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## Article

# Patent Shifting and Anti-Tax Avoidance Legislation

ifo DICE Report

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*Suggested Citation:* Knoll, Bodo; Riedel, Nadine (2019) : Patent Shifting and Anti-Tax Avoidance Legislation, ifo DICE Report, ISSN 2511-7823, ifo Institut – Leibniz-Institut für Wirtschaftsforschung an der Universität München, München, Vol. 17, Iss. 04, pp. 25-29

This Version is available at:

<https://hdl.handle.net/10419/216285>

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## Patent Shifting and Anti-Tax Avoidance Legislation

### INTRODUCTION

Multinational profit shifting has been high on policy-makers' agendas for years and numerous anti-avoidance laws have been implemented and tightened, with the aim of hampering income flows to low-tax countries. While anti-shifting rules were traditionally designed and enacted unilaterally, recent years have seen comprehensive multilateral efforts to coordinate and tighten anti-shifting measures in the OECD's Base Erosion and Profit Shifting (BEPS) project and the European Union's Anti-Tax Avoidance Directive (ATAD). Two main areas of concern are the strategic location of patents and other intellectual property (IP) at low-tax affiliates and income shifting through the mispricing of intra-firm trade connected to IP.

In this article, we review the academic literature on multinational profit shifting, with a particular focus on the role of patents (and other IP) in these strategies. Three questions are addressed: 1) Is patent-related income shifting a quantitatively relevant phenomenon?; 2) Should it be contained?; 3) How can it be contained?

### PATENT OWNERSHIP AND PROFIT SHIFTING

Patents are internationally highly mobile assets and earn a significant fraction of total profits in many modern multinational enterprises (MNEs). Locating them in low-tax countries hence allows for significant reductions in firms' tax costs. Given that intellectual property is, moreover, firm-specific in nature, arm's length prices are difficult to obtain, which creates additional opportunities for MNEs to shift income to low-tax countries by mispricing intra-firm royalties and license fees.

Anecdotes suggest that MNEs do engage in these strategies. Microsoft, Apple, Starbucks, Google, and others operate patent holding units in low-tax countries that assume a significant fraction of firms' total incomes. In the academic literature, researchers assess patent-related income shifting in comprehensive firm databases to determine whether such strategies are confined to individual cases or are a more common phenomenon.

Authors unambiguously find that multinational firms disproportionately locate patent ownership in low-tax countries. In an early study, Karkinsky and Riedel (2012) analyze panel data on multinational firms in Europe and show that the number of patent applications filed by multinational affiliates strongly responds

to changes in corporate tax incentives. The estimated semi-elasticity ranges between -3.5 and -3.8. Griffith et al. (2014) assess the same question but estimate random coefficient models that allow computing realistic own and cross-country tax elasticities. Their estimated own-tax semi-elasticity of patent location choices ranges between -0.5 and -3.9. Similar results are reported by Dudar and Voget (2016) and others. The empirical literature, moreover, shows that multinational firms sort high-value patents to low-tax countries, implying that tax responses of IP income exceed the estimated tax effects on patent numbers (e.g., Griffith et al. 2014; Baumann et al. 2018).

As outlined above, IP ownership, on top of that, creates opportunities for strategic mispricing of intra-firm trade. Several studies provide evidence in line with that notion. Liu et al. (2018) show that tax-motivated intra-firm trade mispricing is centered in R&D-intensive firms. Cristea and Nguyen (2016) find that the tax sensitivity of intra-firm trade prices is particularly large for differentiated goods, where product complexity and quality differentiation hamper the application of arm's length pricing. Hebous and Johannesen (2015) provide evidence consistent with tax-induced mispricing of IP-related service trade. Hopland et al. (2018) find that short-run adjustments in international profit shifting strategies are confined to distortions of user fees for intangible assets.

### PATENT BOX REGIMES AND COMPANY BEHAVIOR

Governments, in consequence, have incentives to keep tax rates on patent and other IP income low in order to attract and retain the related mobile multinational tax base. Consistent with this notion, recent decades have seen a steep increase in the number of countries offering patent or intellectual property boxes that grant special low tax rates on patent and other IP income. Ireland was the first to introduce such a regime in 1973, but it was only when the Netherlands enacted their patent box legislation in 2007 that patent boxes began to attract widespread attention among policymakers in Europe and around the world (see e.g., Fabris 2019). Today, intellectual property boxes are in place in several (mostly European) countries, including Belgium, Cyprus, France, Hungary, Ireland, Luxembourg, the Netherlands, Malta, Portugal, Spain, Switzerland, and the United Kingdom.

Existing IP boxes differ widely in their design and generosity; important design elements are the effective tax reduction granted, the IP covered, and the existence of a development condition.<sup>1</sup> Alstadsaeter et al. (2018) estimate the effect of patent box regimes on multinational firm behavior drawing on a sample of large corporate R&D investors. Their findings suggest



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<sup>1</sup> While the majority of patent box regimes did not specify a development condition at the time of their introduction, countries revised their patent box regimes to comply with the nexus requirement of the OECD/G20 BEPS Action 5 on countering harmful tax practices in recent years (see next page).

that patent boxes have a strong impact on patent location decisions, especially when it comes to the location of patents with a high earnings potential. The estimated tax semi-elasticity varies between -0.6 and -1.9 in the base models. Patent location is, moreover, reported to be more sensitive to the tax advantages offered by patent boxes if patent box regimes have a large scope in terms of the IP covered. Importantly, the results also suggest that patent boxes attract patent registrations rather than real R&D in the absence of nexus requirements. With nexus requirements, significant R&D effects emerge.

The sketched findings are broadly in line with other results in the literature. Chen et al. (2017), Bösenberg and Egger (2017), Gaessler et al. (2019), and Köthenbürger et al. (2018) confirm the positive impact of patent boxes on countries' propensity to attract patent ownership and mobile profits. It is less clear from existing work, however, whether patent boxes are effective in expanding real R&D investments, with some studies reporting positive and others reporting zero or even negative effects. Design elements of the patent box regimes – like the existence of a development condition – might, in part, explain these differences (see e.g., Mohnen et al. 2017; Chen et al. 2017; Bösenberg and Egger 2017; Bornemann et al. 2018; Gaessler et al. 2019).<sup>2</sup>

#### PATENT BOX REGIMES: WELFARE CONSEQUENCES

Even if countries attract mobile profits and R&D to their borders by introducing and expanding patent box regimes, it is a priori unclear whether this raises national welfare: welfare benefits from newly attracted profits and R&D investments (e.g., related to additional tax revenues or knowledge spillovers to the local economy) may be overcompensated by lower tax revenues collected from infra-marginal R&D investments. Chataigny et al. (2017) and Griffith et al. (2014) indeed suggest that the IP boxes in Switzerland and the UK may come with negative revenue effects.

What is more, patent box regimes may harm neighboring countries if the latter experience IP and R&D outflows. Neighbors, in consequence, may have incentives to retaliate the policy move and introduce patent box regimes themselves. IP mobility in this scenario undermines the ability of countries to tax the related income and tax rates in equilibrium are inefficiently low (see e.g., Zodrow and Mieszkowski 1986 and Wilson 1986).

Note, however, that it is a priori unclear whether patent box regimes really do harm neighboring jurisdictions. If MNEs have the flexibility to shift profits to low-tax economies, they may retain R&D activities in high-tax environments in turn (and even expand aggregate R&D, see Schwab and Todtenhaupt 2018); high-tax countries then reap welfare benefits (e.g., from higher

employment and knowledge creation) that may compensate them for the welfare losses from outward profit shifting. In line with these considerations, Baumann et al. (2018) find that patents owned in tax haven countries, in a large number of cases, protect technologies that are invented in high-tax jurisdictions. Analogously, Egger et al. (2014) find that the tax sensitivity of multinational real investments significantly declines, in absolute terms, when MNEs have profit shifting opportunities.

#### ANTI-AVOIDANCE MEASURES: EFFECTIVE LIMITS ON PATENT SHIFTING?

The welfare consequences of (IP-related) profit shifting are thus ambiguous; if countries want to contain such shifting, they can draw on anti-tax avoidance instruments belonging to three broad categories: 1) source countries may levy taxes on IP-related payment flows from their borders; 2) headquarter countries may levy taxes on foreign IP-income if tax rates in destination countries are low; and 3) countries may implement measures that limit the mispricing of intra-firm royalties and license fees. In the following, we will discuss these instruments in turn.

#### Source Country Taxes on Royalty and License Payments

Countries can mitigate IP-related profit outflows by levying source country taxes. Germany and Austria, for example, enacted so-called royalty and license restrictions, which deny multinational firms to deduct intra-firm royalty and license payments destined for low-tax countries from the corporate tax base. The respective payments are hence effectively taxed at the source country, i.e., at the German and Austrian, corporate tax rate.

Such deduction limits are conceptually similar to withholding taxes on royalty and license payments, which also have been proposed to combat IP-related profit shifting (e.g., Finke et al. 2014; Juranek et al. 2018). The Netherlands, for example, just recently enacted a conditional withholding tax on royalty payments to low-tax countries. There are two key differences between the instruments: First, with deduction limits, royalties are taxed at the source country's corporate tax rate, whereas withholding tax rates may divert from this rate. Taxing "shifting income" at the source country rate is conceptually sound, but it might, on efficiency grounds, be beneficial to differentiate the tax burden on royalties/licenses from other corporate income. On top of that, the two regimes may also differ in terms of firms' exposure to double taxation.<sup>3</sup>

<sup>2</sup> Bradley et al. (2015) find no effect of patent box regimes on the propensity to attract foreign patents but a positive effect on the number of patents filed and invented in the country.

<sup>3</sup> While "classic" withholding taxes apply to all payments from countries' borders, using withholding taxes as instruments to combat multinational profit shifting may imply to limit their application to payments directed towards low-tax countries. To avoid MNEs bypassing the measures by channeling royalty flows through conduits requires that indirect payments to low-tax countries are also covered.

Note, moreover, that royalties and license payments differ from true “(IP-related) shifting income” in several ways: For example, tax-induced price distortions for (IP-intensive) goods traded within MNEs remain unaccounted and royalty payments related to real business activity are unduly captured.<sup>4</sup> Furthermore note that the US recently implemented a source country minimum tax scheme (“BEAT”) with an even broader definition of “shifting income”: For certain MNEs, royalty, license, and interest payments from the US as well as a number of other intra-firm payments are included in the corporate tax base; this “modified taxable income” is then assessed at a given tax rate and the taxpayer is liable for the maximum of this tax burden and the tax levy from standard corporate tax rules.

Comprehensive empirical evaluations of the effects of source country taxes that target IP-related multinational profit shifting are still missing to date. One notable exception is Hemmerich (2019) who investigates the economic consequences of the introduction of a royalty deduction limit in Austria in 2014 that denies deduction for tax purposes if royalties are taxed at a rate below 10 percent in the receiving country. Based on data on cross-country royalty flows, he finds that royalty payments to affected destination countries dropped by a massive 50 percent in the wake of the introduction. He interprets the response as evidence for a reduction in IP-related income shifting and the effectiveness of the law. Future research should complement this analysis by determining how real investments in Austria and other countries responded (in order to assess whether part of the observed drop in outward royalty flows might reflect that affected MNEs relocated real investments to other countries).<sup>5</sup>

### **Controlled Foreign Company Rules and Destination Country Minimum Taxes**

An alternative instrument to combat IP-related profit shifting to low-tax countries is controlled foreign company (CFC) legislation that make passive multinational income earned in low-tax countries taxable in the MNE’s parent country. Numerous countries have implemented CFC legislations in their national tax laws over recent decades; with BEPS and ATAD, countries moreover agreed to internationally coordinate their CFC legislations. A number of empirical studies quantify the impact of CFC laws on profit shifting activity, commonly reporting significant reductions in shifting behavior (see e.g., Clifford 2019). Interestingly, this also holds true if IP-related income shifting is considered (see Bau-

mann et al. 2018 and Heckemeyer et al. 2018). Moreover, while the applicability of CFC rules against other EU members was significantly reduced by the European Court of Justice’s Cadbury-Schweppes ruling in 2006, Clifford (2019) shows that the legislation was still effective in limiting income shifting to low-tax countries afterwards.

The OECD, moreover, proposed to alter and expand destination country taxation: according to the proposal (OECD 2019) parent countries should levy – internationally coordinated – minimum taxes on income earned at foreign affiliates. If effective tax rates fall short of a pre-determined minimum level, the parent country levies a tax equal to the difference between the two rates. The proposal has complex economic and welfare implications, which cannot be discussed in detail in this article. Importantly, however, the proposal adds complexity to an already complex set of anti-profit shifting rules. It is hence of key importance that anti-shifting measures are integrated to limit the risk of double taxation and avoid high corporate compliance and administrative costs.

### **Transfer Pricing Legislations**

As outlined above, multinational firms may also shift income to low-tax countries by strategically mispricing intra-firm royalties. Transfer price documentation regulations, which require MNEs to document their transfer prices and show that they adhere to arm’s length rules, are expected to reduce such shifting activities. A number of papers present evidence in line with that notion (e.g., Beer and Loeprick 2015; Riedel et al. 2016). Importantly, however, recent work also suggests that transfer pricing rules exert no dampening effect on shifting activities related to IP-trade (Beer and Loeprick 2015; Baumann et al. 2018). The lack of third-party prices for patents and other IP appears to leave room for mispricing practices even in the presence of documentation requirements.

### **Coordinated Measures: BEPS and ATAD**

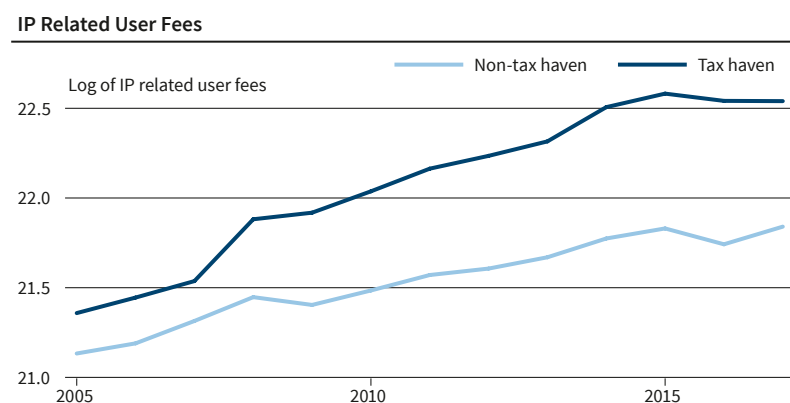
Anti-tax avoidance measures have, moreover, not only been implemented unilaterally, but countries have also agreed to tighten and coordinate instruments in the OECD’s BEPS process and the EU’s ATAD. Numerous measures have been implemented, (some of) which also target IP-related income shifting to low-tax countries. It is still to be seen how effective these measures are in limiting (IP-related) profit flows to lower-tax entities. Preliminary evidence points to the effectiveness of some measures, like country-by-country reporting (Hugger 2019).<sup>6</sup> BEPS Action 5, moreover, defines nexus requirements for patent box regimes. The evidence presented above suggests that this will reduce interna-

<sup>4</sup> The application of withholding taxes should hence be limited to payments directed towards low-tax affiliates to avoid unnecessary burdens on real business activities. Any tax threshold defining the set of “low tax countries” is arbitrary, however. If set low, profit shifting may not be substantially reduced but just diverted to lower-tax countries above the threshold.

<sup>5</sup> The welfare implications of the policy reform are very different in scenarios where MNEs retain their real activity in Austria but restrict profit shifting to low-tax countries and scenarios where MNEs relocate real activity to other countries without deduction limits and shift income from there to low-tax entities.

<sup>6</sup> Under country-by-country reporting, MNEs have to provide basic information on taxable income and real activity allocation across affiliates to tax authorities.

Figure 1



Source: World Development Indicators (2019).

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tional patent shifting to IP box countries (but might trigger shifts of real R&D activity in turn). More rigorous evaluations of the profit shifting effects of ATAD and BEPS have to be left to future research as many of the measures of ATAD and BEPS have just recently become effective (since 2016) or will become effective only in the upcoming years.<sup>7</sup> Country-level data on IP-related user fee inflows does not suggest that tax haven countries have experienced a dip in IP-related user fee receipts after BEPS and ATAD yet (see Figure 1).<sup>8</sup> This may, however, change in the years to come when the measures become effective in more countries.

## CONCLUSION

In this article, we reviewed existing empirical evidence on patent-related income shifting to low-tax countries, which largely suggests that such shifting practices are a quantitatively relevant phenomenon. We, moreover, discussed anti-avoidance measures to combat such activities. While empirical work suggests that transfer pricing laws are of limited effectiveness in containing IP-related profit shifting, there is evidence that deduction limits and CFC regimes “bite” and lower IP-related shifting activities. We also highlight, however, that the welfare consequences of anti-avoidance laws are ambiguous. Even if profit shifting is contained, the location of corporate real activity might become more tax-sensitive and tax competition might, therefore, even intensify (see e.g., Mongrain 2019).

<sup>7</sup> ATAD was adopted in 2016 only and countries were granted a two-and-a-half year period to transform the directive into national law. A number of BEPS countermeasures have been in place since 2016; this for example relates to the nexus requirements for patent box regimes. Here generous phasing out periods until 2021 were granted, however, during which former regimes remain active but new entrants are only allowed to opt for the new regime (e.g., Hemmerich 2019).

<sup>8</sup> The graph shows the natural logarithm of the average royalty payments in 92 non-haven countries and 18 tax havens (in a balanced sample). The haven countries are Antigua and Barbuda, the Bahamas, Belize, Switzerland, Dominica, Grenada, Hong Kong, Ireland, St. Kitts and Nevis, St. Lucia, Luxembourg, Macao, Malta, Mauritius, Panama, Singapore, Seychelles, St. Vincent, and the Grenadines.

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