Econ 230B – Graduate Public Economics

International Tax Competition and Profit Shifting

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Roadmap

Globalization raises key challenges for the taxation of corporate profits

1. Tax competition $\rightarrow$ can lead government to adopt sub-optimally low corporate tax rates

2. Profit shifting $\rightarrow$ can lead to large corporate tax revenue loss

Size of the phenomenon? Mechanisms? Policy solutions?

1 Tax competition

Reminder on source vs. residence based corporate taxes:

- Source (= *territorial*) taxation: profits taxed where prod. occurs
- Residence (=*worldwide*) taxation: profits taxed where owner lives
- Corporate taxes of most countries are source-based (with some residence elements, e.g., 10.5% GILTI minimum tax in US)
- Source-based taxation $\rightarrow$ incentives to move production and shift profits to tax havens

How does tax policies in one country affect the options in other countries, and in turn their policies?

- Standard model: tax competition between local governments
- Main insighst carry to international tax competition
- Key difference: Federal government can help coordinate
- By contrast, current form of globalization has no mechanism for international tax coordination

Zodrow and Mieszkowski (1986) and Wilson (1986)

- n countries $i = 1, ..., n$ with output per unit of labor $y_i = f_i(k_i)$
- Labor supplied inelastically by population h_i (immobile)
- Source taxes on capital at rate t_i, generating $t_i k_i$ in revenue
- Capital-owners can invest wherever they want $\rightarrow$ after-tax return to capital has to be the same everywhere: $f_i'(k_i) - t_i = \rho \quad \forall i$
- Consumer has preferences over private good (x) & public good (r)
- Consumer welfare in i: $W_i = f_i(k_i) - f_i'(k_i)k_i + \rho \bar{k}_i + G_i(t_i k_i)$

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

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

- So domestic capital falls in i, rises elsewhere and ρ falls

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

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

Symmetric Nash equilibrium in pure strategies:

- FOC defines a best response function $t_i(t_{-i})$ relating gov maximizing tax rate to the tax rates t_{-i} set by all others
- The intersection of the best responses $t_i(t_{-i})$ characterizes an interior Nash equilibrium in pure strategies (when it exists)
- Is the equilibrium socially optimum?
- 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 population, production function, same 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 a small uniform increase in all tax rates: the Nash equilibrium is not Pareto efficient

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

Asymmetric equilibrium

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

2 Profit shifting

Three ways to shift profits to low-tax countries:

- Manipulating intra-group import and export prices (*transfer prices*)
- Intra-group borrowing
- Locating intangibles in tax havens

Heckemeyer & Overesch (2017): transfer price most important (but limited data on intangibles)

Transfer price manipulations

- Subsidiaries of a same group are supposed to compute their profits 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 NTJ 2003)

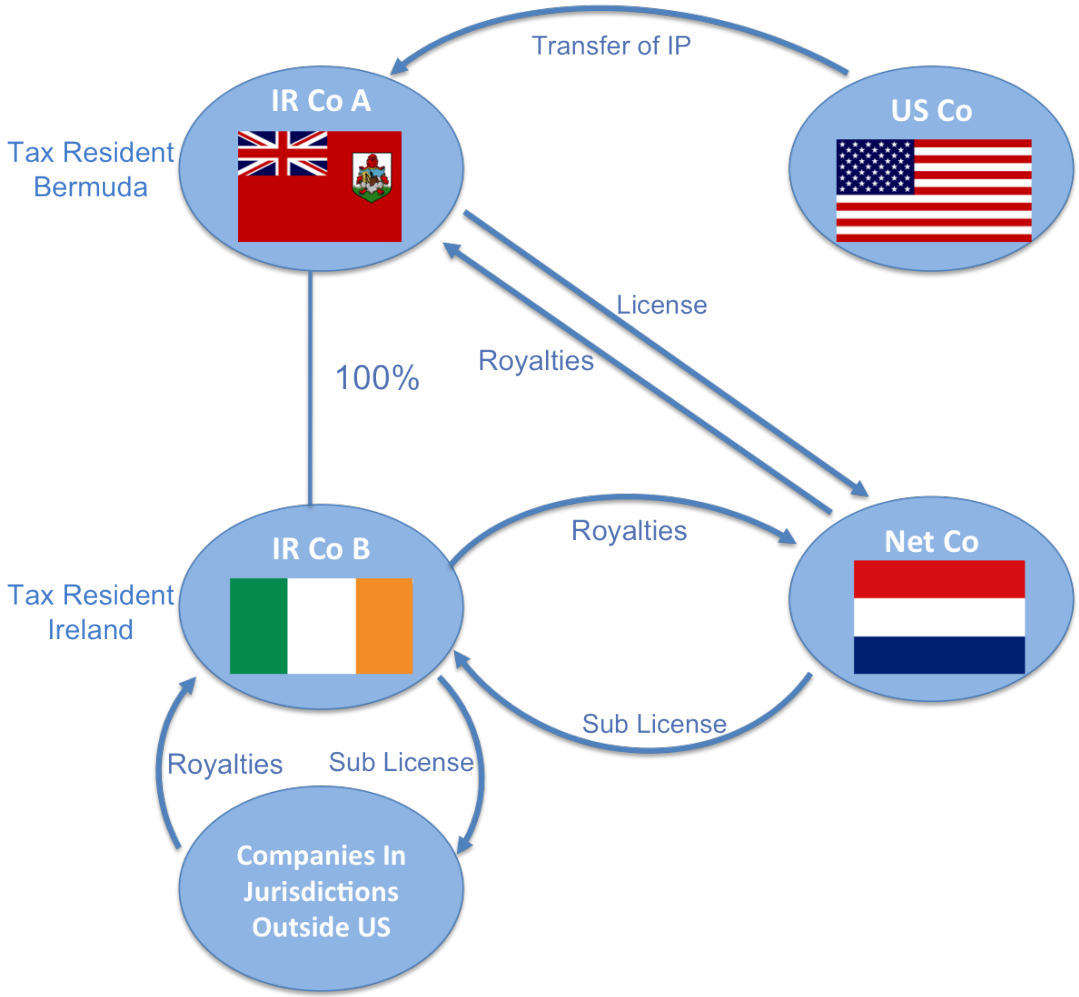
- Intra-group price manipulation also a problem in purely domestic context (*tunneling*): Bertrand, Mehta and Mullainhathan (QJE'02)

Strategic location of debt and intangibles

- Booking assets in low-tax countries enables firms to deduct income in high-tax countries and earn interest & royalties in tax havens
- Transfer of intellectual property can be done through outright sale (Google 2003)
- Or cost sharing: offshore subsidiary contributes part of the cost of developing IP ($\rightarrow$ exports of rights to use IP from US to, eg, Ireland in US trade data)

Treaty shopping

- Anti-avoidance rules are supposed to limit ability of multinationals to shift profits: thin capitalization, controlled foreign corporations
- Can be avoided by exploiting inconsistency in tax laws across countries (*treaty shopping*)
- For instance, inconsistent definition of what a corporation is or where it is located
- Example of Google's "Double Irish Dutch sandwich"



The Double Irish Dutch Sandwich

Microeconometric studies

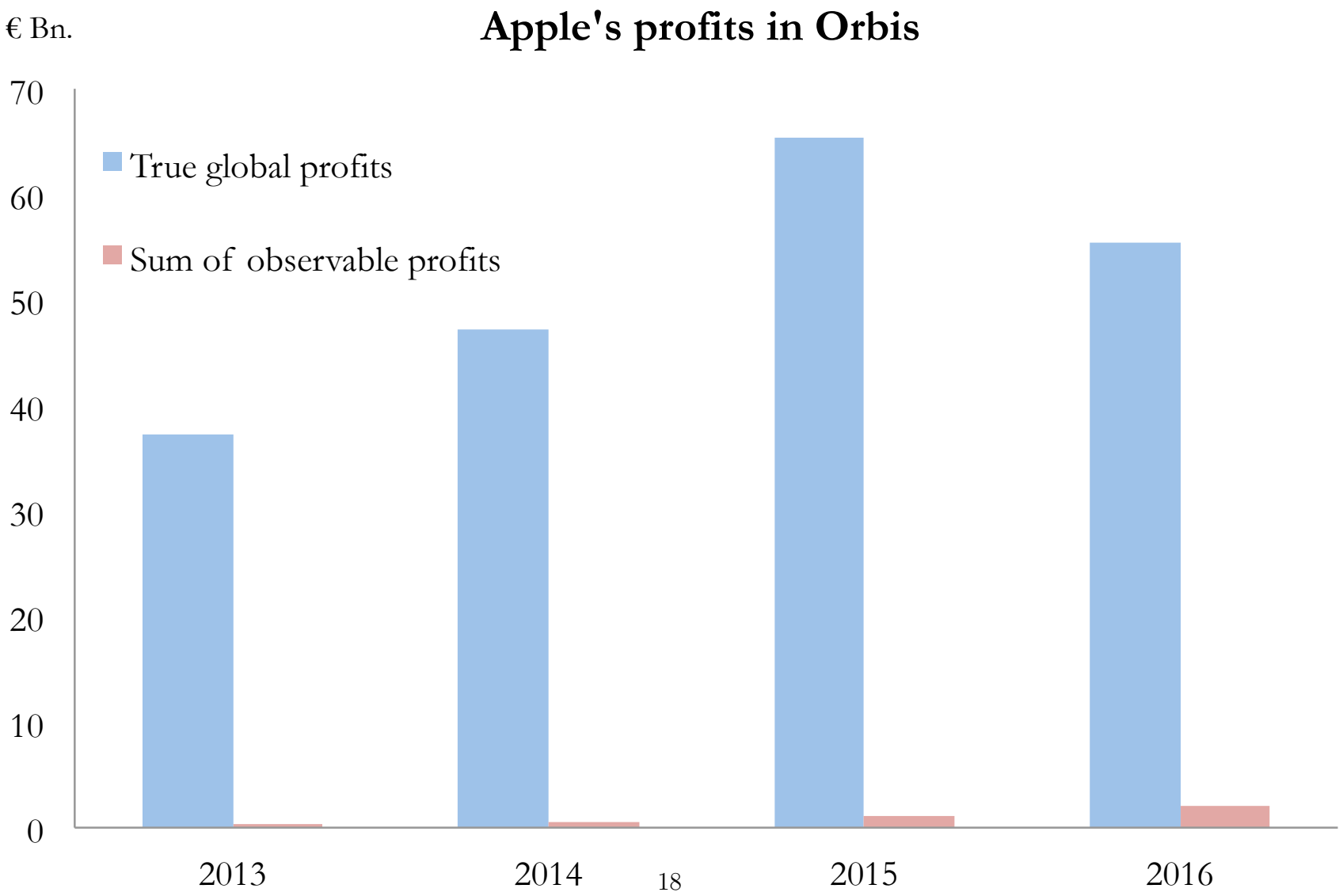
- Large literature profit shifting using Orbis accounting micro-data
- Profit shifting is estimated by running
  $log(\pi_{ic}) = \alpha + \beta(\tau_p - \tau_c) + \delta Firm_i + \gamma Country_c + \epsilon_{ic}$
- where π_{ic} denotes pre-tax profits booked by company i in country c, τ_c the tax rate in country c, τ_p the tax rate in the partner's country (eg, the parent country, see below), and $Firm_i$ and $Country_c$ firm and country controls.
- A positive $\hat{\beta}$ is interpreted as evidence of profit shifting

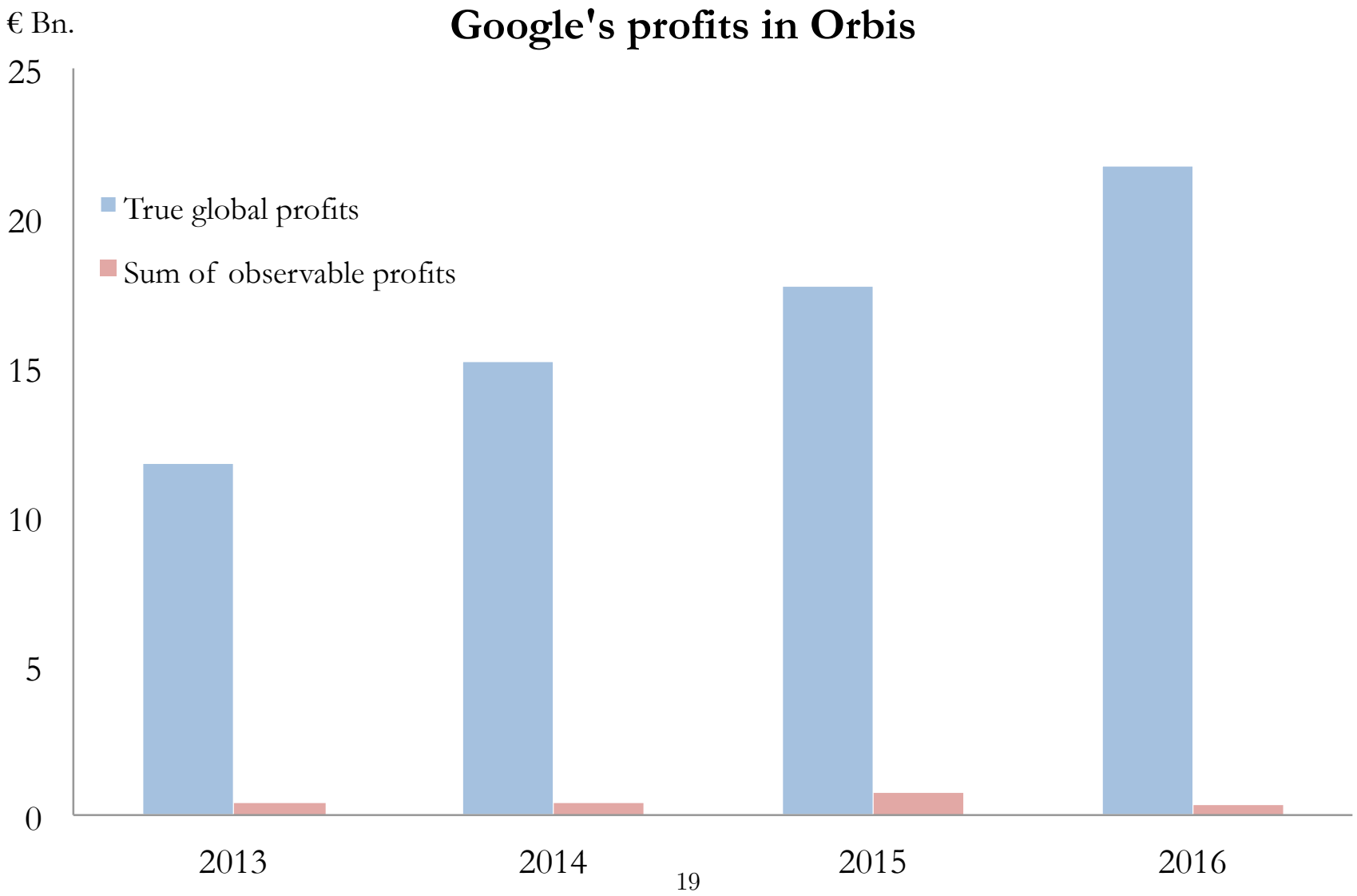
Literature considers four measures for the incentives to shift profits:

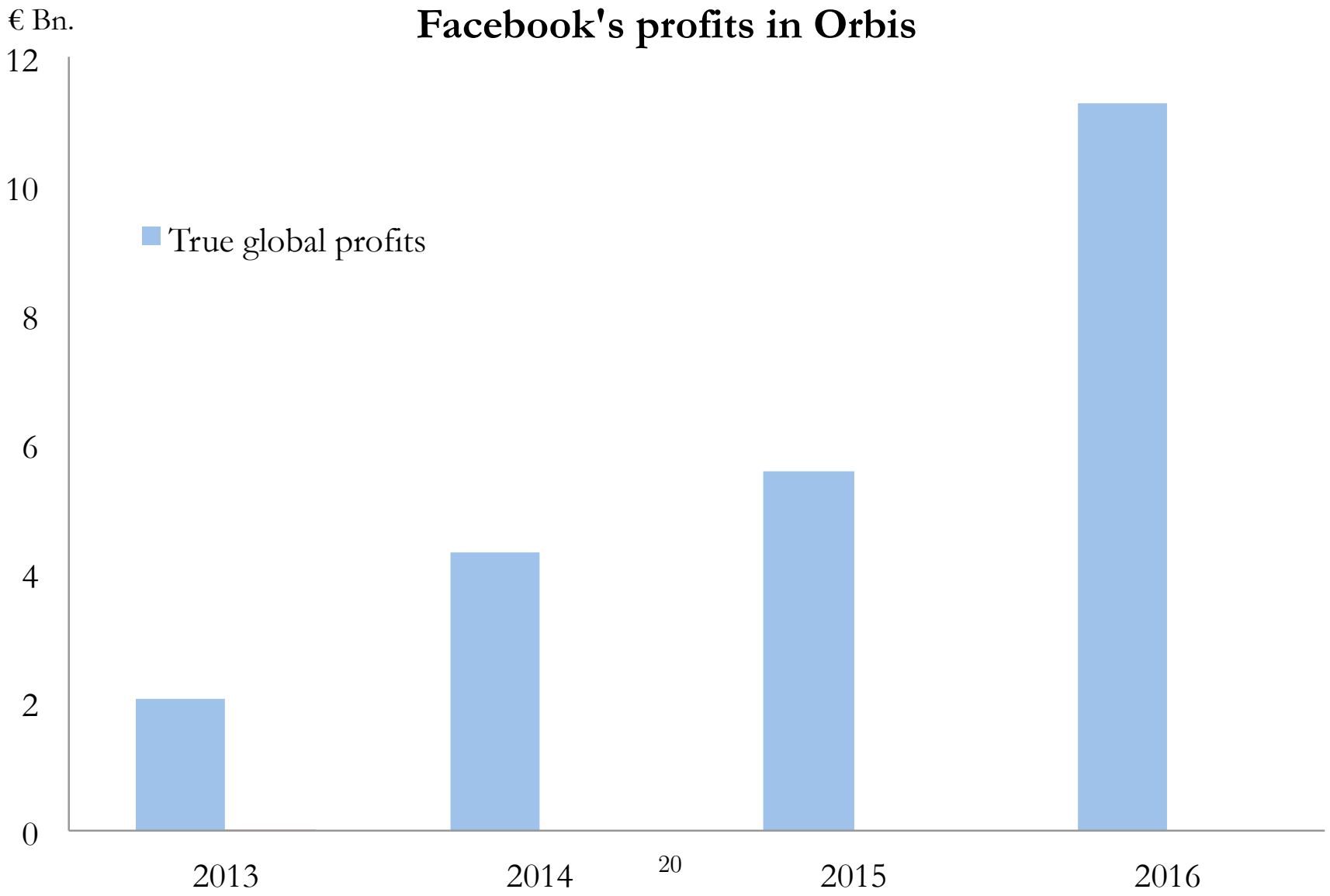
- Differential with the tax rate of the parent's country (e.g., Dharmapala and Riedel, 2013)
- Weighted tax rate differential with all other subsidiaries (e.g., Huizinga and Laeven, 2008)
- Unweighted tax rate differential with other subsidiaries (e.g., Johansson et al. 2017)
- Statutory corporate tax rate (e.g., Lohse and Riedel, 2013).

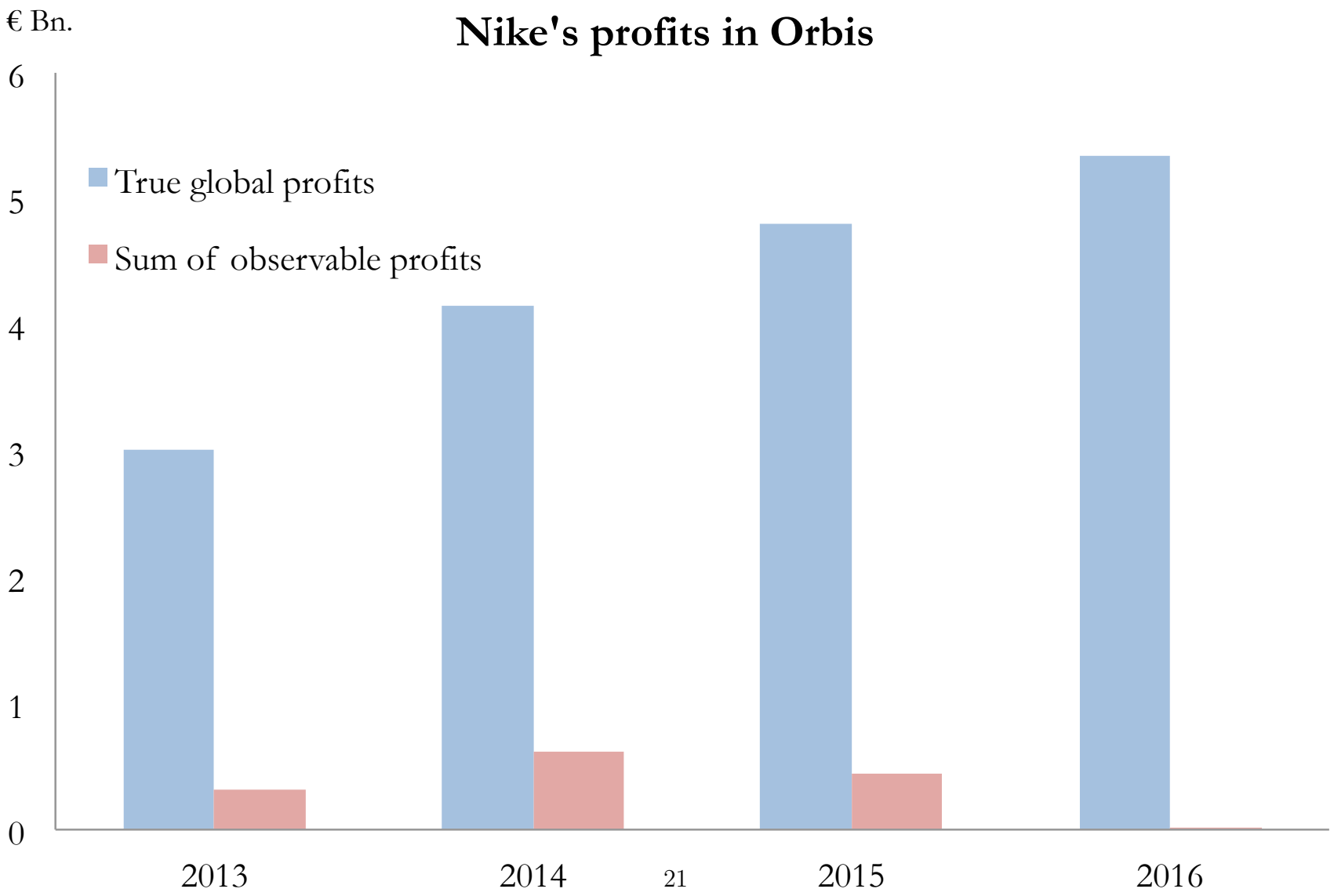
Limits of Orbis

- Little micro-data exists about profits booked by multinationals in low-tax countries.
- Orbis provides accurate information about the global consolidated profits
- But relies on info in public business registries to record the profits made by multinationals in their various subsidiaries
- No or very limited profit data available in countries with no public registry or no public income info in registry

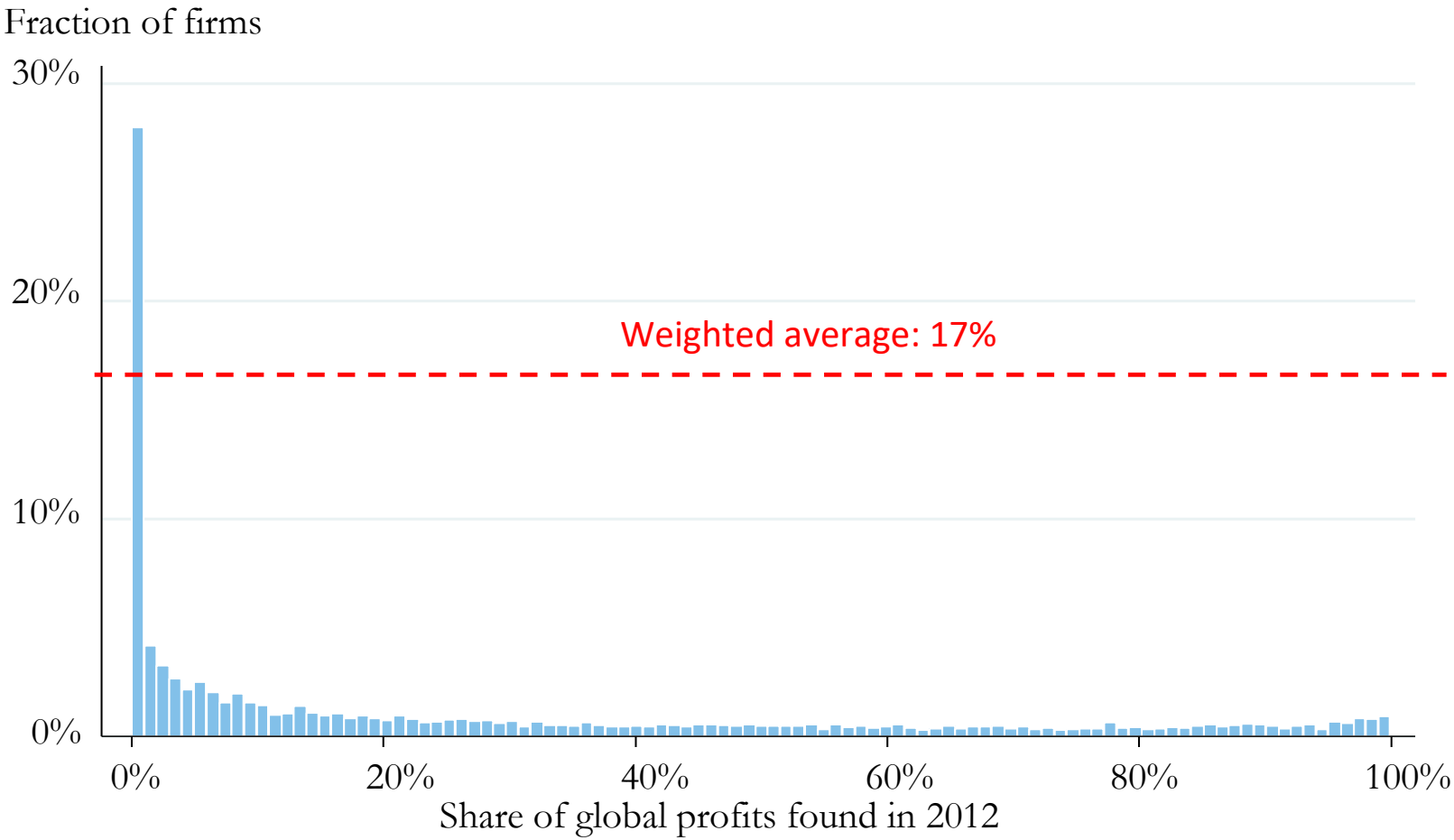

€ Bn.
Apple's profits in Orbis
70
60
50
40
30
20
10
0
True global profits
Sum of observable profits
2013
2014
2015
2016


Google's profits in Orbis
€ Bn.
25
20
15
10
5
0
True global profits
Sum of observable profits
2013
2014
2015
2016


Facebook's profits in Orbis
€ Bn.
12
10
8
6
4
2
0
True global profits
2013
2014
2015
2016


€ Bn.
Nike's profits in Orbis
6
5
4
3
2
1
0
True global profits
Sum of observable profits
2013
2014
2015
2016

The missing profits in Orbis



Are the coverage gaps in Orbis a problem?

- β unbiased if semi-elasticity of profit shifting with respect to tax rate differentials is constant

- But evidence that shifting elasticity is nonlinear, with more responsiveness at lower tax rates than at higher ones
  - Dowd et al. (2017), using IRS tax data, find tax semi-elasticities of 4.7 at corporate tax rates of 5 percent and 0.6 at tax rates of 30 percent.
  - Bilicka (AER 2019) studies profit shifting out of UK using UK tax data, and finds that accounting data underestimate true size

of profit shifting relative to more comprehensive tax data.

- Estimating profit shifting equations with accounting micro-data can also lead to biased inferences about the location of shifted profits.

- E.g, If only high-tax countries have public registries, then one can find that all profit shifting takes place between high-tax countries...

- ... whereas this shifting may be second-order relative to the shifting to low-tax countries.

Macro evidence on profit shifting

- Nascent literature takes a macro perspective to study profit shifting.

- Mostly uses US data hence focus on US multinationals (Clausing, 2009, 2016; Gravelle, 2009; Guvenen et al., 2018).

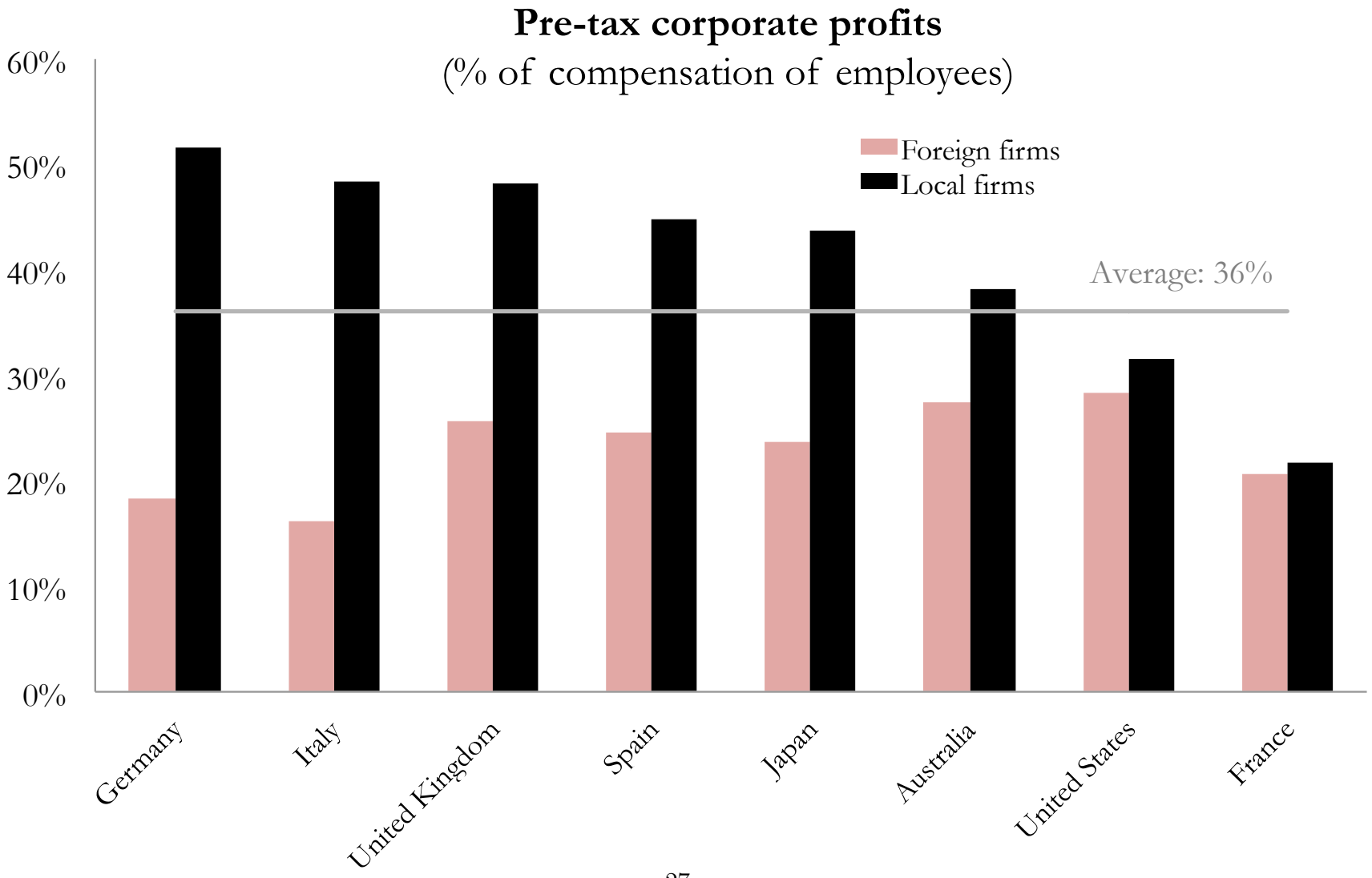
- Key US data source: detailed surveys of foreign activities of US multinationals (with tabulations by country, industry publicly available)

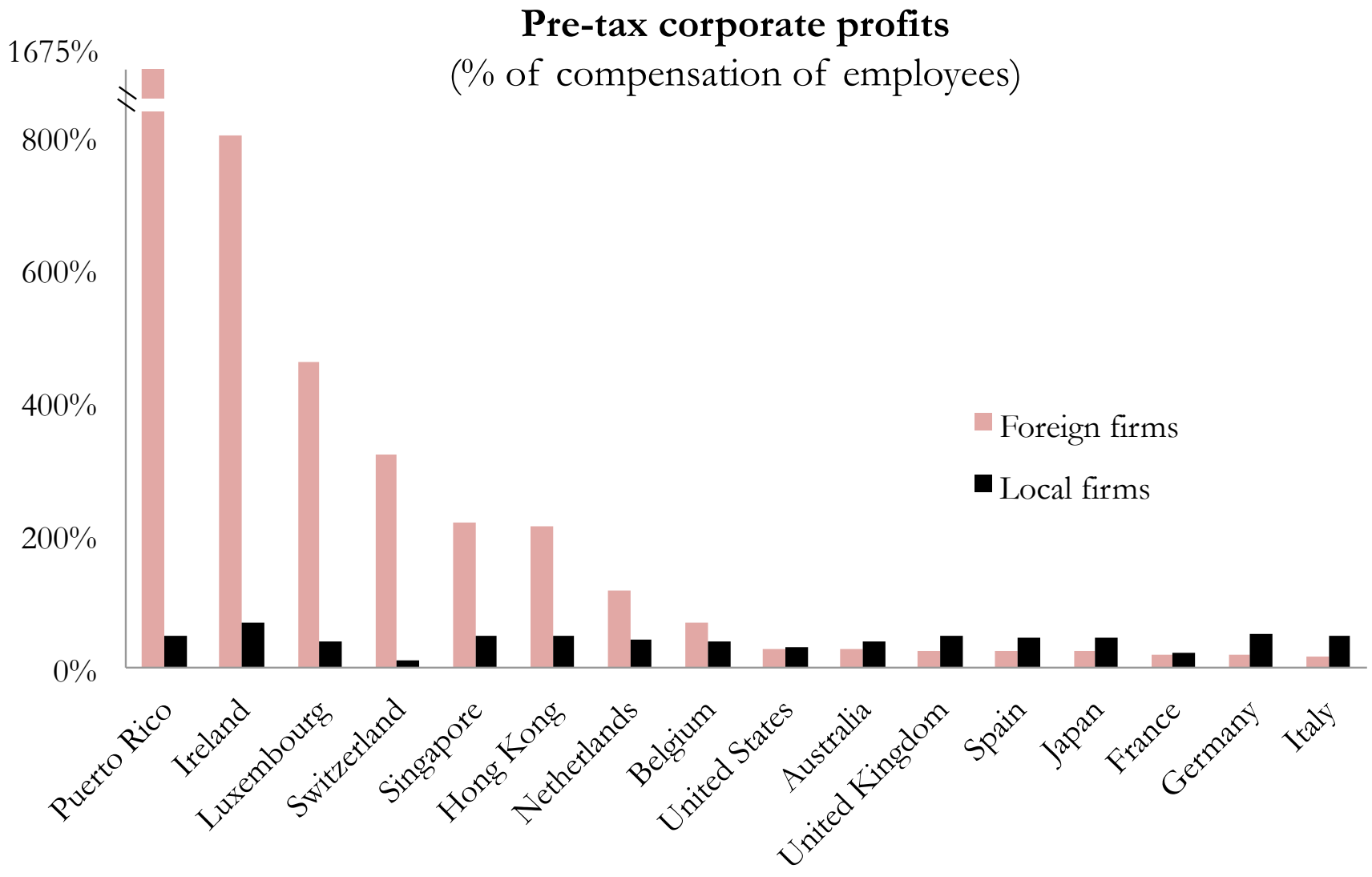
- Similar data recently released in other ctries (Torslov et al 2018)

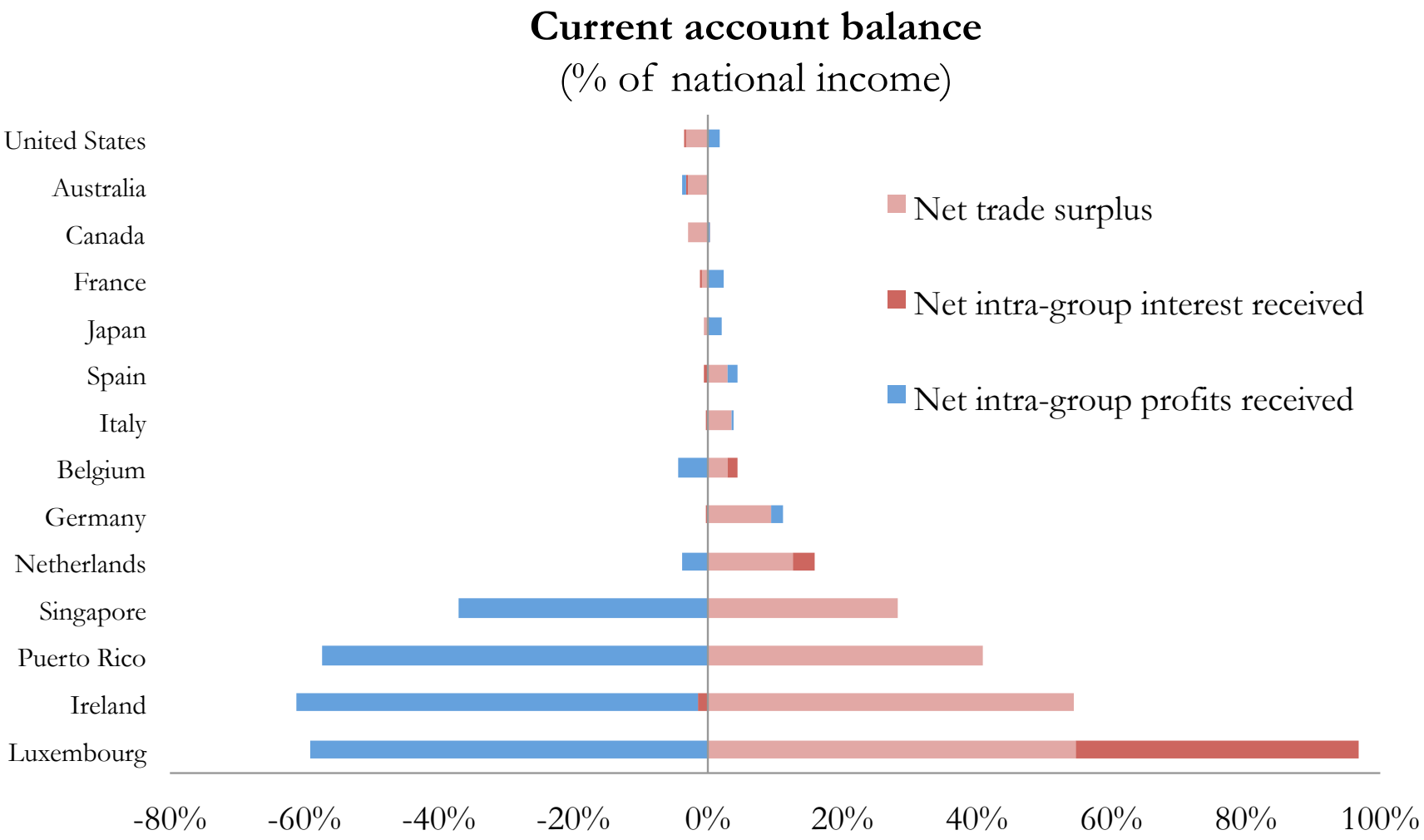
Global profit shifting: methodology (Torslov et al., 2018)

Idea: study capital share of local vs. foreign firms across the world. Striking global pattern:

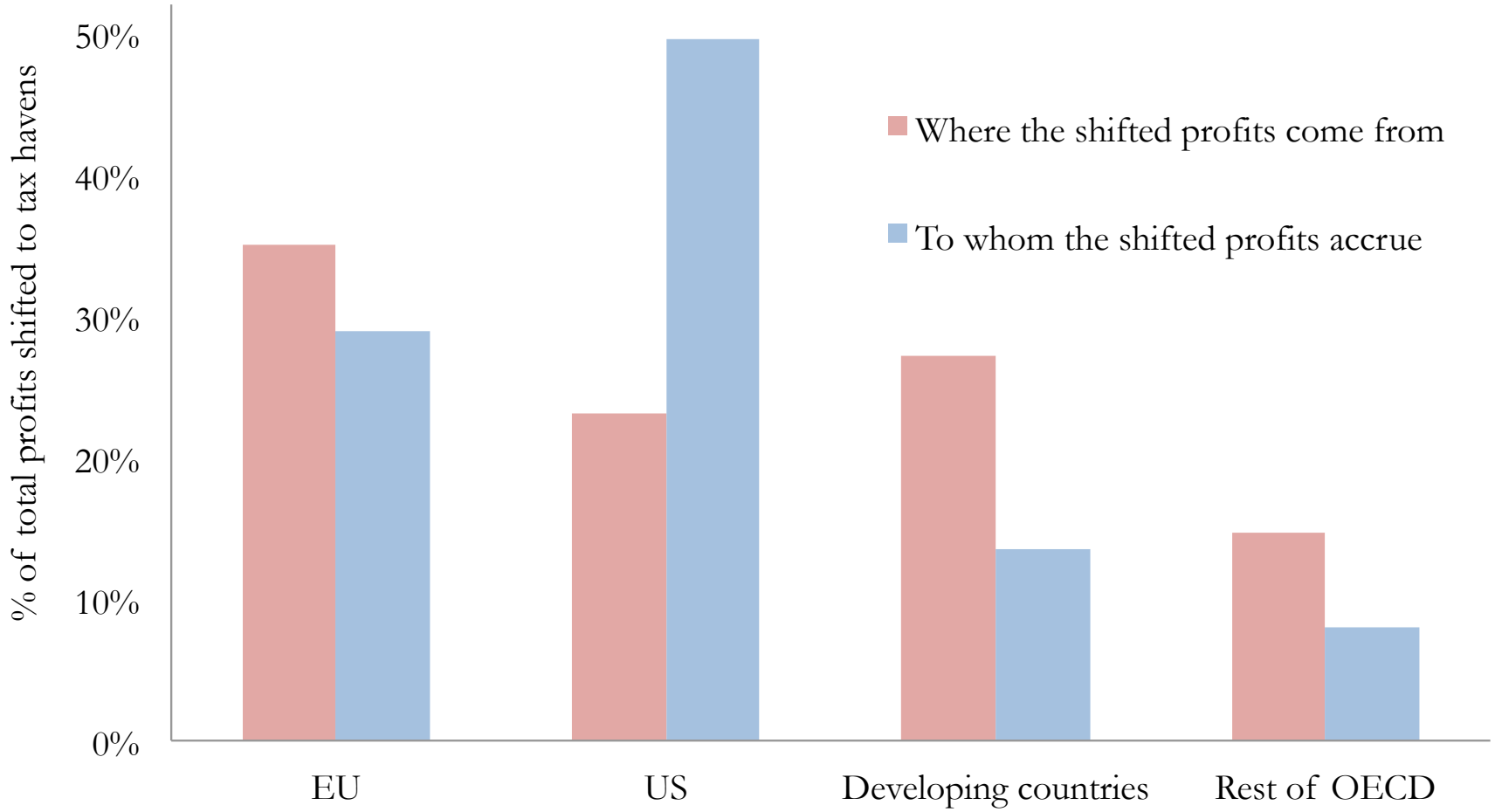
- Foreign firms have lower α than local firms...
- ... Except in tax havens: hugely higher α
- Estimate of globally shifted profits: set profitability of foreign firms in havens equal to profitability of local firms in havens


Pre-tax corporate profits
(% of compensation of employees)
60%
50%
40%
30%
20%
10%
0%
Foreign firms
Local firms
Average: 36%
Germany
Italy
United Kingdom
Spain
Japan
Australia
United States
France


Pre-tax corporate profits
(% of compensation of employees)
1675%
800%
600%
400%
200%
0%
Foreign firms
Local firms
Puerto Rico
Ireland
Luxembourg
Switzerland
Singapore
Hong Kong
Netherlands
Belgium
United States
Australia
United Kingdom
Spain
Japan
France
Germany
Italy


Current account balance
(% of national income)
United States
Australia
Canada
France
Japan
Spain
Italy
Belgium
Germany
Netherlands
Singapore
Puerto Rico
Ireland
Luxembourg
Net trade surplus
Net intra-group interest received
Net intra-group profits received
-80%
-60%
-40%
-20%
0%
20%
40%
60%
80%
100%

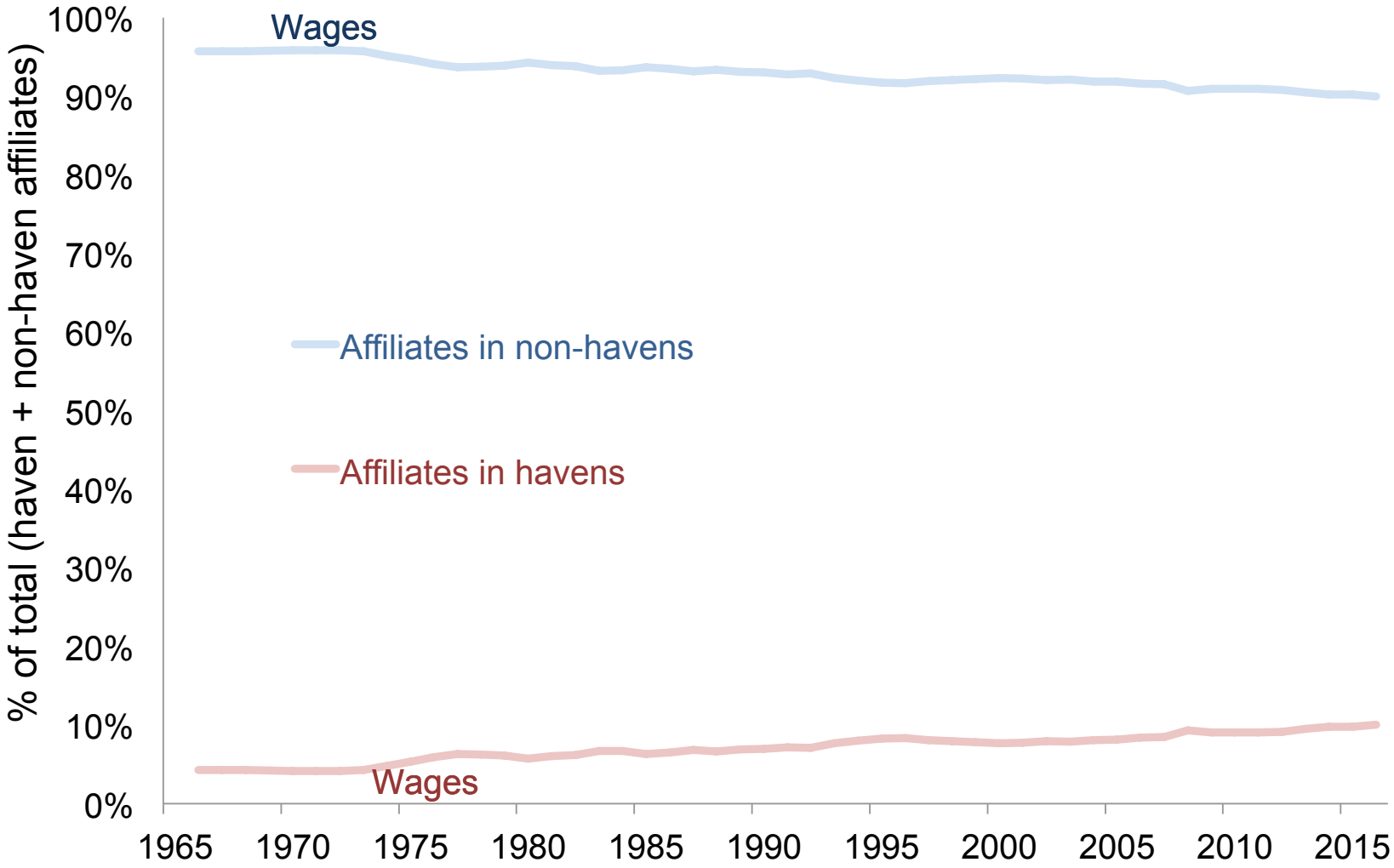
Allocating the profits shifted to tax havens

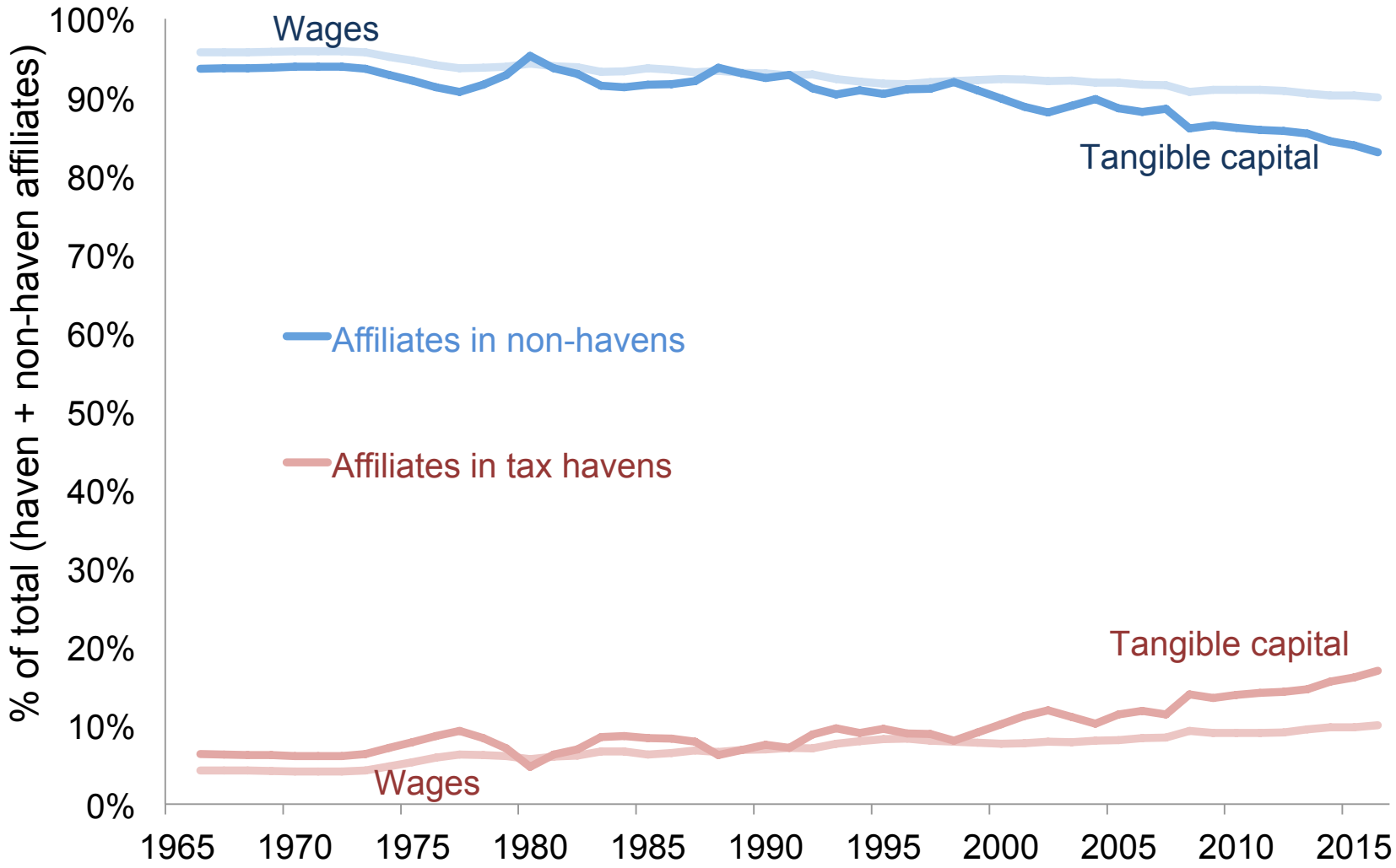


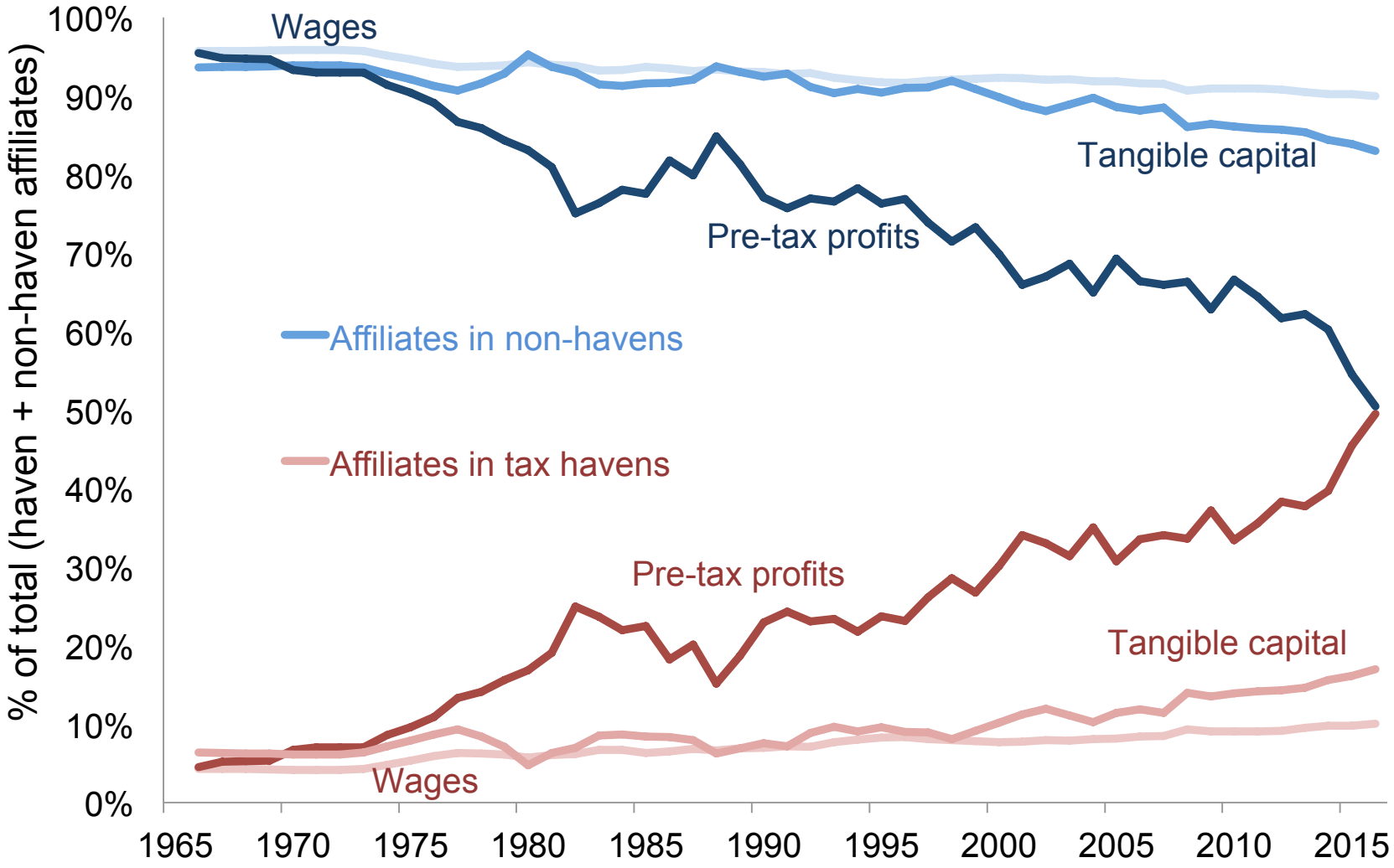
Capital mobility vs. profit shifting: the case of US multinationals

Quantitatively, how does capital mobility and profit shifting compare?

- Wright-Zucman (2018) study profits, wage, capital, rates of returns, and taxes of US multinationals back to 1966
  - Using BEA of activities of US multinationals
  - Data Annual since 1982, every 5 years back to 1966
  - Supplement with IRS tabulations (form 5471)


% of total (haven + non-haven affiliates)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
Wages
Affiliates in non-havens
Affiliates in havens
Wages


% of total (haven + non-haven affiliates)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
Wages
Tangible capital
Affiliates in non-havens
Affiliates in tax havens
Tangible capital
Wages


% of total (haven + non-haven affiliates)
100%
90%
80%
70%
60%
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20%
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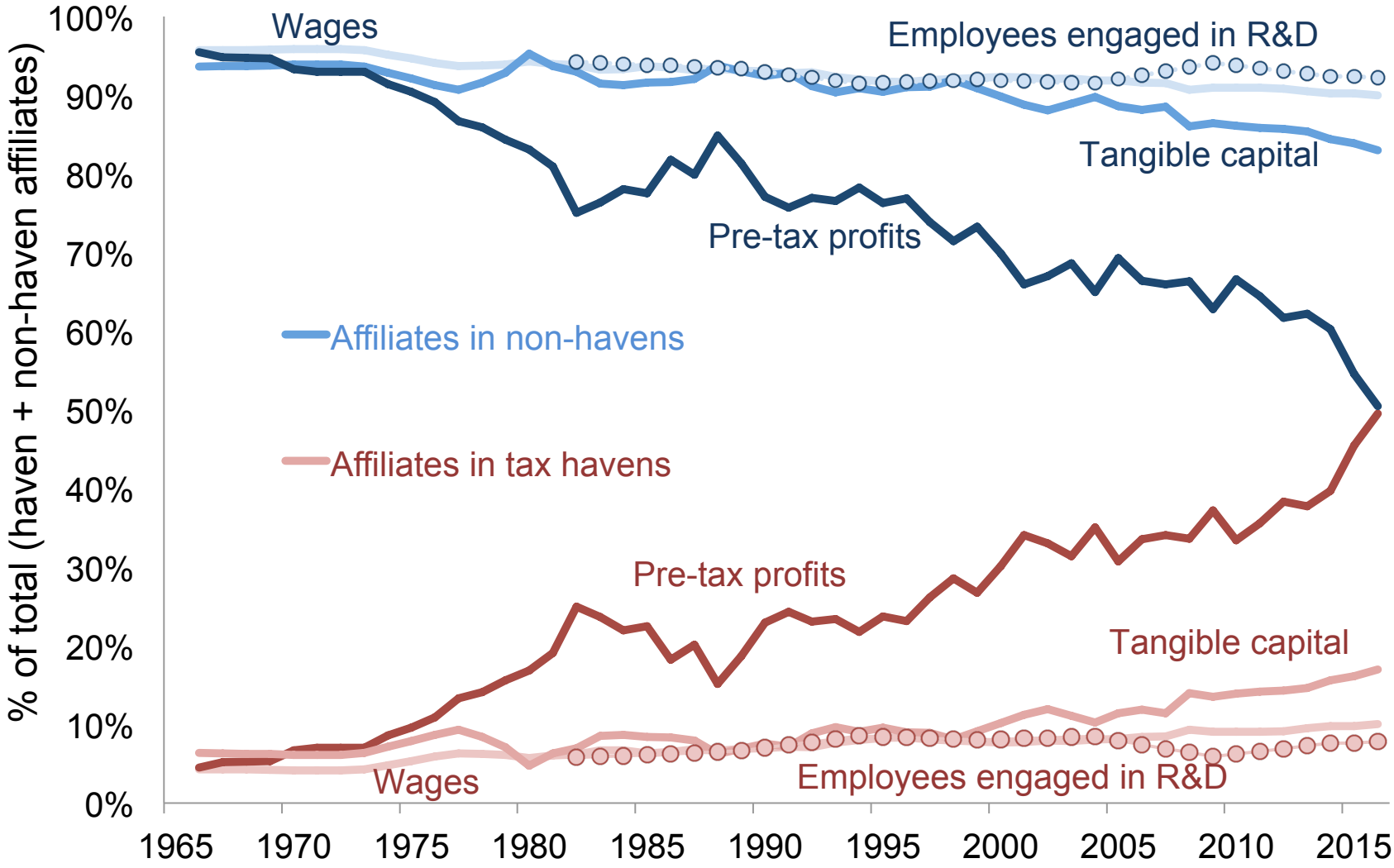
0%
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
Wages
Tangible capital
Pre-tax profits
Affiliates in non-havens
Affiliates in tax havens
Pre-tax profits
Tangible capital
Wages


% of total (haven + non-haven affiliates)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
Wages
Employees engaged in R&D
Tangible capital
Pre-tax profits
Affiliates in non-havens
Affiliates in tax havens
Pre-tax profits
Tangible capital
Wages
Employees engaged in R&D

Empirical evidence on capital mobility

- A number of studies regress FDI on taxes, find elasticities close to or above 1 (see Zodrow 2010 for survey)

- Identification relies on orthogonality of tax rates to other factors (e.g., bureaucracy). No natural quasi-experimental variation

- Main response to differentials in τ_K seems to be artificial profit shifting rather than changes in K

- If policies successful at curbing profit shifting, mobility could $\nearrow$, pushing τ_K further toward 0 (Hong & Smart '10; Johannesen '10)

Policies to prevent profit shifting

OECD Base and Erosion and Profit Shifting (BEPS)

- Fixing inconsistency in bilateral tax treaties
- Strengthening arm's length rules
- Specific profit split for digital industries, based in part on location of users
- Discussion of minimum country-by-country tax rates

Formulary apportionment

- Tax base in country i based on shares of global sales, assets, and/or payroll made in i (Gordon and Wilson Econometrica '86)
- Used by US states for their own corporate taxes (Clausing '14)
- Key attraction: eliminates the opportunity for companies to engage in profit shifting
- Sales only apportionment removes incentives to move K abroad
- Potential problem of sales through low-tax resellers

Corporate tax integration

- Shareholders receive credits for previously paid corporate taxes
- Corporate tax becomes like a withholding pre-paid tax that is refunded when dividends are paid out to individuals
- Removes incentives to shift profits and move capital abroad
- Existed in Europe; still exists today in Canada, Mexico, Australia
- Can be combined with apportionment to ensure proper withholding at corporate level

Border adjustment (Auerbach 2010)

- Include in corporate tax base value of all imports and deduct the value of all exports
- Similar to VAT border-adjustment (Auerbach & Holtz-Eakin '16)
- In theory, $ FX must adjust leaving trade balance unchanged
- Like sales apportionment and integration, border adjustment removes incentives to shift profits or move capital abroad
- If combined with full expensing and no interest deduction: DBCFT

Economically DBCFT at $\tau = 20\%$ is equivalent to:

1. Abolish corporate income tax

2. Introduce a value-added-tax on consumption at 20% rate

3. Subsidize labor earnings at 20% rate (like a giant payroll tax cut)

1. is regressive and makes US a corporate tax haven

2. $+$ 3. is equivalent to a tax on part of existing wealth (progressive)

Uncertainties: FX adjustment, foreign business to consumers sales (problem also for VAT), WTO compatibility

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