Why VAT Pass-Through Varies Across Countries: The Role of Market Power*

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Abstract

We show that VAT pass-through rates depend systematically on market concentration using data from 16 European countries covering 1999-2019. Low-concentration industries exhibit 40% contemporaneous pass-through to consumers, while high-concentration industries show near-zero transmission. Cross-country differences explain 72% of the variation in market concentration. This heterogeneity accounts for 16% of cross-country variation in pass-through rates.

Keywords: VAT pass-through, Market concentration, Cross-country variation
JEL Classification: L11, H22, H25, L13, H87

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1 Introduction

Value-added taxes represent the largest source of government revenue in most developed economies and have increasingly been used as macroeconomic stabilization tools. Central to the effectiveness of VAT policy is the pass-through rate, which determines how much of a tax change is actually passed on to consumers versus being absorbed by firms. Yet empirical evidence reveals striking heterogeneity in pass-through estimates — from 50% for haircare services (Kosonen 2015) to 77% across French sectors (Carbonnier 2007) and 100% in Norwegian food sectors (Gaarder 2019). This heterogeneity not only exists across sectors but also for the same sector across countries: lowered VAT tax rates in the food sector in response to the high-inflation episode 2021-2022 were fully passed on in Portugal (Bernardino et al. 2025), whereas the pass-through in Germany was only about 70% (Fuest et al. 2024).

This heterogeneity creates fundamental uncertainty about when VAT policies will effectively reach consumers versus primarily benefit firm profits (for a discussion related to this heterogeneity, see Benzarti 2025). While economic theory suggests market structure should be a key determinant of tax pass-through (Dierickx et al. 1988), systematic empirical evidence linking concentration to VAT transmission has been limited.

We use comprehensive data on VAT rates (Benzarti and Tazhitdinova 2021) and market concentration covering 16 European countries and 50 product categories from 1999–2019 to document two main findings. First, market power is a significant determinant of the pass-through of value-added taxes (VAT). VAT changes in low-concentration markets exhibit a contemporaneous pass-through of 40%, whereas high-concentration markets show near-zero transmission to consumer prices. Second, the (large) cross-country differences in average market concentration explain 16% of the variation in country-level pass-through rates.

Our findings provide a systematic explanation for why seemingly similar VAT reforms produce dramatically different consumer outcomes across European countries. While the VAT Directive (2006/112/EC) aims to standardize rates across countries, our results suggest that optimal VAT policy should account for local market structure differences.

We complement recent work by Dimitrakopoulou et al. (2024), who show in the case of Greece that gasoline pass-through increases from 50% in monopolistic markets to 80% in competitive ones. In concurrent work, Bellon et al. (2024) demonstrate that upstream market competition affects VAT pass-through. Our contribution focuses on downstream concentration and provides comprehensive cross-country evidence of the market structure-pass-through relationship.

2 Empirical approach

2.1 Data

Prices. We use monthly price data from the Harmonized Index of Consumer Prices (HICP) published by Eurostat at the COICOP 5-digit level (Classification of Individual Consumption by Purpose). Data span 1999–2019, matching the period for which VAT rates are available.

VAT rates. We merge price data with the historical VAT rates database compiled by Benzarti et al. (2020) and extended by Benzarti and Tazhitdinova (2021), containing all value-added tax changes by category for each European country from 2000–2019.

Concentration. We use industry-level revenue-based Herfindahl-Hirschman Indices (HHI) for 2-digit NACE industries from the Competitiveness Research Network (CompNet).[1] We focus on industries operating at the bottom of the supply chain that interact directly with consumers. For COICOP5 categories associated with multiple NACE2 industries, we take the average HHI across these industries.

Our final sample contains 16 countries with VAT changes in up to 50 products (COICOP5 categories) during our period, summarized in Table 2.

2.2 Results

We first examine VAT changes through an event study, assigning each product-country pair (i, c) to either "high concentration" or "low concentration" groups based on whether its median concentration exceeds the sample median.

Extending the setup in Benzarti et al. (2020), we estimate:

$$\begin{aligned}\Delta \log(p_{ict}) = \alpha + \sum_{j=-6}^{6} \beta_{1j} \Delta \tau_{ic,t+j} + \beta_2 \cdot \mathbb{1}(\text{HHI}_{ic} > \text{HHI}_{\text{Median}}) \\ + \sum_{j=-6}^{6} \beta_{3j} \Delta \tau_{ic,t+j} \cdot \mathbb{1}(\text{HHI}_{ic} > \text{HHI}_{\text{Median}}) + \zeta_{ct} + \eta_{it} + \gamma_{ci} + \epsilon_{ict},\end{aligned} \tag{1}$$

where $\Delta \log(p_{ict})$ is the change in log price of category i in country c in month t, $\Delta \tau_{ic,t+j}$ is the tax rate change, ζ_{ct}, η_{it}, and γ_{ci} are country-month, category-month, and country-category fixed effects. Standard errors are clustered at the country-product level.

Figure 1 shows clear differences between concentration groups: high-concentration sectors exhibit near-zero pass-through, while low-concentration sectors show 40% contemporaneous pass-through and 20% anticipatory pass-through three months prior to

[1] While HHI is an equilibrium outcome, our broad industry definitions and inclusion of country-product fixed effects mitigate concerns about endogenous market structure responses to product-specific VAT changes. Our results should be interpreted as a strong correlation consistent with theory rather than definitive causality.

implementation.[2]

To isolate the role of market concentration in pass-through heterogeneity, we focus on contemporaneous effects and do not attempt to quantify the full dynamic pass-through. To examine the precise relationship across the full distribution of market structures, we estimate:

$$\begin{aligned}\Delta \log(p_{ict}) = \alpha + &\beta \, \Delta\tau_{ict} + \gamma \Delta\tau_{ict} \cdot \text{HHI}_{ict} + \alpha \, \text{HHI}_{ict} \\ &+ \; + \zeta_{ct} + \eta_{it} + \gamma_{ci} + \epsilon_{ict},\end{aligned} \tag{2}$$

where γ captures differential pass-through by concentration. We standardize the HHI using the entire sample to render estimates interpretable.[3]

Table 1 builds the results by adding controls step-by-step. Column (4) presents our main specification: pass-through at mean concentration is 21 percentage points. A one-standard-deviation increase in concentration reduces pass-through by 21.5 percentage points—nearly eliminating baseline transmission entirely. This reconciles with our event study: high and low concentration groups differ by 1.4 standard deviations, yielding a predicted 29pp difference, close to the observed 30pp gap.

Market concentration varies much more across countries than across industries: cross-country variation explains 71.6% of the variance in HHI.[4] This motivates the final part of our analysis: how much do cross-country differences in market concentration explain cross-country pass-through variation?

We now demonstrate that country-level concentration differences explain a significant share of cross-country pass-through variation. We proceed in two steps. First, we estimate average contemporaneous effects for each country, controlling for industry-time fixed effects:

$$\Delta \log(p_{ict}) = \alpha \; + \beta_c \, \Delta\tau_{ic,t} + \zeta_{ct} + \eta_{it} + \gamma_{ci} + \epsilon_{ict}. \tag{3}$$

Table 2 reports the first-stage coefficients and standard errors for each country. Despite some imprecise estimates, we find economically and statistically significant differences in pass-through rates across most countries. In the second stage, we regress each country's average concentration level—computed as the employment-weighted average of industry-level HHI— on the estimated country-specific coefficient β_c. To account for heterogeneous precision in the estimates for β_c we weight each observation by the

[2] Benedek et al. (2020) also find anticipatory effects. Buettner and Madzharova (2021) emphasize that the median announcement-to-implementation period is 3 months. The anticipatory effect is mostly driven by January implementations.

[3] Including lags and leads yields similar results.

[4] When repeating the previous exercise after standardizing the HHI using only within-country dispersion, we find that the above- and below-median concentration groups differ by 4 within-country standard deviations. One within-country standard deviation increase in market concentration lowers the pass-through by 7 percentage points.

inverse of the variance of the estimated β_c.[5]

Figure 2 shows the results. Country-level pass-through declines significantly with market power: a one-standard-deviation increase in country-level concentration reduces average pass-through by 13 percentage points. We find an R^2 of 0.16, indicating that concentration heterogeneity explains a substantial share of cross-country pass-through variation. This explanatory power is striking given that VAT changes differ across countries in many other aspects (sign, permanence, anticipation, etc.).

3 Conclusion

Our findings help resolve the empirical puzzle of heterogeneous VAT pass-through by identifying market structure as one key mediating factor. The policy implications are clear: VAT cuts designed for consumer relief work best in competitive industries, while VAT increases in concentrated sectors raise revenue with minimal consumer burden. This suggests countries should tailor VAT policy to their market structure rather than applying uniform rates.

Our results also question EU attempts to harmonize VAT rates via the VAT Directive. Since cross-country concentration differences explain a significant share of pass-through variation, optimal policy would allow countries with competitive markets to set lower rates for consumer benefit while permitting higher rates where firms absorb the burden. The welfare implications are substantial: VAT reductions deliver meaningful consumer savings in competitive sectors but provide minimal consumer benefit in concentrated ones.

[5]This approach is standard in two-stage estimation procedures where first-stage estimates have heterogeneous precision. This is called "inverse variance weighting" because it optimally reflects the amount of information each estimate contains (Burke et al. 2017; Higgins et al. 2019).

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A Tables

Table 1: Pass-through of Value Added Taxes by Concentration

	(1)	(2)	(3)	(4)
Tax change	0.196***	0.077	0.205***	0.209***
	(0.045)	(0.074)	(0.064)	(0.064)
Market concentration (std) × Tax change	-0.081*	-0.272***	-0.211***	-0.215***
	(0.044)	(0.075)	(0.069)	(0.070)
Market concentration (std)	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Time×Country FE	No	Yes	Yes	Yes
Time×Product FE	No	No	Yes	Yes
Country×Product FE	No	No	No	Yes
Observations	149983	149983	149312	149312
R-squared	.0005188	.050397	.3553932	.3594157

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. *Standard errors in parentheses and clustered at the product-country level. The table does not report the constant term. We report under "Tax change" the contemporaneous effect of changes in taxes on changes in prices. Results are virtually identical when including lagging and leading tax changes. Market concentration is measured using HHI and standardized according to the average within-country standard deviation of HHI.*

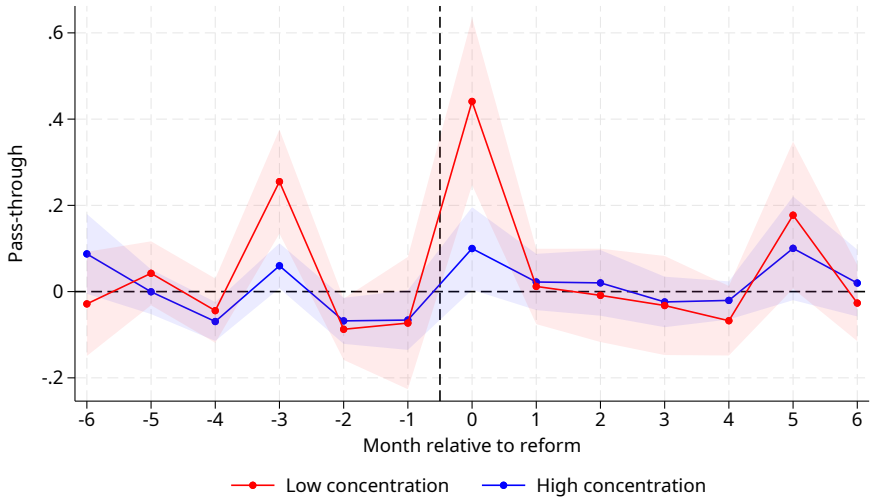
Table 2: Summary statistics by country

Country	#Products	Avg. HHI	#VAT Events	Estimated PT	Estimated PT (s.e.)
CZ	49	0.037	75	0.538	0.178
DE	50	0.019	32	0.158	0.065
ES	47	0.077	64	0.103	0.073
FI	50	0.022	79	0.619	0.217
FR	50	0.013	46	−0.530	0.405
HR	49	0.052	68	0.117	0.094
HU	48	0.048	95	0.223	0.092
IT	49	0.013	50	0.885	0.409
LU	50	0.073	15	−0.019	0.184
LV	45	0.061	102	0.731	0.165
NL	48	0.038	23	0.510	0.102
PL	50	0.030	36	0.446	0.231
PT	48	0.036	79	0.371	0.095
RO	48	0.029	33	0.413	0.048
SI	49	0.102	49	0.114	0.119
SK	48	0.051	27	−0.090	0.045

Notes: *Average HHI are employment-weighted. Estimated pass-through (PT) according to equation* (3).

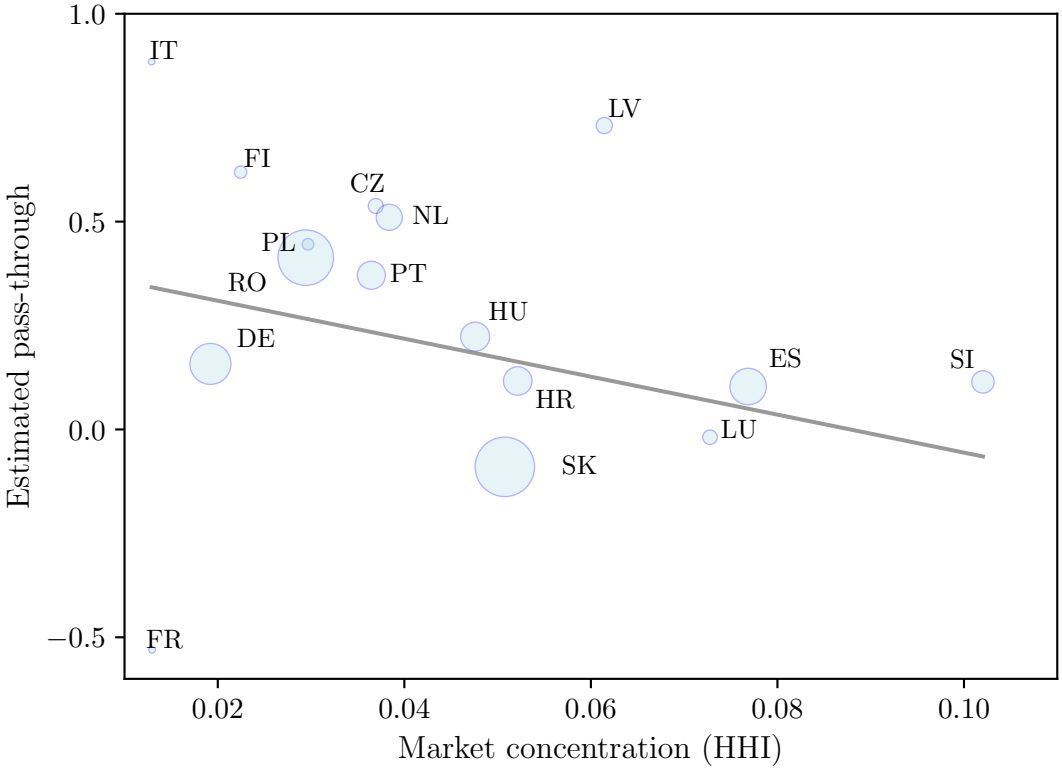
B Figures

Figure 1: Pass-through semi-elasticity by market concentration



Notes: *The estimated pass-through of a value added tax introduced in period* 0 *over time – the* $\beta_{i,j}$ *coefficients in* (1)*. The shaded area highlights the 95% confidence interval.*

Figure 2: Country-level pass-through and market power



Notes: *The figure plots country-level average HHI (employment-weighted) against pass-through estimates. Circle size is inversely proportional to the variance of the first-stage estimate and thus reflects its precision. The estimated coefficient is -0.13 with a p-value of 0.089. The R^2 is 0.16.*