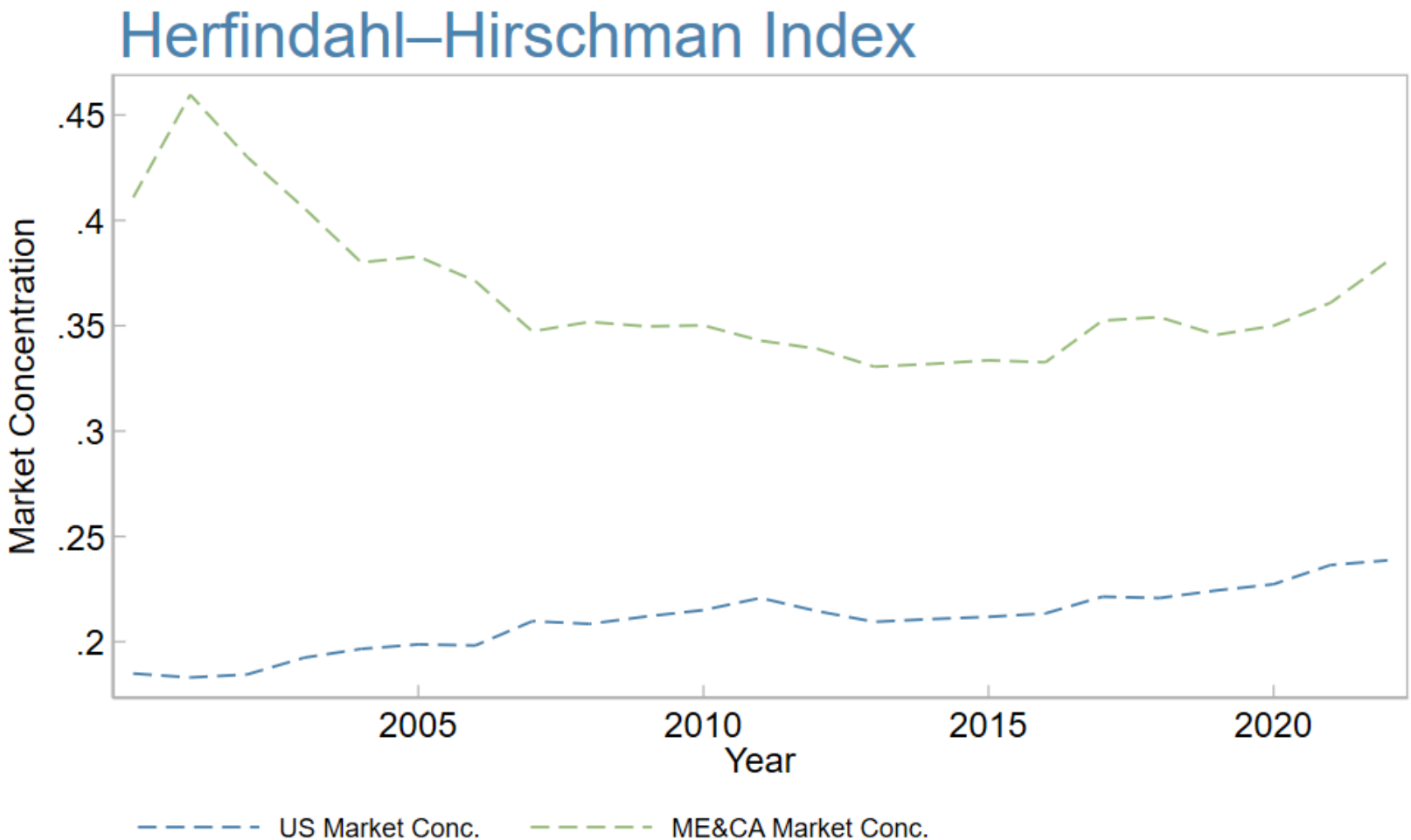
Trends in Market Power (CSA)

MECA has *higher* markups than the US.



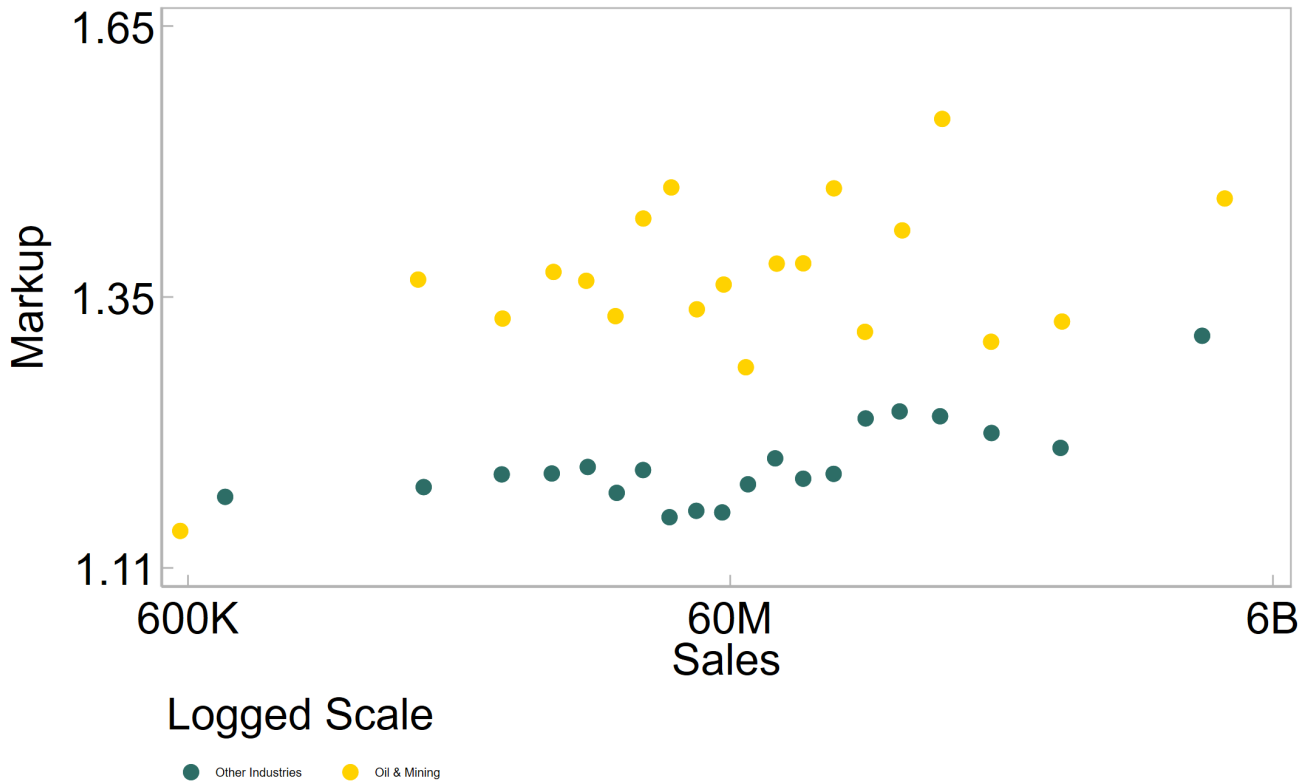
Trends in Market Power (HH-index)

MECA has a *higher* concentration HH-index than the US. ▸▸ HH-index Definition



Trends in Market Power (PFA)

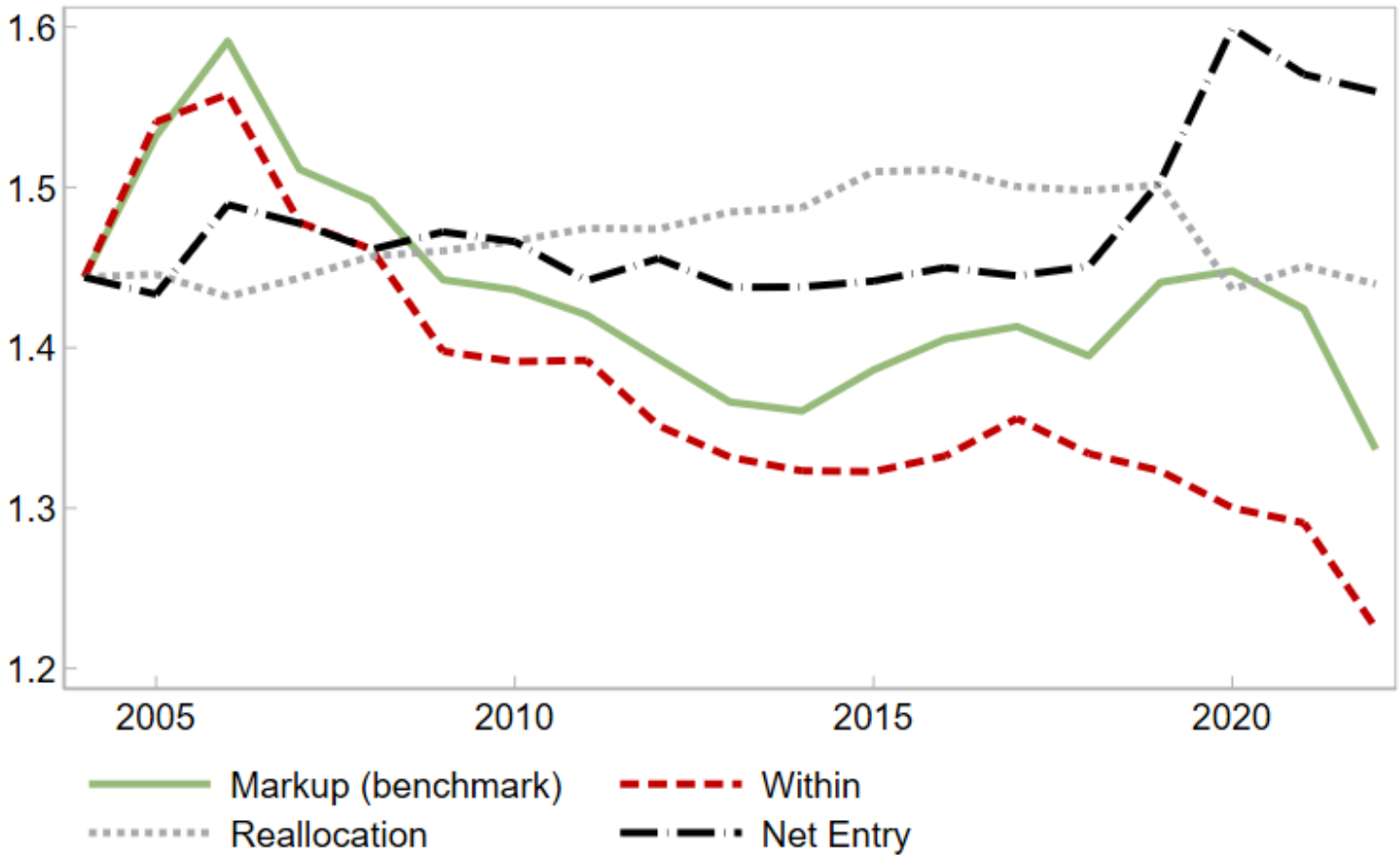
[3] The ME has a *superstar firm* phenomena. ▸▸ GCC



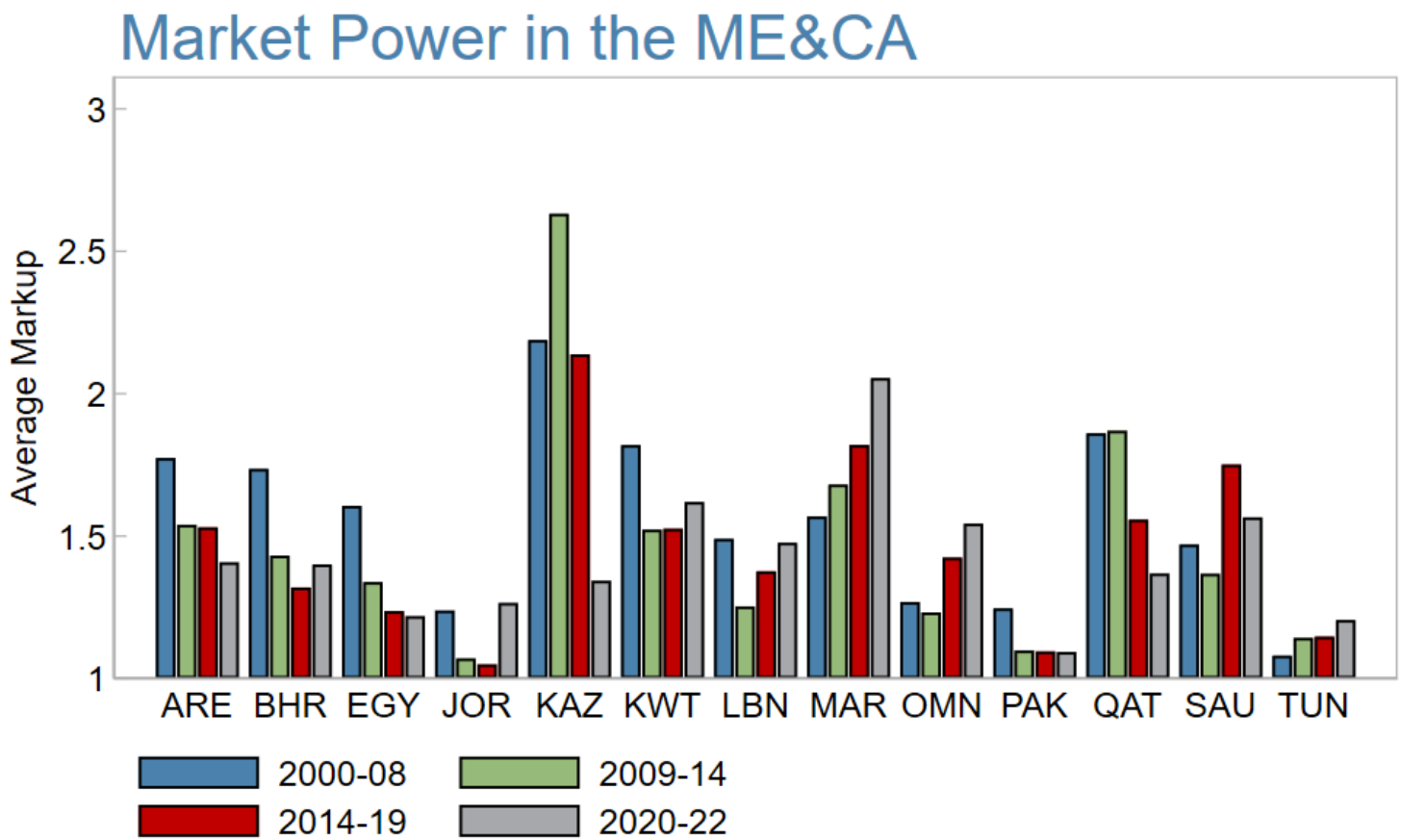
Oil, Mining, & Utilities are yellow & Other Industries are teal

Trends in Market Power

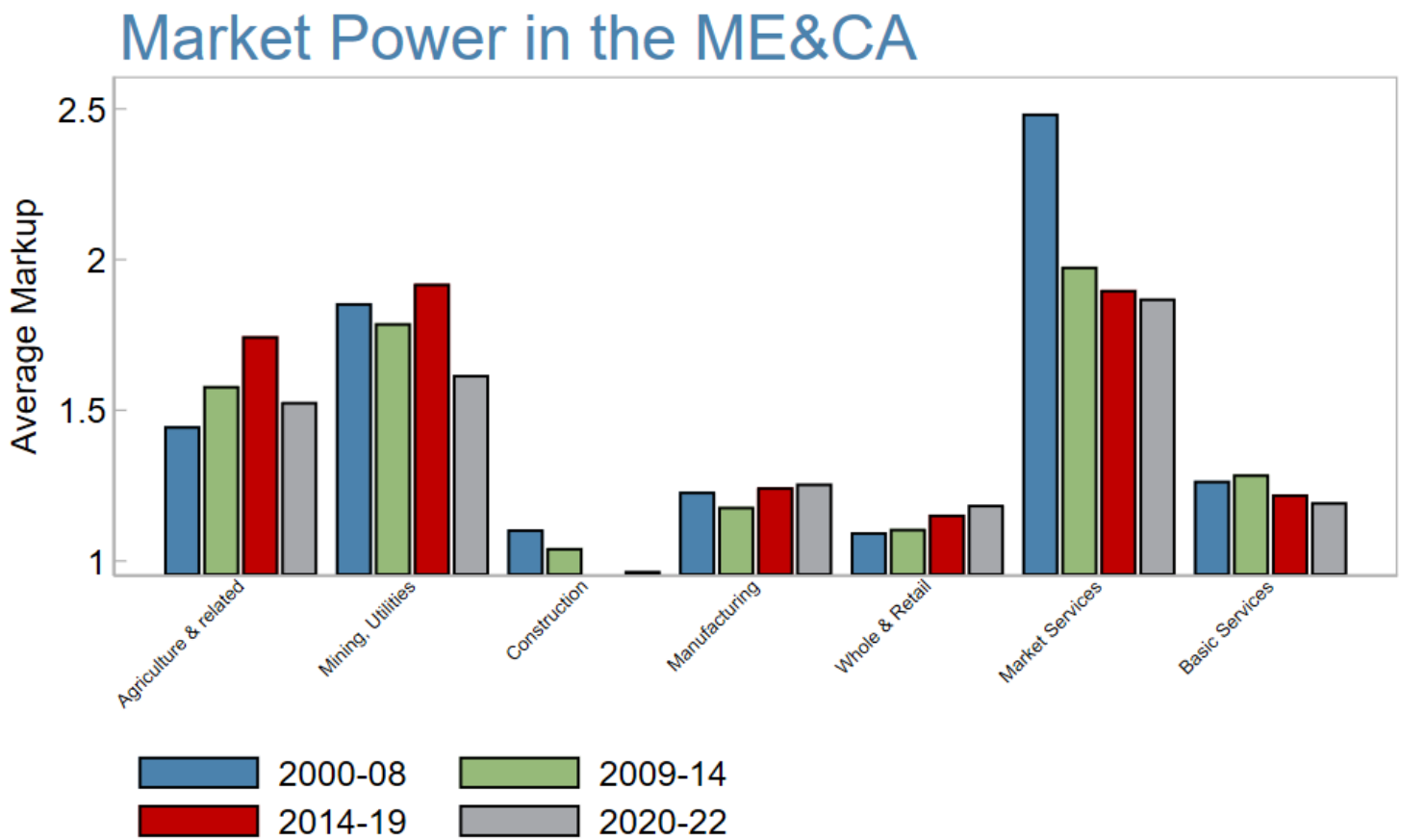
[4] Firm Entry is not a Driver of Falling Markups.



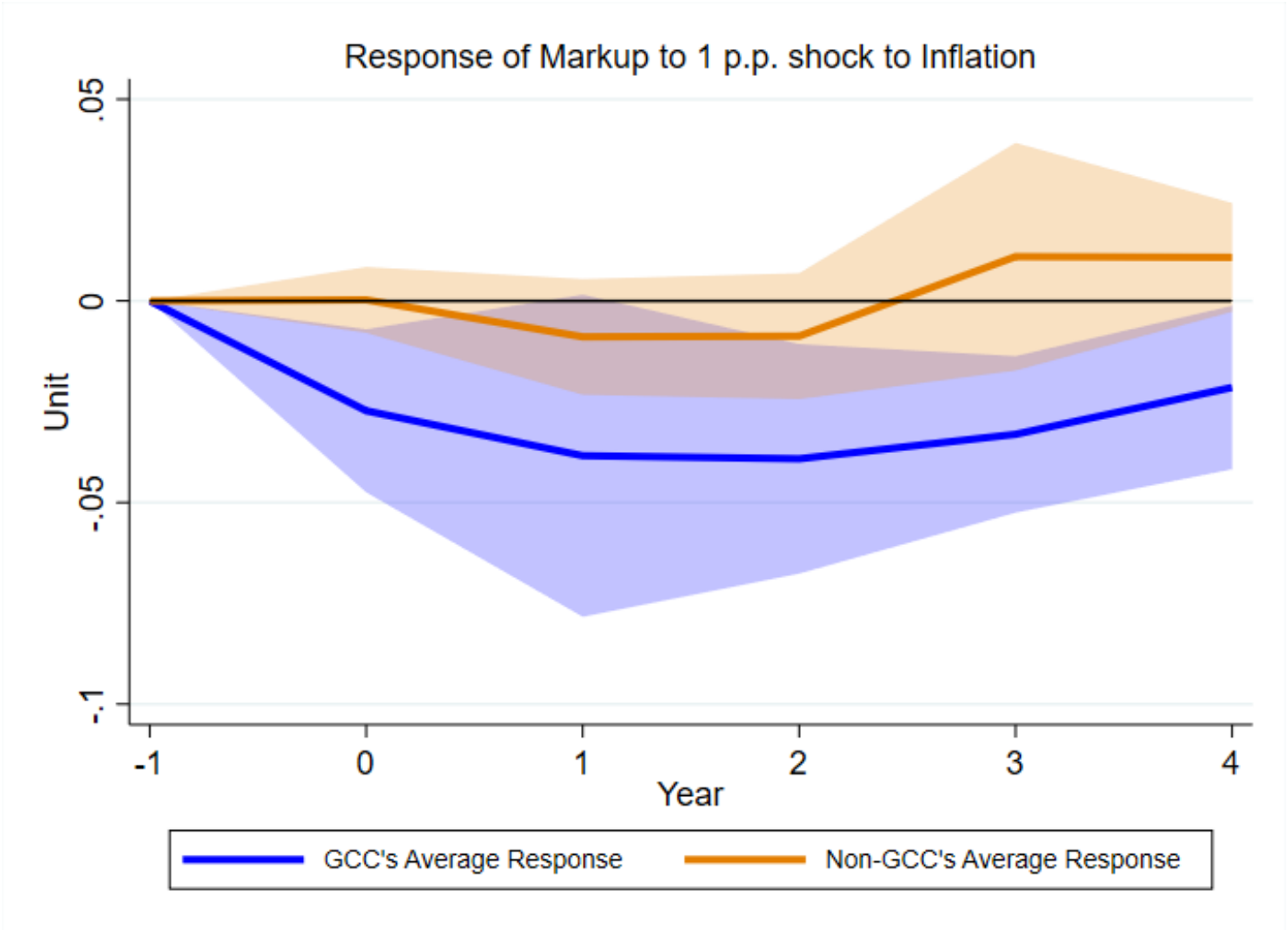
Markups by Country (PFA)



Sectoral Composition (PFA)



Market Power & Inflation in MECA (Jorda, 2005)



Impulse response of Markups to 1pp +ve shock in inflation

GCC VAT Reforms

- GCC VAT Framework agreement of 2016.
- Starting 2018, *staggered VAT implementation* across GCC countries with different rates.
- VAT is borne by the final customer, hence:
  - VAT can affect the final product's pricing strategy
  - Mechanism: change demand curve facing the final good firm.
- Identification strategy:

$$\mathbb{E}[\Delta\mu^0_{it}|\tau_t - \tau_{t-1} = d] = \mathbb{E}[\Delta\mu^0_{it}|\tau_t - \tau_{t-1} = 0]$$

(Parallel Trends Assumption)

GCC Staggered VAT Adoption with Differential Rates

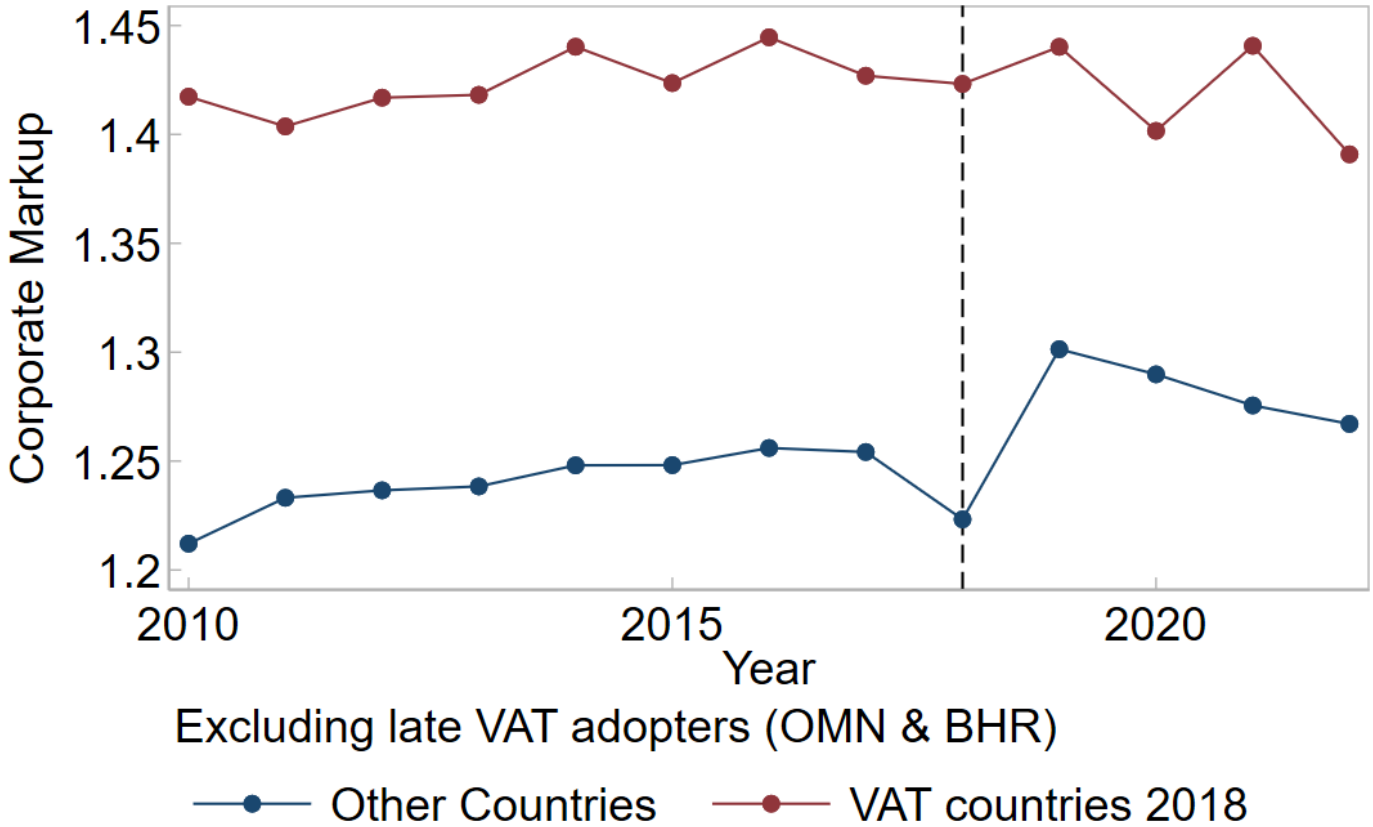
VAT rates and adoption by country & year.

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.

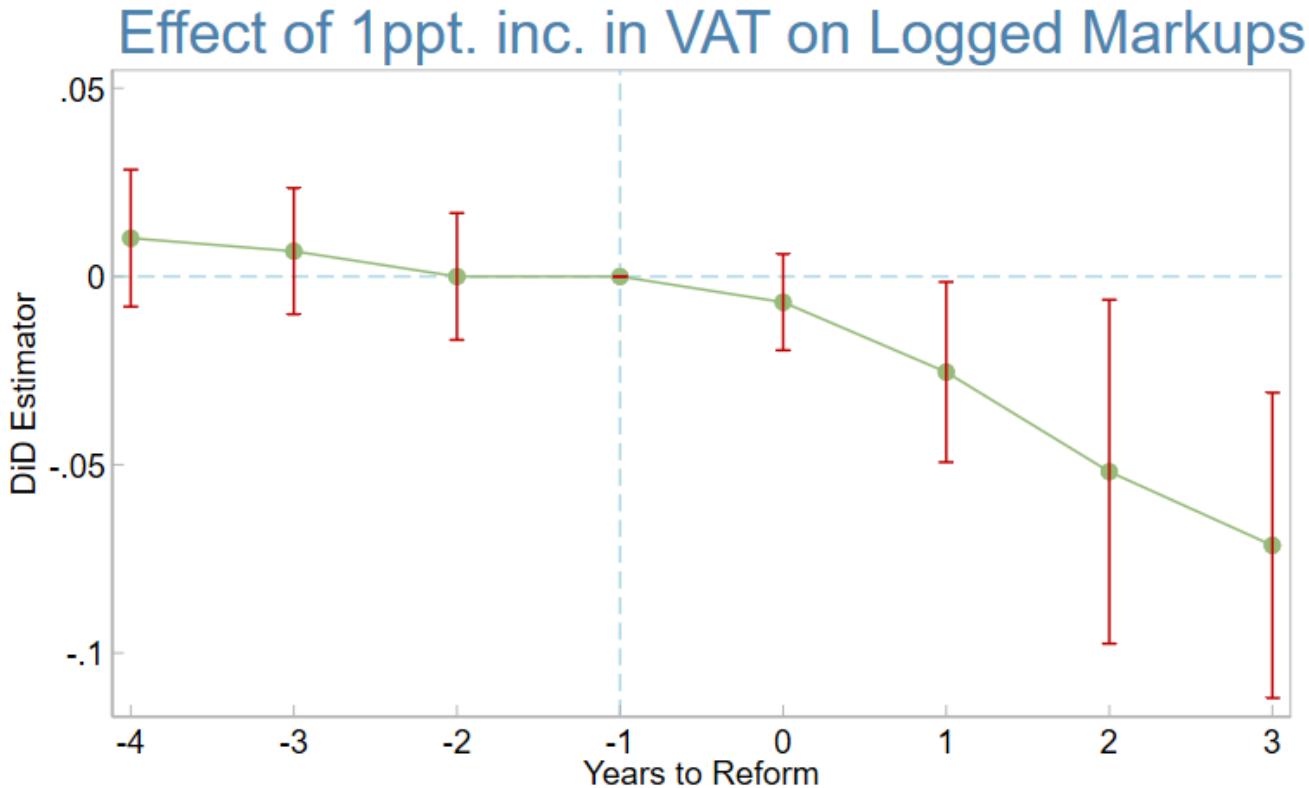
For figure consult: ⏩ Figure.

Exploratory Evidence I



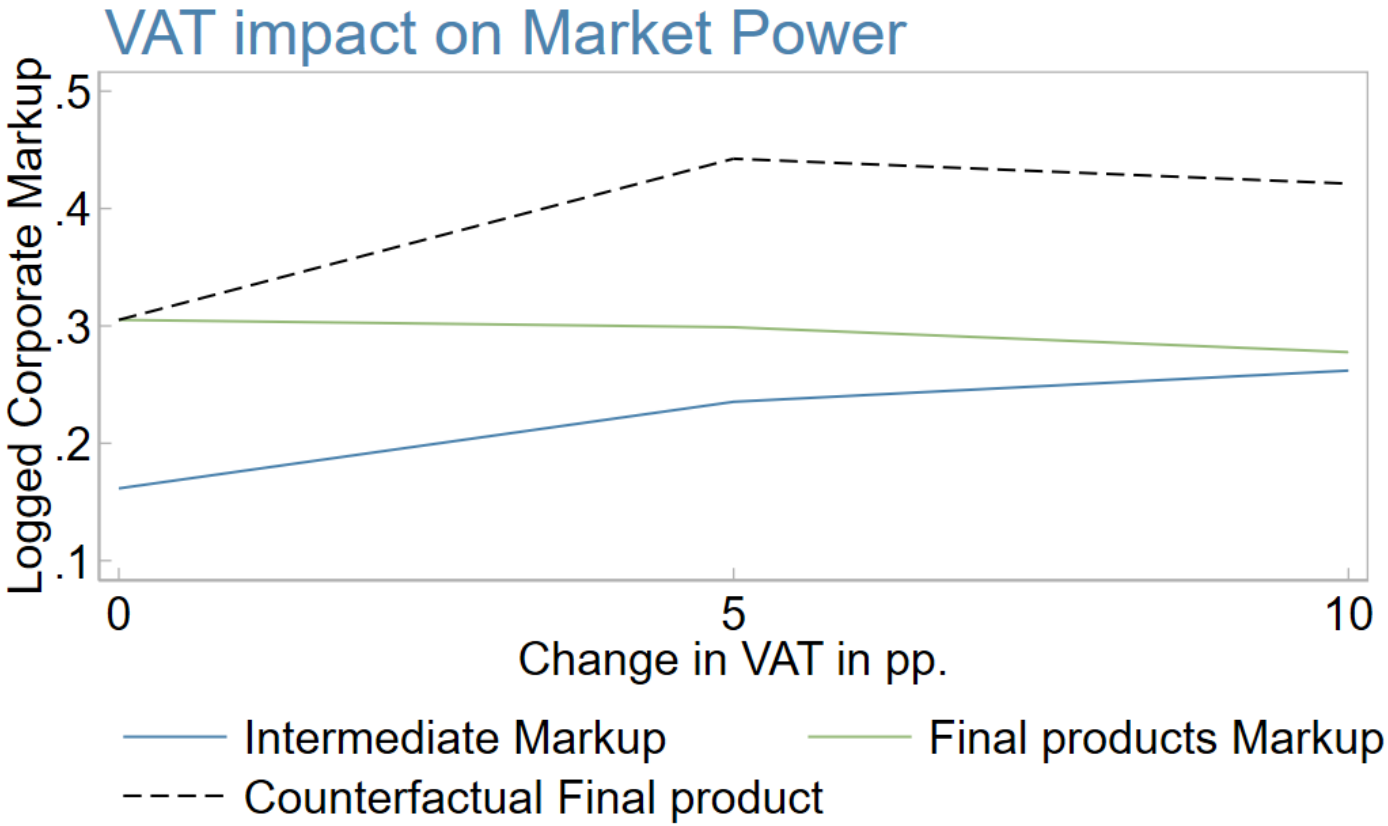
ID1: $\mathbb{E}[\Delta\mu_{it}^0|\tau_t = d] = \mathbb{E}[\Delta\mu_{it}^0|\tau_t = 0]$

Staggered Diff-in-Diff: $\mathbb{E}[\Delta\mu^0_{it}|\tau_t = d] = \mathbb{E}[\Delta\mu^0_{it}|\tau_t = 0]$



Event study (de Chaisemartin & D'Haultfœuille, 2020).
DV: logged(markups_PFA). Controls: sales-cost of goods sold ratio; firm's sales fraction of industry; firm-specific linear trend.
Clustered Standard errors.
Weighted by deflated sales.

Exploratory Evidence II



ID2:

$$\mathbb{E}[\Delta\mu^0_{it}|\tau_t - \tau_{t-1} = d, \textit{final}] = \mathbb{E}[\Delta\mu^0_{it}|\tau_t - \tau_{t-1} = d, \textit{intermediate}]$$

Discussion I: Market Power in the Middle East & Central Asia (PFA)

- Markups in MECA higher than in the US
- However, MECA's markups are declining (except for the COVID-19 period): ⏩ Discussion: PFA
  $\Longrightarrow$ This might be related to antitrust and other product market reforms in the region.
- Highest markups in oil, mining, and utilities and market services sectors

Discussion II: Alternative Markup Measure (CSA)

- Cost-share markup measure to capture full picture of costs.
  Benefits:
  1. No need to assume that a subset of firm-years have the same output elasticity.
  2. Output elasticity not identified when using expenditure data to estimate production function (Bond et al. 2021).
     No need to assume revenue elasticity = output elasticity.

  Costs:
  1. Assumes Constant returns to scale.
- Alternative (Cost-share) approach satisfies some external tests.
  For eg. oil prices *more* correlated with cost-share measure (vs the econometric measure). ⏩ oil

Discussion III: Macroeconomic Implications of Market Power in MECA

- Implications for inflation dynamics in the MECA region?
- Did VAT policy reduce GCC market power?
  $\Longrightarrow$ GCC evidence is in favor of such a claim.
- VAT: part of optimal policy mix to correct for market power. (Delipalla & Keen 1992)

Other Findings of Interest

- Markups are -vely correlated with equity dependence. ⏩ EqD
  $\Longrightarrow$ consistent with pecking order theory of firm financing.
- "Oil" Markups are +vely correlated with oil price changes.
  Cost-share markups *more* correlated with Oil prices. ⏩ oil
- Country-level Markups -vely correlated with GDP growth. ⏩ GDP
- Country Results:
  Saudi Arabia ⏩ SAU; Egypt ⏩ EGY; Pakistan ⏩ PAK; Morocco ⏩ MAR.
- Sample Properties. ⏩ sample
- Further facts about market power. ⏩ facts
- Accounting definitions of COGS and XSGA. ⏩ accounting

Discussion of Econometric Approach

Current practice (IMF WEO team):

- Identify μ_{it} using expenditure (instead of quantities). $\Longrightarrow$ suffers from criticism in Bond et al. (2019) and
- Focus on trends = essentially a revenue-cogs ratio. (assuming a time-invariant revenue elasticity & balanced panel)

Method I: Econometric Approach (Production Function)

Estimating θ_{it}^{s}:

$$log(R_{int}) = \theta_n \cdot log(COGS_{int}) + \gamma_n \cdot log(XSGA_{int}) + \phi_n(k_{int}, i_{int}, z_{int}) + \epsilon_{int},$$

(Olley-Pakes 1996)

Baseline: θ_n estimated for each sector over all sample period.

R_{int} = Revenue of firm i in industry n in year t

$COGS_{int}$ = Cost of Goods Sold.

$XSGA_{int}$ = Expenditure on selling, general, and administrative.

ϕ_{nt} = semi-parametric function of inputs in year t & industry n

k_{int}, i_{int} = log capital stock & log investment of firm i in year t.

z_{int} = other market conditions. Back

Back

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(Olley-Pakes 1996)

Criticism:

1 - Variable/flexible input cost assumption.
(Raval 2023)

2 - Revenue vs Output elasticity & identification concerns.
(Bond et al. 2021). ⏩ Back

Method II: Share estimator

Assuming Constant Returns to Scale:

$$\theta_{it}^{s} = \frac{E_{it}^{s}}{\sum_{j} E_{it}^{j}}$$

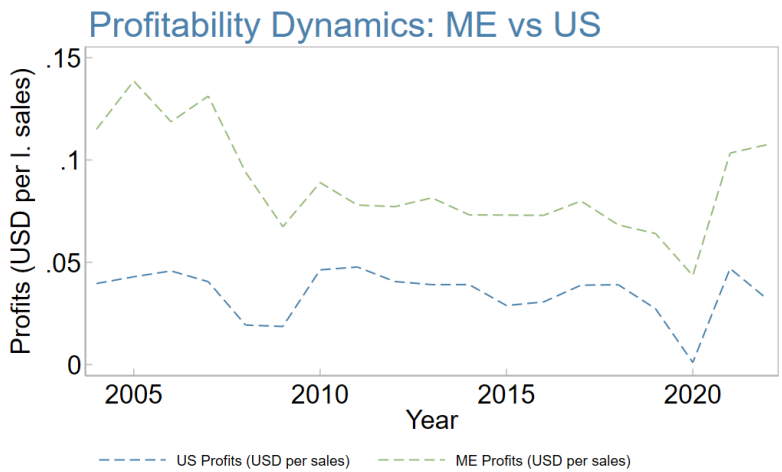
Intuitively, this assumption implies marginal costs = average costs hence one can use input expenditures. $\implies$ Need to choose what items are variable costs.
Following from the FOC,

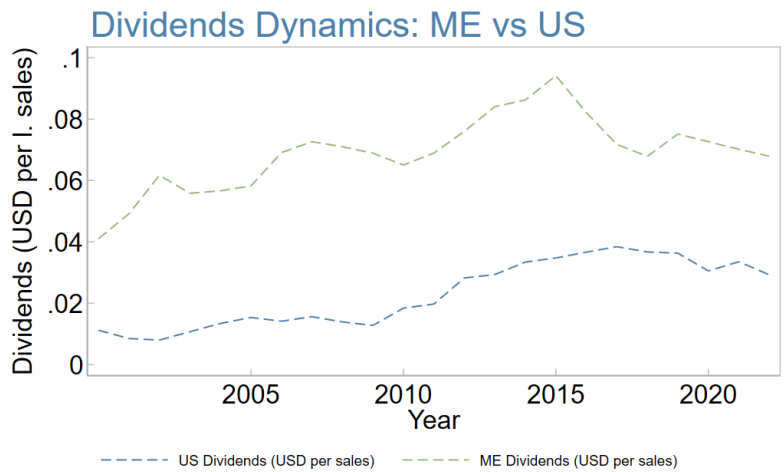
$$\mu_{it} = \frac{R_{it}}{\sum_{j} E_{it}^{j}}$$

Back

Dividends & Profits

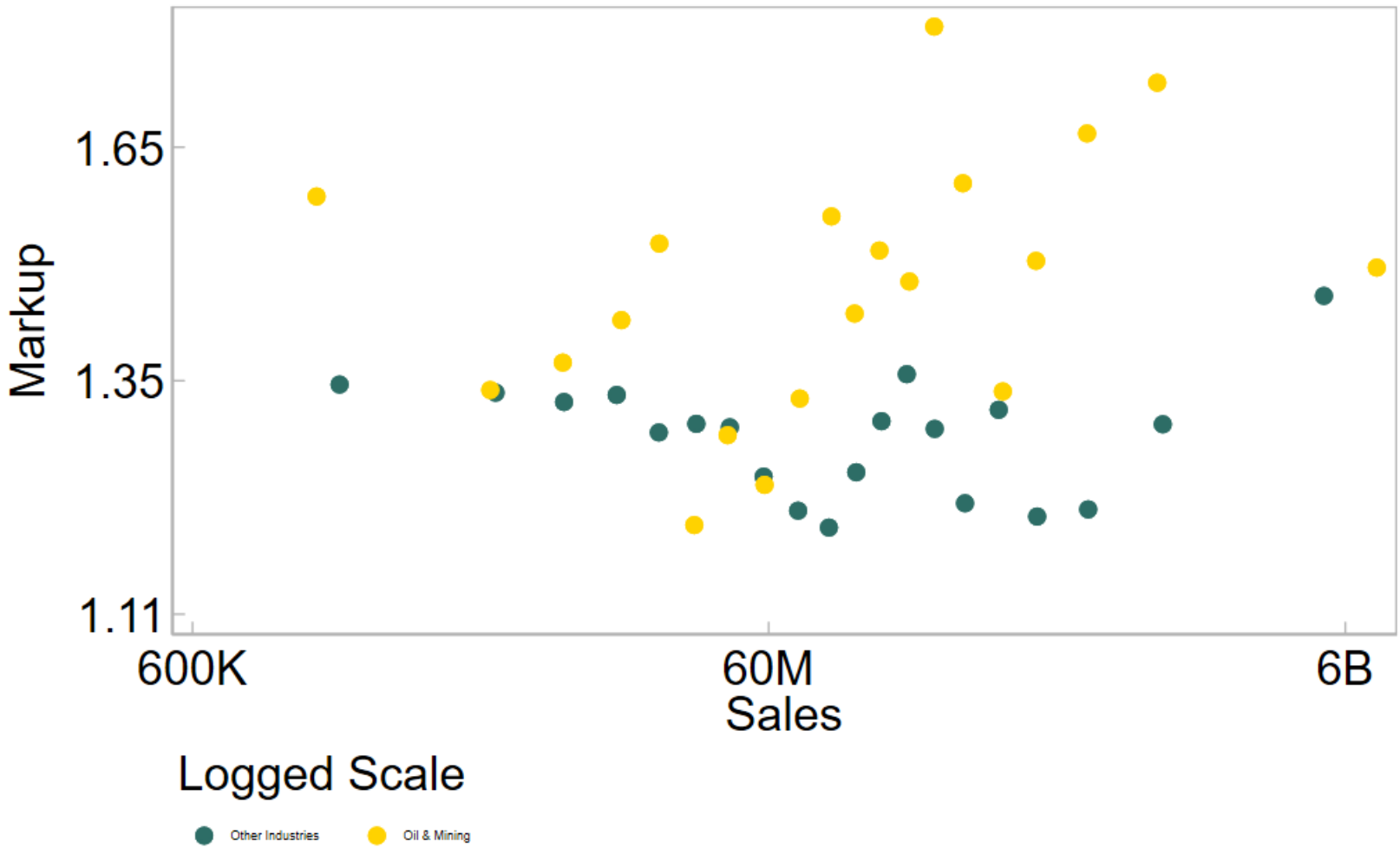
[2*] ME&CA has *higher* dividends & profits vs US. ⏩ Back





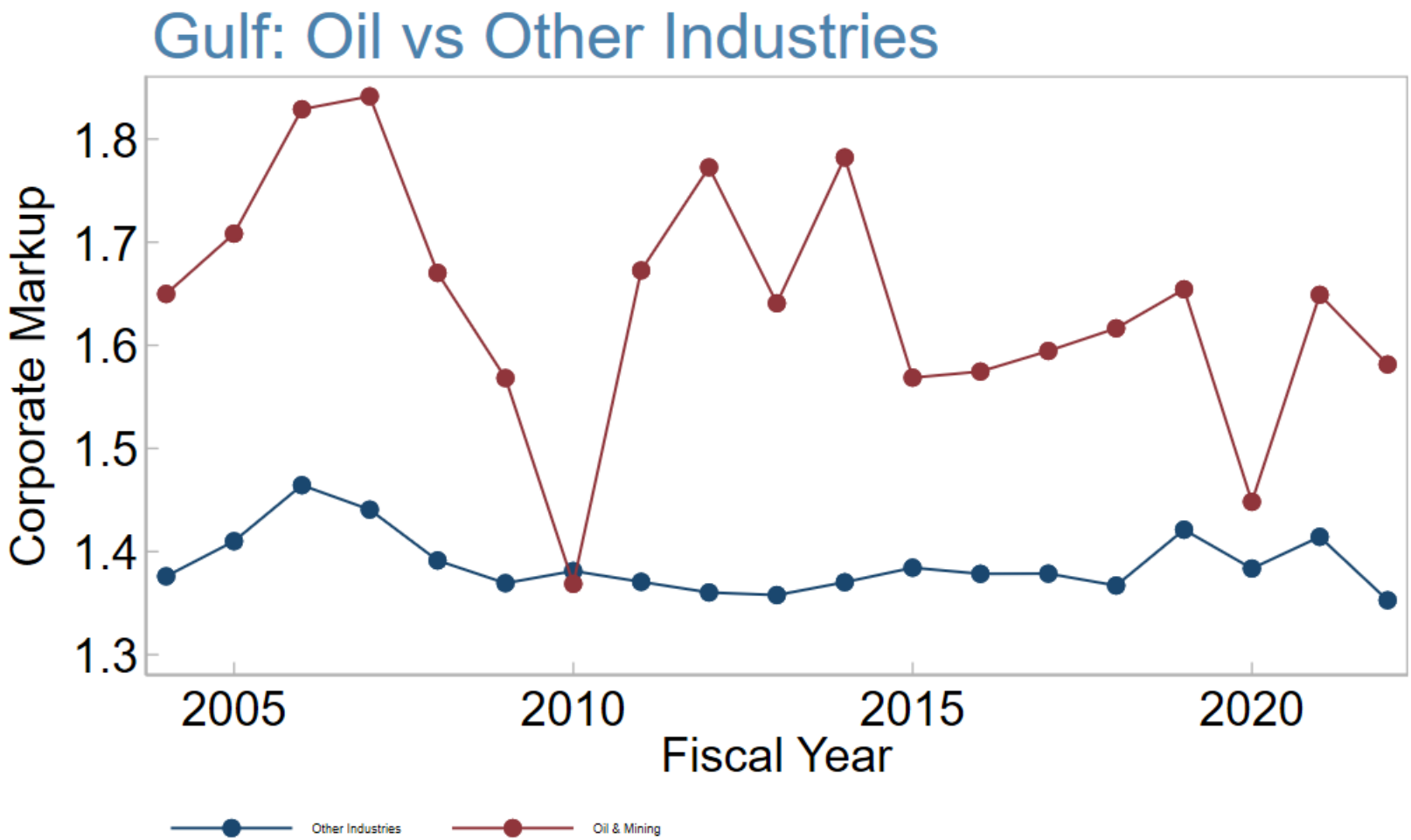
GCC Superstar Firm

[3*] Superstar Phenomena in the GCC. ⏩ Back



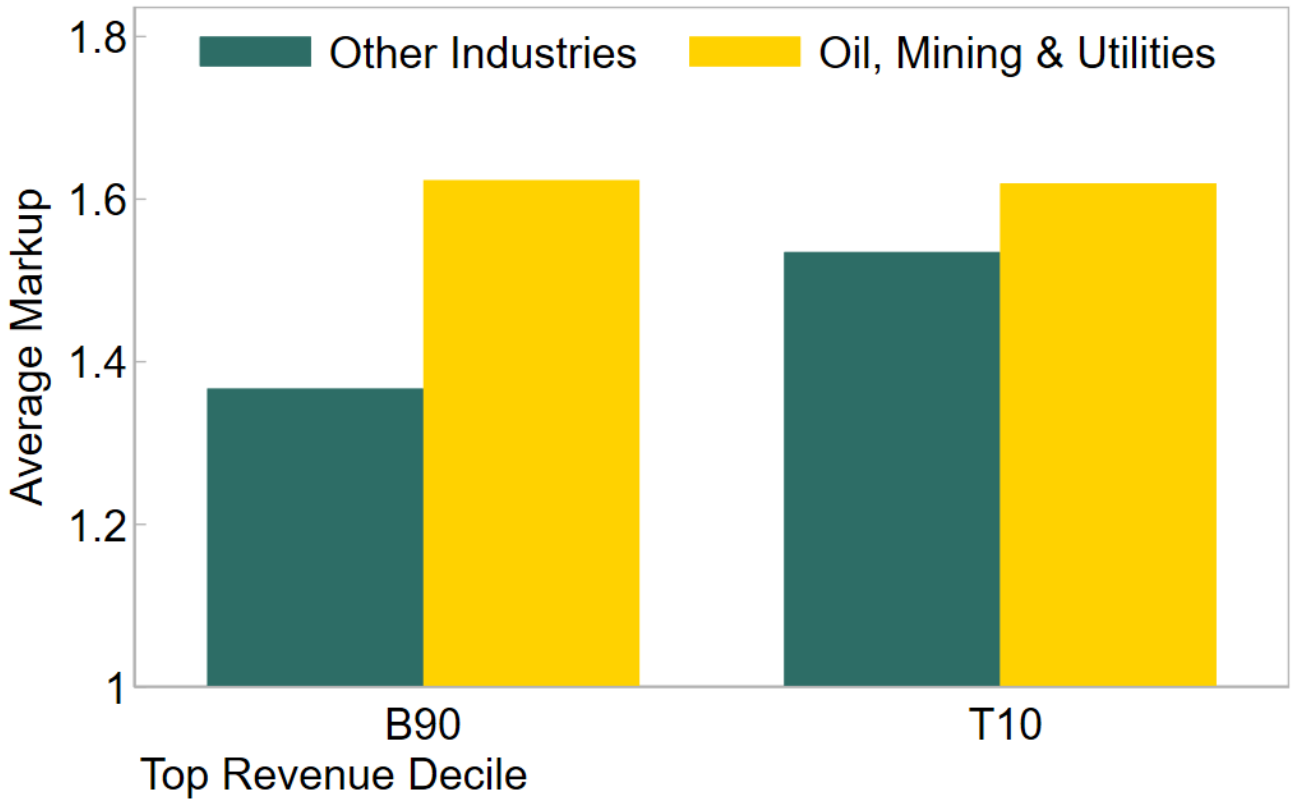
II: Trends in Market Power

[4] The elevated GCC markups are driven by the *Oil, Mining & Utilities* sector. ⏩ Other



II: Trends in Market Power

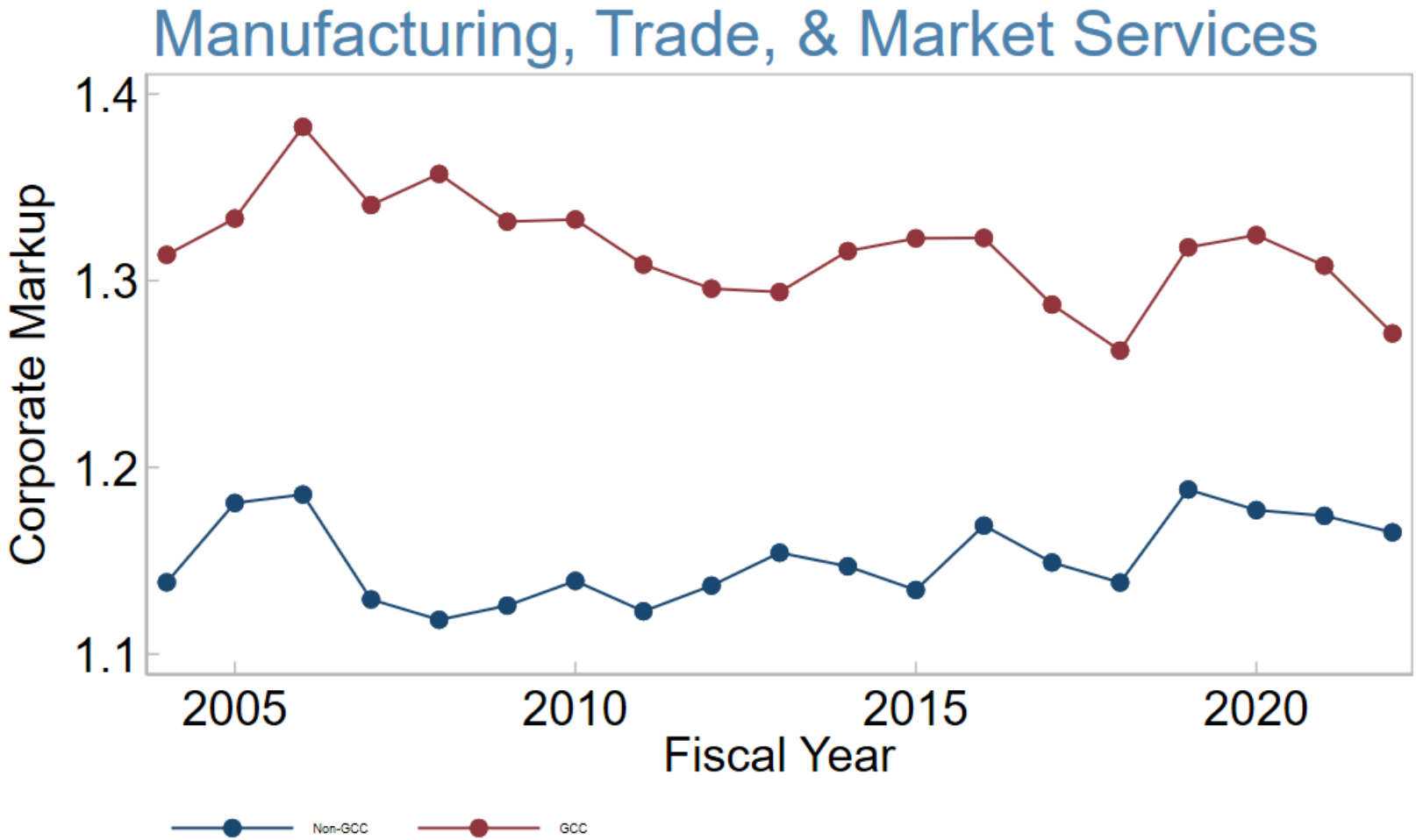
[5] In the GCC, large oil & non-oil have similar markups. ▸▸ Other



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

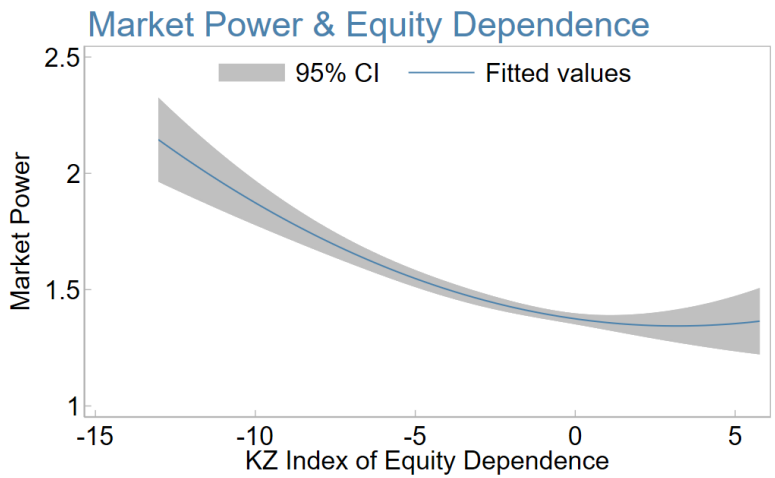
II: Trends in Market Power

[6] Outside oil, GCC firms continue to have *higher* markups both weighted & unweighted. ⏩ Other

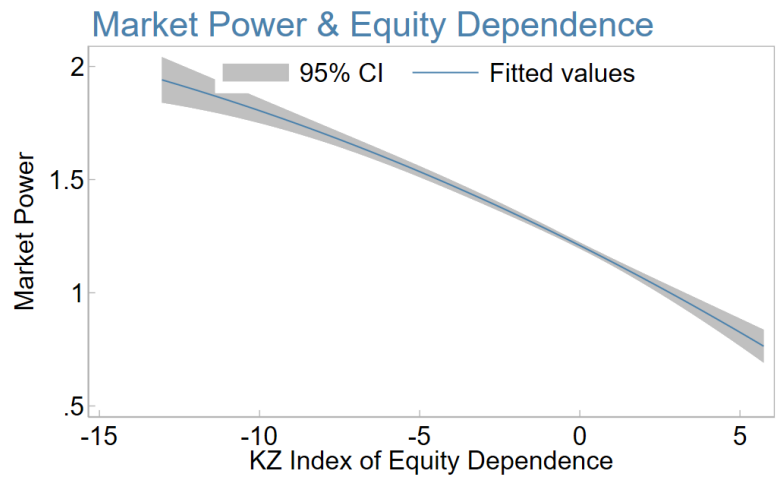


Market Power & Equity Dependence

Equity Dependent firms (limited access to debt instruments) command lower market power. ⏩ Other



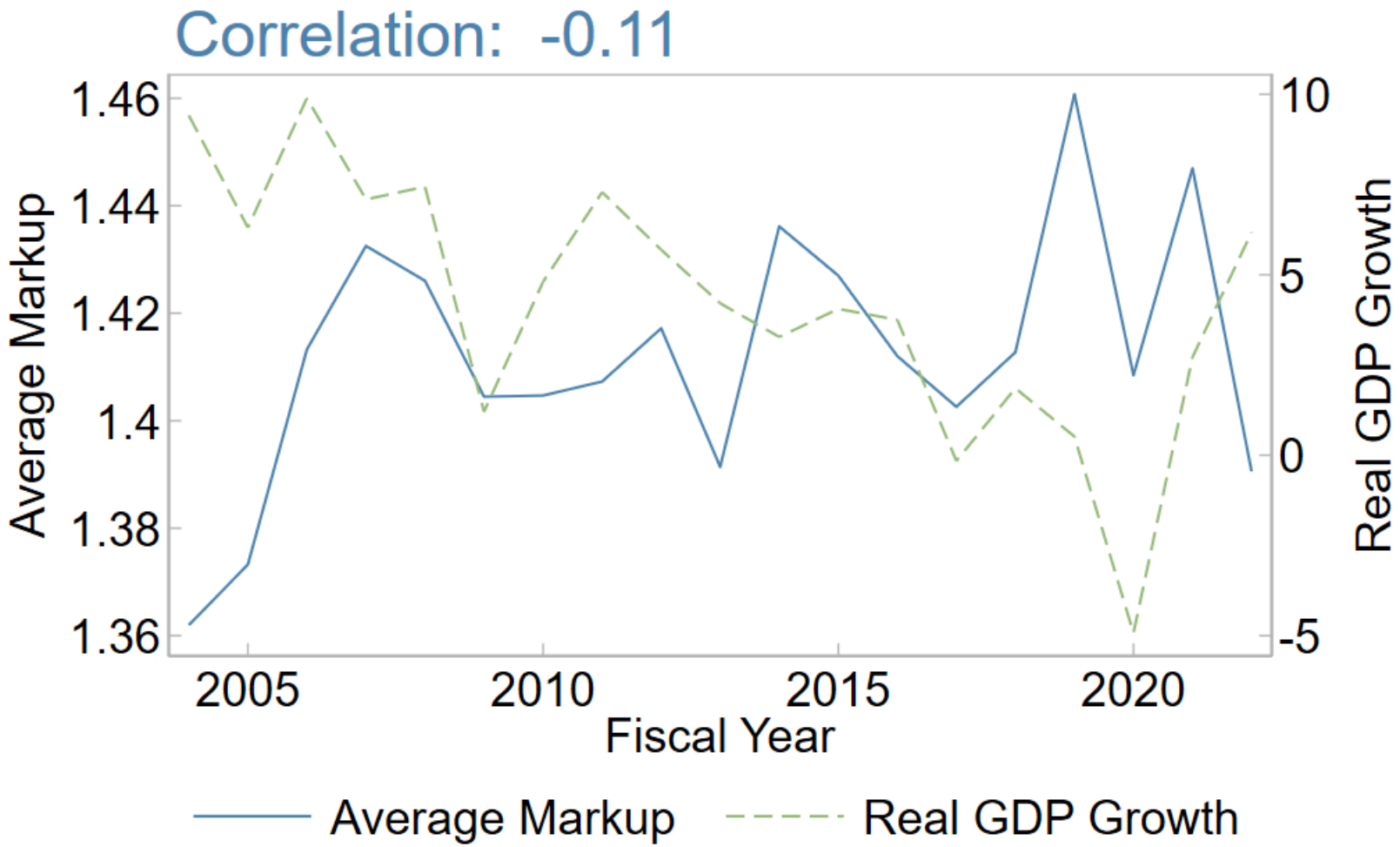
GCC



Rest of ME

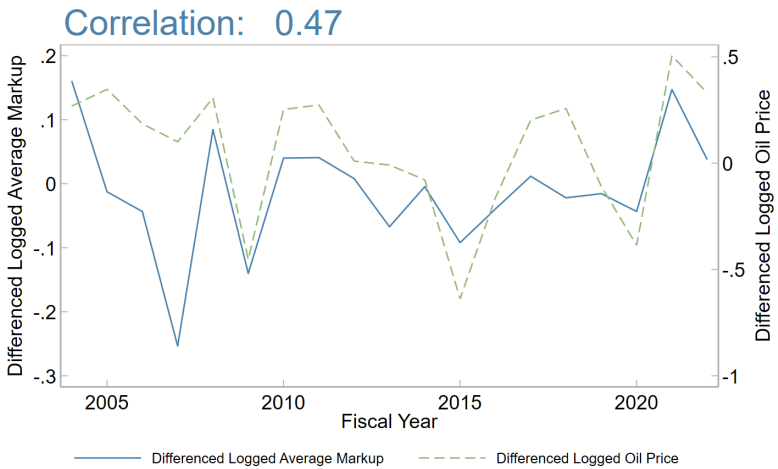
Gulf: Market Power & GDP Growth

Other

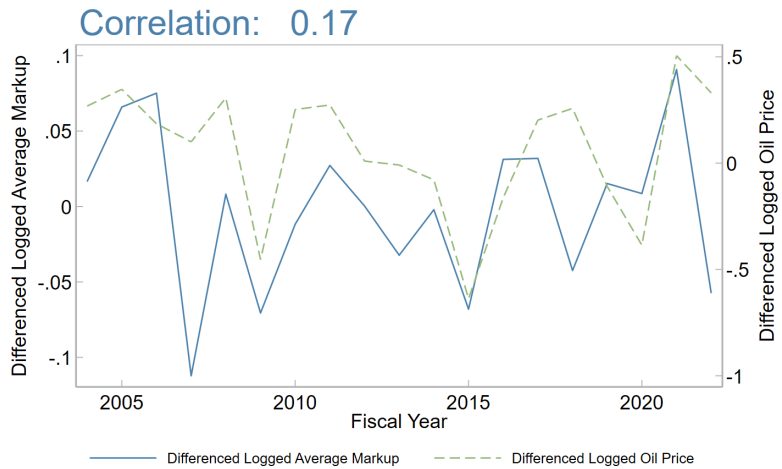


Oil Price and Oil Markups

Cost-share measure of Oil markups is more correlated with Oil prices than econometric (PFA) measure ⏩ Other



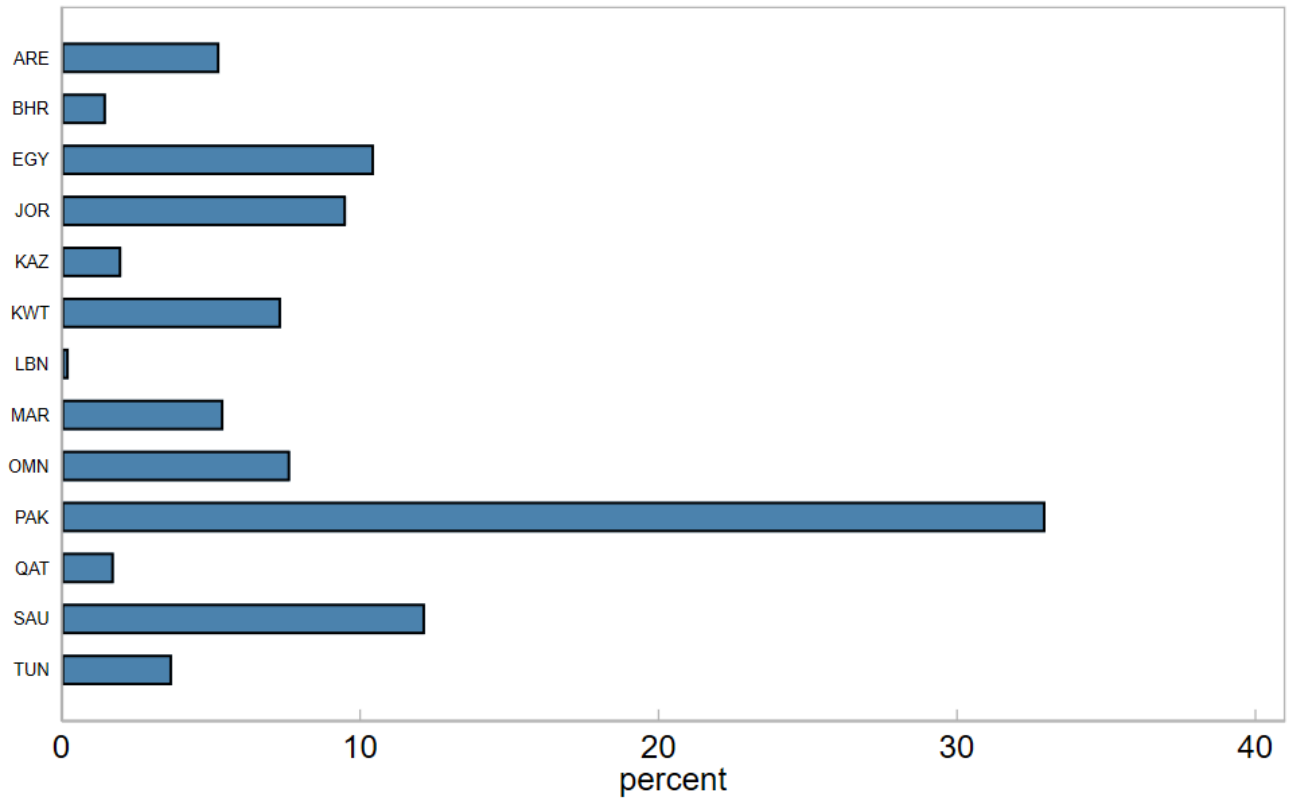
Cost Share Approach



Econometric (PFA) Approach

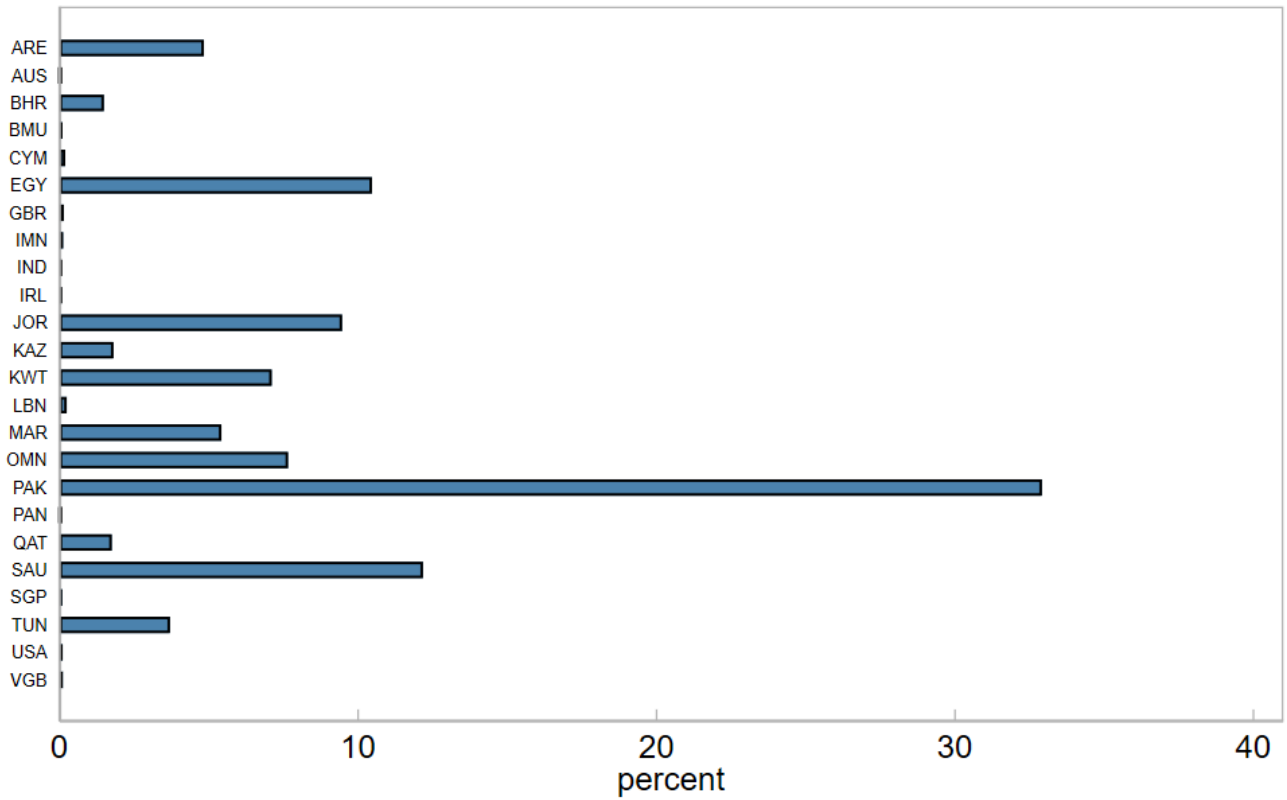
Sample Properties: Firm's Location

⏩ Other



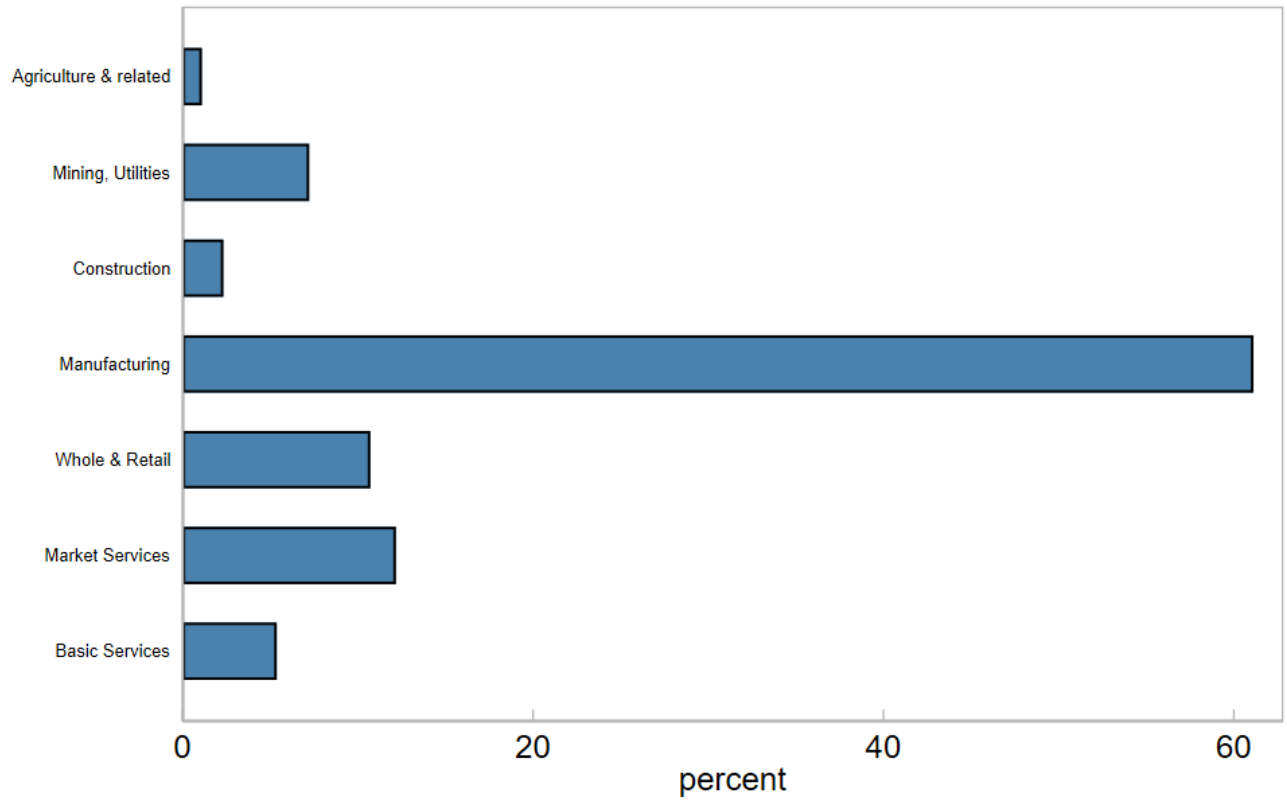
Sample Properties: Firm's Incorporation Country

▶▶ Other



Sample Properties: Firm's Industry

⏩ Other



Summary Statistics Table: 2004-2022

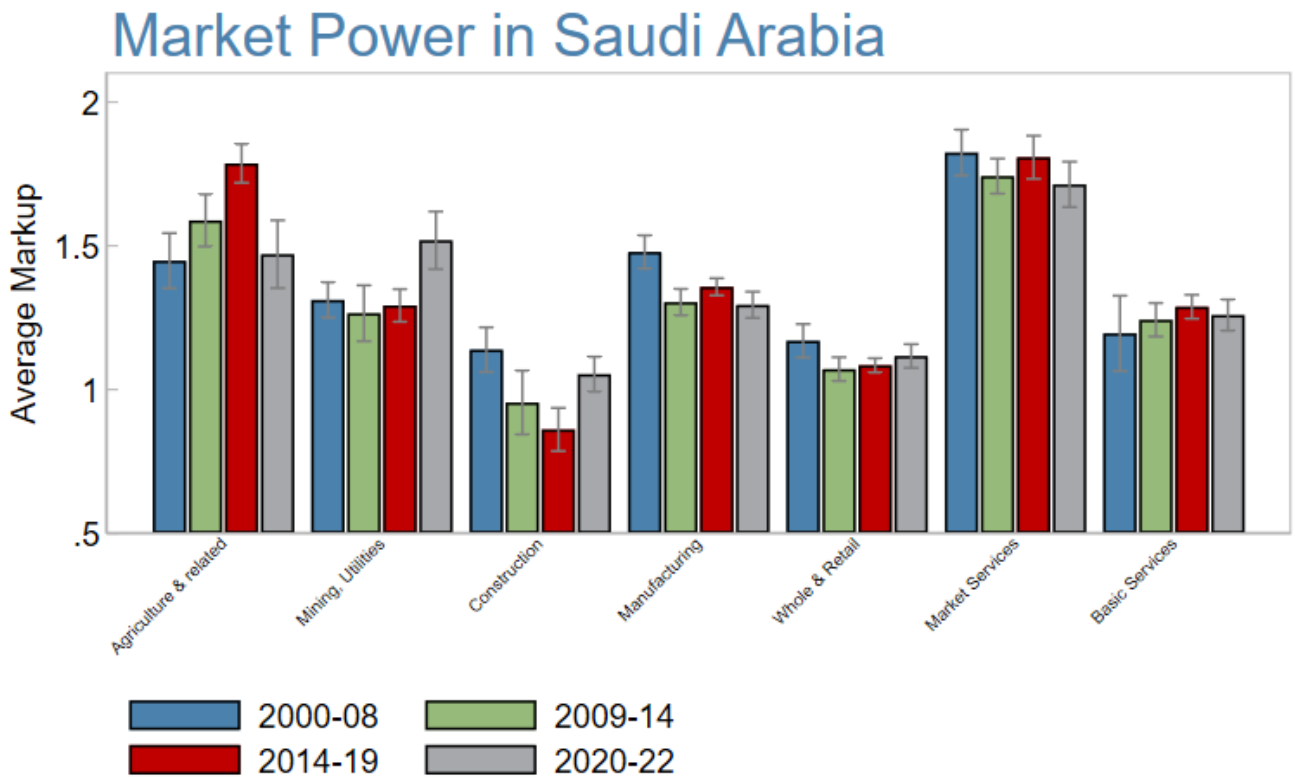
Other

	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&CA. Sales, COGS, and Pretax income are reported in '000s of 2015 USD.

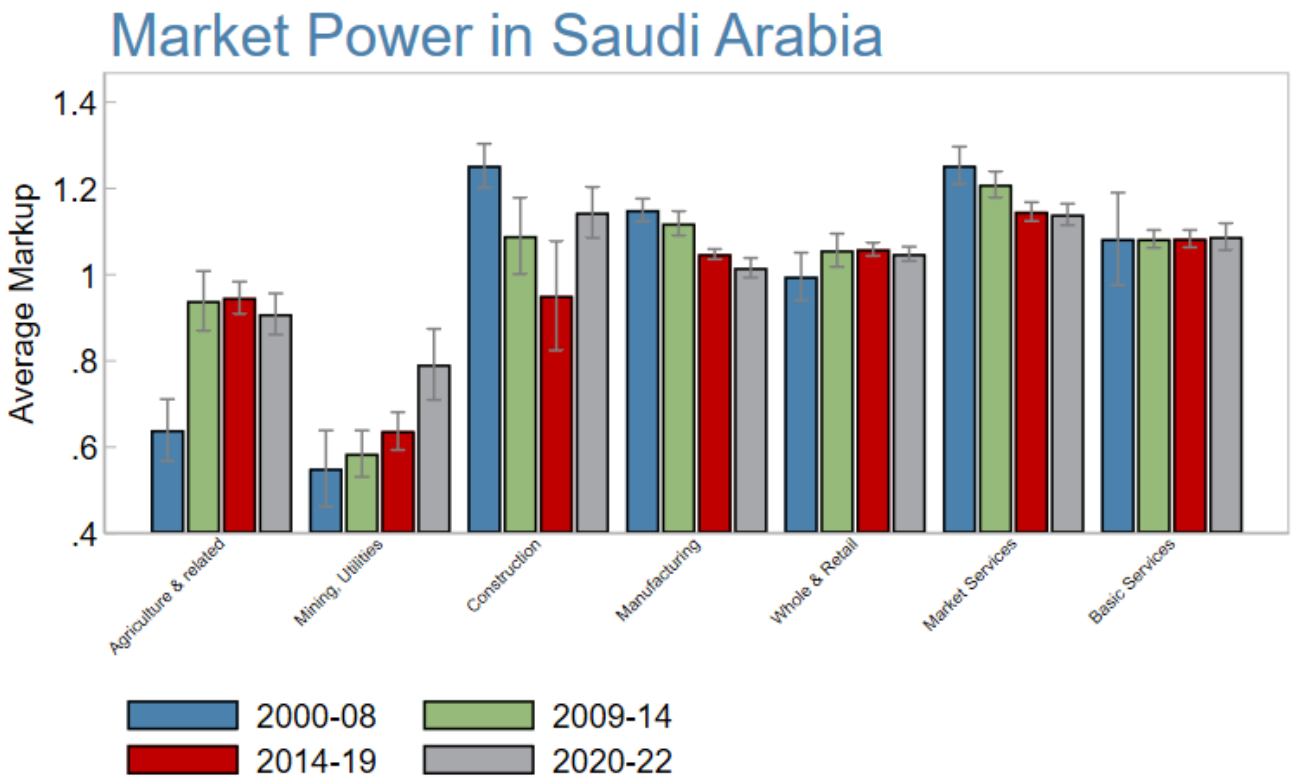
Saudi Arabia Industry: PFA

▸▸ Other ▸▸ CS SAU



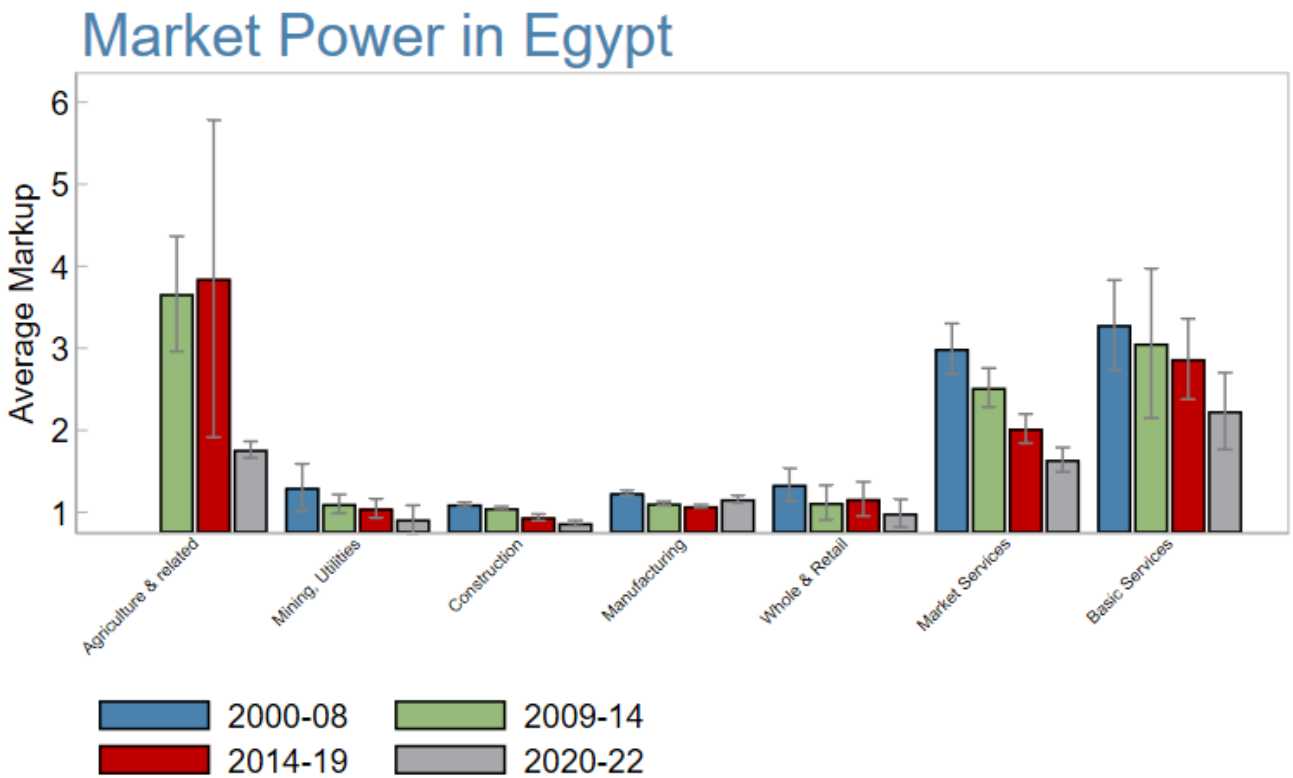
Saudi Arabia Industry: CS

▸▸ Other



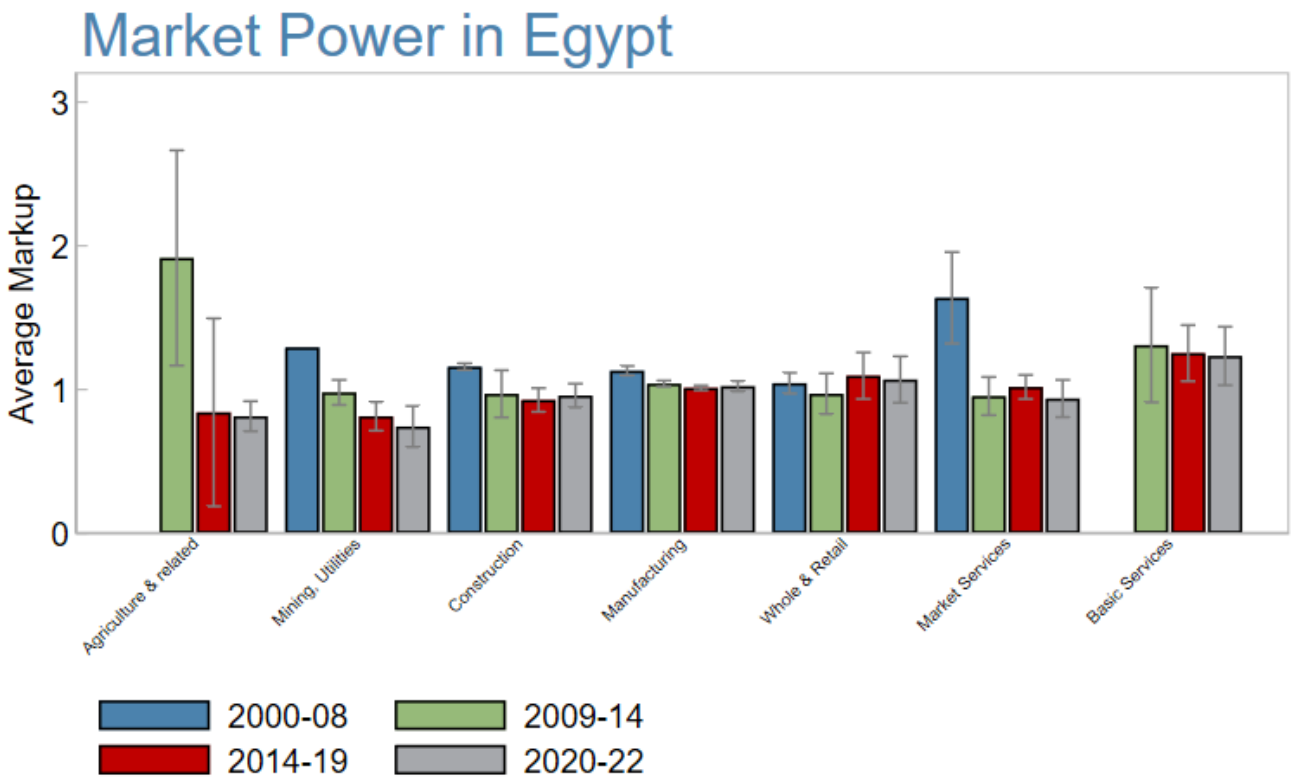
Egypt Industry: PFA

▸▸ Other ▸▸ CS EGY



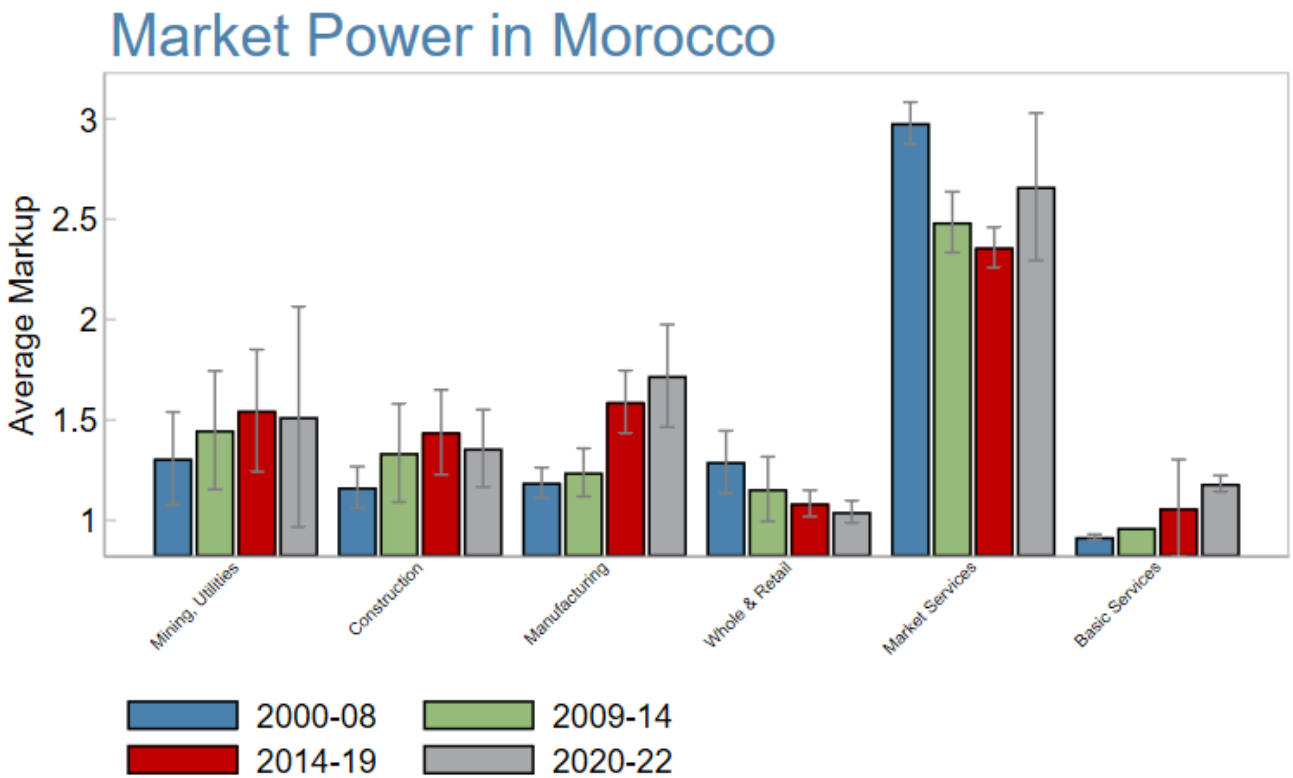
Egypt Industry: CS

▶▶ Other



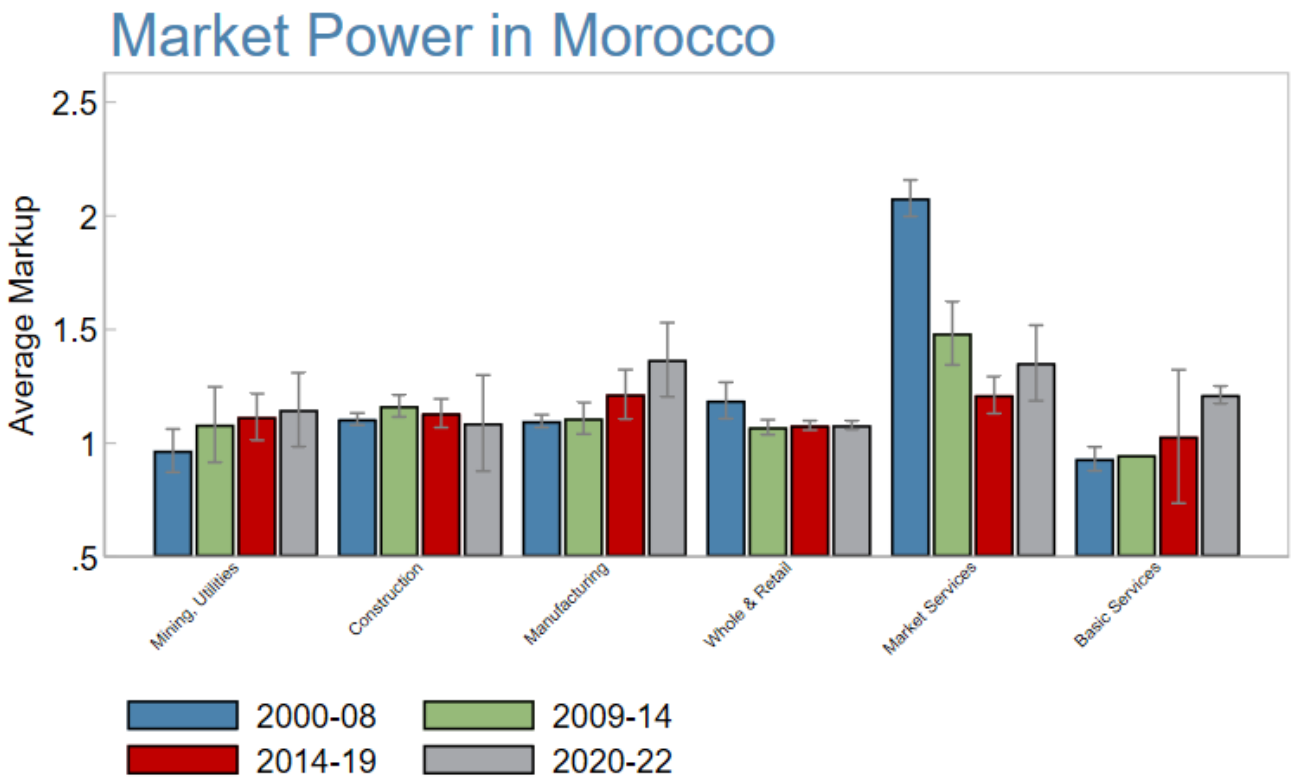
Morocco Industry: PFA

⏩ Other ⏩ CS MAR



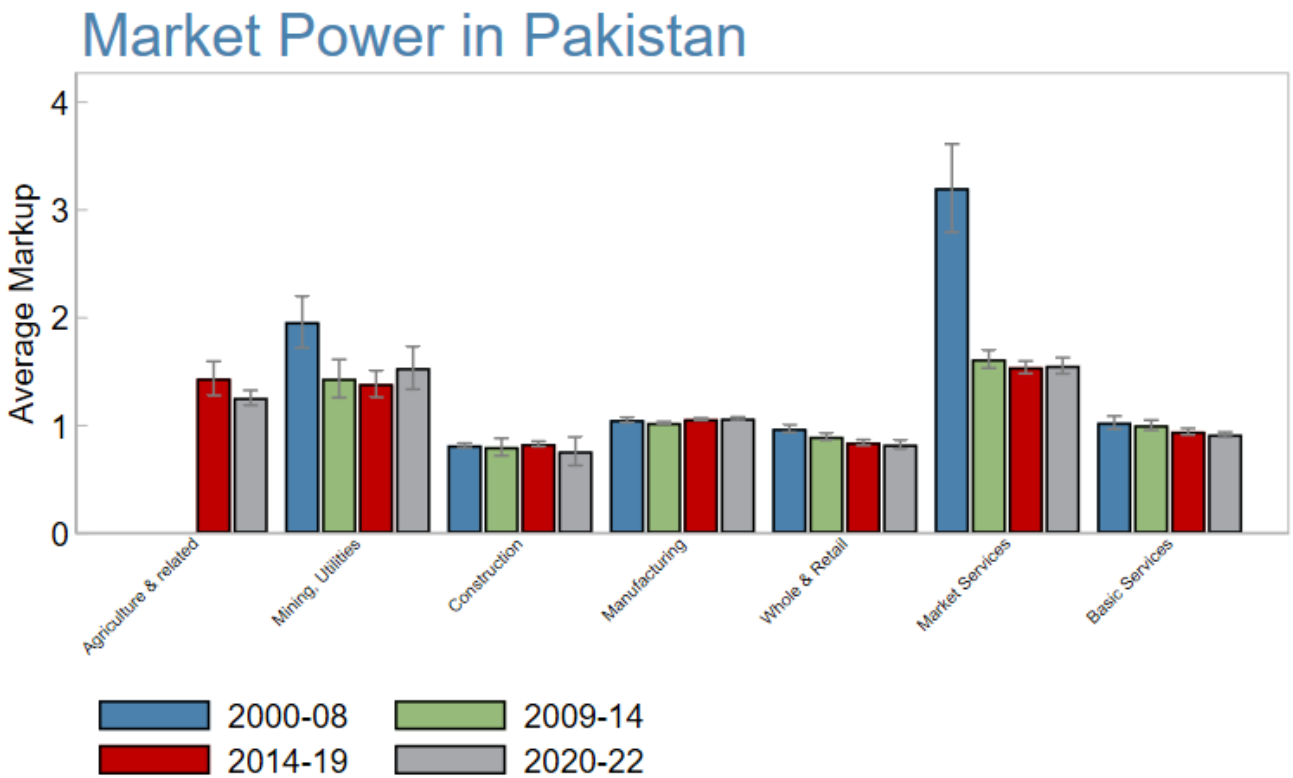
Morocco Industry: CS

▸▸ Other



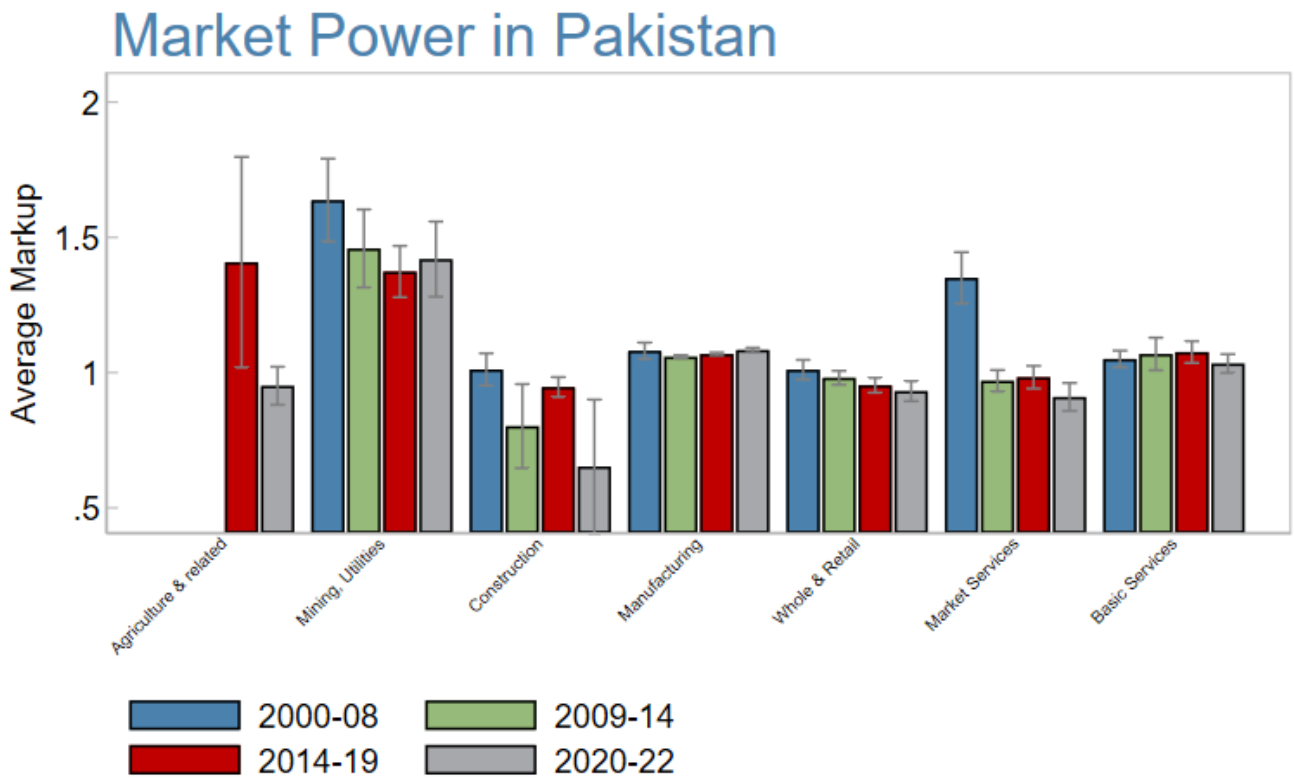
Pakistan Industry: PFA

▸▸ Other ▸▸ CS PAK



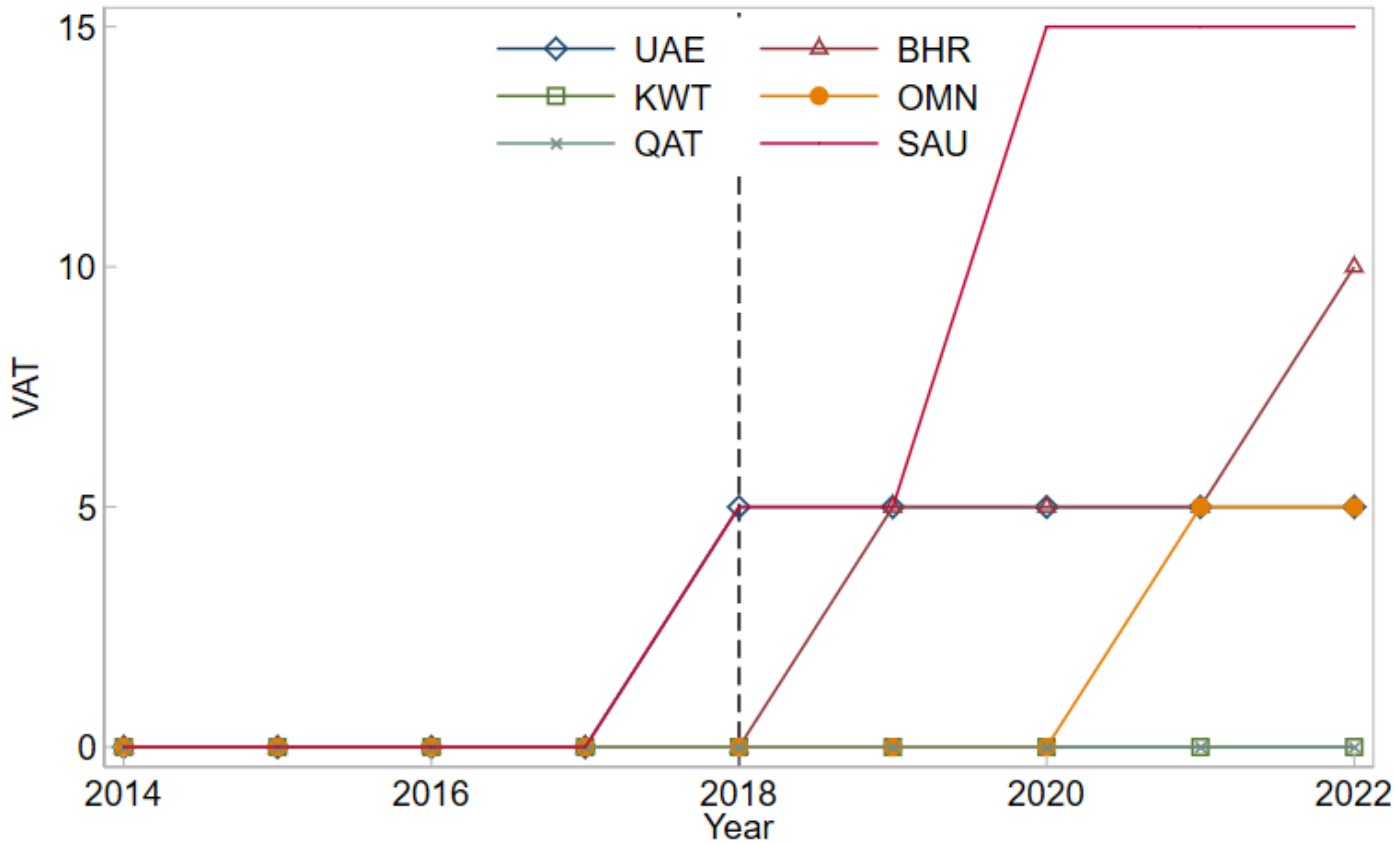
Pakistan Industry: CS

▸▸ Other



Staggered Adoption with Differential Rates

Back



HH-index

$$HH_{kt} = \sum_{j} MS_{jkt}^2 \quad \forall k = 1, 2, 3, ... \tag{1}$$

where MS_{jk} is the market share of firm j in sector k in year t. We define sectors as the 4-digit NAICS codes in the country-year of operation. To estimate an economy-wide HH-index, we average HH_{kt} up to the economy-level for every year.

Back

Accounting Definitions

COGS (cost of goods sold) is the sum of all costs directly allocated by the company to production, such as material, labor and overhead. COGS appears on an income statement. It does not include costs associated with marketing, sales or distribution.

XSGA (selling, general, and administrative expenses) is the sum of all commercial expenses of operation (i.e., expenses not directly related to product production) incurred in the regular course of business pertaining to the securing of operating income.

▸▸ Other