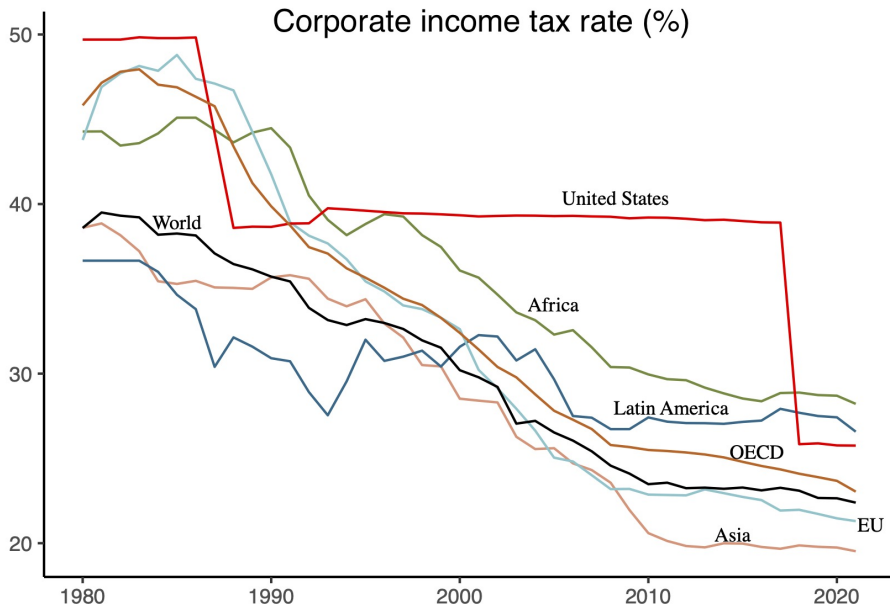# International Tax Competition and Profit Shifting

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Master APE and PPD – Public Economics
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The race-to-the-bottom with corporate income tax rates

Corporate income tax rate (%)

Outline

1. Corporate profit shifting

   ▷ What it is

   ▷ Different data sources used to measure it

   ▷ Main findings from the literature

2. Tax competition for capital: theory

3. Ongoing policy initiatives and their effects

Corporate Profit Shifting to Tax Havens

What is profit shifting?

Multinationals are taxed on profits booked in each country $\rightarrow$ incentive to book profits in tax havens

Three ways to shift profits to tax havens (see, eg, Zucman, 2014, for non-technical exposition):

▷ Manipulating intra-group import and export prices (transfer prices)

▷ Intra-group borrowing

▷ Locating intangibles in tax havens

Transfer price manipulations

How transfer pricing works:

▷ Subsidiaries of a same group are supposed to trade as if unrelated (arm's length pricing)

▷ In practice, relatively easy to manipulate transfer prices, and reference prices sometimes do not exist

▷ Sizable evidence that intra-group prices differs from arm's length prices (Clausing 2003)

▷ Intra-group price manipulation also a problem in purely domestic context (tunneling)

Strategic location of debt and intangibles

▷ Booking assets in havens → firms can deduct income in high-tax countries and earn income in havens

  ▷ Intra-group debt

  ▷ Intangible assets

▷ Transfer of intellectual property can be done through outright sale (Google in 2003)

▷ Or "cost sharing:" offshore subsidiary contributes part of the cost of developing intellectual property

Data & methods to study profit shifting

1. Accounting micro-data (Orbis)

▷ Large literature studies profit shifting using Orbis micro-data (eg, Dharmapala & Riedel, 2013)

▷ Profit shifting is estimated by running
$$log(\pi_{ic}) = \alpha + \beta(1 - \tau_c) + \delta Firm_i + \gamma Country_c + \epsilon_{ic}$$

▷ A positive $\hat{\beta}$ is interpreted as evidence of profit shifting

▷ Different measures of incentives to shift (can be gap with parent, gap with other subsidiaries, etc.)

Limits of Orbis

Limited public data on profits booked by firms in low-tax countries:

▷ Orbis provides accurate information about the global consolidated profits of multinationals

▷ But relies on info in public business registries for dis-aggregated country-level profits

▷ No or very limited profit data available for countries with no public registry or no public income info

More comprehensive data sources

2. Foreign affiliates statistics

▷ Census-type surveys of the activities of multinational companies

▷ Annual since 1982 in the US (e.g., Wright and Zucman, 2018; Guvenen et al., 2022)

▷ Similar data recently released in other countries → used by Tørsløv et al. (2023) to build global estimates

Tørsløv et al. (2023) methodology

Idea: study profitability of local (l) vs. foreign (f) firms across the world

Profitability $\pi =$ ratio of profits to wages

Striking global pattern:

▷ Foreign firms usually have lower profitability than local firms ($\pi_f < \pi_l$)...

▷ ... Except in tax havens: hugely higher profitability ($\pi_f >> \pi_l$)

In tax havens, foreign firms are much more profitable than local firms

Pre-tax corporate profits
(% of compensation of employees)

■ Foreign firms
■ Local firms
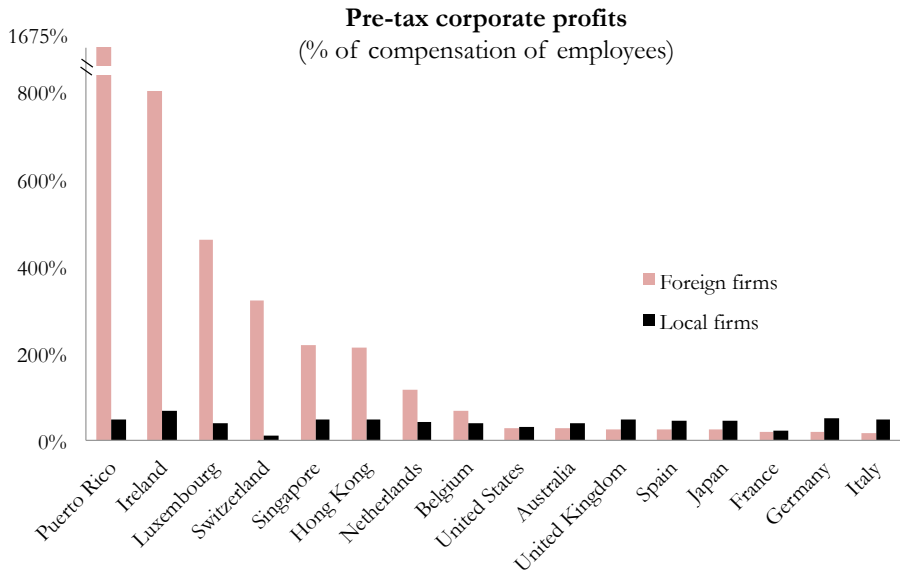
In tax havens, foreign firms are much more profitable than local firms
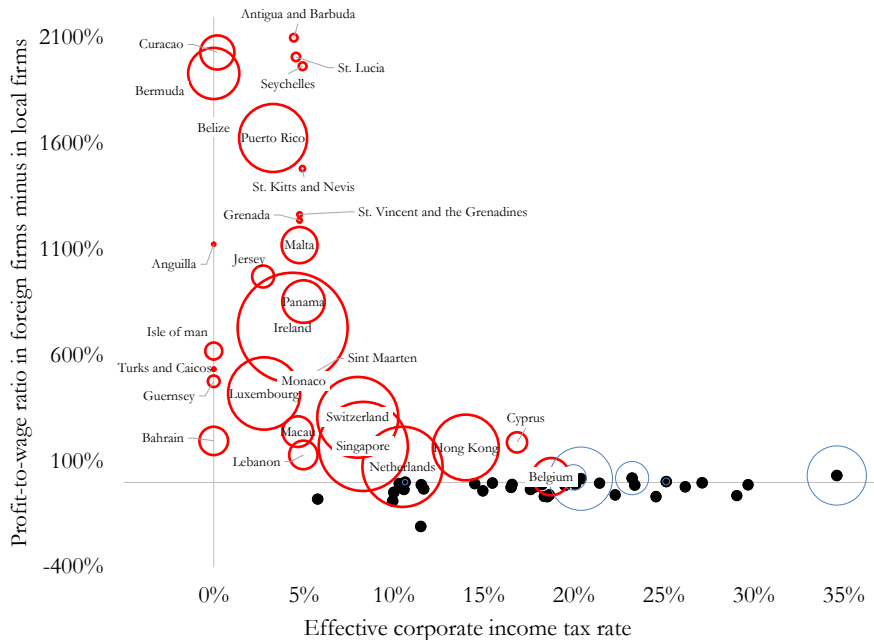
Benchmark estimate of profits shifted to tax havens

Set π_f in havens equal to π_l in havens

- ▷ Flexible: e.g., allows havens to have π higher than other countries

- ▷ Easy to track for policymakers

- ▷ Robust

    - ▷ Vary π_l in havens → little difference

    - ▷ Sectoral composition → $\pi_f >> \pi_l$ within sector

# Result: About 36% of multinational profits are shifted to tax havens

In this dataset, tax havens are defined as countries with excessive profitability of multinational firms and where the effective corporate tax rate is typically below 15 per cent

Where are the missing profits?

Corporate tax revenue `lost` as a share of corporate tax revenue collected (in %) | 2020

0 - 4   4 - 8   8 - 12   12 - 16   > 16   Tax havens   No data

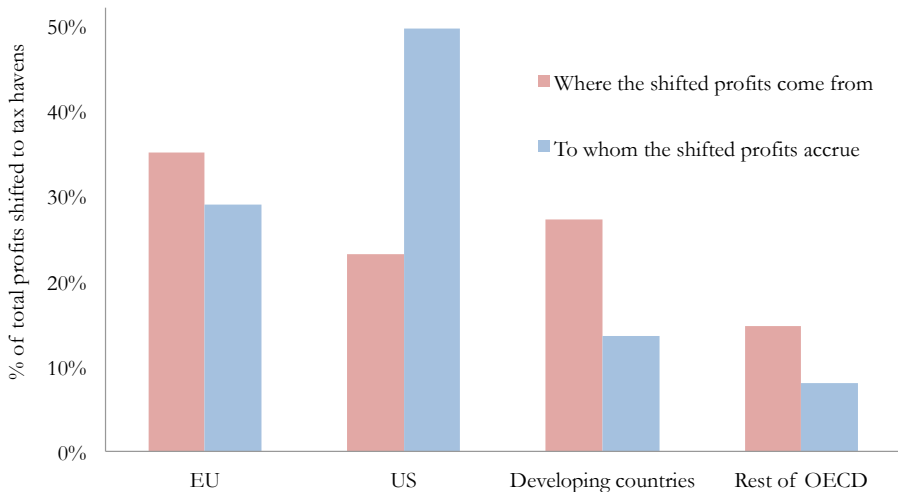Data from the Atlas of the Offshore world:
https://atlas-offshore.world
Based on Tørsløv et al. (2023), updated
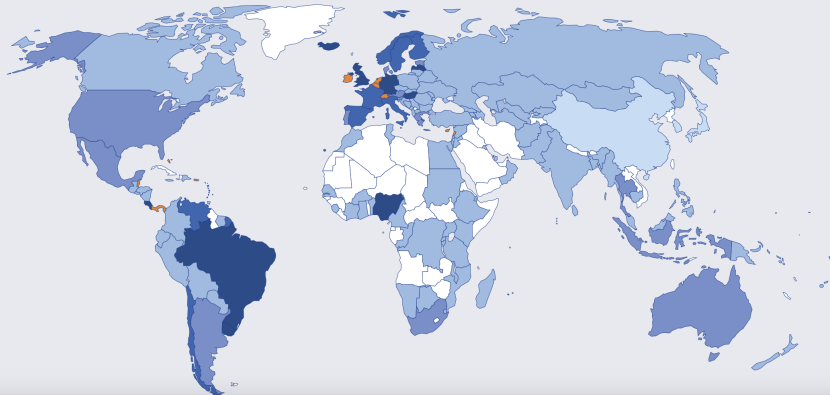
Where do profits come from? Follow the money in balances of payments of havens

Current account balance
(% of national income)
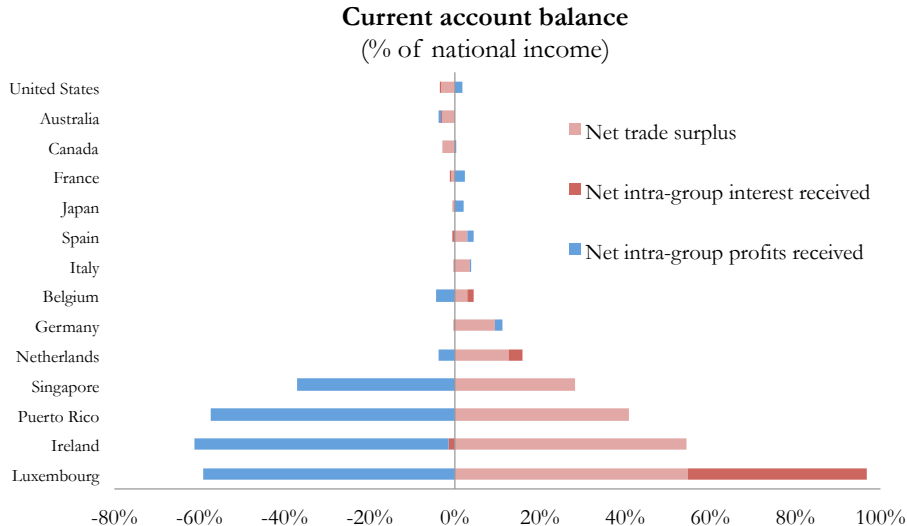
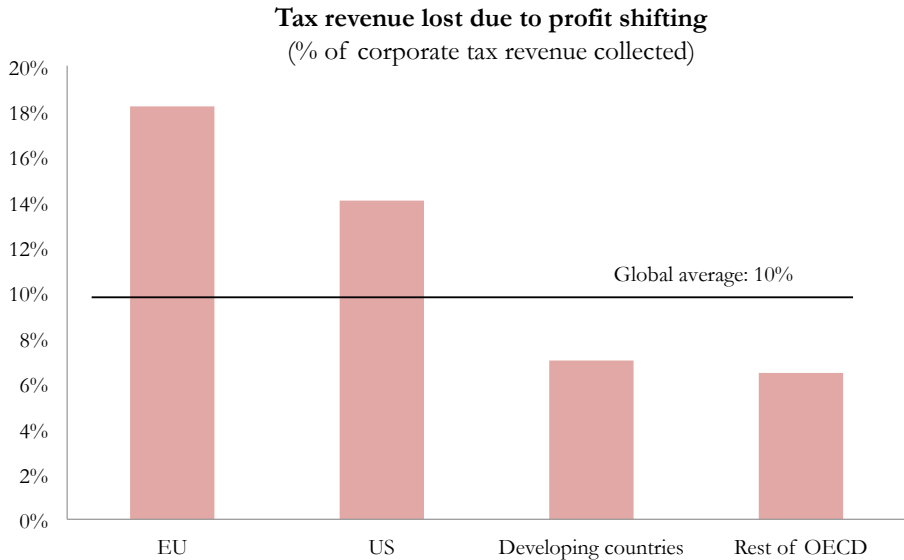# Allocating the shifted profits

Allocating the profits shifted to tax havens

Corporate tax losses caused by profit shifting

Tax revenue lost due to profit shifting
(% of corporate tax revenue collected)

Other data to study corporate profit shifting: tax data

3. Corporate income tax data

▷ Bilicka (2019) study of corporate tax returns in UK

▷ Profit/asset of foreign firms in the UK = only half profit/asset of comparable local firms

▷ Bunching at zero profit by foreign firms (much larger in tax data than accounting data)

Tax avoidance by foreign multinationals in the UK

Panel A. Foreign multinational subsidiaries
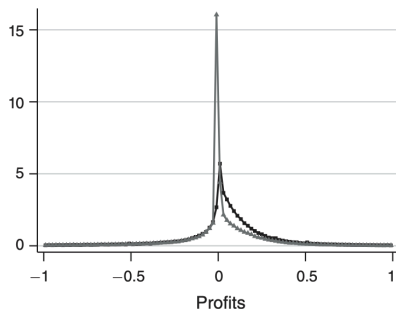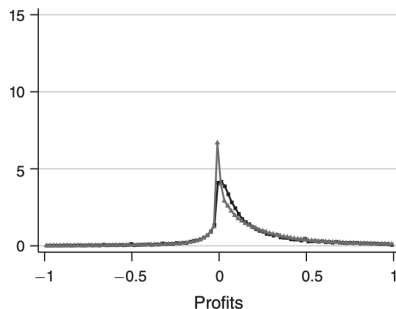
Panel B. Domestic standalones

FIGURE 2. DISTRIBUTIONS OF TAXABLE AND ACCOUNTING PROFITS: COMPARISONS

Notes: Distribution of the ratios of taxable profits (including trading losses) from HMRC and profit and loss before taxes from FAME scaled by total assets, propensity score matched sample with non-missing accounting profits data, 2000–2014. Gray line shows distribution of the ratio of taxable profits to total assets, while the black line shows the distribution of the ratio of accounting profits to total assets.

Sources: Merged HMRC and FAME data

Other data to study corporate profit shifting: the new frontier

4. Country-By-Country Reports

▷ New harmonized tax reporting, one of the main outcomes of OECD BEPS process

▷ Automatically exchanged between tax authorities, but limited public micro-data so far (only tabulations)

▷ Early years need adjustments for double-counting

▷ Adjusted data show same magnitudes as in foreign affiliates stats (US: Garcia-Bernardo et al., 2022)

Key resource: EU Tax Observatory country-by-country data explorer
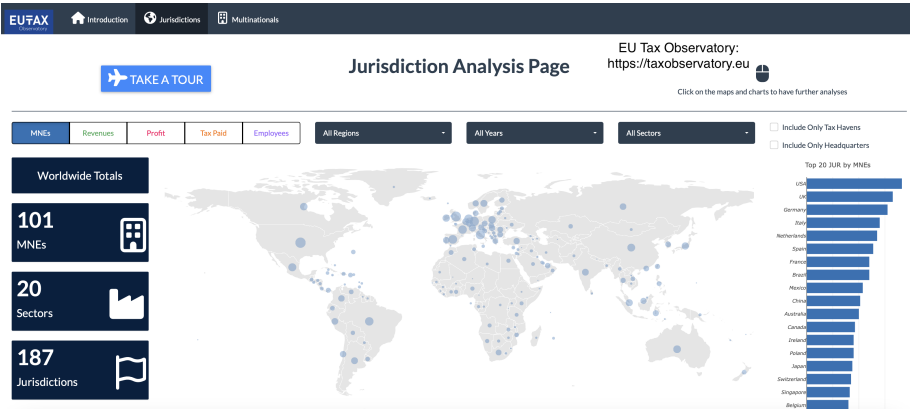
International Tax Competition: Basic Theory

Tax competition for capital

Even if profit shifting was impossible (no tax evasion), firms could still move production to low-tax countries

What are the costs of this international tax competition?

▷ Standard model: tax competition between local governments

▷ Main insights carry to international tax competition

▷ Key difference: Federal government can help coordinate

▷ By contrast, current form of globalization lacks mechanisms for international tax coordination

Zodrow and Mieszkowski (1986) and Wilson (1986)

▷ n countries i with output per unit of labor $y_i = f_i(k_i)$

▷ Labor supplied inelastically by pop h_i (immobile)

▷ Source taxes on capital at rate $t_i \rightarrow t_i k_i$ in revenue

▷ Capital-owners can invest wherever they want $\rightarrow$ after-tax return to capital has to be the same everywhere: $f_i'(k_i) - t_i = \rho \quad \forall i$

▷ Denote $\bar{k}_i$ the per capita wealth of country i (domestic capital plus net foreign capital)

▷ Consumer welfare
$$W_i = f_i(k_i) - f_i'(k_i)k_i + \rho \bar{k}_i + G_i(t_i k_i)$$

Welfare maximization

▷ Government chooses tax rate to maximize welfare, taking tax rates of all other countries as given.

▷ Assume t_i increases. Capital moves out of i to other countries until we're back to $f_i'(k_i) - t_i = \rho$ for all i

▷ Domestic capital falls in i, rises elsewhere and ρ falls

▷ FOC is:
$$\frac{\partial W_i}{\partial t_i} = -f_i''(k_i)k_i\frac{\partial k_i}{\partial t_i} + G_i'(t_ik_i)\left(k_i + t_i\frac{\partial k_i}{\partial t_i}\right) + \frac{\partial \rho}{\partial t_i}\bar{k}_i = 0$$

▷ Gov weighs the reduction in wage, increase in revenue, and reduced net income on wealth

Symmetric Nash equilibrium in pure strategies

▷ FOC defines best response function $t_i(t_{-i})$ relating gov maximizing tax rate to tax rates t_{-i} set by all others

▷ The intersection of the best responses $t_i(t_{-i})$ characterizes an interior Nash equilibrium

▷ Key question: is the equilibrium socially optimum?

▷ Answer: generally, no. The Nash equilibrium is not Pareto efficient

$\rightarrow$ International tax competition leads to sub-optimally low tax rates

Nash equilibrium is Pareto dominated: proof

▷ Consider how small increases in tax rate $dt_i = dt$ by all countries would affect welfare in country i at the Nash equilibrium

▷ This reduces ρ by dt and leaves total capital and its allocation unchanged, so
$dW_i = [(k_i - \bar{k}_i)f_i''(k_i) - G_i'(t_i k_i)t_i]\frac{\partial k_i}{\partial t_i}dt$

▷ If countries are identical (same pop, prod function, preferences) then in equilibrium $k_i = \bar{k}_i = \bar{k}$ and:

$$dW_i = -G_i'(t_i k_i)t_i\frac{\partial k_i}{\partial t_i}dt > 0$$

▷ All countries would benefit from $\uparrow$ in all tax rates

Asymmetric equilibrium

▷ Country i gains from dt iff $(k_i - \bar{k}_i)f_i'' - G_i'(t_ik_i)t_i < 0$.

▷ This is always the case when $k_i > \bar{k}_i \rightarrow$ for capital importers , it's always good to have a coordinated increase in corporate taxes

▷ For capital exporters, it's unclear

▷ Depends, e.g., on how far they are from optimal provision of public goods

▷ See Keen and Konrad (HPE, 2013)

Effects of Policies

# An issue at the top of the international policymaking agenda

The last decade has seen the emergence of new forms of international coordination:

▷ BEPS process to harmonize tax rules

▷ Agreement on a 15% minimum tax for multinational profits (OECD "two-pillar" solution)
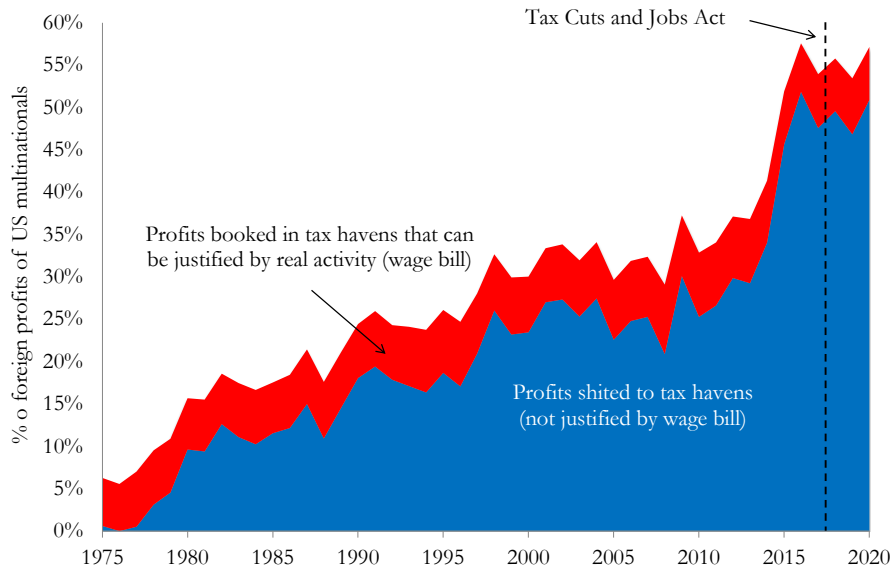
Are these policies up to the challenges? If not, what else is needed?

Long-run dynamics of global profit shifting (Wier and Zucman, 2023)

Foreign profits shifted to tax havens and corporate tax revenue loss, 1975-2019
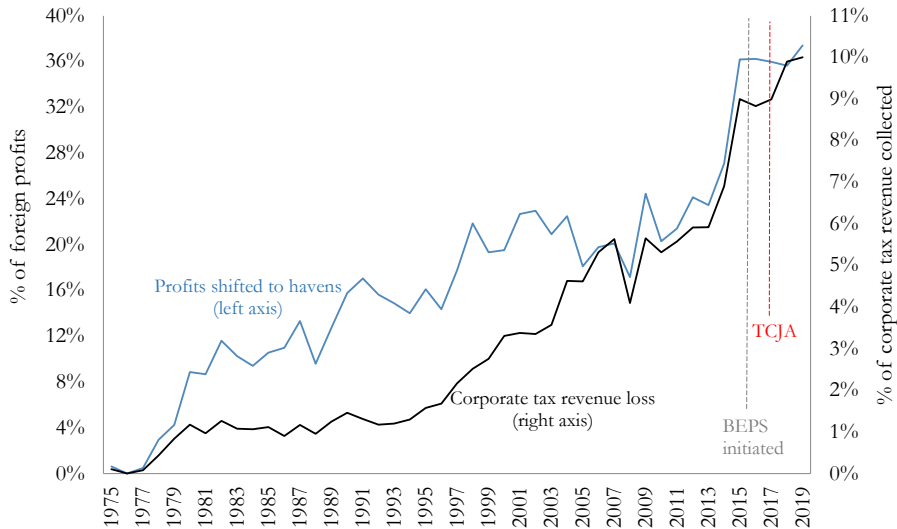
Long-run profit shifting trends for US multinationals

US vs. non-US multinationals

Profit shifting estimates: US vs. Non-US multinationals

Billions of current US$	2015	2016	2017	2018	2019	2020
All multinationals						
Foreign profits	1,703	1,926	2,203	2,526	2,284	
Profits shifted to tax havens	616	722	837	1,011	858	
as a % of foreign profits	**36%**	**38%**	**38%**	**40%**	**38%**	
US multinationals						
Foreign profits	572	585	677	723	729	622
as a % of foreign profits of all multinationals	34%	30%	31%	29%	32%	
Profits shifted to tax havens	261	303	322	358	342	316
as a % of profits shifted by all multinationals	42%	42%	38%	35%	40%	
as a % of foreign profits of US multinationals	**46%**	**52%**	**48%**	**50%**	**47%**	**51%**
Non-US multinationals						
Foreign profits	1,131	1,341	1,526	1,803	1,555	
Profits shifted to tax havens	355	419	515	652	516	
as a % of foreign profits of non-US multinationals	**31%**	**31%**	**34%**	**36%**	**33%**	

The global minimum tax

2021: commitments by about 140 countries to apply a 15% minimum effective tax on country-by-country profits

An important agreement:

▷ First time an agreement puts a floor to tax rates

▷ Could reduce shifting to zero-tax, substance-less havens…

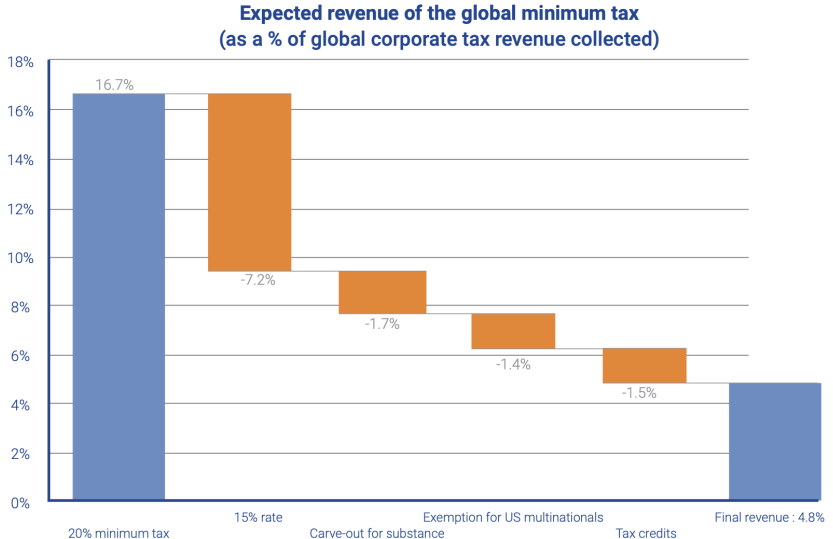▷ … Unless tax havens offset taxes with tax credits

Limitations

Initially presented as a way to "end the race to the bottom", the agreement in fact embraces tax competition

▷ Carve-out for substance: up to 8% of tangible assets + 10% of payroll can be excluded

▷ This encourages firms to move production to low-tax places

▷ Underlying philosophy: tax competition is legitimate, any rate (if there is substance) is acceptable

Revenue effects of the global minimum tax

Figure 3
Source: EU Tax Observatory, "Global Tax Evasion Report 2024"
The weakening of the global minimum tax

Expected revenue of the global minimum tax
(as a % of global corporate tax revenue collected)

- 20% minimum tax: 16.7%
- 15% rate: -7.2%
- Carve-out for substance: -1.7%
- Exemption for US multinationals: -1.4%
- Tax credits: -1.5%
- Final revenue : 4.8%

The concentration of corporate equity ownership: the case of the United States

Figure 2: Share of pre-tax income earned vs. share of equity wealth owned by the top 1% pre-tax income earners
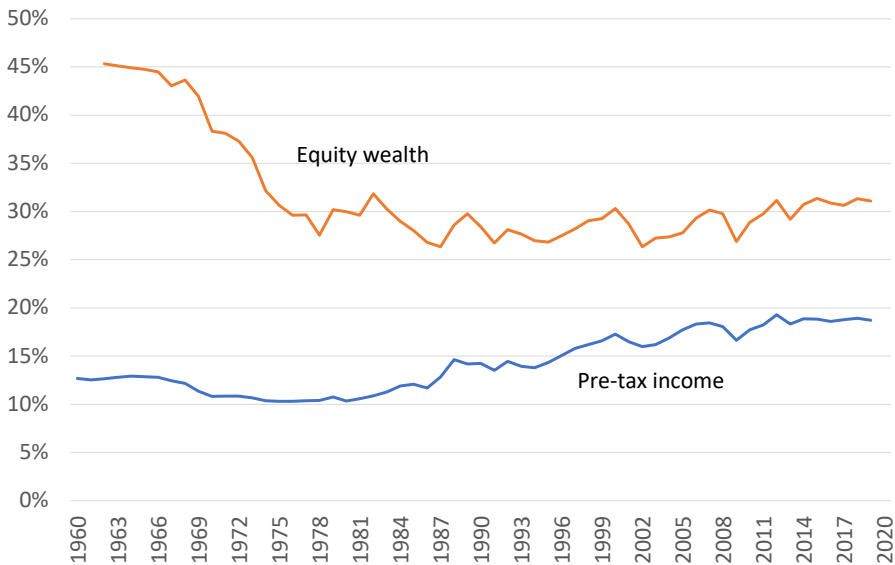
The arithmetic of international tax competition

How can lack of progress on coordination be explained?

**Tax havens have no interest in ending the race-to-the-bottom:**

▷ With tax competition, revenue-maximizing corporate rate τ^* is low for small countries, perhaps $\approx 5\%$.

▷ Insisting on global agreements (or unanimity in EU context) means carving tax competition into stone

The redistribution of corporate income tax revenues

Corporate income tax revenue per capita (2021 €)
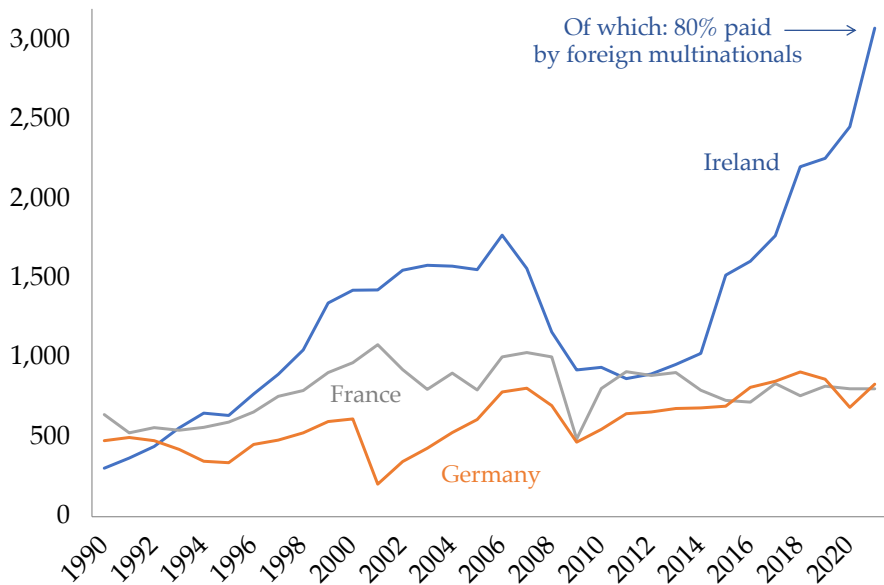
Many havens collect a lot of tax revenue by taxing multinationals at very low rates

Corporate income tax revenue
(% of national income)

Average among non-havens: 3.5%
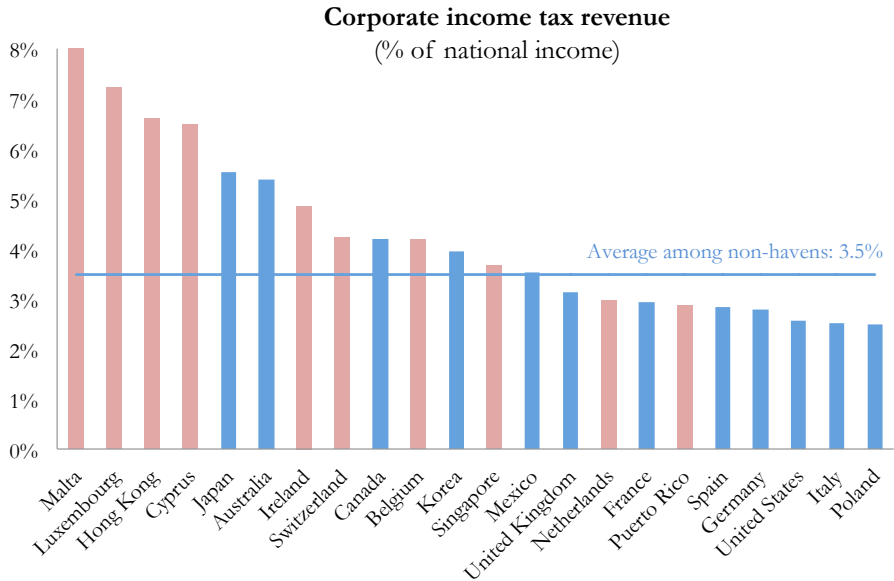
The way forward: unilateral or multilateral action to collect tax deficits

▷ Any number of countries could chose to collect the taxes that tax havens refuse to collect

▷ ... playing the role of **tax collector of last resort**

▷ ... making it pointless for firms to book profits in tax havens

▷ ... making it pointless for havens to offer low rates → **race to the top**

▷ See EU Tax Observatory report #1 (Barake, Chouc, Neef, and Zucman, 2021) for simulations

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