

Profit Shifting and Firm Growth

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Introduction

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We know that:

- ▶ There is large amount of tax avoidance, especially amongst MNEs. Panama and Paradise papers 2015, Torslov et al. 2018, Bilicka 2019
- ▶ The extent of profit shifting has been increasing over time. Clausing 2016, OECD 2017
- ▶ Emerging evidence that profit shifting restrictions affect allocation of investment, labor and assets
Bilicka et al 2020 and Suarez-Serrato 2018

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... If profit shifting comes with **inefficient allocation** of labor, assets and investment and as a consequence **slower firm growth**, this may affect our economies severely in the long-run

This paper: profit shifting and firm growth

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- ① Use firm level balance sheet data to show stylized facts
- ② Propose a model to investigate potential mechanism through which tax planning affects firm production and consequently firm growth.

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Main findings:

- ① Multi-establishment domestic firms tend to be larger than comparable multinational firms.
- ② We use a firm dynamic model with multi-establishment firms to show that tax planning incentives result in firms opting to be multinationals and having fewer and smaller establishments. This results in lower levels of output and employment.

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- ▶ BUT... potential negative consequences,
 - ① firms that move their profits to low tax jurisdictions may pass up on profitable investment opportunities in higher tax countries, **if their objective becomes tax minimization**

 - ② firms may choose to move real business operations away from high tax jurisdictions, **slowing down growth** of particular business affiliates in particular locations. This might **distort the allocation of capital**.

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Sample selection

- ▶ domestic firms with multiple establishments
- ▶ MNCs HQ in a high-tax country
- ▶ To compare firms of similar size, for which the incentives discussed in our theoretical model matter (< 11 establishments)

Stylized fact 1: domestic firms are on average larger than MNCs with a comparable number of subsidiaries

	total assets	emp	turnover	number of est	number of obs
Panel A: French Firms with fewer than 11 establishments					
domestic	73,405	303	83,152	4.5	4,447
MNCs	68,251	220	59,397	4.9	1,900
Panel B: German Firms with fewer than 11 establishments					
domestic	100,822	592	139,685	4.8	7,989
MNCs	98,703	537	143,678	5.8	2,459

Domestic French firms have on average around \$USD 73.4 million total assets, employ an average of 303 people and have around \$USD 83.2 million turnover. **MNCs of similar size** have \$USD 68.3 million total assets, employ on average 220 people and have \$USD 59.4 million turnover.

Stylized fact 2: size of an MNC with more than 1 tax haven subsidiary < size of MNC with 1 tax haven subsidiary < size of MNC with no tax haven subsidiaries

	total assets	emp	turnover	number of est	number of obs
Panel A: based on tax haven presence					
MNC with at least 1 tax haven sub	702,383	2,676	463,102	8	151,302
MNCs with 1 tax haven sub	724,923	2,793	498,050	8	55,108
MNC with no tax haven subs	799,413	2,607	530,907	7	252,368
Panel B: based on proportion of LT subs					
MNCs with <50% LT est	3,624,730	9,025	2,857,198	34	173,139
MNCs with >90% LT est	2,688,501	7,335	1,801,887	26	449,090

Panel A: Using a tax haven as part of your ownership structure has been shown in the literature to be highly correlated with the ability to shift profits effectively. Some MNCs may be smaller than potential, because they exploit profit shifting strategies over growth

Stylized fact 3: size of an MNC is smaller if they have a large fraction of establishments in low tax countries

	total assets	emp	turnover	number of est	number of obs
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Panel B: If an MNC prioritizes low tax locations, it may curtail its growth potential.

Model

A multi-establishment firm model based on Hopenhayn and Rogerson (1993), Veracierto (2001), and Xi (2016):

- ▶ firms run multiple establishments (at least two),
- ▶ firms can choose to be domestic or multinational,
- ▶ establishments are the basic production units
- ▶ Inputs of production (z_f, z_e, h)
 - ▶ z_f : firm-specific intangible capital, non-rival, e.g. patent, blue print
 - ▶ z_e : establishment specific intangible capital, rival, e.g. local supply chain, local market
 - ▶ h : labor
- ▶ Output: homogeneous good y used for consumption

Establishments: Production Technology

There are two types of establishments: domestic (D) and foreign (F).

- ▶ Both types of establishment use (z_f, z_e, h) to produce output y with the following production technology

$$y = f^{\tau}(z_f, z_e, h) = (z_f^{\alpha}((1 - \mu_{\tau})z_e)^{1-\alpha})^{1-\gamma} h^{\gamma}$$

where

- ▶ $\tau \in \{D, F\}$, type of establishment
- ▶ z_f : non-rival firm-specific intangible capital,
- ▶ z_e : rival establishment-specific intangible capital,
- ▶ μ_{τ} : depreciation of establishment-specific intangible capital
- ▶ h : labor

Establishments: Domestic v.s. Foreign

Domestic and foreign establishments are different along **three** dimensions:

- ① corporate tax rate, $t_D > t_F$
- ② depreciation of establishment-specific intangible capital,
 $\mu_D = 0, \mu_F > 0$
- ③ cost of creating/running, $C_D < C_F$

Firm Problem

The multi-establishment firm can choose to be **domestic** or **multinational**;

- ▶ A domestic firm
 - ▶ creates and runs $n \geq 2$ domestic establishments
 - ▶ total profit will be taxed at t_D

- ▶ A multinational firm
 - ▶ creates and run 1 domestic establishment and $n \geq 1$ foreign establishments,
 - ▶ total profit, from domestic and foreign establishments, is taxed at t_F

A Domestic Firm's Profit

A domestic firm with technology capital x maximizes profit:

$$\pi^D(x) = \max_{n_D, h_D} \left(F^D(x, h_D, n_D) - wh_D - wn_D C_D \right) (1 - t_D)$$

where

- ▶ C_D ; cost of running a domestic est.
- ▶ n_D ; number of est.
- ▶ h_D ; labor demand of domestic est.
- ▶ $F^D(x, h_D, n_D)$;

$$F^D(x, h_D, n_D) = \max_{z_{e,j}, h_j} \sum_{j=1}^{n_D} f^D(z_f, z_{e,j}, h_j)$$

$$s.t. \quad \sum_{j=1}^{n_D} h_j < h_D \quad , \quad \sum_{j=1}^{n_D} z_{e,j} \leq z_e \quad z_e + z_f \leq x$$

where $z_{e,j}$ and h_j are intangible capital and labor demand for est. j

A Multinational Firm's Profit

A multinational firm with technology capital x maximizes profit:

$$\pi^M(x) = \max_{\substack{z_f, z_{eD}, h_D, \\ n_F, z_{eF}, h_F}} \left\{ \left(f^D(z_f, z_{eD}, h_D) - wh_D - wC_D + \right. \right. \\ \left. \left. F^F(h_F, n_F, z_f, z_{eF}) - wh_F - wn_FC_F \right) (1 - t_F) \right\} \\ \text{s.t.} \quad z_f + z_{eF} + z_{eD} \leq x$$

where

- ▶ C_D, C_F ; cost of running domestic and foreign est.
- ▶ n_F ; number of foreign est.
- ▶ z_{eD} ; est. specific intangible capital for domestic est.
- ▶ z_{eF} ; sum of est. specific intangible capital for foreign est.
- ▶ h_D ; labor demand of domestic est.
- ▶ h_F ; total labor demand of foreign est.

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► $F^F(h_F, n_F, z_f, z_{eF})$ is defined as

$$\begin{aligned} F^F(h_F, n_F, z_f, z_{eF}) = \max_{\{z_{e,j}, h_j\}_j} \sum_{j=1}^{n_F} f^F(z_f, z_{e,j}, h_j) \\ \text{s.t.} \quad \sum_{j=1}^{n_F} h_j \leq h_F \quad \sum_{j=1}^{n_F} z_{e,j} \leq z_{eF} \end{aligned}$$

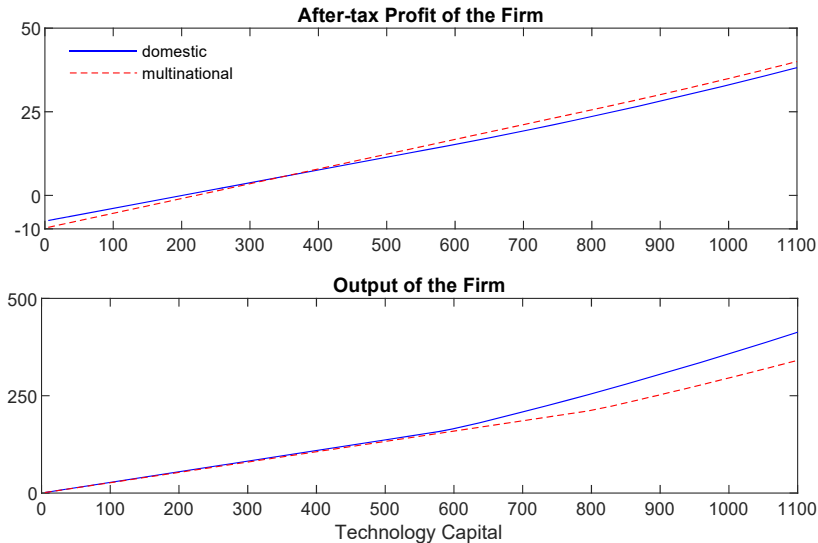
where $z_{e,j}$ and h_j are intangible capital and labor demand for est. j

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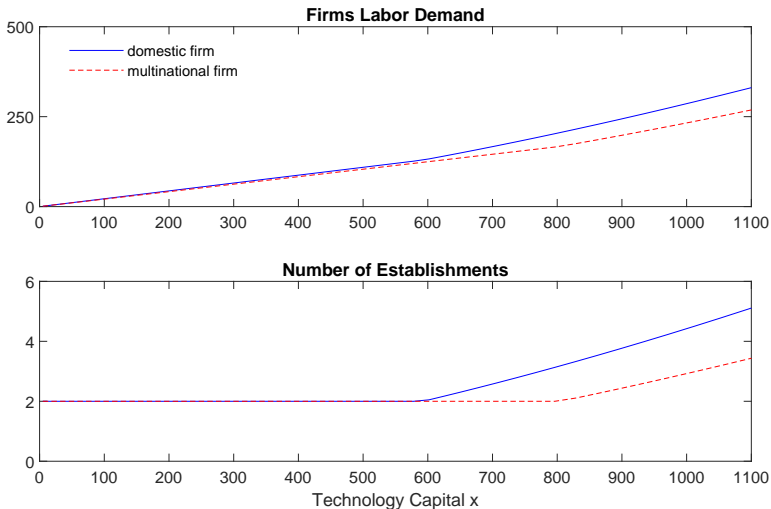
a firm with the technology capital x , chooses between a domestic and a multinational structure by comparing the after-tax profit of each of those options:

$$\pi(x) = \max\{\pi^D(x), \pi^M(x)\}$$

Domestic v.s. Multinational; Comparing Profit and Output



Domestic vs Multinational; Comparing Labor Demand and Number of Est.

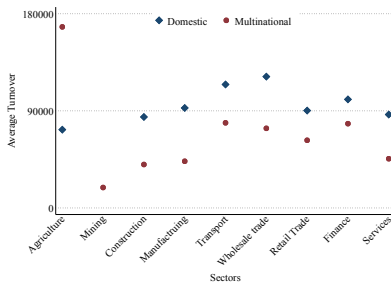
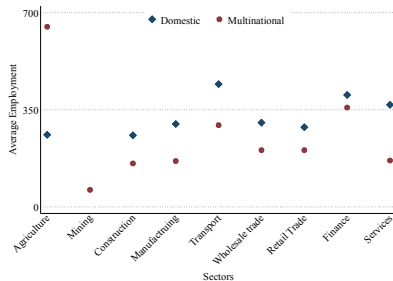
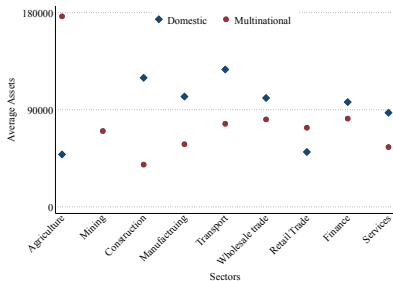


To Sum Up

- ▶ We built a multi-establishment firm model in which firm can choose the location, the number of establishments they want to create, and the size of each establishment.
- ▶ We find that the cost of firms setting tax bill minimization as their objective is a lower production and employment level for the economy
- ▶ Our model can be used for evaluating costly policy proposals that are targeting tax avoidance practices

APPENDIX

Stylized fact 2: ... across almost all sectors



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