Intra-Industry Diffusion of Profit Shifting Strategies

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Motivation

- Multinational enterprises (MNEs) are often accused of large-scale tax avoidance and profit shifting.
  - $\rightarrow$ Globalization, expansion of MNEs, digitalization, development of offshore industries, etc.
- In recent years, these practices have become a major policy concern.
  - $\rightarrow$ Tax scandals, budget deficits, rise of inequalities, pandemic, etc.

- The techniques used by MNEs are well-documented in the literature. However, less is known about the **determinants** of profit shifting.
- Differences in corporate tax rates across countries naturally play a key role.
- What about **spillovers**?

What I do in this paper

- I **empirically** investigate the existence of profit shifting spillovers.

- First, I construct a **rich database** containing information on the
  - financial statements
  - and foreign subsidiaries

  of US-listed companies between 1993 and 2013.

- Next, I carry out an **event-study** and focus on **tax haven foreign direct investments** (FDIs).

- I scrutinize how the probability to own subsidiaries in a tax haven evolves when other firms operating in the **same sector** establish subsidiaries in this tax haven.

Overview of the results

- The average **probability** to report a subsidiary in a specific tax haven is **10 percent higher** when a peer is present in this tax haven.

- The effect grows over time and reaches +40 percent after 5 years.

- The results pass multiple **robustness tests**: estimation methodology, industry and tax haven classification, falsification tests, no pre-existing trends.

- Furthermore, the spillovers are **heterogeneous** across sectors and over time. They are more pronounced
  - in finance and services than in manufacturing,
  - in the 2004-2013 period than in the 1993-2003 period.

- Firms thus replicate the tax avoidance schemes of their peers → **policy implications**.

Related literature

- **Determinants of corporate tax avoidance**: surveys by Alm et al. (2019) and Wang et al. (2019).

- **Profit shifting activities of MNEs**: survey by Beer et al. (2020).

- **Propagation of tax avoidance practices across firms**: Lim et al. (2018), Barrios and Gallemore (2019), Gallemore et al. (2019), and Bauckloh et al. (2021).
  - $\rightarrow$ Common denominator: main focus on (cash) effective tax rates.

- The **contribution** of this paper is three-fold.
  - Accent on one of the most aggressive tax planning methods: profit shifting.
  - Intra-industry dissemination of tax avoidance activities.
  - More disaggregated database (at the firm-*tax haven*-year level) $\rightarrow$ "neater" identification strategy.

Outline of the talk

Outline of the talk

Sources

Compustat

- Consolidated financial statements of publicly listed firms in North America since 1950.
- Sector, assets, sales, pre-tax income, intangibles, employment, etc.
- These companies are few in number but they are the most productive and the most likely to engage in FDIs and profit shifting (Helpman et al., 2004; Jones et al., 2018).

Exhibit 21

- The SEC requires US-listed firms to disclose every year in Exhibit 21 of Form 10-K a list of their worldwide subsidiaries. ▸ Example
- These reports have been electronically filed since 1993 and available on the EDGAR platform.
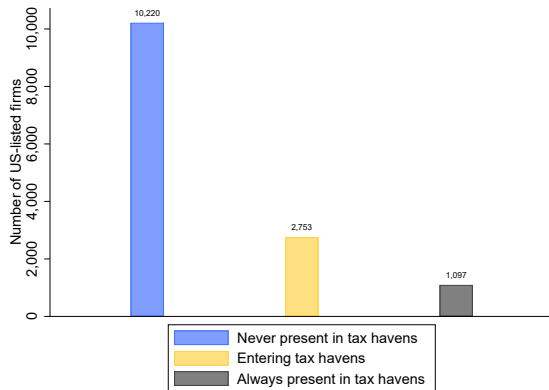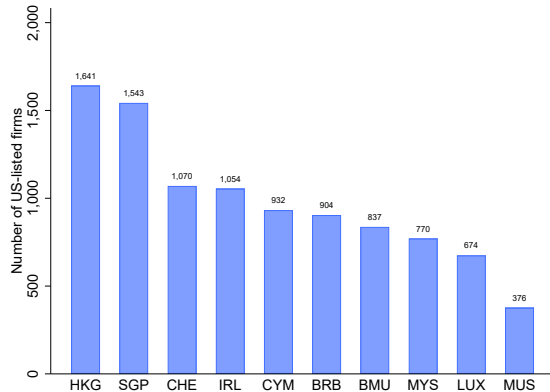- I use a dataset covering the 1993-2013 period.

Sample

- **14,070 firms**, all of which reported one or several subsidiaries at some point inside or outside the US between 1993 and 2013.

- The list of tax havens, based on Hines and Rice (1994) and Dyreng and Lindsey (2009), comprises **50 tax havens**. ▸ List

- Sectors are defined at the **4-digit SIC level**.

Descriptive statistics

(a) Firms' presence in tax havens

Legend:
- Never present in tax havens
- Entering tax havens
- Always present in tax havens

Bar values: 10,220 / 2,753 / 1,097

(b) Top 10 tax havens

HKG	SGP	CHE	IRL	CYM	BRB	BMU	MYS	LUX	MUS
1,641	1,543	1,070	1,054	932	904	837	770	674	376

- The number firms established in tax havens **more than tripled** between 1993 and 2013.
- $\rightarrow$ Beyond data availability, the period is ideal to study the development of profit shifting.

Outline of the talk

Identification strategy

I run the following **linear probability model** with **three-way fixed effects** to examine whether profit shifting activities propagate within sectors:

$$FDI_{i,c,t} \quad = \quad \alpha\,TREAT_{i,c,t} + \mu_{i,t} + \upsilon_{c,t} + \gamma_{i,c} + \epsilon_{i,c,t}$$

- $FDI_{i,c,t}$: dummy equal to 1 if firm i has in year t at least one subsidiary in tax haven c.
- $TREAT_{i,c,t}$: dummy equal to 1 if at least one other firm operating in the same sector owns in year t subsidiaries in tax haven c $\rightarrow$ variable of interest.
- $\mu_{i,t}$: sector- and firm-year determinants of tax avoidance (e.g., productivity and intangibles).
- $\upsilon_{c,t}$: country-year factors influencing tax haven FDIs and profit shifting (e.g., corporate tax rates and secrecy).
- $\gamma_{i,c}$: firm-country time-invariant causes of tax haven FDIs like distance between the headquarter and the tax haven as well as firm-country specific knowledge.
- $\rightarrow$ The effect is **purged of many confounding factors**.

Baseline results

Table 1 – Baseline results

Dependent variable	$FDI_{i,c,t}$
$TREAT_{i,c,t}$	1.35e-3[a]
	(2.74e-4)
Firm-year FEs	Yes
Country-year FEs	Yes
Firm-country FEs	Yes
R^2	0.69
Nb. of obs.	5,514,400

Notes. The standard error, in parentheses, is clustered at the firm-year level. [a]$p <$ 0.01.

- If a peer reports a physical presence in a tax haven, the probability to disclose a subsidiary in this tax haven increases by **0.1 percentage point** all other things being equal.
- Given that the average probability is 1.33 percent, the effect amounts to **+10 percent**.

Sensitivity tests

- **Alternative estimation methodology**: use of a logit model. `▸ Table`

- **Parallel trend assumption**: suggestive evidence. `▸ Graph`

- **Alternative treatment variable**: intensive margin with the number/share of peer firms implanted in tax havens. `▸ Table` `▸ Graph`

- **Alternative classification of tax havens**: different combinations of the 2 lists, exclusion of the largest/central tax havens, elimination of one tax haven at a time. `▸ Table`

- **Alternative industry classification**: sectors with at least 15 firms, 3-digit decomposition. `▸ Table`

- **Falsification test**: each sector is randomly assigned to another sector to check that we really capture intra-industry spillovers. `▸ Table`
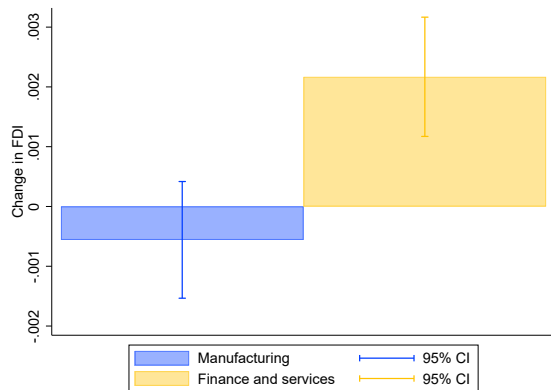
Heterogeneous effects

- The literature documents that profit shifting activities have considerably developed in the **last decades** (Grubert, 2012) and are more intense in **finance** and **services** (Gumpert et al., 2016).
- Question: Do profit shifting spillovers have the same pattern? Yes!

(a) 1993-2003 versus 2004-2013
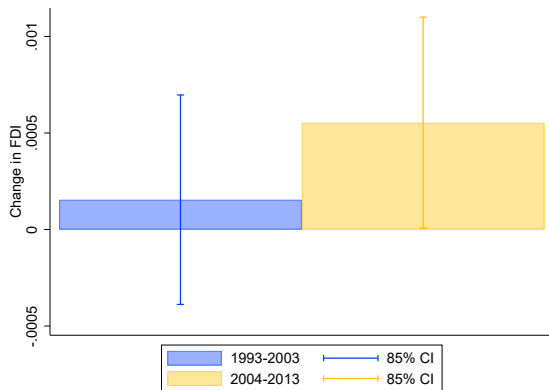
(b) Manufacturing versus finance and services

Outline of the talk

Summary of the findings

- The paper is the first to unveil the existence of **intra-industry spillovers of profit shifting**.

- A firm is more likely to own a subsidiary in a specific tax haven once another firm in the same industry establishes a physical presence in this tax haven.

- It means that firms tend to **duplicate** the tax dodging schemes of their peers.

- From a **policy viewpoint**, it implies that auditing peers of firms accused of profit shifting could help public authorities deter profit shifting.

- More work is now needed to identify the exact **channels** whereby profit shifting knowledge disseminates across MNEs.

Thank you for your attention!

Questions, remarks, and suggestions are welcome:
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Appendix

Exhibit 21

Figure 3 – Non-exhaustive list of the significant subsidiaries reported by Johnson & Johnson in 2011

Name of Subsidiary	Jurisdiction of Organization
U.S. Subsidiaries:	
Acclarent, Inc.	Delaware
ALZA Corporation	Delaware
Alza Development Corporation	California
Alza Land Management, Inc.	Delaware
Animas Corporation	Delaware
Biosense Webster, Inc.	California
Centocor Biologics, LLC	Pennsylvania
Centocor Research & Development, Inc.	Pennsylvania
CNA Development LLC	Delaware
Codman & Shurtleff, Inc.	New Jersey
Cordis Corporation	Florida
Cordis International Corporation	Delaware
Cordis LLC	Delaware
Cougar Biotechnology, Inc.	Delaware
Crescendo Pharmaceuticals Corporation	Delaware
Crucell Holdings Inc.	Delaware
DePuy, Inc.	Delaware
DePuy Mitek, Inc.	Massachusetts
DePuy Orthopaedics, Inc.	Indiana
International Subsidiaries:	
Apsis	France
Beijing Dabao Cosmetics Co., Ltd.	China
Berna Biotech Korea Corporation	Korea
Berna Rhein B.V.	Netherlands
Biosense Webster (Israel) Ltd.	Israel
Cilag Advanced Technologies GmbH	Switzerland
Cilag AG	Switzerland

Tax havens

Table 2 – List of tax havens • Back

Andorra, Anguilla, Antigua and Barbuda, Aruba, Bahamas, Bahrain, Barbados, Belize, Bermuda, British Virgin Islands, Cayman Islands, Cook Islands, Costa Rica, Cyprus, Dominica, Gibraltar, Grenada, Guernsey, Hong Kong, Ireland, Isle of Man, Jersey, Jordan, Lebanon, Liberia, Liechtenstein, Luxembourg, Macau, Malaysia, Maldives, Malta, Marshall Islands, Mauritius, Monaco, Montserrat, Nauru, Netherlands Antilles, Niue, Panama, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Saint Martin, Samoa, San Marino, Seychelles, Singapore, Switzerland, Turks and Caicos Islands, and Vanuatu.
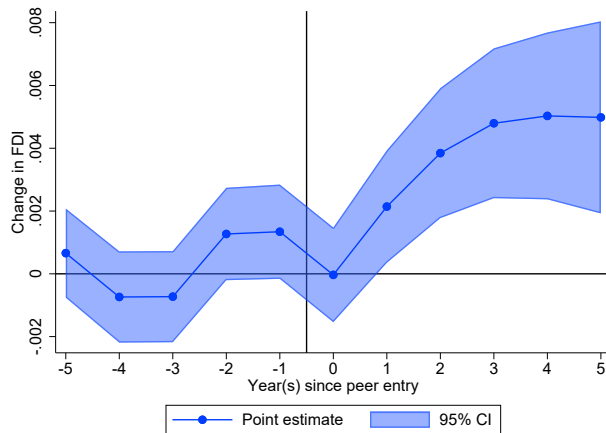

Sensitivity tests

Table 3 – Sensitivity tests ▸ Back

Dependent variable	$FDI_{i,c,t}$
Panel A: Binary model	
$TREAT_{i,c,t}$	0.13[b]
Panel B: Treatment variable	
$TREAT^C_{i,c,t}$	1.95e-3[a]
$SHARE_{i,c,t}$	0.11[a]
Panel C: Classification of tax havens	
$TREAT^{HR}_{i,c,t}$	9.33e-4[a]
$TREAT^{DL}_{i,c,t}$	1.32e-3[a]
$TREAT^{DL \cap HR}_{i,c,t}$	8.95e-4[a]
$TREAT^{EX6}_{i,c,t}$	1.53e-3[a]
Panel D: Industry definition	
$TREAT^{>15}_{i,c,t}$	1.74e-3[a]
$TREAT^{3-digit}_{i,c,t}$	1.23e-3[a]
Panel E: Falsification test	
$TREAT^{random}_{i,c,t}$	1.74e-4
Firm-year FEs	Yes
Country-year FEs	Yes
Firm-country FEs	Yes

Notes. Standard errors are clustered at the firm-year level and not reported for space. [b] $p < 0.05$, [a] $p < 0.01$.
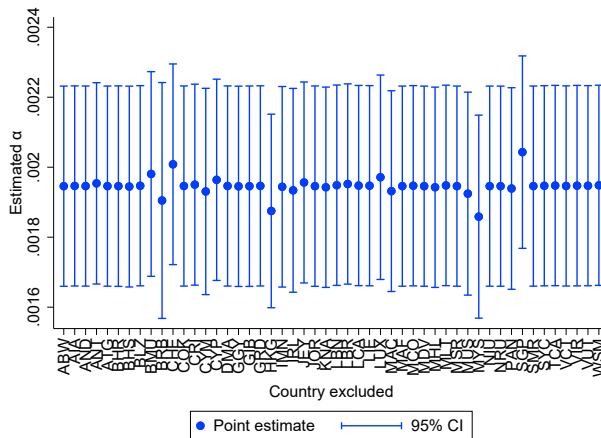
Sensitivity tests

Notes. This figure outlines how $FDI_{i,c,t}$ varies before and after the treatment. Standard errors are clustered at the firm-year level.

Sensitivity tests

Figure 5 – Dropping one tax haven at a time ▸ Back

Notes. This figure show how $\hat{\alpha}$ varies when we exclude one tax haven at a time. Standard errors are clustered at the firm-year level.