

Knocking on Tax Haven's Door: Multinational Firms and Transfer Pricing

Online Appendix

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Abstract

This Appendix contains additional material related to the theoretical section, as well as information on the dataset, and a series of robustness checks of our main results.

A Firm selection into profit shifting

We can evaluate $\pi_{AL}^{F*}[\alpha]$ at the equilibrium arm's length price. This leads to

$$\pi_{AL}^{F*}[\alpha] = (1 - T^H) p^{H*2} \beta^F \alpha (1 + \tau_v^F) \equiv (1 - T^H) \frac{\alpha}{4\beta(1 + \tau_v^F)}$$

so the arm's length profits are linear in α .

Turning to $\pi_{MNE}^{F*}[\alpha]$, we can first notice that

$$\pi_{MNE}^{F*} = (1 - T^H) \left(\frac{1}{\theta^F(T^F)} + \frac{1}{2} \right) \gamma^F p^{H*2} \left(1 - \frac{p_{MNE}^H}{p^{H*}} \right) - f.$$

Plugging the equilibrium price wedge in the above expression leads to

$$\pi_{MNE}^{F*}[\alpha] = \pi_{AL}^{F*}[\alpha] \frac{\left(\frac{\theta}{2} + 1\right)^2}{(\theta + 1) - \frac{\beta^F}{2} \theta (1 + \tau_v^F) \cdot \frac{\alpha \theta^F(T^F)}{\gamma^F}} - f.$$

Since the denominator is positive and decreasing on $[0, \bar{\alpha}]$, the above expression defines a unique equilibrium cutoff $\hat{\alpha}^F$.

Since $\frac{\theta+1}{\left(\frac{\theta}{2}+1\right)^2}$ and $\frac{\theta^2}{\left(\frac{\theta}{2}+1\right)^2}$ are respectively decreasing and increasing in $\theta[T^F] > 0$, the slope of π_{MNE}^{F*} for a given α increases with θ . Given θ , the slope also increases with α as shown in Figure 1 below. Therefore, the demand shifter $\hat{\alpha}^F$ cutoff increases in $\theta[T^F]$.

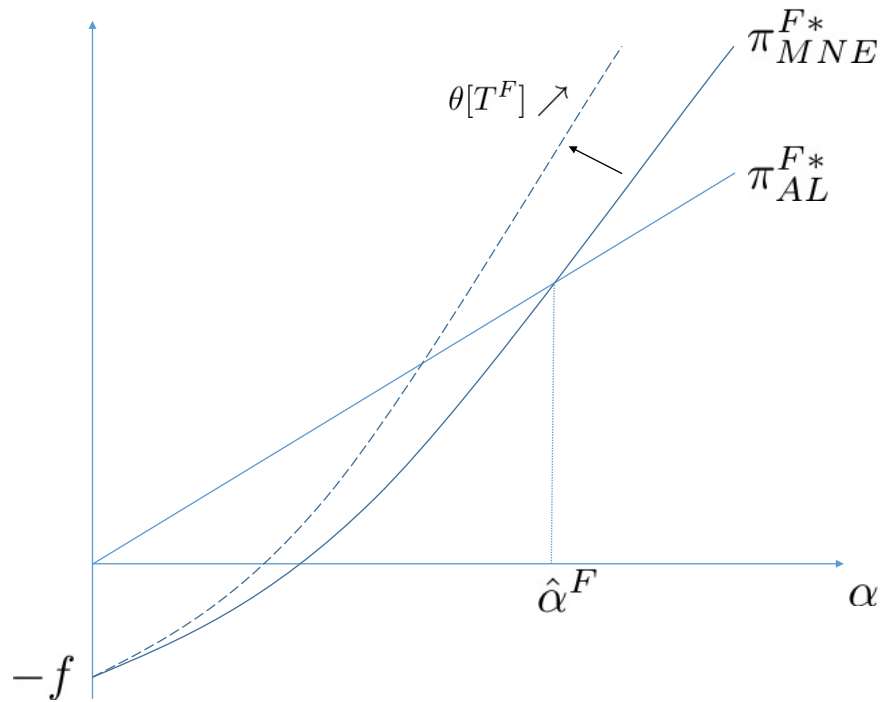
Last, we can show that the slope of π_{MNE}^{F*} is also larger at $\alpha \approx 0+$.

When α is close to zero, we have

$$\pi_{MNE}^{F*}[0+] \sim \pi_{AL}^{F*}[0+] \frac{\left(\frac{\theta}{2} + 1\right)^2}{(\theta + 1)} > \pi_{AL}^{F*}[0+] \quad \forall \theta > 0.$$

This proves formally that a fixed cost is needed to generate selection across firms. Intuitively, this is because without a fixed cost, firms can deviate marginally from arm's length pricing at no cost.

Figure 1 – The impact of foreign corporate taxes on firm selection into profit shifting



B Data

In the estimation sample, we exclude transactions whose share of intra-firm trade is below 99% and above 1%. This section provides more information on the types, number, and value of transactions that are kept and dropped in the estimation sample when using these baseline thresholds. We also provide more information on the composition of exports to tax havens and to non-havens.

- Our estimation sample drops HS4-destination codes that fall within the [1%;99%] threshold. Here, we give various numbers concerning the typical MNE. The median number of HS4-destinations dropped for the typical firm is one (average=4.3) which yields to a median number of HS4-destination for MNEs in the estimation sample of 33 (average=54.8). The value of exports dropped for the median firm is 137,000 euros (average= 10 millions euros). The share of exports kept for the median firm is 99% of exports (average= 84%).

- In Table 1, we report the sectoral composition of dropped and kept transactions for the sample of multinational firms. The table shows the 20 HS4 categories that are the most represented among dropped transactions. As shown in Table 1, there is no striking differences in the composition of dropped transactions as compared to the ones that we keep in the estimation sample. This suggests that HS4-destination codes that fall within the [1%;99%] thresholds are not systematically different from the ones kept.
- Table 2 reports the composition of intra-firm exports by use. Columns (1) and (2) of Table 2 show that resale is a bit more represented in exports to tax havens than in the other destinations (79% vs 72%). This difference vanishes if one considers the composition of intra-firm exports in value. Columns (3) and (4) of Table 2 show that resale accounts for 69% of intra-firm exports to tax havens, the same figure as for overall exports. Manufacture accounts for 30% of exports to tax havens against 27% for overall exports (columns 2-4). These figures suggests that the nature of transactions involving affiliates in tax havens and in other countries is not very different.
- In Table 4 we show that the distributions of transactions are very similar for transactions to tax havens and non-havens with two differences. The first difference is that the share of exports in vehicles and parts (HS87) in non-havens is much larger than that in tax havens (24.0% compared to 8.4%). Given the large share of trade in vehicles in non-havens and the near non-existence of auto production in our set of tax havens, this is not surprising. The second difference is that the share of exports in electrical machinery (HS85) is higher in tax havens (23.0% compared to 15.8%). This is at least partially mechanical given the lower share in vehicles and parts.

C Robustness analysis

This section presents various exercises showing that our results are robust to the introduction of alternative variables, to the use of alternative definitions of the variables, to alternative choices in the construction of the data, and alternative computation of standard errors. More

specifically:

- Table 3 introduces three additional determinants of pricing-to-market: market size measured as GDP, an index of remoteness of the destination country, and the level of inequality measured by a GINI index. As with other determinants introduced in the paper, we have interacted these variables with the intra-firm dummy variable. These determinants have no significant impact on transfer prices – with the exception of GDP when introduced alone. Importantly these additional determinants do not affect our main results.
- Table 5 reproduces our baseline table by using the tariffs in levels instead of the log of one plus the tariff. In each specification, the coefficient on this variables is less precisely measured than in the specification using the log of one plus the tariff. Using this alternative measure of trade barriers does not affect the quantitative impact of our main variables of interest.
- Table 6 reports the standard errors computed by clustering in the country, the product, or the product-mode dimensions. In the paper we report standard errors clustered in the country dimension. We see here that this is the most conservative definition.
- Tables 7 and 8 report the results of our two main tables using the effective average tax rates (EATR) rather than the effective marginal tax rate (EMTR). All the results go through with this alternative definition of the tax rate.
- Table 9 explores cross product heterogeneity in the transfer pricing behavior using two continuous measures of product differentiation. We consider the sectoral quality ladder (Khandelwal 2010) and the relation-specificity measure (Nunn 2007).¹ The estimates are noisy but their signs are as expected: transfer pricing to low-tax countries or to tax havens is more pronounced for more differentiated products - differentiation reflecting

¹Blonigen et al. (2014) use the Nunn’s measure to examine profit shifting across products based on their level of differentiation.

either a greater scope for quality differentiation or a greater use of investment-specific inputs.

- In the main body of the paper, we report the results by choosing two specific thresholds: flows with a share of intra-firm trade below 1 percent are considered as arm's length and flows with a share of intra-firm trade above 99% are considered as intra-firm. Flows in between are excluded. In Tables 10, 11 and 12 we examine the sensitivity of our estimation to this choice. We consider two other alternative definitions, namely 2% and 98%, 0% and 100% and 10% and 90%. Our results remain.
- In Table 13, we use the full sample which also include the observations that fall outside the threshold values. Our aim is to see whether the results hold when we include observations for MNEs that do both arm's length and intra-firm trade. We use two methodologies. First, we run a robustness check that keeps CN8 exports and re-run our main specification using the HS4 share of intra-firm trade as the interaction instead of the binary classification. The results are reported in Table 13: they confirm our main findings. Second, we keep all observations but interact our variables with two dummy variables. The first is our former intra-firm export dummy variable that takes the value of one if the share of intra-firm exports is above 99%. The second dummy variable, *mix*, takes the value of one if the share of intra-firm exports is between 1% and 99%. The results are reported in Table 14. Our main results are not affected by this specification either. As expected the prices of transactions for which the data indicates a share of arm's length transactions between 1 and 99 percent are between the two "extremes" of intra-firm and arm's length prices.
- In Figures 2 and 3, we analyse whether the threshold effect identified using the full sample is present across different subsamples. Consistent with our theory, we find that the non-linearity is driven by large MNEs, while the price gap is not significantly different from zero for any decile of tax rate for small MNEs. The price gap for French MNEs is significantly different from 0 for the first decile only. Interestingly the second

decile is significant for Foreign MNEs. We also find a similar threshold effect for differentiated products and for the sample where we exclude wholesalers. The effect is stable and not different from zero for non-differentiated products.

Table 1 – Dropped vs kept transactions across HS4 codes

HS4	Desc.	(1)	(2)	(3)	(4)
		$\leq 1\%$ kept	Intra-firm export share $\geq 99\%$ kept	$1\% \leq x \leq 99\%$ dropped	Sh. tot. exports
8708	Parts and accessories of the motor vehicles	2.1%	8.1%	7.2%	4.3%
8703	Cars	4.1%	15.6%	4.3%	7.4%
4011	New pneumatic tires, of rubber	0.1%	1.7%	3.9%	1.0%
8525	Transmission apparatus for radio, telephone and TV	0.6%	2.0%	2.6%	1.2%
3004	Medicaments, packaged	1.6%	4.3%	2.5%	2.5%
8407	Spark-ignition reciprocating or rotary internal combustion piston engines	0.0%	1.2%	1.7%	0.6%
7210	Flat rolled iron or non-alloy steel, coated with tin, w >600mm, t>0.5mm	0.3%	0.1%	1.5%	0.4%
7606	Aluminum plates, sheets and strip > 0.2 mm	0.3%	0.1%	1.5%	0.4%
8429	Self-propelled bulldozers, excavators and road rollers	0.3%	0.4%	1.4%	0.5%
7225	Flat-rolled products of other alloy steel of a width > 600 mm	0.3%	0.0%	1.4%	0.3%
7218	Stainless steel in ingots or other primary forms	0.0%	0.0%	1.3%	0.1%
3904	Polymers of vinyl chloride or of other halogenated olefins, in primary forms	0.1%	0.2%	1.2%	0.3%
8536	Apparatus protecting electrical circuits for < 1k volts	0.4%	0.9%	1.2%	0.7%
7208	Hot rolled iron or non-alloy steel, coil, w >600mm, t >10mm, myp 355 mpa	0.3%	0.1%	1.2%	0.4%
3303	Perfumes and toilet waters	0.9%	0.6%	1.1%	0.8%
3304	Beauty or make up preparations	0.7%	1.1%	1.1%	0.9%
2710	Petroleum oils, refined	0.8%	1.1%	1.1%	1.0%
3901	Polymers of ethylene, in primary forms	0.4%	0.2%	1.1%	0.4%
4810	Paper and paperboard, coated on one or both sides with kaolin	0.4%	0.2%	1.1%	0.4%
8413	Pumps for liquid	0.3%	0.5%	1.0%	0.4%

Note: This table gives the sectoral composition of dropped and kept transactions for the sample of multinational firms.

Table 2 – Intra-firm exports, by use

	Share of trade flows		Weight in exports	
	All countries	Tax havens	All countries	Tax havens
	(1)	(2)	(3)	(4)
Manufacture	23%	18%	27%	30%
Resale	72%	79%	69%	69%
Completion	2%	2%	4%	1%
Investment	3%	1%	0%	0%

Note: This table documents the composition of intra-firm exports in terms of use by the affiliates. Manufacture means that the affiliate uses intra-firm imports in her production process. Resale means that the affiliate is an intermediary that resells the products directly. Completion means that the affiliate applies minor changes to the products before they are sold. Investment means that the products enter in the capital of the affiliate. Information on the use of intra-firm exports is given for 45% of intra-firm transactions in our sample. They account for 77% of intra-firm exports in the sample.

Table 3 – More measures of PTM

	Dependent variables: export price			
	(1)	(2)	(3)	(4)
$\frac{Intra_{fpmc} \times:}{(1 - \tau_c)}$	-0.15*** (0.044)	-0.07 (0.045)	-0.14*** (0.046)	-0.11* (0.055)
$TaxHaven_c$	-0.09*** (0.019)	-0.10*** (0.022)	-0.09*** (0.020)	-0.11*** (0.021)
$Per\ Capita\ GDP_c$	0.00 (0.007)	-0.01 (0.009)	0.00 (0.007)	0.00 (0.009)
$Distance_c$	-0.05*** (0.007)	-0.05*** (0.008)	-0.06*** (0.007)	-0.04*** (0.009)
$Tariff_c$	-0.36*** (0.105)	-0.38*** (0.114)	-0.35*** (0.105)	-0.36*** (0.110)
GDP_c	-0.01** (0.004)			-0.04 (0.023)
$GINI_c$		-0.02 (0.035)		0.00 (0.038)
$Remoteness$			0.01 (0.005)	0.01 (0.025)
Sample	Full	Full	Full	Full
Country FE	Yes	Yes	Yes	Yes
Firm-Prod.-Mode FE	Yes	Yes	Yes	Yes
Observations	729,737	708,879	710,517	708,879
Adj. R^2	0.929	0.929	0.929	0.929

Note: This table investigates the impact of the effective tax rate, GDP per capita, distance, tariffs, and of the tax haven dummy on intra-firm and arm's length export prices. The effective tax rate is transformed as follows: $(\log(1 - \tau))$. We use the effective marginal tax rate here. All regressions include firm-product-exporting mode fixed effects. The last column further includes country fixed effects. In column (5), we restrict the sample to countries which are not classified as tax havens. Robust standard errors clustered by destination are computed. Corresponding t-statistics are reported in parentheses. Significance levels: * $p < 0.1$, ** $p < 0.05$, and *** $p < 0.01$.

Table 4 – Composition of intra-firm exports, tax havens and ROW (2-digit)

HS2	Description	Sh. to tax havens	Sh. others
85	Electrical machinery; television image and sound recorders and reproducers, and parts thereof	23.0%	15.8%
84	Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof	15.6%	17.3%
87	Vehicles other than railway or tramway rolling-stock, and parts and accessories thereof.	8.4%	24.0%
30	Pharmaceutical products.	8.0%	5.3%
22	Beverages, spirits and vinegar.	4.2%	2.2%
29	Organic chemicals.	4.1%	2.3%
42	Articles of leather; saddlery and harness; travel goods, handbags and similar containers;	4.1%	0.6%
32	Tanning or dyeing extracts; dyes, pigments and other colouring matter; paints and varnishes	2.9%	0.5%
40	Rubber and articles thereof	2.5%	2.7%
90	Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments	2.4%	3.2%
27	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral waxes.	2.2%	1.2%
39	Plastics and articles thereof	2.1%	2.7%
72	Iron and steel.	2.0%	0.8%
38	Miscellaneous chemical products.	1.8%	1.4%
71	Pearls, precious or semi-precious stones and metals, and articles thereof.	1.8%	0.2%
33	Essential oils and resinoids; perfumery, cosmetic or toilet preparations.	1.4%	1.9%
48	Paper and paperboard; articles of paper pulp, of paper or of paperboard.	1.1%	1.4%
88	Aircraft, spacecraft, and parts thereof.	1.1%	1.8%
4	Dairy produce; of animal origin.	1.0%	1.4%
23	Residues and waste from the food industries; prepared animal fodder.	0.8%	0.6%

Table 5 – Baseline regression Effective Marginal Tax Rate, all firms, alt. measure of tariff

	Dependent variables: export price				
	(1)	(2)	(3)	(4)	(5)
$(1 - \tau_c)$	0.13 (0.147)		-0.00 (0.099)	-0.03 (0.097)	
$- \times Intra_{fpmc}$	-0.22** (0.108)		-0.12* (0.067)	-0.08 (0.054)	-0.10* (0.055)
$TaxHaven_c$		0.11 (0.074)	0.11 (0.075)		
$- \times Intra_{fpmc}$		-0.11*** (0.040)	-0.09** (0.036)		-0.09*** (0.026)
$Per\ Capita\ GDP_c$	0.05** (0.025)	0.03 (0.022)	0.03 (0.022)	0.04 (0.023)	
$- \times Intra_{fpmc}$	-0.03** (0.011)	-0.01 (0.010)	-0.01 (0.010)	-0.02 (0.010)	-0.00 (0.008)
$Distance_c$	0.09*** (0.024)	0.09*** (0.021)	0.09*** (0.021)	0.11*** (0.021)	
$- \times Intra_{fpmc}$	-0.05*** (0.013)	-0.06*** (0.009)	-0.06*** (0.010)	-0.07*** (0.010)	-0.06*** (0.009)
$Tariff_c$	0.22 (0.196)	0.17 (0.160)	0.17 (0.161)	0.08 (0.144)	
$- \times Intra_{fpmc}$	-0.22 (0.152)	-0.18 (0.123)	-0.18 (0.125)	-0.11 (0.099)	-0.17** (0.083)
Sample	Full	Full	Full	w.o Tax H.	Full
Country FE	No	No	No	No	Yes
Firm-Prod.-Mode FE	Yes	Yes	Yes	Yes	Yes
Observations	729,737	729,737	729,737	652,548	729,737
Adj. R^2	0.864	0.865	0.865	0.869	0.853

Note: This table investigates the impact of the effective tax rate, GDP per capita, distance, tariffs, and of the tax haven dummy on intra-firm and arm's length export prices. The effective tax rate is transformed as follows: $(\log(1 - \tau))$. We use the effective marginal tax rate here. All regressions include firm-product-exporting mode fixed effects. The last column further includes country fixed effects. In column (5), we restrict the sample to countries which are not classified as tax havens. Robust standard errors clustered by destination are computed. Corresponding t-statistics are reported in parentheses. Significance levels: * $p < 0.1$, ** $p < 0.05$, and *** $p < 0.01$.

Table 6 – Baseline regression Effective Marginal Tax Rate, altern. clustering

		Dependent variable: export price				
		Std errors clustered in [country], (product), and {product-mode dimensions}				
	(1)	(2)	(3)	(4)	(5)	(6)
$(1 - \tau_c)$	0.09 [0.146] (0.025) {0.025}	0.13 [0.144] (0.025) {0.025}		-0.00 [0.100] (0.020) {0.020}	-0.03 [0.098] (0.021) {0.021}	
$- \times \text{Intra}_{fpmc}$		-0.18* [0.091] (0.054) {0.054}		-0.12* [0.067] (0.060) {0.061}	-0.08 [0.053] (0.062) {0.063}	-0.10* [0.054] (0.044) {0.045}
TaxHaven_c			0.11 [0.073] (0.014) {0.025}	0.11 [0.074] (0.014) {0.027}		
$- \times \text{Intra}_{fpmc}$			-0.11** [0.040] (0.023) {0.025}	-0.09** [0.036] (0.026) {0.027}		{0.020} -0.08*** [0.025] (0.019) {0.020}
Per Capita GDP_c		0.06** [0.025] (0.007) {0.007}	0.04* [0.022] (0.007) {0.007}	0.04 [0.022] (0.007) {0.007}	0.04* [0.023] (0.007) {0.007}	
$- \times \text{Intra}_{fpmc}$		-0.03*** [0.011] (0.011) {0.012}	-0.01 [0.010] (0.012) {0.012}	-0.01 [0.010] (0.012) {0.012}	-0.02* [0.010] (0.012) {0.013}	-0.00 [0.008] (0.009) {0.009}
Distance_c		0.08*** [0.025] (0.006) {0.006}	0.09*** [0.022] (0.007) {0.007}	0.09*** [0.022] (0.007) {0.007}	0.11*** [0.022] (0.007) {0.007}	
$- \times \text{Intra}_{fpmc}$		-0.05*** [0.013] (0.011) {0.012}	-0.05*** [0.010] (0.011) {0.012}	-0.05*** [0.010] (0.011) {0.012}	-0.07*** [0.011] (0.012) {0.013}	-0.06*** [0.009] (0.008) {0.009}
Tariff_c		0.40 [0.324] (0.107) {0.107}	0.32 [0.268] (0.094) {0.094}	0.32 [0.268] (0.093) {0.093}	0.14 [0.274] (0.082) {0.082}	
$- \times \text{Intra}_{fpmc}$		-0.40* [0.213] (0.150) {0.157}	-0.33* [0.170] (0.142) {0.148}	-0.34* [0.174] (0.142) {0.148}	-0.21 [0.160] (0.138) {0.145}	-0.36*** [0.123] (0.090) {0.092}
Sample	Full	Full	Full	Full	w.o Tax H.	Full
Country FE	No	No	No	No	No	Yes
Firm-Prod.-Mode FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	729,737	729,737	729,737	729,737	652,548	729,737
Adj. R^2	0.863	0.864	0.865	0.865	0.869	0.853

Note: This table investigates the impact of the effective tax rate, GDP per capita, distance, tariffs, and of the tax haven dummy on intra-firm and arm's length export prices. The effective tax rate is transformed as follows: $(\log(1 - \tau))$. We use the effective marginal tax rate here. All regressions include firm-product-exporting mode fixed effects. The last column further includes country fixed effects. In column (5), we restrict the sample to countries which are not classified as tax havens. Robust standard errors clustered by destination are you in parentheses. Significance levels: * $p < 0.1$, ** $p < 0.05$, and *** $p < 0.01$.

Table 7 – Baseline regression Effective Average Tax Rate, all firms

	Dependent variables: export price					
	(1)	(2)	(3)	(4)	(5)	(6)
$(1 - \tau_c)$	0.11 (0.144)	0.13 (0.149)		-0.01 (0.107)	-0.04 (0.107)	
$- \times Intra_{fpmc}$	-0.21** (0.097)	-0.24** (0.112)		-0.13* (0.071)	-0.09 (0.052)	-0.11* (0.054)
$TaxHaven_c$			0.11 (0.073)	0.11 (0.074)		
$- \times Intra_{fpmc}$			-0.11** (0.040)	-0.08** (0.035)		-0.08*** (0.025)
$Per\ Capita\ GDP_c$		0.06** (0.024)	0.04* (0.022)	0.04 (0.022)	0.04* (0.023)	
$- \times Intra_{fpmc}$		-0.03*** (0.010)	-0.01 (0.010)	-0.01 (0.010)	-0.02* (0.010)	-0.00 (0.008)
$Distance_c$	0.08***	0.09*** (0.025)	0.09*** (0.022)	0.11*** (0.022)		
$- \times Intra_{fpmc}$		-0.05*** (0.013)	-0.05*** (0.010)	-0.05*** (0.010)	-0.06*** (0.011)	-0.05*** (0.009)
$Tariff_c$		0.39 (0.323)	0.32 (0.268)	0.32 (0.267)	0.14 (0.273)	
$- \times Intra_{fpmc}$		-0.40* (0.213)	-0.33* (0.170)	-0.34* (0.173)	-0.20 (0.160)	-0.36*** (0.123)
Sample	Full	Full	Full	Full	w.o Tax H.	Full
Country FE	No	No	No	No	No	Yes
Firm-Prod.-Mode FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	729,737	729,737	729,737	729,737	652,548	729,737
Adj. R^2	0.863	0.864	0.865	0.865	0.869	0.853

Note: This table investigates the impact of the effective tax rate, GDP per capita, distance, tariffs, and of the tax haven dummy on intra-firm and arm's length export prices. Effective tax rates are transformed as follows: $(\log(1 - \tau))$. All regressions include firm-product-exporting mode fixed effects. The last column further includes country fixed effects and adjust the number of observations for singletons. In column (5), we restrict the sample to countries not classified as tax havens. Robust standard errors clustered by destination are reported in parentheses. Significance levels: * $p < 0.1$, ** $p < 0.05$, and *** $p < 0.01$.

Table 8 – Additional results, Effective Average Tax Rates

	Dependent variables: export price							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Intra firm c</i> ×:								
$(1 - \tau_c)$	-0.09 (0.088)	-0.13 (0.155)	-0.19 (0.132)	-0.04 (0.095)	-0.02 (0.165)	-0.13* (0.069)	-0.15** (0.070)	-0.10 (0.070)
<i>Tax Haven_c</i>	-0.11*** (0.022)	-0.00 (0.070)	-0.07* (0.040)	-0.11 (0.067)	-0.05 (0.091)	-0.07** (0.027)	-0.07*** (0.023)	-0.08** (0.036)
<i>Per Capita GDP_c</i>	-0.00 (0.010)	-0.01 (0.030)	-0.02 (0.022)	0.01 (0.015)	-0.04 (0.050)	-0.01 (0.011)	-0.01 (0.011)	-0.01 (0.010)
<i>Distance_c</i>	-0.05*** (0.012)	-0.07*** (0.023)	-0.09*** (0.019)	-0.04*** (0.015)	-0.01 (0.055)	-0.05*** (0.012)	-0.05*** (0.009)	-0.06*** (0.011)
<i>Tariff_c</i>	-0.41** (0.182)	-0.24 (0.276)	-0.43* (0.248)	-0.28* (0.163)	0.16 (0.147)	-0.54*** (0.184)	-0.34** (0.145)	-0.25 (0.161)
Sample	Big firms	Small firms	French firms	Foreign MNEs	Homog. goods	Diff. goods	w/o wholesale	All
Firm-Prod.-Mode FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Cty-Sect. FE	No	No	No	No	No	No	No	Yes
Observations	710,924	682,887	567,652	455,508	11,592	599,792	276,451	729,737
Adj. R^2	0.928	0.931	0.934	0.933	0.969	0.915	0.907	0.929

Note: This table investigates the impact of the effective tax rate, GDP per capita, distance, tariffs, and of the tax haven dummy on intra-firm and arm's length export prices. All regressions include firm-product-exporting mode fixed effects. Column (1) focuses on MNEs whose export sales are above the P75. Column (2) focuses on MNEs whose export sales are below the P25. Column (3) excludes affiliates of foreign MNEs located in France. Column (4) excludes French MNEs. Column (5) only contains the products classified as homogeneous in the Rauch nomenclature. Column (6) only contains the products classified as differentiated in the Rauch nomenclature. Column (7) excludes MNEs whose main activity abroad is wholesale. Column (8) displays the results with country and sector fixed effects. Robust standard errors clustered by destination are reported in parentheses. Significance levels: * $p < 0.1$, ** $p < 0.05$, and *** $p < 0.01$.

Table 9 – More on product differentiation

	Dependent variables: export price					
	(1)	(2)	(3)	(4)	(5)	(6)
$\frac{Intra_{fpmc} \times:}{(1 - \tau_c)}$	0.38 (0.262)	-0.10** (0.047)	0.20 (0.263)	0.23 (0.182)	-0.10** (0.048)	0.25 (0.190)
– \times <i>Nunn's diff.</i>	-0.52* (0.292)		-0.32 (0.288)			
– \times <i>Quality ladder</i>				-0.15* (0.077)		-0.16* (0.082)
<i>TaxHaven_c</i>	-0.08*** (0.022)	0.10 (0.142)	0.06 (0.150)	-0.09*** (0.021)	-0.05 (0.106)	-0.10 (0.122)
– \times <i>Nunn's diff.</i>		-0.21 (0.139)	-0.16 (0.148)			
– \times <i>Quality ladder</i>					-0.02 (0.042)	0.01 (0.049)
<i>Per Capita GDP_c</i>	-0.00 (0.007)	-0.00 (0.007)	-0.00 (0.007)	-0.00 (0.007)	-0.00 (0.007)	-0.00 (0.007)
<i>Distance_c</i>	-0.05*** (0.008)	-0.05*** (0.008)	-0.05*** (0.008)	-0.05*** (0.008)	-0.05*** (0.008)	-0.05*** (0.008)
<i>Tariff_c</i>	-0.37*** (0.108)	-0.37*** (0.111)	-0.37*** (0.111)	-0.38*** (0.114)	-0.38*** (0.115)	-0.38*** (0.114)
Sample	Full	Full	Full	Full	Full	Full
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm-Prod.-Mode FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	720,274	720,274	720,274	711,215	711,215	711,215
Adj. R^2	0.925	0.925	0.925	0.923	0.923	0.923

Note: This table investigates the impact of the effective tax rate, GDP per capita, distance, tariffs, and of the tax haven dummy on intra-firm and arm's length export prices. The effective tax rate is transformed as follows: $(\log(1 - \tau))$. We use the effective marginal tax rate here. All regressions include firm-product-exporting mode fixed effects. Robust standard errors clustered by destination are reported in parentheses. Significance levels: * $p < 0.1$, ** $p < 0.05$, and *** $p < 0.01$.

Table 10 – Baseline regression Effective Marginal Tax Rate, all firms, 2%-98% thresholds

	Dependent variables: export price					
	(1)	(2)	(3)	(4)	(5)	(6)
$(1 - \tau_c)$	0.10 (0.147)	0.13 (0.146)		-0.00 (0.100)	-0.03 (0.097)	
$- \times Intra_{fpmc}$	-0.17* (0.090)	-0.21* (0.104)		-0.11* (0.065)	-0.07 (0.051)	-0.09* (0.053)
$TaxHaven_c$			0.11 (0.074)	0.11 (0.075)		
$- \times Intra_{fpmc}$			-0.11** (0.039)	-0.09** (0.036)		-0.08*** (0.025)
$Per\ Capita\ GDP_c$		0.06** (0.025)	0.04* (0.021)	0.04 (0.022)	0.04* (0.023)	
$- \times Intra_{fpmc}$		-0.03** (0.011)	-0.01 (0.010)	-0.01 (0.010)	-0.02 (0.010)	-0.00 (0.008)
$Distance_c$		0.08*** (0.024)	0.09*** (0.022)	0.09*** (0.022)	0.11*** (0.022)	
$- \times Intra_{fpmc}$		-0.05*** (0.013)	-0.06*** (0.010)	-0.05*** (0.011)	-0.07*** (0.011)	-0.06*** (0.009)
$Tariff_c$		0.39 (0.324)	0.31 (0.267)	0.31 (0.267)	0.13 (0.272)	
$- \times Intra_{fpmc}$		-0.41* (0.217)	-0.34* (0.174)	-0.34* (0.178)	-0.21 (0.162)	-0.37*** (0.124)
Sample	Full	Full	Full	Full	w.o Tax H.	Full
Country FE	No	No	No	No	No	Yes
Firm-Prod.-Mode FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	737,095	737,095	737,095	737,095	659,007	737,095
Adj. R^2	0.864	0.865	0.865	0.865	0.870	0.853

Note: This table investigates the impact of the effective tax rate, GDP per capita, distance, tariffs, and of the tax haven dummy on intra-firm and arm's length export prices. The effective tax rate is transformed as follows: $(\log(1 - \tau))$. We use the effective marginal tax rate here. All regressions include firm-product-exporting mode fixed effects. The last column further includes country fixed effects. In column (5), we restrict the sample to countries which are not classified as tax havens. Robust standard errors clustered by destination are reported in parentheses. Significance levels: * $p < 0.1$, ** $p < 0.05$, and *** $p < 0.01$.

Table 11 – Baseline regression Effective Marginal Tax Rate, all firms, 0%-100% thresholds

	Dependent variables: export price					
	(1)	(2)	(3)	(4)	(5)	(6)
$(1 - \tau_c)$	0.09 (0.197)	0.19 (0.214)		-0.02 (0.125)	-0.02 (0.131)	
$- \times Intra_{fpmc}$	-0.25 (0.380)	-0.34 (0.411)		-0.04 (0.335)	0.06 (0.287)	0.01 (0.233)
$TaxHaven_c$			0.19* (0.098)	0.19* (0.101)		
$- \times Intra_{fpmc}$			-0.27** (0.103)	-0.27** (0.122)		-0.22** (0.083)
$Per\ Capita\ GDP_c$		0.11*** (0.039)	0.08** (0.030)	0.08** (0.031)	0.08** (0.034)	
$- \times Intra_{fpmc}$		-0.08 (0.047)	-0.04 (0.042)	-0.04 (0.043)	-0.04 (0.045)	-0.01 (0.031)
$Distance_c$		0.11*** (0.029)	0.12*** (0.031)	0.12*** (0.031)	0.14*** (0.034)	
$- \times Intra_{fpmc}$		-0.04 (0.037)	-0.06 (0.034)	-0.05 (0.034)	-0.06 (0.040)	-0.04 (0.025)
$Tariff_c$		0.12 (0.501)	-0.09 (0.504)	-0.09 (0.508)	-0.38 (0.656)	
$- \times Intra_{fpmc}$		-0.59 (1.380)	-0.40 (1.430)	-0.38 (1.431)	-0.43 (1.755)	-0.72 (1.035)
Sample	Full	Full	Full	Full	w.o Tax H.	Full
Country FE	No	No	No	No	No	Yes
Firm-Prod.-Mode FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	138,681	138,681	138,681	138,681	125,279	138,681
Adj. R^2	0.828	0.830	0.831	0.831	0.840	0.815

Note: This table investigates the impact of the effective tax rate, GDP per capita, distance, tariffs, and of the tax haven dummy on intra-firm and arm's length export prices. The effective tax rate is transformed as follows: $(\log(1 - \tau))$. We use the effective marginal tax rate here. All regressions include firm-product-exporting mode fixed effects. The last column further includes country fixed effects. In column (5), we restrict the sample to countries which are not classified as tax havens. Robust standard errors clustered by destination are reported in parentheses. Significance levels: * $p < 0.1$, ** $p < 0.05$, and *** $p < 0.01$.

Table 12 – Baseline regression Effective Marginal Tax Rate, all firms, 10%-90% thresholds

	Dependent variables: export price					
	(1)	(2)	(3)	(4)	(5)	(6)
$(1 - \tau_c)$	0.08 (0.155)	0.12 (0.145)		-0.02 (0.100)	-0.04 (0.097)	
$- \times Intra_{fpmc}$	-0.13 (0.097)	-0.18* (0.105)		-0.07 (0.066)	-0.02 (0.053)	-0.06 (0.053)
$TaxHaven_c$			0.11 (0.073)	0.12 (0.074)		
$- \times Intra_{fpmc}$			-0.10** (0.042)	-0.09** (0.042)		-0.08*** (0.029)
$Per\ Capita\ GDP_c$		0.06** (0.024)	0.04* (0.021)	0.04* (0.021)	0.04* (0.022)	
$- \times Intra_{fpmc}$		-0.03** (0.012)	-0.01 (0.011)	-0.01 (0.011)	-0.02 (0.011)	-0.00 (0.009)
$Distance_c$		0.08*** (0.024)	0.09*** (0.022)	0.09*** (0.021)	0.11*** (0.022)	
$- \times Intra_{fpmc}$		-0.05*** (0.013)	-0.05*** (0.009)	-0.05*** (0.010)	-0.06*** (0.011)	-0.05*** (0.009)
$Tariff_c$		0.37 (0.310)	0.29 (0.251)	0.29 (0.251)	0.11 (0.252)	
$- \times Intra_{fpmc}$		-0.40* (0.210)	-0.33** (0.161)	-0.33* (0.164)	-0.21 (0.150)	-0.37*** (0.116)
Sample	Full	Full	Full	Full	w.o Tax H.	Full
Country FE	No	No	No	No	No	Yes
Firm-Prod.-Mode FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	766,600	766,600	766,600	766,600	685,958	541,801
Adj. R^2	0.867	0.868	0.868	0.868	0.872	0.856

Note: This table investigates the impact of the effective tax rate, GDP per capita, distance, tariffs, and of the tax haven dummy on intra-firm and arm's length export prices. The effective tax rate is transformed as follows: $(\log(1 - \tau))$. We use the effective marginal tax rate here. All regressions include firm-product-exporting mode fixed effects. The last column further includes country fixed effects. In column (5), we restrict the sample to countries which are not classified as tax havens. Robust standard errors clustered by destination are reported in parentheses. Significance levels: * $p < 0.1$, ** $p < 0.05$, and *** $p < 0.01$.

Table 13 – Regression Effective Marginal Tax Rate and sh. of intra-firm trade, all firms

	Dependent variables: export price					
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Share_intra</i>	-0.13*** (0.030)	0.46** (0.200)	0.39** (0.184)	0.38** (0.184)	0.52*** (0.189)	0.30*** (0.112)
$(1 - \tau_c)$	0.09*** (0.024)	0.11*** (0.025)		-0.04** (0.018)	-0.06*** (0.019)	
$- \times \textit{Share_intra}_{fpmc}$	-0.08 (0.054)	-0.10** (0.052)		0.01 (0.053)	0.06 (0.057)	0.01 (0.040)
<i>TaxHaven_c</i>			0.11*** (0.016)	0.11*** (0.017)		
$- \times \textit{Share_intra}_{fpmc}$			-0.08*** (0.025)	-0.08*** (0.027)		-0.08*** (0.019)
<i>Per Capita GDP_c</i>		0.06*** (0.013)	0.04*** (0.011)	0.04*** (0.010)	0.04*** (0.009)	
$- \times \textit{Share_intra}_{fpmc}$		-0.03* (0.015)	-0.01 (0.014)	-0.01 (0.014)	-0.01 (0.012)	0.00 (0.009)
<i>Distance_c</i>		0.08*** (0.008)	0.09*** (0.009)	0.09*** (0.009)	0.11*** (0.013)	
$- \times \textit{Share_intra}_{fpmc}$		-0.05*** (0.011)	-0.05*** (0.012)	-0.05*** (0.011)	-0.07*** (0.015)	-0.06*** (0.008)
<i>Tariff_c</i>		0.39** (0.151)	0.31*** (0.114)	0.31*** (0.112)	0.13* (0.068)	
$- \times \textit{Share_intra}_{fpmc}$		0.39** (0.151)	0.31*** (0.114)	0.31*** (0.112)	0.13* (0.068)	
Sample	Full	Full	Full	Full	w.o Tax H.	Full
Country FE	No	No	No	No	No	Yes
Firm-Prod.-Mode FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	913,495	913,495	913,495	913,495	805,657	913,495
Adj. R^2	0.875	0.876	0.876	0.876	0.880	0.867

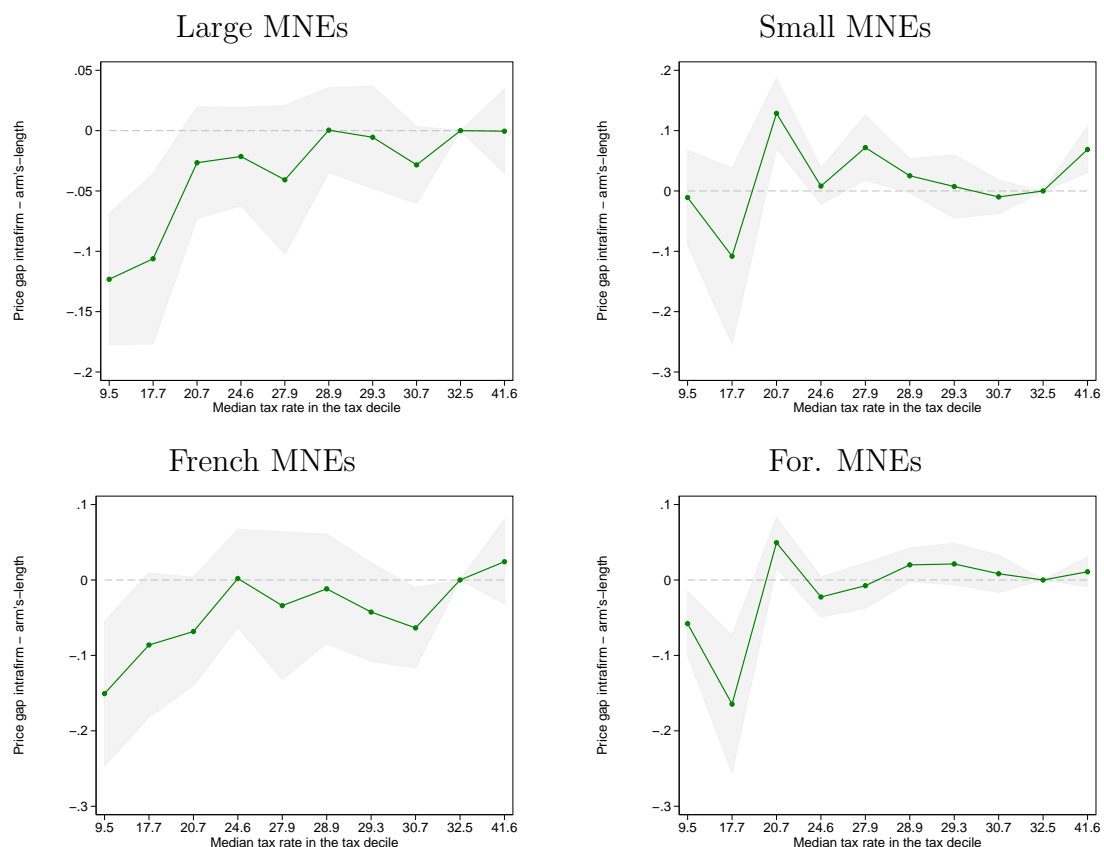
Note: This table investigates the impact of the effective tax rate, GDP per capita, distance, tariffs, and of the tax haven dummy on export prices depending on the intra-firm share of the transaction. The effective tax rate is transformed as follows: $(\log(1 - \tau))$. We use the effective marginal tax rate here. All regressions include firm-product-exporting mode fixed effects. The last column further includes country fixed effects and adjust the number of observations for singletons. In column (5), we restrict the sample to countries which are not classified as tax havens. Robust standard errors clustered by HS4-level are reported in parentheses. Significance levels: * $p < 0.1$, ** $p < 0.05$, and *** $p < 0.01$.

Table 14 – Regression Effective Marginal Tax Rate, Intra-firm, Arm’s length, and Mix transactions

	Dependent variables: export price					
	(1)	(2)	(3)	(4)	(5)	(6)
$(1 - \tau_c)$	0.08 (0.153)	0.11 (0.144)		-0.04 (0.106)	-0.06 (0.103)	
$- \times Mix_{fpmc}$	-0.04 (0.076)	0.07 (0.118)		0.17* (0.087)	0.22*** (0.073)	0.21*** (0.076)
$- \times Intra_{fpmc}$	0.04 (0.087)	-0.23** (0.100)		-0.10 (0.062)	-0.06 (0.052)	-0.10* (0.052)
$TaxHaven_c$			0.11 (0.070)	0.11 (0.071)		
$- \times Mix_{fpmc}$			-0.05 (0.063)	-0.07 (0.069)		-0.07 (0.050)
$- \times Intra_{fpmc}$			-0.11*** (0.029)	-0.09*** (0.029)		-0.09*** (0.027)
$Per\ Capita\ GDP_c$		0.05** (0.022)	0.03* (0.018)	0.03* (0.018)	0.03* (0.019)	
$- \times Mix_{fpmc}$		0.02 (0.016)	0.02** (0.009)	0.03*** (0.010)	0.03*** (0.011)	0.04*** (0.007)
$- \times Intra_{fpmc}$		0.00 (0.009)	0.02*** (0.005)	0.01*** (0.005)	0.02*** (0.006)	0.02*** (0.004)
$Distance_c$		0.08*** (0.025)	0.09*** (0.021)	0.09*** (0.021)	0.11*** (0.022)	
$- \times Mix_{fpmc}$		-0.03 (0.019)	-0.04** (0.015)	-0.04** (0.015)	-0.05*** (0.017)	-0.04*** (0.011)
$- \times Intra_{fpmc}$		-0.03** (0.013)	-0.04*** (0.009)	-0.04*** (0.009)	-0.05*** (0.012)	-0.04*** (0.008)
$Tariff_c$		0.38 (0.265)	0.30 (0.206)	0.30 (0.203)	0.11 (0.200)	
$- \times Mix_{fpmc}$		0.03 (0.287)	0.07 (0.242)	0.08 (0.238)	0.36* (0.190)	0.07 (0.146)
$- \times Intra_{fpmc}$		-0.38* (0.197)	-0.31* (0.167)	-0.32* (0.166)	-0.18 (0.151)	-0.36*** (0.128)
Sample	Full	Full	Full	Full	w.o Tax H.	Full
Country FE	No	No	No	No	No	Yes
Firm-Prod.-Mode FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	913,495	913,495	913,495	913,495	805,657	913,495
Adj. R^2	0.875	0.876	0.876	0.876	0.880	0.867

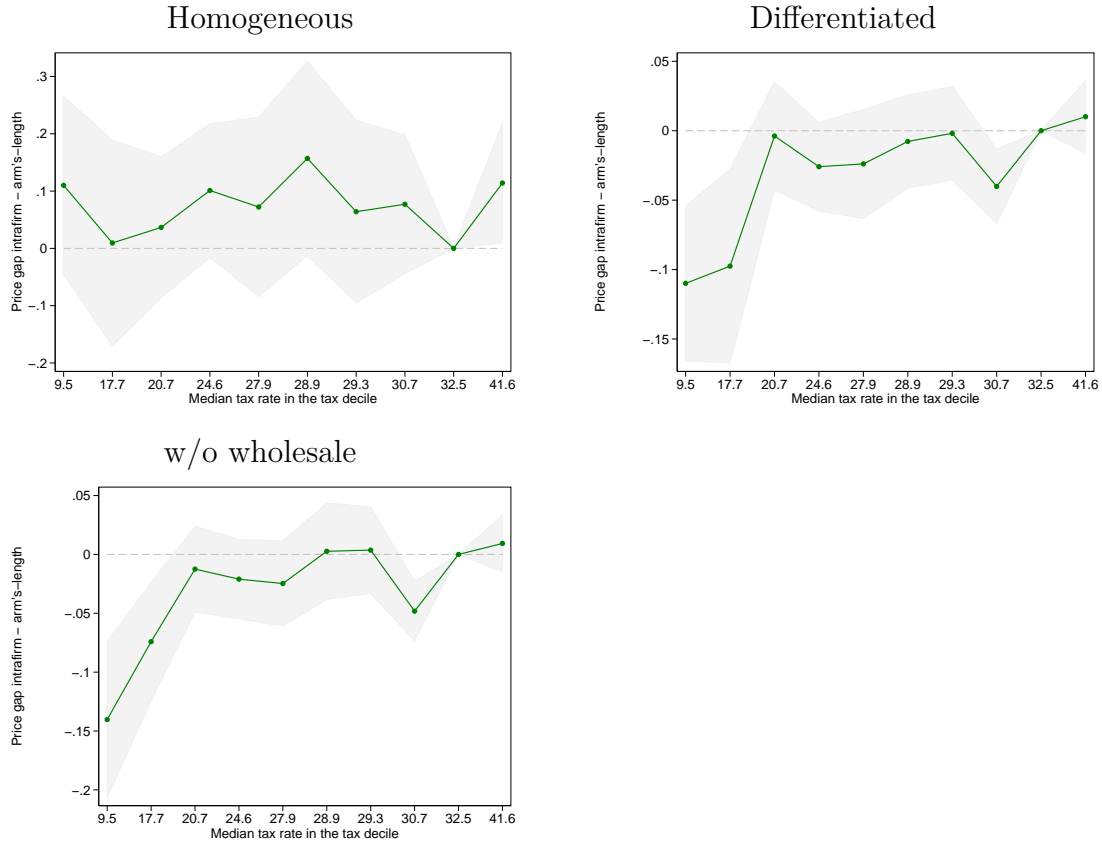
Note: This table investigates the impact of the effective tax rate, GDP per capita, distance, tariffs, and of the tax haven dummy on export prices depending on the intra-firm share of the transaction. *Mix* takes the value of one if the share of intra-firm trade in the firm-HS4-destination triplet is between 1% and 99%. *Intra* is a dummy equal to one if the share of intra-firm trade is above 99%. The effective tax rate is transformed as follows: $(\log(1 - \tau))$. We use the effective marginal tax rate here. All regressions include firm-product-exporting mode fixed effects. The last column further includes country fixed effects and adjust the number of observations for singletons. In column (5), we restrict the sample to countries which are not classified as tax havens. Robust standard errors clustered by destination are reported in parentheses. Significance levels: * $p < 0.1$, ** $p < 0.05$, and *** $p < 0.01$.

Figure 2 – Threshold effect of corporate tax rate on transfer pricing



Note: This graph displays the price wedge between intra-firm and arm's length prices by decile of the destination country corporate tax rate. The price wedge is measured by the coefficients on the interaction between tax deciles and an intra-firm dummy in a regression of the logarithm of export prices on firm-product-exporting mode fixed effects, tax decile of the destination country, GDP per capita, distance, and tariff, and their interaction with a dummy equal to one if the exports are between related parties. The first decile is the decile of countries with the lowest corporate tax rates. The tenth decile is the decile with the highest corporate tax rates. Decile 9 is normalized to zero (countries with the same tax level as France). The gray area corresponds to the confidence interval at 5%.

Figure 3 – Threshold effect of corporate tax rate on transfer pricing



Note: This graph displays the price wedge between intra-firm and arm's length prices by decile of the destination country corporate tax rate. The price wedge is measured by the coefficients on the interaction between tax deciles and an intra-firm dummy in a regression of the logarithm of export prices on firm-product-exporting mode fixed effects, tax decile of the destination country, GDP per capita, distance, and tariff, and their interaction with a dummy equal to one if the exports are between related parties. The first decile is the decile of countries with the lowest corporate tax rates. The tenth decile is the decile with the highest corporate tax rates. Decile 9 is normalized to zero (countries with the same tax level as France). The gray area corresponds to the confidence interval at 5%.