

# Looking Beyond Aggregate Markups: Profit-led Inflation Dynamics in Austria

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## Background

- ▶ Inflation surge induced debate on the extent of firm profits' contribution
- ▶ No clear definition of profit (-led) inflation or sellers' inflation
- ▶ Standard theory suggests imperfect competition and industry concentration lead to higher profits (De Loecker et al., 2020)
- ▶ Alternative explanations range from cyclical factors to greed (Lavoie (2023); Weber and Wasner (2023))

## Why Austria?

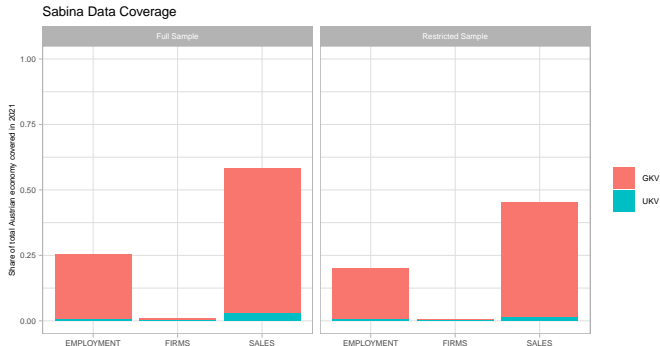
- ▶ Hit comparably hard due to various factors (e.g. ties to Russia)
- ▶ Hardly any direct price interventions
- ▶ Record decrease in real wages
- ▶ Existing literature focused on listed company data

## Strategy

- ▶ We know a lot about firms, but what we do not know is the price they charge for their products
- ▶ It is approximated by estimating a markup  $\mu$
- ▶  $P = \mu * MC$  or  $P = \mu * TC$
- ▶ Different approaches towards markup estimation (De Loecker et al. (2020); Autor et al. (2020); Nikiforos et al. (2024))
- ▶ Profit inflation is hard to grasp (macro, micro, input output)
- ▶ Problem: Most of the contributions do not go far beyond the markup

⇒ Research Q.: **Can we trustfully identify profit-inflation in Austria?**

- ▶ Income statements from "Sabina" (Austrian firms 2019 - 2022)
- ▶ Restricted sample (constant n for all years) and full sample
- ▶ Data is clearly skewed towards bigger firms → that is okay because we want a representation of economic activity
- ▶ More sales coverage, more coverage of consumer expenditure



Note: Filtered dataset compared to economy-wide results for 2021 by Statistics Austria (Leistungs- und Strukturerhebung).

## Main Variables

- ▶ COGS (cost of goods sold = *labour* + *materials*)
- ▶ XSGA (administrative and selling expenses)
- ▶ EBIT (profit measure)
- ▶ Sales margin (**markup**)  $SG = \frac{Sales}{COGS}$

## Filtering

- ▶ All statements on firm level (to avoid large parent groups)
- ▶ No consolidated statements
- ▶ 1% top and bottom coding for  $SG$
- ▶ Financial sector largely excluded
- ▶ Housing associations excluded

# Summary Statistics

Table: Restricted Sample

year	n	Median in Million Euros					
		SALES	other	COGS	XSGA	EBIT	NET
2019	3050	35.4	0.2	26.2	4.1	0.97	0.80
2020	3050	31.5	0.4	23.8	3.8	0.89	0.73
2021	3050	33.4	0.5	26.3	3.8	1.20	1.06
2022	3050	36.9	0.5	27.9	4.2	1.13	0.98

Note: Results in 2015 Euros, adjusted by GDP Deflator.

Table: Full Sample

year	n	Median in Million Euros					
		SALES	other	COGS	XSGA	EBIT	NET
2019	5250	20.3	0.1	15.4	2.7	0.52	0.44
2020	5234	16.5	0.2	12.7	2.3	0.45	0.37
2021	5470	18.4	0.3	14.4	2.4	0.64	0.56
2022	5099	22.5	0.3	17.2	2.9	0.72	0.62

Note: Results in 2015 Euros, adjusted by GDP Deflator.

## Sales Weights

- ▶ A firm's sales' share in total sales:  $w_{it} = \frac{SALES_{it}}{\sum_i SALES_{it}}$
- ▶ Could also use cost weights or No. of employees
- ▶ Sales best reflect importance for buyers and consumers
- ▶ How we measure things:
  1. TOTAL:  $\pi_t^{total} = \sum_i \pi_{it}$
  2. AGGREGATE:  $\pi_t^{agg} = \sum_i \pi_{it} * w_{it}$

Table: Weights by Sector (NAICS)

	2019	2020	2021	2022
21.22 ENERGY	15.2	13.6	18.5	26.4
23 CONSTRUCTION	3.2	3.3	3.0	2.5
31.33 MANUFACTURING	26.9	26.8	25.8	23.1
42 WHOLESALE TRADE	23.5	23.9	22.4	21.0
44.45 RETAIL TRADE	13.6	14.5	14.0	12.0
48 TRANSPORTATION	4.6	4.9	4.4	4.0
52.53 FINANCE AND REAL ESTATE	0.4	0.3	0.3	0.2
54 PROFESSIONAL SERVICES	3.6	3.9	3.5	3.1
55 HOLDINGS	0.7	0.6	0.5	0.8
72 ACCOMODATION AND FOOD	0.6	0.4	0.3	0.4
REST	7.7	7.9	7.1	6.5

Note: Categories based on NAICS, adjusted by author.

# Markups I



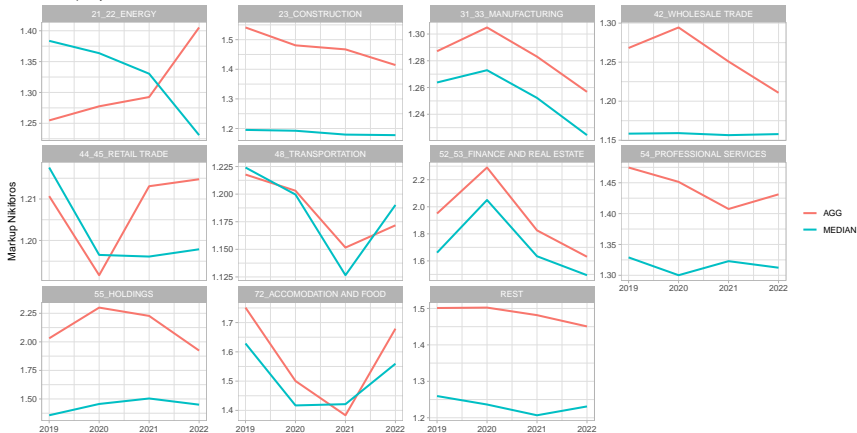
Note: Markup DeLoecker uses median industry costshares (incl. XSGA) as elasticity measure. Markup Nikiforos refers to structuralist approach. Weighted by yearly sales weights.

- ▶ Measures differ only in levels
- ▶ No widespread increase of markups



# Markups II

Markups by Sector



Note: Markup = Sales/COGS. Aggregated weighted by yearly sales weights. NAICS industries adjusted by author.

## Observations

- ▶ Markups did not increase drastically in 2022
- ▶ Does this rule out profit inflation once and for all?
- ▶ Remember: Real profits increased sharply compared to 2019

⇒ Markup not sufficient for explaining profit surge

$$\pi_{EBIT} = \underbrace{pQ + I + \Delta Invtr}_{\text{Income}} - \underbrace{COGS - XSGA - \delta}_{\text{Costs}}$$

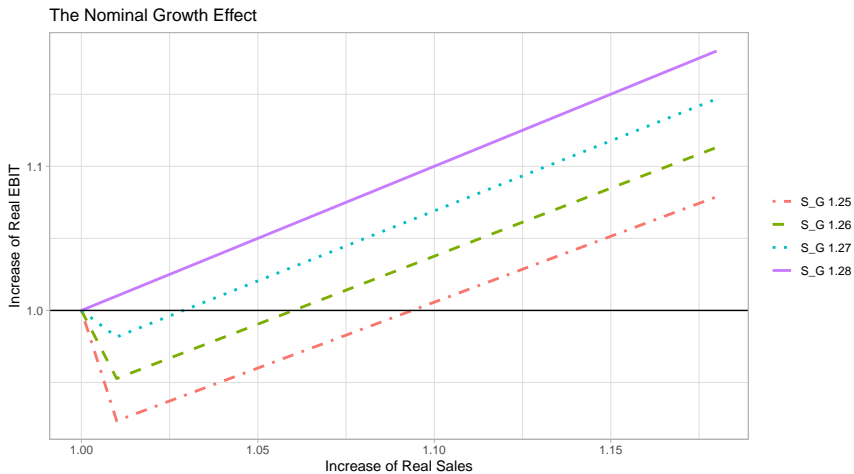
Profits can increase via 4 channels:

- ▶ Markup  $\Delta \frac{Sales}{COGS} > 0$
- ▶ Markup over total costs  $\Delta \frac{Sales}{COGS + XSGA + \delta} = \Delta \frac{Sales}{TC} > 0$
- ▶ Income-Cost margin  $\Delta \frac{Sales + IncNoSales}{TC} = \Delta \frac{Income}{TC} > 0$
- ▶ Size effect (nominal growth)

$$\textit{Profit} = \textit{Income} - \textit{Costs}$$

Profit	Income	Costs	Markup
2	10	8	1.25
2	12	10	1.20
3	20	17	1.18

# The Nominal Growth Effect



# Profits Increase more than Markups

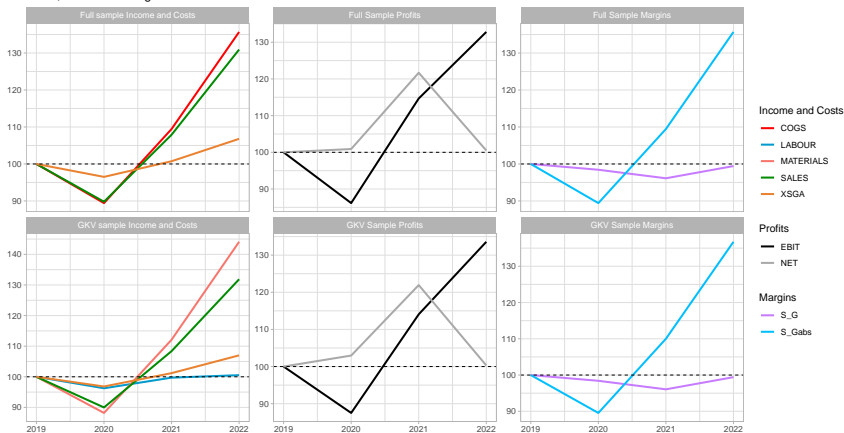
Increases in Markups and Real Profits between 2019 and 2022



Note: Markup computed via sales margin: Sales/COGS.

# Constant Markups, Rising Profits

Sales, Costs and Margins



Note: All plots show Total economy wide values. Adjusted by GDP Deflator.

- ▶ SG stays constant as a rate, but increases as absolute difference
- ▶ Sales increase in line with (material) costs
- ▶ Real labour costs on the same level as in 2019

# Profit vs. Labour Share



Note: Only GKV firms included. Upper plots show median labour and material costs by sales quintile. Lower plots show median EBIT and net profits.

- ▶ Labour's share in costs declines over time AND declines with firm size
- ▶ Firms protect their profits by passing on higher input costs
- ▶ profit share increases:  $\Delta \frac{\pi}{\pi + wL} > 0$

# Profit Expansion - Profit Inflation

## 1 - Profit Inflation

- ▶ All markups/margins increase  $\Rightarrow$  clear case
- ▶  $\Delta \frac{Sales}{COGS} < 0$  but  $\Delta \frac{Sales}{TC} > 0$
- ▶  $\Delta \frac{Sales}{TC} < 0$  but  $\Delta \frac{Income}{TC} > 0$

## 2 - Nominal Growth Effect

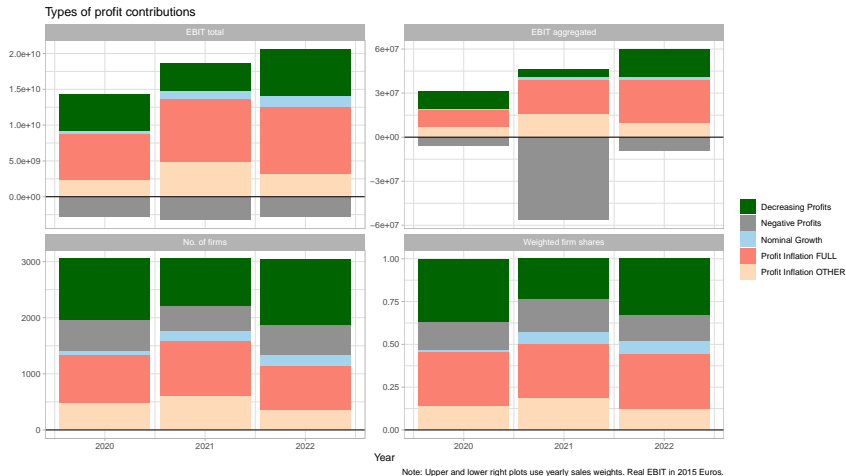
- ▶  $\Delta \frac{Income}{TC} < 0$  but  $\Delta EBIT > 0$

## 3 - No Profit Inflation

- ▶ Decreasing profits
- ▶ Negative profits
- ▶ Note: markup could still increase in these cases



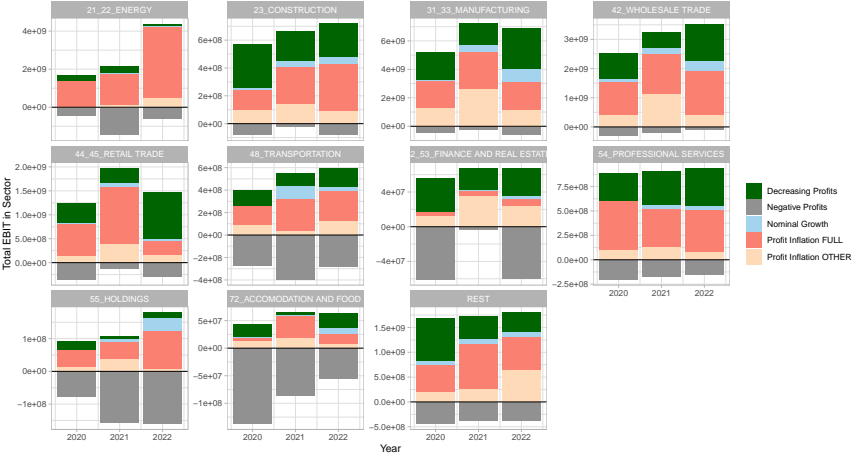
# Profit Expansion - Profit Inflation I



- ▶ Substantial shares of total and aggregated profits are gained by firms exerting different kinds of profit inflation (e.g. extended markups on variable or total costs)

# Profit Expansion - Profit Inflation II

Profit Contributions by Sector



# Conclusion

## First Findings

- ▶ Standard markup measure is not sufficient to deal with profit inflation
- ▶ Various channels can increase firm profits
- ▶ Markups did not increase drastically between 2019 and 2022
- ▶ Real profits can increase even under declining markups
- ▶ Still strong hints for profit inflation:
  1. Firms protected profit share while facing higher input costs
  2. Labour's share in costs and sales declined
  3. Real profits on higher level than in 2019
  4. Substantial part of profits driven by increases in different markups/margins

## Open Questions

- ▶ Role of competition and market power
- ▶ Transmission of higher input costs between sectors
- ▶ Labour costs will catch up in 2023 and 2024

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