Profit Shifting of Multinational Corporations Worldwide

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The effects of profit shifting of multinational corporations (MNCs)

- Lower government revenues
- Uneven level playing field
- Globalisation perceived as inequitable
- Illicit financial flows and SDG target 16.4
Overview

- The origin and destination of profit shifting for many countries
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- Data: Country-by-country reporting (CBCR) by MNCs for many countries
- Methodology: A logarithmic function to model the extremely non-linear relationship between profits and tax rates
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- Data: Country-by-country reporting (CBCR) by MNCs for many countries
- Methodology: A logarithmic function to model the extremely non-linear relationship between profits and tax rates

1. Scale
2. Tax Havens
3. Headquarters
4. Low-income countries
Contributions to the existing literature (and policy debates)

- Methodology: Hines and Rice (1994), Dowd et al. (2017)
- Data: Clausing (2020), Garcia-Bernardo, Janský, and Tørsløv (2021), Fuest, Hugger, et al. (2022), Garcia-Bernardo, Janský, and Zucman (2022)

1. Scale: Crivelli et al. (2016), Álvarez-Martínez et al. (2021), Tørsløv et al. (2022), Bilicka (2019), Dharmapala and Riedel (2013)

2. Tax havens: Zucman (2015), Guvenen et al. (2022)

3. Headquarters: Dischinger et al. (2014), Wright and Zucman (2018)

4. Low-income countries: Fuest, Hebous, et al. (2011), Janský and Palanský (2019), Johannesen et al. (2020)
The country-by-country reporting data

- Aggregated large MNCs’ profits and taxes in around 190 countries
- Profit-making affiliates for effective tax rates (ETRs) and both profit- and loss-making affiliates for real operations of MNCs
- The 2017 US CBCR data
- The 2017 OECD CBCR data with data imputations to further improve coverage
- The data are a major step forward, albeit imperfect
- We make a number of corrections for double counting in the data
- Double counting of some profits; estimated at 34-59% for US MNCs (Garcia-Bernardo, Janský, and Zucman, 2022)
Estimating double counting in the CBCR data of US MNCs

| Year | Compustat Profits N | CBCR Profit (inc. Stateless) | CBCR Profit (exc. Stateless) | N | Final Profit | Double count (inc. Stateless) | Double count (exc. Stateless) | Double count (inc. USD billion) | Double count (exc. USD billion) | Orbis (N = 1,234; Horst & Curatolo 1,221; N = 1,349) | Profit-like | CFC |
|------|---------------------|-------------------------------|-------------------------------|----|--------------|-----------------------------|-------------------------------|-------------------------------|-------------------------------|--------------------------------|------------|-----|
| Dom  | 2017 641 1.325 | 1.180 | 1.180 | 750 | 1.428 | 765 | 54% | 54% | 415 | 415 | 567 | 473 | 706 |
|      | 2018 684 1.323 | 1.296 | 1.296 | 893 | 1.431 | 911 | 42% | 42% | 385 | 385 |
| For  | 2016 450 1.313 | 1.116 | 918 | 475 | 1.415 | 486 | 41% | 246 | 42 | 669 | 570 |
|      | 2017 551 1.325 | 842 | 638 | 584 | 1.428 | 596 | 39% | 458 | 260 | 694 | 580 |
|      | 2018 617 1.345 | 1.116 | 918 | 647 | 1.453 | 658 | 70% | 331 | 166 | 671 | 547 |
|      | 2019 560 1.323 | 933 | 768 | 590 | 1.431 | 602 | 55% | 331 | 166 | 671 | 547 |
| Total| 2017 1.342 1.444 | 2.022 | 1.818 | 1.575 | 1.334 | 1.444 | 1.361 | 49% | 47% | 661 | 457 | 1.317 | 1.450 |
|      | 2018 1.493 1.468 | 2.604 | 2.406 | 2.041 | 1.489 | 1.468 | 1.514 | 72% | 59% | 891 | 812 | 1.418 |
|      | 2019 1.490 1.443 | 2.229 | 2.064 | 1.698 | 1.483 | 1.443 | 1.513 | 47% | 36% | 716 | 551 | 1.502 |

Source: Garcia-Bernardo, Janský, and Zucman (2022)
Methodology

- Tax semi-elasticity model: linear, quadratic and logarithmic
- (Also: reallocation of the shifted profit and misalignment model)
Tax semi-elasticity

- The most common model (Hines and Rice, 1994)

\[
\log (\pi_i) = \beta_0 + \beta_1 \log (K_i) + \beta_2 \log (L_i) + \beta_3 (\tau_i) + \beta_4 \tau_i^2 + \epsilon,
\]

- For simplicity

\[
\log (\pi_i) \propto \beta_3 (\tau_i)
\]
Tax semi-elasticity

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  \]
  Profits booked \quad Capital \quad Labor \quad Tax rate \quad Controls

- For simplicity
  \[
  \log (\pi_i) \propto \beta_3 (\tau_i)
  \]
  Profits booked \quad Tax rate

- Improvement (Dowd et al., 2017; Hines and Rice, 1994)
  \[
  \log (\pi_i) \propto \beta_3 (\tau_i) + \beta_4 (\tau_i)^2
  \]
  Profits booked \quad Tax rate \quad Tax rate squared
**Tax semi-elasticity**

- The most common model (Hines and Rice, 1994)
  \[
  \log(\pi_i) = \beta_0 + \beta_1 \log(K_i) + \beta_2 \log(L_i) + \beta_3(\tau_i) + \beta_4(\tau_i)^2 + \epsilon,
  \]
  where: 
  - \(\pi_i\): Profits booked
  - \(K_i\): Capital
  - \(L_i\): Labor
  - \(\tau_i\): Tax rate
  - \(\epsilon\): Controls

- For simplicity
  \[
  \log(\pi_i) \propto \beta_3(\tau_i)
  \]
  where: 
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  where: 
  - \(\pi_i\): Profits booked
  - \(\tau_i\): Tax rate
  - \(\beta_4(\tau_i)^2\): Tax rate squared

- Empirical observation: The model still does not fit the data very well
Our model: Logarithmic semi-elasticity

\[
\log (\pi_i) \propto \beta_3 (\tau_i) + \beta_4 \log (t + \tau_i)
\]

Profits booked \hspace{1cm} Tax rate \hspace{1cm} Logarithmic tax rate
Results for ETR 0.1% (Jersey)

Increase in profits (1 = ETR 25%)

- Logarithmic
- Quadratic
- Linear

Increase: 295.1 times
Increase: 12.4 times
Increase: 2.7 times
### Top destinations of profit shifting: Percentage of profits shifted into countries with at least $10\text{ bn} \text{ reported using the 2017 US data}$

| Country          | ETR | Profits (+) | Profits (all) | Misal. | Log   | Quad | Linear |
|------------------|-----|-------------|---------------|--------|-------|------|--------|
| Jersey           | 0.1%| $12.8\text{ bn}$ | $10.5\text{ bn}$ | 97.3%  | 99.4% | 89.0%| 54.5%  |
| Cayman Islands   | 0.6%| $56.1\text{ bn}$ | $52.7\text{ bn}$ | 98.8%  | 97.6% | 88.3%| 53.9%  |
| Other Europe     | 0.8%| $13.6\text{ bn}$ | $0.0\text{ bn}$ | -      | 96.5% | 87.9%| 53.6%  |
| Luxembourg       | 1.0%| $54.4\text{ bn}$ | $22.4\text{ bn}$ | 92.0%  | 95.2% | 87.5%| 53.2%  |
| Puerto Rico      | 1.6%| $31.7\text{ bn}$ | $30.9\text{ bn}$ | 94.9%  | 91.8% | 86.4%| 52.3%  |
| Bermuda          | 1.7%| $31.9\text{ bn}$ | $29.2\text{ bn}$ | 98.5%  | 91.4% | 86.2%| 52.2%  |
| Other America    | 2.4%| $12.2\text{ bn}$ | $-0.1\text{ bn}$ | -      | 86.4% | 84.7%| 51.1%  |
| Singapore        | 5.0%| $51.1\text{ bn}$ | $49.2\text{ bn}$ | 78.2%  | 68.6% | 78.4%| 46.9%  |
| Switzerland      | 6.1%| $53.3\text{ bn}$ | $44.4\text{ bn}$ | 79.4%  | 61.3% | 75.3%| 45.0%  |
| Netherlands      | 7.5%| $63.0\text{ bn}$ | $36.0\text{ bn}$ | 79.2%  | 51.9% | 70.7%| 42.4%  |
| United Kingdom   | 11.6%| $81.7\text{ bn}$ | $18.1\text{ bn}$ | -      | 29.8% | 55.2%| 34.5%  |
| Hong Kong        | 12.3%| $12.2\text{ bn}$ | $11.1\text{ bn}$ | 48.0%  | 26.8% | 52.3%| 33.1%  |
| Ireland          | 13.8%| $30.8\text{ bn}$ | $26.5\text{ bn}$ | 54.3%  | 20.9% | 45.8%| 29.9%  |
| Canada           | 15.2%| $40.1\text{ bn}$ | $31.7\text{ bn}$ | 7.5%   | 15.8% | 39.2%| 26.6%  |
| Australia        | 15.3%| $18.1\text{ bn}$ | $14.8\text{ bn}$ | 27.8%  | 15.6% | 38.9%| 26.4%  |
| Japan            | 20.5%| $25.5\text{ bn}$ | $24.9\text{ bn}$ | 44.9%  | 3.8%  | 15.6%| 13.2%  |
| China            | 23.0%| $28.5\text{ bn}$ | $26.8\text{ bn}$ | -      | 1.1%  | 6.1% | 6.1%   |
| Germany          | 24.9%| $19.8\text{ bn}$ | $6.8\text{ bn}$ | -      | -     | -   | 0.4%   |
| Brazil           | 25.5%| $12.0\text{ bn}$ | $5.9\text{ bn}$ | -      | -     | -   | -      |
| Nicaragua        | 26.7%| $17.7\text{ bn}$ | $0.1\text{ bn}$ | -      | -     | -   | -      |
| India            | 33.0%| $13.7\text{ bn}$ | $11.8\text{ bn}$ | -      | 3.3%  | -   | -      |
| United States    | 42.8%| $602.8\text{ bn}$ | $542.8\text{ bn}$ | -      | 16.9% | 27.0%| -      |
Share of profit shifted into countries, grouped by the effective tax rates

| ETR   | Misalignment | Logarithmic | Quadratic | Linear |
|-------|--------------|-------------|-----------|--------|
| <5%   | 40.0%        | 40.6%       | 33.5%     | 31.6%  |
| 5-10% | 30.0%        | 43.1%       | 40.6%     | 39.8%  |
| 10-15%| 15.4%        | 11.8%       | 16.4%     | 17.2%  |
| 15-25%| 9.7%         | 2.7%        | 4.1%      | 6.1%   |
| ≥25%  | 4.9%         | 1.7%        | 5.4%      | 5.3%   |
Profits shifted in and out of countries

![Chart showing profits shifted in and out of countries]
Tax revenue loss as a percentage of total revenue

High income

Upper middle income

Lower middle income

Low income

Misalignment

Losses Gains

8 6 4 2 0 2 4 6 8
Tax Revenue Loss (% Total Tax Revenue)

Misalignment

Losses Gains

7.2%

Logarithmic model

Losses Gains

-7.2%

-2.7%

8 6 4 2 0 2 4 6 8
Tax Revenue Loss (% Total Tax Revenue)

Misalignment

Losses Gains

-2.1%

13.0%

-6.4%

Logarithmic model

Losses Gains

-1.9%

11.7%

-1.9%

7.5
 5.0
 2.5
 0.0 2.5 5.0 7.5
Tax Revenue Loss (% Total Tax Revenue)

Misalignment

Losses Gains

-7.5
 5.0
 2.5
 0.0 2.5 5.0 7.5
Tax Revenue Loss (% Total Tax Revenue)

Logarithmic model
# The scale of profit shifting and revenue losses (billion USD)

| Study                                      | Profit shifting | Revenue loss | Data type | Country-level | Countries | Data       |
|--------------------------------------------|-----------------|--------------|-----------|---------------|-----------|------------|
| Cobham and Janský (2018)                   | -               | 90           | Revenue   | Yes           | 102       | 2013       |
| IMF's Crivelli et al. (2016)               | -               | 123          | Revenue   | No            | 173       | 2013       |
| Keen et al. (2014)                         | -               | 180          | Revenue   | Yes           | 46        | 2012       |
| OECD’s Johansson et al. (2017)             | -               | 100-240      | Orbis     | No            | 46        | 2010       |
| Fuest, Greil, et al. (2022)                | 271             | 104          | CBCR      | No            | -         | 2019       |
| Janský and Palanský (2019)                 | 420             | 125          | FDI       | Yes           | 79        | 2016       |
| UNCTAD’s Bolwijn et al. (2018)             | 700             | 200          | FDI       | No            | 72        | 2012       |
| Bratta et al. (2021)                       | 786             | 217          | CBCR      | No            | -         | 2017       |
| **This paper**                             | **862-867**     | **177-257**  | **CBCR**  | **Yes**       | **214**   | **2017**   |
| Tørsløv et al. (2022)                      | 946             | 243          | FDI       | Yes           | 57        | 2018       |
| Wier and Zucman (2022)                     | 969             | 247          | FDI       | Yes           | 57        | 2019       |
| Clausing (2016)                            | 1076            | 279          | FDI       | Yes           | 25        | 2012       |
| Tax Justice Network (2021)                 | 1163-1334       | 312          | CBCR      | Yes           | 200       | 2017       |
Summary of findings

- Bigger than previously estimated
- Low effective tax rates
- Low-income countries more hardly hit
- Future research: better data, CBCR and returns
- Implications for a global corporate tax reform
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