

Online Appendix for

Are less developed countries more exposed to multinational tax avoidance?

Method and evidence from micro-data

(March 2017)

Figures

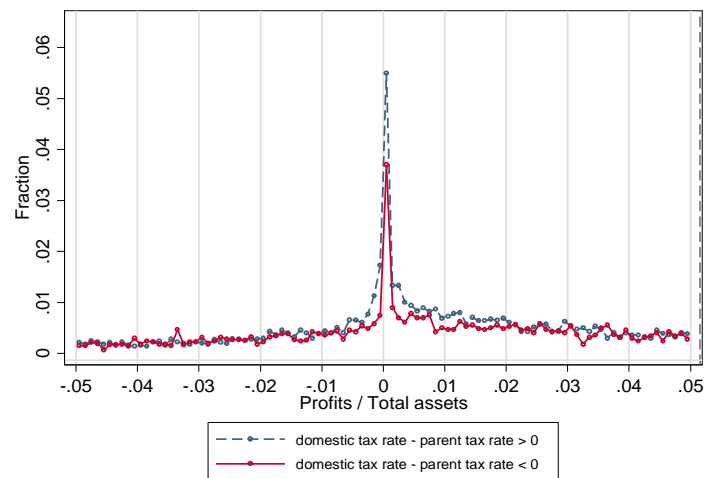
- A1 Return-on-assets histograms - Low vs High governance - by tax difference to parent
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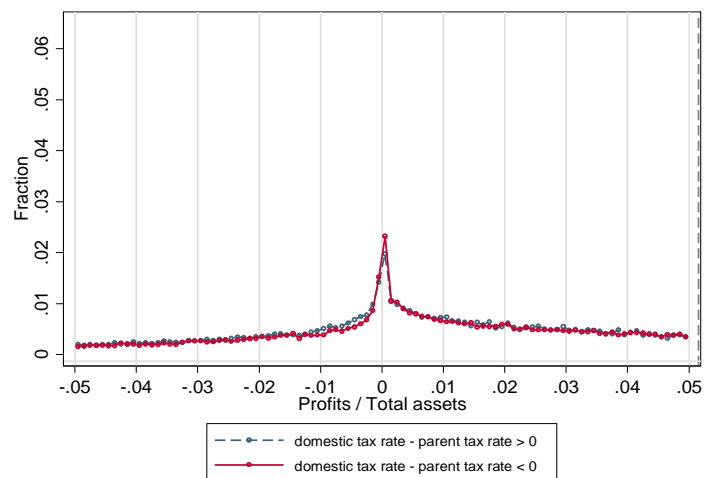
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Figure A1: Tax incentives for profit shifting, economic development and return on assets

A1.a: Below-average governance



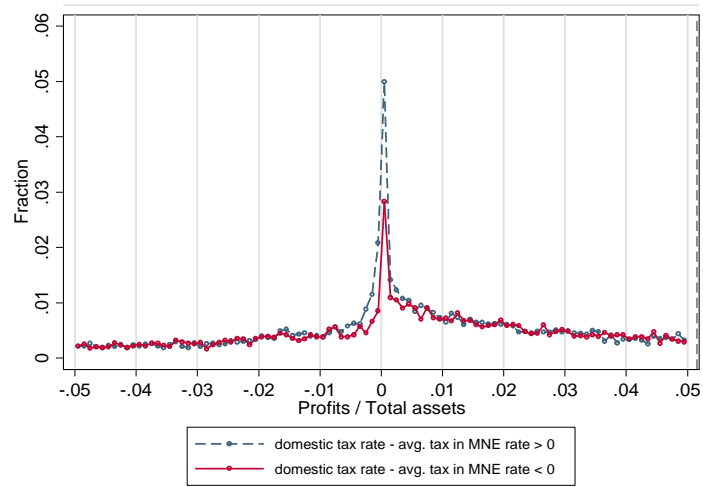
A1.b: Above-average governance



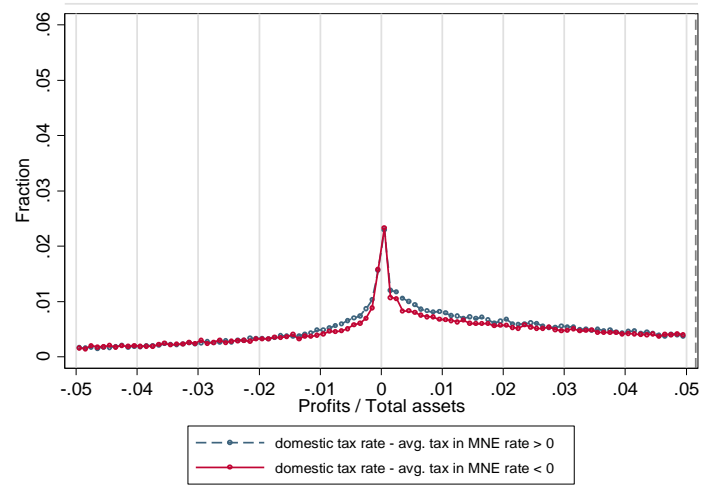
Notes: The figure shows histograms of the return on assets in countries with below-average and above-average quality of governance respectively. The return on assets is the ratio of profits (after financial income and expenses but before taxation) to total assets.

Figure A2: Tax incentives for profit shifting, institutional development and return on assets

A2.a: Low/middle-income



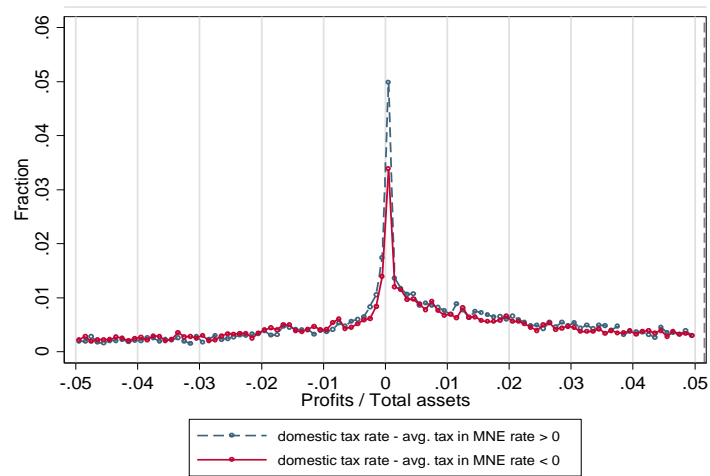
A2.b: High-income



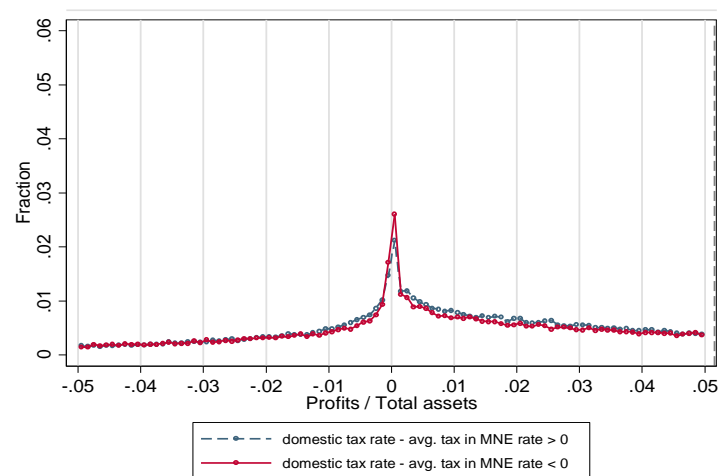
Notes: The figure shows histograms of the return on assets in countries with a GNI (Atlas Method) below and above \$12,275 respectively. The return on assets is the ratio of profits (after financial income and expenses but before taxation) to total assets.

Figure A3: Tax incentives for profit shifting, institutional development and return on assets

A3.a: Below-average governance



A3.b: Above-average governance



Notes: The figure shows histograms of the return on assets in low- and middle income countries and high-income countries respectively. The return on assets is the ratio of profits (after financial income and expenses but before taxation) to total assets.

Table A1: Zero profits - excluding observations between 0.5% and 2%

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Low/middle- income	High- income	Low/middle- income	High- income	All countries	All countries	All countries	All countries
Parent tax rate	-0.168*** (0.06)	-0.006 (0.02)			-0.100*** (0.03)		-0.139*** (0.04)	
Average foreign affiliate tax rate			-0.191*** (0.07)	-0.007 (0.02)		-0.129*** (0.04)		-0.155*** (0.04)
Parent tax rate × GNI per capita (standardized)					0.072*** (0.02)			
Average foreign affiliate tax rate × GNI per capita (standardized)						0.091*** (0.03)		
Parent tax rate × Governance (standardized)							0.102*** (0.03)	
Average foreign affiliate tax rate × Governance (standardized)								0.113*** (0.03)
Observations	33,366	128,611	48,817	290,089	161,916	338,410	161,937	338,848
Number of corporations	115,850	576,960	180,402	1,319,565	692,588	1,497,574	692,662	1,499,736
Corporation fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country-year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year-income group fixed effects	-	-	-	-	Yes	Yes	Yes	Yes

Notes: The table shows results from an ordinary least squares regression with observations at the corporation-level for 2003-2012. Observations between 0.5% and 2% are excluded. Variables: *zero profits* is a dummy variable coded one when the corporation's return to assets is between -0.5% and 0.5% and zero otherwise; *parent tax rate* is the corporate tax rate in the country of the corporation's ultimate owner; *average foreign affiliate tax rate* is the unweighted average of the corporate tax rates in the countries of the corporation's foreign affiliates; *GNI per capita* is the standardized value of the gross national product in the country of the corporation; *Governance* is the standardized value of the first principal component of the 6 indicators of quality of governance (control over corruption, regulatory quality, rule of law, voice and accountability, government effectiveness and political stability). The income and governance variables are standardized by subtracting the global mean and dividing by the standard deviation. Sample: in Columns (1) and (3) the sample is corporations in low/middle-income countries; in columns (2) and (4), the sample is corporations in high-income countries; in Columns (5)-(8), the sample includes corporations in all countries. The sample is winsorized by excluding corporations with a return to assets exceeding 96% (the 99th percentile in the gross sample). Standard errors: all reported standard errors are robust to heteroscedasticity and clustered at the corporation-level. Statistical significance: *, ** and *** Indicate significance at the 10%, 5% and 1% level respectively.

Table A2: Zero profits - narrow definition of zero profits

=""	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Low/middle-income	High-income	Low/middle-income	High-income	All countries	All countries	All countries	All countries
Parent tax rate	-0.177** (0.07)	0.024 (0.03)			-0.098** (0.04)		-0.136*** (0.05)	
Average foreign affiliate tax rate			-0.243*** (0.08)	0.017 (0.03)		-0.170*** (0.05)		-0.204*** (0.05)
Parent tax rate × GNI per capita (standardized)					0.096*** (0.03)			
Average foreign affiliate tax rate × GNI per capita (standardized)						0.140*** (0.04)		
Parent tax rate × Governance (standardized)							0.121*** (0.04)	
Average foreign affiliate tax rate × Governance (standardized)								0.175*** (0.04)
Observations	33,366	128,611	48,817	290,089	161,916	338,410	161,937	338,848
Number of corporations	115,850	576,960	180,402	1,319,565	692,588	1,497,574	692,662	1,499,736
Corporation fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country-year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year-income group fixed effects	-	-	-	-	Yes	Yes	Yes	Yes

Notes: The table shows results from an ordinary least squares regression with observations at the corporation-level for 2003-2012. Variables: *zero profits* is a dummy variable coded one when the corporation's return to assets is between -0.25% and 0.25% and zero otherwise; *parent tax rate* is the corporate tax rate in the country of the corporation's ultimate owner; *average foreign affiliate tax rate* is the unweighted average of the corporate tax rates in the countries of the corporation's foreign affiliates; *GNI per capita* is the standardized value of the gross national product in the country of the corporation; *Governance* is the standardized value of the first principal component of the 6 indicators of quality of governance (control over corruption, regulatory quality, rule of law, voice and accountability, government effectiveness and political stability). The income and governance variables are standardized by subtracting the global mean and dividing by the standard deviation. Sample: in Columns (1) and (3) the sample is corporations in low/middle-income countries; in columns (2) and (4), the sample is corporations in high-income countries; in Columns (5)-(8), the sample includes corporations in all countries. The sample is winsorized by excluding corporations with a return to assets exceeding 96% (the 99th percentile in the gross sample). Standard errors: all reported standard errors are robust to heteroscedasticity and clustered at the corporation-level. Statistical significance: *, ** and *** Indicate significance at the 10%, 5% and 1% level respectively.

Table A3: Zero profits - separate measures of quality of governance

Panel A: Parent tax rate	Dependent variable: Zero profits					
	Control over Corruption	Regulatory Quality	Voice and Accountability	Rule of Law	Government effectiveness	Political Stability
Parent tax rate	-0.0998*** (0.0300)	-0.150*** (0.0439)	-0.0954** (0.0389)	-0.114*** (0.0335)	-0.135*** (0.0366)	-0.0518** (0.0256)
Parent tax rate × governance indicator	0.0742*** (0.0225)	0.109*** (0.0348)	0.0685** (0.0329)	0.0861*** (0.0261)	0.0997*** (0.0277)	0.0584* (0.0342)
Observations	790,997	790,997	791,099	791,099	790,997	791,099
R-squared	0.005	0.005	0.005	0.005	0.005	0.005
Number of corporations	168,136	168,136	168,149	168,149	168,136	168,149
Panel B: Average foreign affiliate tax rate	Dependent variable: Zero profits					
	Control over Corruption	Regulatory Quality	Voice and Accountability	Rule of Law	Government effectiveness	Political Stability
Average foreign affiliate tax rate	-0.124*** (0.0438)	-0.158*** (0.0604)	-0.124** (0.0530)	-0.130*** (0.0470)	-0.145*** (0.0522)	-0.0823** (0.0364)
Average foreign affiliate tax rate × governance indicator	0.0753** (0.0335)	0.0948* (0.0484)	0.0730 (0.0459)	0.0794** (0.0370)	0.0879** (0.0410)	0.0803 (0.0538)
Observations	880,837	880,837	880,957	880,957	880,837	880,957
R-squared	0.005	0.005	0.005	0.005	0.005	0.005
Number of corporations	183,631	183,631	183,646	183,646	183,631	183,646

Notes: The table shows results from an ordinary least squares regression with observations at the corporation-level for the period 2003-2012. Variables: *zero profits* is a dummy variable coded one when the corporation's return to assets is between -0.5% and 0.5% and zero otherwise; *parent tax rate* is the the corporate tax rate in the country of the corporation's ultimate owner; *average foreign affiliate tax rate* is the unweighted average of the corporate tax rates in the countries of the corporation's foreign affiliates; *governance indicator* is Control over Corruption in Column (1), Regulatory Quality in Column (2), Voice and Accountability in Column (3), Rule of Law in Column (4), Government Effectiveness in Column (5) and Political Stability in Column (6). Sample: Subsidiaries of multinational firms in 139 countries in the world winsorized by excluding corporations with a return to assets exceeding 96% (the 99th percentile in the gross sample). Controls: all regressions include corporation and industry-year fixed effects. Standard errors: all reported standard errors are robust to heteroscedasticity and to clustered at the corporation-level. Statistical significance: *, ** and *** Indicate significance at the 10%, 5% and 1% level respectively.

Table A4: Reported profits - separate measures of quality of governance

Panel A: Parent tax rate	Dependent variable: Profits (in logs)					
	Control over Corruption	Regulatory Quality	Voice and Accountability	Rule of Law	Government effectiveness	Political Stability
Parent tax rate	0.639*** (0.167)	0.790*** (0.259)	0.614*** (0.236)	0.687*** (0.191)	0.759*** (0.205)	0.415*** (0.154)
Parent tax rate × governance indicator	-0.377*** (0.131)	-0.449** (0.208)	-0.319 (0.202)	-0.404*** (0.154)	-0.449*** (0.160)	-0.279 (0.226)
Observations	507,125	507,125	507,125	507,125	507,125	507,125
R-squared	0.073	0.073	0.073	0.073	0.073	0.073
Number of corporations	118,908	118,908	118,908	118,908	118,908	118,908
Panel B: Average foreign affiliate tax rate	Dependent variable: Profits (in logs)					
	Control over Corruption	Regulatory Quality	Voice and Accountability	Rule of Law	Government effectiveness	Political Stability
Average foreign affiliate tax rate	0.710*** (0.171)	1.053*** (0.260)	0.897*** (0.240)	0.806*** (0.191)	0.898*** (0.209)	0.452*** (0.147)
Average foreign affiliate tax rate × governance indicator	-0.439*** (0.131)	-0.690*** (0.209)	-0.590*** (0.203)	-0.523*** (0.153)	-0.572*** (0.162)	-0.365* (0.214)
Observations	1,066,679	1,066,679	1,066,679	1,066,679	1,066,828	1,066,679
R-squared	0.067	0.067	0.067	0.067	0.060	0.067
Number of corporations	239,185	239,185	239,185	239,185	238,951	239,185

Notes: The table shows results from an ordinary least squares regression with observations at the corporation-level for the period 2003-2012. Variables: *profits* is reported profits; *parent tax rate* is the the corporate tax rate in the country of the corporation's ultimate owner; *average foreign affiliate tax rate* is the unweighted average of the corporate tax rates in the countries of the corporation's foreign affiliates; *governance indicator* is Control over Corruption in Column (1), Regulatory Quality in Column (2), Voice and Accountability in Column (3), Rule of Law in Column (4), Government Effectiveness in Column (5) and Political Stability in Column (6); *fixed assets* is the value of the corporation's fixed assets; *employees* is the number of employees at the corporation. Sample: 56 countries in the world winsorized by excluding corporations with a return to assets exceeding 96% (the 99th percentile in the gross sample). Controls: all regressions include corporation and industry-year fixed effects. Standard errors: all reported standard errors are robust to heteroscedasticity and clustered at the corporation-level. Statistical significance: *, ** and *** Indicate significance at the 10%, 5% and 1% level respectively.

Table A5: Tax incentive measured as difference between domestic and foreign tax rates (EU28)

	Dependent variable: Profits (in logs)	
	(1)	(2)
	European Union-28	European Union-28
Tax differential to parent	-0.575*** (0.0805)	
Tax differential to average affiliate		-0.680*** (0.0942)
GDP per capita (in logs)	0.488*** (0.0607)	0.617*** (0.0598)
Fixed assets (in logs)	0.0701*** (0.00343)	0.0722*** (0.00334)
Employees (in logs)	0.290*** (0.00678)	0.288*** (0.00651)
Observations	432,939	479,765
R-squared	0.053	0.053
Number of corporations	96,697	105,578
Corporation fixed effects	Yes	Yes
Industry-year fixed effects	Yes	Yes

Notes: The table shows results from an ordinary least squares regression with observations at the corporation-level for the period 2003-2012. Variables: *Profits* is reported profits; *Tax differential to parent* is the difference between the corporate tax rate in the country of the corporation and the corporate tax rate in the country of the corporation's ultimate owner; *Tax differential to average affiliate* is the difference between the corporate tax rate in the country of the corporation and the unweighted average of the corporate tax rates in the countries of the corporation's foreign affiliates; *fixed assets* is the value of the corporation's fixed assets; *employees* is the number of employees at the corporation. Sample: the sample is corporations in the 28 countries which are EU member states. The sample is winsorized by excluding corporations with a return to assets exceeding 96% (the 99th percentile in the gross sample). Standard errors: all reported standard errors are robust to heteroscedasticity and clustered at the corporation-level. Statistical significance: *, ** and *** Indicate significance at the 10%, 5% and 1% level respectively.

Table A6: Tax incentive measured as difference between domestic and foreign tax rates

	Dependent variable: Profits (in logs)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Low/middle-income	High-income	Low/middle-income	High-income	All countries	All countries	All countries	All countries
Tax differential to parent	-1.107*** (0.215)	-0.378*** (0.0825)			-1.075*** (0.121)		-0.909*** (0.143)	
Tax differential to average affiliate			-0.817*** (0.196)	-0.116* (0.0673)		-1.030*** (0.114)		-0.663*** (0.122)
Tax differential to parent × GNI per capita (standardized)					0.681*** (0.0999)			
Tax differential to average affiliate × GNI per capita (standardized)						0.822*** (0.0883)		
Tax differential to parent × Governance (standardized)							0.425*** (0.111)	
Tax differential to average affiliate × Governance (standardized)								0.430*** (0.0918)
GDP per capita (in logs)	3.09e-05 (0.158)	0.836*** (0.0650)	0.642*** (0.128)	1.137*** (0.0499)	0.728*** (0.0600)	1.084*** (0.0463)	0.723*** (0.0600)	1.099*** (0.0464)
Fixed assets (in logs)	0.159*** (0.00933)	0.0719*** (0.00347)	0.177*** (0.00763)	0.0767*** (0.00253)	0.0840*** (0.00327)	0.0879*** (0.00241)	0.0840*** (0.00327)	0.0880*** (0.00241)
Employees (in logs)	0.371*** (0.0149)	0.280*** (0.00702)	0.345*** (0.0135)	0.271*** (0.00470)	0.302*** (0.00644)	0.283*** (0.00449)	0.302*** (0.00644)	0.283*** (0.00449)
Observations	87,864	415,606	130,807	927,117	503,470	1,057,924	503,470	
R-squared	0.103	0.052	0.103	0.051	0.062	0.058	0.062	
Number of corporations	25,420	93,188	36,086	202,266	118,608	238,352	118,608	
Corporation fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year-income group fixed effects	-	-	-	-	Yes	Yes	Yes	Yes

Notes: The table shows results from an ordinary least squares regression with observations at the corporation-level for the period 2003-2012. Variables: *profits* is reported profits; *tax differential to parent* is the difference between the corporate tax rate in the country of the corporation and the corporate tax rate in the country of the corporation's ultimate owner; *tax differential to average affiliate* is the difference between the corporate tax rate in the country of the corporation and the unweighted average of the corporate tax rates in the countries of the corporation's foreign affiliates; *GNI per capita* is the standardized value of the gross national product in the country of the corporation; *Governance* is the standardized value of the first principal component of the 6 indicators of quality of governance (control over corruption, regulatory quality, rule of law, voice and accountability, government effectiveness and political stability); *fixed assets* is the value of the corporation's fixed assets; *employees* is the number of employees at the corporation. The income and governance variables are standardized by subtracting the global mean and dividing by the standard deviation. Sample: in Columns (1) and (3) the sample is corporations in low/middle-income countries; in columns (2) and (4), the sample is corporations in high-income countries; in Columns (5)-(8), the sample includes corporations in all countries. The sample is winsorized by excluding corporations with a return to assets exceeding 96% (the 99th percentile in the gross sample). Standard errors: all reported standard errors are robust to heteroscedasticity and clustered at the corporation-level. Statistical significance: *, ** and *** Indicate significance at the 10%, 5% and 1% level respectively.