

## Profit Shifting Through Intellectual Property

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In October 2021, 136 countries agreed to set a minimum global corporate tax rate of 15% starting in 2023. The Global Tax Deal involves taxing a company's profits in the country where they make sales and establishes a minimum effective corporate tax rate of 15%.<sup>1</sup>

The main goal behind the plan is to discourage multinational corporations from shifting profits to low-tax jurisdictions and, according to Treasury Secretary Janet Yellen, avoid a “race to the bottom” with respect to corporate taxes.<sup>2</sup> Tørsløv, Weir, and Zucman (2022) estimate that 36% of multinational profits, defined as profits made by multinationals outside of the country where their parent affiliate is located, were shifted to tax havens globally in 2015. One of the biggest channels through which multinationals in high-tax jurisdictions take advantage of differences in national tax regimes is the shifting of ownership of their intellectual property (IP) (i.e., patents, design, trademarks, and copyrights) to a subsidiary in a low-tax jurisdiction. This practice has important consequences for economic activity. For instance, Guvenen et al. (2022) find that adjustments to profit shifting would have increased productivity growth by 13 basis points per year from 2004 to 2010.

In this essay, we show that large movements of IP toward low-tax jurisdictions is indeed a channel through which multinational corporations shift profits abroad. Using patent data from PATSTAT, we compute for a sample group of countries the number of patent applications in the 2010s filed in foreign countries.<sup>3</sup> Patent application data are reported according to both the residence of the inventor and the residence of the applicant, regardless of whether the applicant is also the inventor. We argue that discrepancies between the number of patent applications by applicants and the number by inventors (the applicant-to-inventor ratio) provide suggestive evidence of profit shifting through IP.

Take the case of an engineer working for a tech company based in Silicon Valley who invents a new IP. On the initial application, let's assume the tech company, a U.S. multinational corporation, is the applicant and the engineer is the inventor. In this case, the country of the inventor and the applicant will both be the United States, so this application would be counted as 1 by applicant and 1 by

inventor for patents originating in the United States. However, if the multinational transfers ownership of the IP to a subsidiary in Bermuda, the subsidiary in Bermuda will be listed as the applicant on subsequent filings since they now own the IP. Hence, for Bermuda if the multinational were to file a subsequent application, this application would be counted as 1 by applicant and 0 by inventor for patents originating in Bermuda.

Patent data can give us insights on profit shifting due to multinationals moving intellectual property to tax havens.

The table shows that countries with the highest applicant-to-inventor ratios are those typically considered tax havens (see Tørsløv, Weir, and Zucman, 2022). The British Virgin Islands, Barbados, Bermuda, and the Cayman Islands stand out as extreme outliers, with applicant-to-inventor ratios of 53.19, 47.44, 38.12, and 22.89, respectively. Additionally, their effective corporate tax rates are also among the lowest in the world, with those for the British Virgin Islands, Bermuda, and the Cayman Islands each 0% and that for Barbados just 3%. These ratios contrast sharply with higher-tax jurisdictions such as the United States, Japan, and Germany, where the applicant-to-inventor ratios are much closer to 1. Moreover, most patent applications in tax havens are filed by multinational corporations, with the shares filed by these corporations reaching nearly 100% in Barbados, Bermuda, and the Cayman Islands, indicating very little patent ownership in these jurisdictions is held by local firms or people. Hence, we find suggestive evidence of large movements of foreign-created IP toward low-tax jurisdictions by multinational corporations, which may be driven by profit-shifting motives.

Our results complement those in Tørsløv, Weir, and Zucman (2022), who show that, in tax havens, profits of foreign firms are substantially larger than those of local firms, suggesting that lower effective corporate tax rates may attract out-sized profits from foreign firms to those jurisdictions. In addition, we show that movements of IP

### Patent Applications Abroad, by Country of Origin of the Application

Rank	Applicant country	Ratio	MNC share	Effective corporate tax rate
1	British Virgin Islands	53.19	80%	0%
2	Barbados	47.44	94%	3%
3	Bermuda	38.12	96%	0%
4	Cayman Islands	22.89	97%	0%
5	Liechtenstein	6.05	56%	3%
6	Cyprus	5.78	90%	5%
7	Luxembourg	5.33	32%	17%
8	Malta	4.44	68%	5%
9	Macau	3.19	72%	5%
10	Hong Kong	1.66	76%	8%
11	Switzerland	1.62	55%	14%
12	Ireland	1.44	56%	8%
13	Singapore	1.44	58%	4%
14	Netherlands	1.37	74%	10%
15	Sweden	1.21	75%	23%
19	United States	1.11	57%	21%
20	Denmark	1.06	82%	26%
21	Japan	1.05	69%	15%
24	Germany	1.01	67%	11%
26	France	1.00	55%	27%

NOTE: The table shows the ranking of countries applying for a patent abroad according to the applicant-to-inventor ratio (column 1); the name of the country from which patents are filed abroad (column 2); the applicant-to-inventor ratio (column 3); the share of total patent applications abroad filed by multinational corporations (MNC) (column 4); and the effective corporate tax rate computed as corporate income taxes as in Tørsløv, Weir, and Zucman (2018), computed as foreign corporate income tax paid divided by profit-type return in the Bureau of Economic Analysis survey of the foreign activities of U.S. multinationals (column 5).

SOURCE: PATSTAT and authors' calculations.

by multinationals to low-tax jurisdictions may be one indicator of profit-shifting practices. ■

### Notes

<sup>1</sup> In December 2017, President Trump signed the Tax Cuts and Jobs Act, which among other points reduced the U.S. federal corporate income tax rate from 35 percent to 21 percent and moved from a worldwide tax system (in which repatriated foreign profits of U.S. firms were subject to taxation in the United States) to a territorial tax system (in which foreign profits are exempt from U.S. taxes).

<sup>2</sup> <https://home.treasury.gov/news/press-releases/jy0447>.

<sup>3</sup> Because patents are territorial—a patent office can only guarantee protection within the borders they govern—innovators have an incentive to apply for patents in many countries. See Santacreu and LaBelle (2021).

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