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Literature review

Tax avoidance, DTTs, effects on revenues

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List of abbreviations

BEPS	Base Erosion and Profit Shifting
DTT	Double Taxation agreement
CFC	Controlled Foreign Company
CIT	Corporate Income Tax
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
IPR	Intellectual Property Rights
LTJ	Low Tax Jurisdiction
MNE/MCC	Multinational Enterprise / Corporation
OECD	Organisation for Economic Cooperation and Development
OFC	Offshore Financial Center
PE	Permanent Establishment
SFI	Special Financial Institution
SSA	Sub-Saharan Africa

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1 Introduction

Defining tax avoidance

The OECD's Glossary of Tax Terms defines tax avoidance as "a term that is difficult to define but which is generally used to describe the arrangement of a taxpayer's affairs that is intended to reduce his tax liability and that although the arrangement could be strictly legal it is usually in contradiction with the intent of the law it purports to follow". Unlike tax evasion, tax avoidance is not illegal, and may even be partially the result of policies by states in order to, for example, promote R&D or other investments¹. The use of such facilities only constitutes an avoidance mechanism after review by the Forum on Harmful Tax Practices². Similarly, differences in standards, regulations and legal interpretations (of tax treaties) between different jurisdictions leaves scope for avoidance. In some of those cases, tax avoidance mechanisms may still adhere to the law of some individual jurisdictions, but may inflict harm on other jurisdictions.

For the purpose of this evaluation, we define tax avoidance as practices that aim to minimise a firm's tax liabilities by using legal means against the spirit of the law, above all by shifting profitable activities or ownership to locations where they are subject to low or no taxation. This is also referred to as 'aggressive tax planning' (IHS, CPB, & DONDENA, 2017), as opposed to 'acceptable tax planning' (European Commission, 2016). Multinational companies engaged in the cross-border trading of goods and (financial) services and with other foreign operations located in high-tax countries are particularly inclined to such behaviour (Gumpert, Hines Jr, & Schnitzer, 2016). Not all international capital flows are a result of tax avoidance. There are other reasons to move around funds, repatriate profits, shield certain assets, etcetera. As the OECD (2015b, p. 20) notes, tax avoidance analysis needs to disentangle three different categories of effects: (i) real economic activity across countries independent of tax; (ii) real economic activity across countries influenced by differences in non-Base Erosion and Profit Shifting-affected tax rates (e.g. responsiveness of capital investment to a change in a country's effective tax rate); and (iii) BEPS-related activities across countries that include financial flows, legal contracts and structuring to shift profits away from where value is generated. We focus on those patterns that are clearly (though maybe not exclusively) motivated by taxpayers' interest in lowering their tax burden in a way not intended by states.

Though motivated by individual interests, as mentioned these patterns are facilitated by harmful policy practices or omissions. 'Harmful Policy Practices' are actions undertaken by governments that are harmful to third countries in that they reduce the tax base of those countries or create opportunities for taxpayers to avoid taxes and thus result in harmful tax competition (see OECD, 1998). Some countries rely on those practices as key elements of their 'business model', while other countries use them occasionally to attract investments or to protect their tax base. 'Omissions' refers to lack of action, including lack of coordination and cooperation between governments, to close regulatory gaps, mismatches and loopholes (Alonso, 2019). Together, they constitute what is often referred to as harmful tax practices or competition. Both the European Commission and the

¹ For an overview, see e.g. OECD (2018), OECD Review of National R&D Tax Incentives and Estimates of R&D Tax Subsidy Rates.

² The assessments of preferential tax regimes are conducted by the Forum of Harmful Tax Practices (FHTP), comprising of the more than 130 member jurisdictions of the Inclusive Framework. Since the start of the BEPS Project, the FHTP has reviewed almost 290 preferential tax regimes.

OECD (in the context of the OECD BEPS project)³ have set up criteria to identify harmful tax practices. In the case of the EU, the criteria for identifying potentially harmful measures were laid out in 1997 in the Code of Conduct for Business Taxation: (i) an effective level of taxation which is significantly lower than the general level of taxation in the country concerned; (ii) tax benefits reserved for non-residents; (iii) tax incentives for activities which are isolated from the domestic economy and therefore have no impact on the national tax base; (iv) granting of tax advantages even in the absence of any real economic activity; (v) the basis of profit determination for companies in a multinational group departs from internationally accepted rules, in particular those approved by the OECD; (vi) lack of transparency.

From a development policy perspective, such practices and omissions cause three major types of problems. First, it creates a drain on corporate and other tax revenues worldwide. The problem is more severe for developing countries than for developed countries because taxes paid by large corporations play a more important role for public revenue in this group of countries (Cobham & Janský, 2018; Johannesen, Tørsløv, & Wier, 2017). Second, tax avoidance also leads to market distortions by tilting the playing field in favour of tax-aggressive MNEs (OECD, 2015b, p. 15; Wier & Reynolds, 2018). Third, these practices undermine the legitimacy of the tax system and the fiscal (or social) contract (Prichard, 2019). Development cooperation is engaged in all three dimensions—hence, focusing on revenue loss alone would be too narrow.

Overview of this review

Outline

This literature review addresses the question of the best estimate of tax revenue lost by developing countries due to multinational tax avoidance. In addition, it assesses the role of the Netherlands in facilitating, or fighting, tax avoidance. We address these issues in five steps. First, we identify the main channels used by multinational corporations (MNCs) to avoid taxes. Second, we present the existing empirical evidence regarding these channels and the overall relevance of the subject, with a particular focus on poorer (low and lower-middle income) countries. Third, we zoom in on the role of the Netherlands, based on the available literature. Fourth, we look at double taxation agreements (DTTs) and their effects on tax avoidance, with particular emphasis on anti-abuse clauses. Fifth, we present evidence to size up the effect by discussing the tax gap and related concepts (such as tax effort, tax potential, etc.) of developing countries.

Methodological notes

We performed a structured review of the literature. Our point of departure was twofold, consisting of both our own knowledge of relevant literature, as well as a scan of (recent) publications by leading relevant organisations such as the IMF and OECD. We also directed search efforts through databases of academic literature, and used the ‘snowballing’ method whereby we found new literature through scanning the references of identified relevant literature. Lastly, we augmented and verified our literature review through consultation with experts from the Netherlands’ Bureau for Economic Policy Analysis (CPB) and the Dutch Ministry of Finance.

³ The *OECD G20 Base Erosion and Profit Shifting Project* (or *BEPS Project*) is an *OECD/G20 project* to set up an international framework to combat tax avoidance by multinational enterprises (“MNEs”) using base erosion and profit shifting tools.

2 Channels and mechanisms of tax avoidance

At the most general level, there are two broad channels for tax avoidance: i) reduction of the tax base and ii) reduction of the tax rate. Base erosion are practices that aim at reducing the overall tax base of a firm, while profit shifting changes the rate at which profits are taxed without (necessarily) affecting the tax base. Channels are implemented through specific *mechanisms*, with some mechanisms impacting both, tax base and rate. The distinction chosen here follows the general thrust of the international literature. Based on OECD (2013), European Commission (2016a), Ramboll Management Consulting and Corit Advisory (2015), Beer, de Mooij, and Liu (2018) and Weyzig (2013), Table 2.1 documents the most relevant mechanisms identified in the literature.

Table 2.1 Relevant tax avoidance mechanisms

	Description	Main channel	Relevance for developing economies¹
Hybrid mismatch arrangement	Exploits difference in tax treatment of instruments or entities in two jurisdictions to achieve (double) non-taxation.	Base erosion	Low
Favourable tax treatment of intellectual property rights (IPR)	Makes use of patent boxes or other special tax regimes	Base erosion	Medium
Tax treaty shopping	Exploits restrictions of taxing rights with regard to withholding tax rates, permanent establishment rules and the taxation of non-residents	Base erosion	High
Avoidance of permanent establishment (PE) status	Uses specific arrangements and exemptions to avoid taxation linked to PE	Base erosion	High
Controlled foreign company (CFC) scheme	Reduction of tax rate through attribution of income to a CFC in a low-tax jurisdiction	Profit shifting	Low
Debt shifting	Interest payments in high-tax jurisdictions on debt held by affiliates in low-tax jurisdictions	Profit shifting	High
Transfer mispricing	Strategically setting prices for transactions between affiliated entities in high- and low-tax jurisdictions	Profit shifting	Medium-High

Source: SEO Amsterdam Economics. As per OECD (2014). Most of the channels of high and medium relevance are also noted in IMF (2014) as well as IMF (2019).

2.1 Base erosion

Base erosion refers to practices that aim at reducing the overall tax base of a firm. In principle, companies in various sectors can direct their efforts to this effect (see cf. OECD, 2015, BEPS Action 1 for the distinctions and similarities between ‘digital’ and ‘traditional’ businesses).

2.1.1 Hybrid mismatch arrangements

Hybrid mismatch arrangements exploit differences in the tax treatment of an entity or an instrument under the laws of two or more jurisdictions to achieve double non-taxation (cf. OECD, 2015, BEPS Action 2). MNCs use the fact that jurisdictions treat the same income or entities differently for tax purposes. Hybrid mismatches can refer to the qualification (and taxation) of financing instruments. For instance, some expenses can be deducted in both jurisdictions (double deduction), or tax deductions can be obtained in one jurisdiction on income that is exempt from tax in the country of destination (deduction-no inclusion) (European Commission, 2016a, 2016b). This can amount to double non-taxation of income. Note that this is not just a feature of treaty usage, but also of domestic tax laws. Hybrid mismatches can also refer to mismatches in qualification of entities (transparent in one country versus opaque in the other country) and mismatches in tax residence rules (generally incorporation and/or effective place of management). This makes hybrid mismatches quite difficult to detect in practice at the level of individual firm behaviour.

2.1.2 Favourable tax treatment of IP-income

Another base erosion mechanism refers to the favourable tax treatment of intellectual property income according to a patent box or other specific tax regime in one jurisdiction, while at the same time another jurisdiction allows a deduction of royalty payments and does not levy any withholding tax on the outbound royalty payment (see OECD, 2015, BEPS Action 5; see also Ramboll Management Consulting & Corit Advisory, 2015).

2.1.3 Tax treaty shopping

Tax treaty shopping ‘involves the diversion of Foreign Direct Investment (FDI) through a third country to achieve reduction of withholding taxes under favourable tax treaties’ (Weyzig, 2013, see also OECD, 2015, BEPS Action 6). The OECD defines Treaty Shopping as an analysis of tax treaty provisions to structure an international transaction or operation so as to take advantage of a particular tax treaty. The term is normally applied to a situation where a non-resident of both treaty countries establishes an entity in one of the treaty countries in order to obtain treaty benefits.

With regard to developing countries, the practice of tax treaty shopping is based on over two thousand DTTs developing countries have signed since the 1960s (Hearson, 2018). In order to attract foreign investments, countries accept restrictions of taxing rights with regard to withholding tax rates, permanent establishment rules and the taxation of non-residents. Braun and Zagler (2018) show that the signing of such treaties between developing and developed countries is positively associated with a sizeable increase (22 percent, on average) of bilateral aid in the year of signature. Petkova, Stasio, and Zagler (2019) provide indirect evidence on the power of treaty shopping by

showing that many tax treaties are simply irrelevant with regard to attracting FDI because investors could rely on alternative routes.

A specific dimension of treaty shopping refers to the practice of donors who channel financial development aid using vehicles of offshore financial centres. This is justified by the non-existence of such vehicles in target countries or their excessive costs in host countries. Also, it is maintained that the costs of such practices in terms of revenue foregone for target countries would be compensated by larger inflows of FDI. A study by Beer and Loeprick (2018) on the impact of bilateral tax treaties of developing countries with investment hubs does not support this claim. On the other hand, Hines (2013) documents a ‘distance effect’, with countries closer to investment hubs (jurisdictions that typically have maintain treaties) receiving more investments. Similarly, based on a sample of OECD countries Lejour (2014) documents an increase in FDI to countries that sign a DTT. The literature currently offers no reconciliation between such positive and negative estimates.

2.1.4 Avoidance of permanent establishment status

MNCs may generate profits in jurisdictions without any permanent establishment, which amounts to complete base erosion under current nexus rules. This is facilitated by the digitalisation of the global economy, which is leading to new business models (platform economy, sharing economy, user-generated value) and changing the conditions of taxing value where it is created. However, MNCs sometimes rely on other mechanisms to avoid permanent establishment status, such as commissionaire arrangements, exploitation of the “specific activity exemptions” of the OECD Model Tax Convention, or the splitting-up of contracts (OECD, 2015c, see especially i.r.t. BEPS Action 7).

2.2 Profit shifting

Companies seek to lower their tax burden by shifting profits from high-tax to low-tax jurisdictions, or by shifting debt from low-tax to high-tax jurisdictions. Companies in various sectors can work towards such reductions (cf. OECD, 2015, Action 1 for ‘digital’ vs. ‘traditional’ companies).

2.2.1 Controlled foreign company schemes

One of the sources of profit shifting is the possibility of creating affiliated non-resident entities and routing income of a resident enterprise through the non-resident affiliate (OECD, 2013, see also OECD, 2015, BEPS Action 3). MNCs frequently set up subsidiaries (controlled foreign companies or CFCs) in low-tax jurisdictions. These companies, referred to as shell companies, carry out no or very reduced substantive activities but hold important intangible assets of the respective MNC and receive large royalty payments from other subsidiaries located in high-tax jurisdictions. Shell companies are corporations that have a legal existence (typically in an offshore finance centre), but do not produce any goods or services beyond channelling money. The use of shell companies or special purpose entities in low tax jurisdictions is studied in several recent papers (Damgaard, Elkjaer, & Johannesen, 2019; Lejour, Mohlmann, van 't Riet, & Benschop, 2019; Nerudova, Solilova, Litzman, & Janský, 2020).

Governments have devised CFC rules to prevent taxpayers with a controlling interest in a foreign

subsidiary from stripping the tax base of their country of residence by shifting income into a CFC. The mechanism of these rules is simple. CFC-legislation requires that the taxpayer will immediately be taxed on the non-distributed income of its CFC if certain requirements are met. However, taxpayers have developed practices that allow them to circumvent CFC rules. For example, they may manipulate the definition of CFCs through the choice of the subsidiary's legal form, fragmentation of the level of control, or splitting of income across multiple subsidiaries (European Commission, 2016b).

2.2.2 Debt shifting

Debt shifting can be considered one of the most common mechanisms of tax planning by MNCs, through a related entity that benefits from a low-tax regime, to create excessive interest deductions for the issuer without a corresponding interest income inclusion by the holder. The result is that interest payments are deducted against the taxable profits of the operating companies while the interest income is taxed favourably or not at all at the level of the recipient, and sometimes the group as a whole may have little or no external debt (OECD, 2013, see also OECD, 2015, BEPS Actions 2, 4 and relatedly 9).

A related structure refers to situations where interest can be fully deducted in one member state whereas only a small interest spread is being taxed in another member state, with this other member state not imposing withholding tax on the interest paid to an offshore (low taxed) entity.

Debt shifting can be used to lower the profits of entities in high-tax jurisdictions while raising the profits of related entities in low-tax jurisdictions. However, it can be employed as a means of base erosion, often simultaneously:

“Most countries tax debt and equity differently for the purposes of their domestic law. Interest on debt is generally a deductible expense of the payer and taxed at ordinary rates in the hands of the payee. Dividends, or other equity returns, on the other hand, are generally not deductible and are typically subject to some form of tax relief (an exemption, exclusion, credit, etc.) in the hands of the payee. While, in a purely domestic context, these differences in treatment may result in debt and equity being subject to a similar overall tax burden, the difference in the treatment of the payer creates a tax-induced bias, in the cross- border context, towards debt financing. The distortion is compounded by tax planning techniques that may be employed to reduce or eliminate tax on interest income in the jurisdiction of the payee” (OECD, 2015a, p. 15).

This quote also shows that debt shifting is not primarily an issue of violating the arms-length principle by charging higher-than-usual interest rates (although this might also occur at times). Even if interest rates applied in intra-group financing match the rates requested by third parties, debt shifting may still lead to lower, sometimes even negative, tax rates.

2.2.3 Transfer mispricing

Transfer mispricing constitutes a specific channel of tax avoidance, because in many cases it is

difficult (if not impossible) to determine whether the pricing of intra-group trade in goods and, above all, services is in fact arm's length (see also OECD, 2015, BEPS Actions 8-10). Tax and customs authorities from developing countries find it particularly hard to control trading of intangible assets (such as intellectual property rights).

Transfer pricing rules under the OECD as well as the UN Model Tax Convention require transactions between associated enterprises to be priced as if the enterprises were independent. This so-called "arms-length principle" is susceptible to manipulation by taxpayers, leading to situations where the allocation of profits is not aligned with the economic activity that produced the profits (European Commission, 2016b; OECD, 2013, 2015). Unlike transactions of basic goods or services where fair market prices are readily available, transactions involving intangible assets, commodities or financial transactions lack comparable market transactions and thus create problems in applying the arm's-length principle (Chen, 2019; OECD, 2015).

This has important implications for the measurement of transfer mispricing. With regard to the trade of goods, studies typically identify profit shifting from variation in the unit prices of traded goods, inferred from macro-level information about traded values and quantities. However, many types of services are inherently uncountable and therefore do not have meaningful unit prices (Bustos, Pomeranz, Vila-Belda, & Zucman, 2019; Hebus & Johannesen, 2016).

2.3 Relevance of mechanisms for developing economies

As a matter of principle, all of the preceding channels and mechanisms could impact developing economy revenue collection. In practice however, not all channels and mechanisms are equally relevant. Instead, the OECD (2014) and the IMF (2014) outline the set of mechanisms especially relevant for developing economies.

The OECD (2014) and the IMF (2014) notes that avoidance issues surrounding intragroup payments on debt, services or intellectual property are highly relevant for developing economies – in part because intragroup firms in developing economies typically receive finance, services and/or intellectual property. The OECD (2014) observes that local tax authorities struggle to assess whether such intragroup payments are at real value due to a lack of information and/or limited (technical capacity). Both the OECD and the IMF (2014) stress the role of interest payments in relation to debtshifting.

Relatedly, the OECD (2014) and the IMF (2014) report that the way multinational corporations structure their activities in developing economies induces risks for avoidance. The use of centralised business functions at e.g. a regional level gives rise to 'supply chain restructuring'. Similarly, the indirect transfer of assets can shield companies from e.g. capital gains tax. In short, certain structures either move or keep business activities out of the country (establishment) or raise questions with respect to the pricing of intragroup activities (transfer pricing). The OECD (2014) notes that the appropriate fiscal treatment of such structures may require high capacity on the part of local tax authorities, which is sometimes lacking.

Intersecting concerns regarding intragroup payments, permanent establishment, and transfer mispricing is the abuse of treaties (OECD, 2014). This typically takes the form of routing intragroup payments through an affiliated treaty country, whereby the developing economy loses out on withholding taxes. Likewise, the IMF (2014) notes that treaty shopping is a major issue for developing economies and that treaty partners should be mindful of the fact that revenue losses may offset the potential gains in investments.

3 Empirical evidence and estimates of effects

A growing literature attempts to estimate revenue losses as a result of tax avoidance. The policy debates of the last decades have sparked significant academic interest. Nevertheless, studies typically face empirical challenges (see Box 3.1). Below, we review estimates on global losses inclusive of as many channels/mechanisms as possible, estimates of losses in SSA economies, and estimates of losses per specific channel/mechanisms. Where relevant, we reference and note methodological limitations. We note that the literature has not converged on strategies to address methodological limitations. Every method has its advantages and limitations. As a result, it is difficult to single out a single best estimate of the costs of avoidance.

Box 3.1 Challenges in the empirical literature

Challenges faced by the empirical literature are:

Geographic scope. A significant part of this research has focused on developed economies (above all the US, see Blouin & Robinson, 2019; Clausing, 2016, 2020; Zucman, 2014). Studies estimating global revenue losses are scarce, and studies shedding light on (individual) developing economies even more so.

Avoidance scope. Most studies using macro-level data investigate the overall revenue loss associated with avoidance, and hence typically do not offer a decomposition by channel. Some studies focus on specific mechanisms, usually based on firm-level data, but the literature covers only some of the mechanisms identified above. In addition, comparing the available estimates of the revenue effects of specific mechanisms is difficult due to methodological differences between papers.

Data limitations. Countries differ by data availability and quality. This problem is especially pronounced for developing economies, as well as for some offshore financial centers.⁴ The problem arises in both macro- and micro-level data.

Importantly, Clausing (2020) observes that there appears to be a large data-driven discrepancy. Studies that rely on financial accounting databases find far smaller magnitudes of profit shifting and much lower elasticities than studies that rely on macroeconomic statistics, tax data, or survey data on multinational companies. This is largely due to the fact that profits in some offshore financial centers are hardly included in financial accounting databases.⁵ In addition, Heckemeyer and Overesch (2017) find that the choice of the (firm-level) database also influences the observed magnitude of the effect. This problem is not just technical, but also conceptual in the sense that some studies take the absence or presence of certain capital flows in the data as indicative of avoidance.

Measurement issues. Some variables of interest such as the effective (as opposed to statutory) corporate income tax rate are difficult to measure (in part due to data limitations). Differences in tax standards can make comparing jurisdictions more difficult. Differences in accounting standards between jurisdictions require careful reconciliation in order to avoid over- or underestimating effect sizes.

Identification: Endogeneity is a significant problem. For instance, the effective corporate income tax rate is endogenous of firm tax behaviour (i.e. firms 'choose' their effective corporate rate through their use of certain structures, implying that the 'counterfactual' behaviour in absence of certain structures is difficult to observe). Relatedly, the opacity of international tax planning constitutes another challenge for identification.

Source: SEO Amsterdam Economics.

⁴ Different studies define offshore financial centers/tax havens / low tax jurisdictions differently see e.g. Gravelle (2013), Hers et al (2018) and Garcia Bernardo et al (2017) amongst others.

⁵ It is a well-known fact that the widely-used ORBIS database has limited coverage with regard to tax havens. As Tørslov, Wier, and Zucman (2018, p. 7) observe: "In 2012, only 17% of the global profits of multinationals could be traced in Orbis – 83% were booked in subsidiaries unknown to Orbis, or for which no profits data was available. The problem is particularly acute for low and zero tax countries."

Table 3.1 Summary of studies - Global

	Estimated effect	Geographic scope	Avoidance scope	Data issues	Measurement issues	Identification
Crivelli et al. (2015)	Global revenue losses due to spillovers worth USD 650 bln.	Global	Base and strategic spillovers	Coverage of macro-data, need for proxies based on macro-data	Appropriate tax rates	Panel data regressions
Cobham and Janský (2018)	Global revenue losses due to spillovers worth USD 500 bln.	Global	Base and strategic spillovers	Same as above	Appropriate tax rates	Panel data regressions
OECD (2015)	Revenue losses between USD 100 and USD 240 bln.	Global	Revenue loss due to CIT avoidance	ORBIS has limited coverage of OFCs, coverage of macro-data	Use of proxies for (in total) 6 different indicators.	Quantitative synthesis of relevant indicators
Janský and Palanský (2019)	Revenue losses around USD 125 bln.	Global, sample of 79 countries	Revenue losses due to shifting associated with 'tax havens'	Coverage of macro-data, need for proxies based on macro-data	Definition of 'tax haven'	Panel data regressions

Source: SEO Amsterdam Economics.

Table 3.2 Summary of studies – Developing Countries

	Estimated effect	Geographic scope	Avoidance scope	Data issues	Measurement issues	Identification
Crivelli et al. (2015)	Non-OECD revenue losses worth USD 200 bln.	Non-OECD	Revenue losses due to shifting associated with 'tax havens'	Coverage of macro-data, need for proxies based on macro-data	Definition of 'tax haven'	Panel data regressions
Cobham and Janský (2018)	Range of losses in developing economies: range from 6.97% of GDP (Chad) to - 1.11 percent (i.e. a gain) for Jordan.	Global, sometimes jurisdiction specified.	See above	See above	See above	See above
Janský and Palanský (2019)	Range of losses in SSA: 0.53 percent of GDP (Mozambique) to 0.02 percent (Benin).	Global, sometimes specified by jurisdiction.	See above	See above	See above	See above
Janský and Šedivý (2019)	Range of losses in SSA between 0 and 0.05% of GDP.	Sample of several developing economies in SSA and Asia.	Revenue losses associated with DTTs with developing economies.	Coverage of macro-data, need for proxies based on macro-data	Measuring tax rates	Direct calculation based on tax rate differentials

Source: SEO Amsterdam Economics.

Table 3.3 Summary of studies – Channel Specific

	Estimated effect	Geographic scope	Avoidance scope	Data issues	Measurement issues	Identification
UNCTAD (2015)	Annual USD 100 bln. revenue loss for developing economies linked to investment hubs.	Developing economies	Treaty shopping, investment hubs	Coverage of macro-data, need for proxies based on macro- data	Defining investment hubs	Panel data regression to estimate elasticity of FDI, simulation analysis to assess revenue losses
Tørsløv et al. (2018)	Global tax revenue losses due to profit shifting of around 10% of CIT revenues	Global	Profit shifting	Blouin and Robinson (2019) and Clausing (2020) debate about the extent to which 'double counting' is a problem in US BEA foreign affiliate statistics.	Factors to consider in the profit attribution.	Profit appropriation based on bilateral BoP statistics.
Blouin & Robinson (2019)	4-15% of corporate tax revenues lost to BEPS activity of MNEs	US	Profit shifting	See note at Torslov et al. (2018)	As per Clausing (2016)	As per Clausing (2016)
Clausing (2016)	Between \$77 and \$111 billion in corporate tax revenue by 2012	US	Profit shifting	BEA foreign affiliate microdata, see also note at Torslov et al. (2018)	Measuring tax differentials and semi-elasticities.	Direct calculation based on stylised tax rate differentials and semi-elasticities
Clausing (2020)	\$100 billion a year in 2017	US	Profit shifting	See note at Torslov et al. (2018).	As per Clausing (2016)	As per Clausing (2016)

Source: SEO Amsterdam Economics.

Table 3.4 Summary of studies – Channel Specific (continued)

Study	Estimated effect	Geographic scope	Avoidance scope	Data issues	Measure-ment issues	Identification
Dharmapala & Riedel (2013)	Earnings shocks drive within-group capital flows, mainly through strategic use of debt.	EU	Profit shifting, debt shifting	AMADEUS data restricted to European affiliates	Observing and measuring earnings shock	Identification on firm earnings shock (diff-in-diff) may have alternative explanations
Heckemeyer & Overesch (2017)	Tax semi-elasticity of subsidiary pre-tax profits of about 0.8	Meta-analysis	Profit shifting	Meta-analysis	Meta-analysis	Meta-analysis
Devereux et al. (2020)	By foreign-controlled entities.	Global	Profit shifting	See Torslov et al (2018), see Blouin & Robinson (2019), further use of micro- and macro-data suffers from the same issues as noted above.	Combining approaches from the literature implies that issues carry over.	Synthesis based on the literature, Limitations may carry over.
Davies et al. (2018)	Tax losses of 1% of CIT revenue due to transfer mispricing in manufacturing	France	Transfer mispricing	Firm level microdata combined with macro data (and proxies)	Measurement of pricing and tax differentials, definition of affiliates and havens.	Panel regression
Hebous and Johannesen (2016)	Tax losses of 7% of CIT revenue due to transfer mispricing in services	Germany	Transfer mispricing	Firm level microdata combined with macro data (and proxies)	Definition of havens	Panel data Regression

Source: SEO Amsterdam Economics.

3.1 Estimates of global revenue losses

A first set of empirical studies that have been widely discussed in the international tax debate does not explore the impacts of specific tax avoidance mechanisms, but rather looks at the spillover effects of countries' tax policies on third countries, both in terms of investment and profit shifting. Crivelli, De Mooij, and Keen (2015) focus on two types of cross-border fiscal spillovers in international corporate taxation: 'base' and 'strategic' spillovers. Base spillovers are the impact of one country's tax policy on the tax bases of other countries. This can arise through either an impact on real activities (investment) but also as a result of shifting behaviour. Strategic rate spillovers are the impact on a country's policy choices of tax changes abroad. The authors use panel data for 173 countries over 33 years to quantify the revenue impact of avoidance techniques. In particular, they estimate an equation with corporate tax base as the dependent variable and offshore financial centres (OFCs) corporate tax rates as one of the independent variables, in order to evaluate the

scale of the spillover. In their model they measure avoidance associated with OFCs by ‘turning off’ the effects on tax bases operating through that channel. Findings point to a global revenue loss of ca. USD 650 bn, of which USD 200 bn in non-OECD countries. In dollar terms, the revenue apparently at stake is, as one would expect, much larger for OECD members. Relative to GDP, the implied long run revenue losses for OECD countries are in the order of 1 percent of GDP—close to the estimate of Gravelle (2013). For developing countries, losses are estimated at around 1.3 percent of GDP. This is a significant amount, especially relative to their lower levels of overall revenue.

Cobham and Janský (2018) use the same methodology as Crivelli et al. (2015), and re-estimate their model using a different data set on tax revenues (Government Revenue Dataset, GRD).⁶ They present country-level results (see Appendix A). Their findings support a somewhat lower estimate of global revenue losses of around USD 500 billion annually and indicate that the greatest intensity of losses occurs in low- and lower-middle income countries. Both studies estimate tax revenue loss from corporate tax avoidance by looking at the cross-country relationship between the CIT revenue collected by each country and the statutory tax rates of other countries, but not on direct statistics on the profits booked by multinationals in OFCs (see Tørsløv et al., 2018). Statutory rather than real effective tax rates are used due to data availability, though the authors acknowledge that the statutory rates can be quite different than real effective rates and thus may not reveal the real dimension of spillover effects.

Action 11 of the OECD / G20 BEPS project focuses on the task of measuring and monitoring BEPS. In its final report on this action area, the OECD (2015b, pp. 15-16) observes that the profit rates reported by MNE affiliates located in lower-tax countries are twice as high as their group’s worldwide profit rate on average. Effective tax rates paid by large MNE entities are estimated to be 4 to 8½ percentage points lower than similar enterprises with domestic-only operations. The separation of taxable profits from the location of the value creating activity is particularly clear with respect to intangible assets, and the phenomenon has grown rapidly (see e.g. Hers et al., 2018). For example, the ratio of the value of royalties received to spending on research and development in a group of low-tax countries was six times higher than the average ratio for all other countries and has increased three-fold between 2009 and 2012. Finally, debt from both related and third parties is more concentrated in MNE affiliates in higher statutory tax-rate countries. OECD (2015b) uses firm-level Orbis data to quantify indicators on profit rate differentials, effective tax rates and interest expenses. All in all, the OECD (2015b) estimates a global loss of USD 100 billion to USD 240 billion in 2014, or 4 to 10 percent of all CIT revenues (and up to USD 2.1 trillion over 2005–2014). It should be noted however, that the ORBIS database registers only 1,622 subsidiaries of MNCs located in the Middle East and Africa region, which is only 0.5 percent of all subsidiaries contained in the database. It is unclear to what extent this affects the degree of over- or underestimation in the reported estimates.

⁶ See <https://www.wider.unu.edu/project/government-revenue-dataset>, accessed 13.03.2020

Janský and Palanský (2019) use data on FDI stocks and balance-of-payments statistics, both provided by the IMF, to assess revenue losses from profit shifting related to FDI from OFCs.⁷ Their findings indicate that a total of USD 420 billion was shifted out of the 79 countries of their sample (both developing and developed), resulting in a tax revenue loss of USD 125 billion, or ca. 10 percent of corporate tax revenue.

3.2 Estimates of revenue losses for developing economies, esp. SSA

A few studies provide estimates for individual countries. For this evaluation, the most relevant studies encompass the 32 development cooperation partners of the Netherlands. For instance, Crivelli et al. (2015) as well as Cobham and Janský (2018) present data on 23 of these 32 countries. Revenue losses from corporate tax avoidance estimated by Cobham and Janský (2018) range from 6.97 percent of GDP in the case of Chad to -1.11 percent (i.e. a gain from tax avoidance practices) in the case of Jordan in the year 2013. Sub-Saharan Africa on average has CIT spillover revenue losses of between 2.01 and 2.32 percent of GDP, depending on the dataset employed.

Janský and Palanský (2019) use data on FDI stocks and balance-of-payments statistics, both provided by the IMF, to assess revenue losses from profit shifting related to FDI from OFCs.⁸ Their findings indicate that a total of USD 420 billion was shifted out of the 79 countries of their sample (both developing and developed), resulting in a tax revenue loss of USD 125 billion, or ca. 10 percent of corporate tax revenue. Referring again to the group of development cooperation partners of the Netherlands, revenue losses range from 3.53 percent of GDP (Mozambique) to 0.02 percent (Benin).

Finally, Janský and Šedivý (2019) explore the costs of tax treaties for developing countries in terms of revenue foregone from withholding taxes. They provide detailed estimates for 14 developing countries, six of which are cooperation partners of the Netherlands (see Appendix A for their results). Based on data between 2009 and 2015, estimates range from 0.05 percent of GDP in Uganda to virtually zero percent in the case of Tanzania.

3.3 Estimates of effects of specific avoidance mechanisms

Some studies provide evidence on the effects of specific avoidance mechanisms. Tables 3.1-3.4 display an overview. Note that it is not possible to assess the effects of all identified avoidance mechanisms. In fact, the only literature that provides empirical estimates of the losses associated with base erosion is the one on treaty shopping and the impacts of DTTs. Following the terms of reference and due to its particular relevance to this evaluation, treaty shopping will be covered in more detail in a separate chapter below.

3.3.1 Treaty shopping

UNCTAD (2015) uses national-level data on returns to foreign direct investment to estimate the

⁷ This is based on the approach developed by UNCTAD (2015), which we discuss below.

⁸ This is based on the approach developed by UNCTAD (2015), which we discuss below

scale of revenue losses due to profit shifting through investment conduit jurisdiction, a practice discussed as treaty shopping by Weyzig (2013). An estimated USD 100 billion of annual tax revenue losses for developing countries is related to inward investment stocks directly linked to offshore hubs. There is a clear relationship between the share of offshore-hub investment in host countries' inward FDI stock and the reported (taxable) rate of return on FDI. The more investment is routed through offshore hubs, the less taxable profits accrue. Across developing economies, on average every 10 percentage points of offshore investment is associated with a 1 percentage point lower rate of return.

3.3.2 Profit shifting

Profit shifting is typically measured indirectly by relating tax rate differentials to reported pre-tax profits at the firm or country level. In contrast, Tørsløv et al. (2018) use a newly constructed database on where profits are booked by multinational companies, derived from new macroeconomic data known as foreign affiliates statistics. These statistics record profits made by affiliates of foreign multinational companies and the wages these affiliates pay. Hereby the national account aggregates of the main OFCs and non- OFC countries can be broken down by firm ownership, thus enabling a distinction between foreign-owned firms and local firms. Findings indicate that foreign firms are systematically more profitable than local firms in OFCs, and less profitable in non-haven countries. At a global level, close to 40 percent of multinational profits – defined as profits made by multinational companies outside of the country where their parent is located – are shifted to OFCs in 2015. Profit shifting by multinationals leads to corporate tax revenue loss of almost 20 percent of total corporate tax revenue in the European Union. For the world as a whole, the tax revenue loss is around 10 percent. According to Tørsløv et al. (2018) revenue losses vary significantly across countries, but are smaller as a percentage of total tax revenues for developing countries. At first glance, this finding is at odds with the results that revenue loss measured as a percentage of GDP is larger for developing countries than for industrialised countries. However, sampling probably plays a role here, as this study only includes seven large emerging economies (Brazil, China, Colombia, Costa Rica, India, Russia and South Africa).

The approach followed by Tørsløv et al. (2018) has been criticised because it may misrepresent the actual profits of the subsidiaries of MNCs in third countries. According to Blouin and Robinson (2019), correcting for double counting of foreign income from indirect subsidiaries would reduce the estimate of the U.S. fiscal effects of BEPS from 30-45 percent to 4-15 percent of corporate tax revenues – a huge change. However, Clausing (2020) points to some serious puzzles raised by the method chosen by Blouin and Robinson (2019) and presents revised estimates based on the most recent US data (2017). According to her, US revenue loss from profit shifting is likely to exceed USD 100 billion in 2017, amounting to more than a third of federal corporate tax revenues. Total amounts are somewhat lower than her previous estimates, but relative figures remain roughly in the same range (see Clausing, 2009).

Dharmapala and Riedel (2013) employ a similar strategy by looking at the effects of earning shocks experienced by parent firms on profits of affiliated entities in third countries, but on a sample of EU economies. While profits of affiliates in high-tax jurisdictions are not significantly affected, profits in low-tax jurisdictions are. Their estimates suggest that at the margin, around 2 percent of the (additional) parent profits are transferred to low-tax subsidiaries.

Heckemeyer and Overesch (2017) present the findings of a meta-analysis covering 27 empirical studies with more than 200 primary estimates. All studies estimate the empirical relationship between reported parent or affiliate profitability and the tax incentive to shift profits abroad. Results suggest that transfer pricing and licensing, not inter-company debt, is the dominant profit-shifting channel. All in all, a one percentage point smaller tax rate differential between parent and affiliate jurisdiction is associated with an increase in an affiliate's pre-tax profit by approximately 0.8 percent.

A few initial studies estimate the effect of a worldwide minimum taxation such as suggested by the OECD "Global Anti-Base Erosion" proposal with its two pillars. For instance, a recent study commissioned by PwC using financial accounting data on foreign-controlled subsidiaries across many countries, Devereux et al. (2020, p. 4) conclude:

"A threshold effective tax rate of 10 percent would yield additional revenue worldwide of around USD 32 billion, or around 14 percent of the taxes currently paid by foreign-controlled entities. This represents less than 2 percent of total taxes currently levied worldwide on corporate profit, and approximately one third of 1 percent of total worldwide corporate profit. The highest revenues would be sourced from the British Virgin Islands, Puerto Rico, Ireland, Bermuda, Cayman Islands, Luxembourg, Netherlands and Singapore."

The beneficiaries of such minimum tax would be the largest economies if the country of the ultimate parent company would collect it, or the low tax countries if the tax would be collected on a country-by-country basis.

3.3.3 Debt shifting

The strategic use of debt by European multinationals is mentioned in the paper by Dharmapala and Riedel (2013) as one of the dominant channels through which profit-shifting occurs. They find that the financial income (which includes net interest payments but excludes operating income) of low-tax affiliates increases relative to that of high-tax affiliates in the wake of positive parent earnings shocks. In contrast, there is no such effect for operating income. Moreover, the debt-to-asset ratio of parent firms responds more positively to positive parent earnings shocks when more of the parent's subsidiaries are located in low-tax countries. These are strong indications for debt shifting. However, sampling may have played a role in bringing about this result, as the sample is constructed such that affiliates and parents belong to different industries (i.e. less opportunities for transfer mispricing).

3.3.4 Transfer mispricing

In their study on the missing profits of nations, Tørsløv et al. (2018, p. 23) observe profit-shifting even in industries where intangibles play a relatively minor role in the production process. They relate this finding to transfer mispricing and debt shifting: "Firms across all industries may shift profits by using intra-group trade and borrowing. It could also be that multinationals in all sectors can create firm-specific intangibles (such as logos), book these in low-tax places, and charge royalties to high-tax subsidiaries for the right to use these intangibles".

With regard to industrialised countries, more and more studies try to tease out the effects of transfer

mispricing by combining macro-level with firm-level data on trade and investments. For instance, Davies, Martin, Parenti, and Toubal (2018) study the effect of transfer mispricing using micro-level data from France, controlling for pricing-to-market strategies. They estimate mispricing effects to be in the range of roughly 1 percent of total corporate taxes collected by tax authorities in France for manufactured goods alone, with the bulk of this loss being driven by the exports of 450 firms to ten OFCs.

Given the difficulties outlined above, there are few studies that explore the impact of transfer mispricing in services, focusing on industrialised countries. Hebous and Johannesen (2016) combine aggregate data on trade flows with micro-level data from Germany for an in-depth analysis of transfer mispricing related to services. They find support for the hypothesis that affiliated trade in intellectual property (patents and trademarks), headquarter services (administration, management and advertising), information services, and sea transport (shipping) serves to shift profits to OFCs. In addition, the authors observe a particularly strong effect of services trade *between* OFCs, indicating that services are traded through chains of entities belonging to the same firm. Results also suggest that service trade between German firms and their OFCs affiliates is funnelled through entities in third countries; in particular the Netherlands. Under the extreme assumption that all service imports from OFCs in which the importing firm has an affiliate are purely fictitious transactions where the acquired service has no actual value, these imports would cause a revenue loss of around € 3 bln. (approximately 7 percent of German corporate tax revenue) for the German tax authority. However, the overall amount of profit shifting due to actual mispricing could be lower given that other channels of tax avoidance offered by OFCs could also play a role.

3.4 Estimates for the Netherlands

The Netherlands is often mentioned as serving a key role in facilitating (tax driven) international capital flows (for instance, see Lejour et al., 2019). Qualitative studies on the Dutch fiscal system offer insight into the mechanisms and pre-conditions that drive the role of the Netherlands in facilitating international capital flows. SOMO (2019) argues that Dutch substance requirements are comparatively weak, allowing easy access for foreign companies wishing to make use of the Netherlands' treaty network and tax system. The Dutch treaty network is extensive and intersects with certain exemptions in the Dutch tax code and EU law, for instance the exemption on dividend withholdings and the participation exemption. Other features that are supportive of international capital flows and/or tax planning are the options of corporate forms available to companies in the Netherlands (e.g. a cooperation, limited partnerships), which offer certain (favourable) tax treatments.

Lastly, the practice of tax rulings on the interpretation of the tax code by the Netherlands' tax authority have attracted significant attention from the European Commission. As of July 1st 2019, stricter requirements apply regarding the issuance of tax rulings. In addition, Vleggeert & Vording (2019) highlight the role of low or zero withholding taxes. Beyond such features of the legal system, the fact that the Netherlands has long been an attractive conduit for foreign capital (self-)reinforces its role in facilitating international capital flows. Kerste et al. (2013) documents a significant (tax) advisory sector in the Netherlands capable of facilitating foreign capital flows. This suggests some 'path dependency' in the sense that because the Netherlands facilitates significant capital flows, MNE's continue to structure flows via the Netherlands, despite legislative changes (e.g. the introduction of a conditional withholding tax) making it less attractive.

3.4.1 Overall effects

Quantitative research into the magnitude of tax avoidance channeled through the Netherlands is scarce (Lejour, 2020), especially with respect to the ‘costs’ (in terms of lost revenue) imposed by Dutch fiscal policy on other jurisdictions. Estimating the cost of avoidance is methodologically difficult (see above). Conceptually, linking costs of avoidance to a specific country is difficult given that avoidance typically hinges on *differences* in fiscal regimes *between* several countries.

The only specific estimate of overall revenue losses associated with tax avoidance through the Netherlands is Lejour (2020). Lejour synthesises various estimates in the literature to arrive at a rough estimate. Tørslov et al. (2018) estimate that USD 57 bln. of profits were shifted to the Netherlands in 2015. Blouin and Robinson (2019) build on Clausing (2016) to suggest flows affiliated with US companies through the Netherlands worth USD 14-42 bln in 2012 (but see our discussion in section 1.2.3). Beer et al. (2019) argue that Dutch CIT revenues should be 5 percent higher due to fiscally driven capital flows, but Lejour (2020) deems this unlikely (in part given the Netherlands’ role as a conduit). Combining these estimates from the literature, Lejour (2020) suggests global tax losses worth USD 25 bln. globally due to the Netherlands. Lejour (2020) remarks that estimates in the literature (and by extension his) typically do not account for behavioural effects such as tax competition. Instead, the literature typically takes the tax system as given; allowing for tax competition would make the tax system endogenous. Endogenous behaviour in relation to tax policy could drive higher revenue losses than estimated by methods that take the fiscal environment as given (see e.g. Crivelli et al., 2016).

Table 3.5 Available estimates for the role of the Netherlands

	Estimated effect	Geographic scope	Avoidance scope	Data issues	Measure-ment issues	Identification
Lejour (2020)	Global tax revenue losses of USD 25 bln. due to the Netherlands	Global	As per Torslov et al. (2018), Clausing (2016), and Beer at al. (2019)	As per Torslov et al. (2018), Clausing (2016), and Beer at al. (2019)	As per Torslov et al. (2018), Clausing (2016), and Beer at al. (2019)	Synthesis based on the literature

Source: SEO Amsterdam Economics.

While not estimating revenue losses, Hers et al. (2018) provide data on the volume of financial flows through the Netherlands to low-tax jurisdictions (LTJs). Using direct measurement of microdata from a sample of Dutch Special Financial Institutions (SFIs), Hers et al. (2018) document € 196 bln. and € 199 bln. worth of inflows and outflows through Dutch special financial institutions (SFIs) in 2016 (dividends, interest and royalties). An estimated € 22 bln. of the outflows are directed towards low tax jurisdictions (Hers et al., 2018; Ministry of Finance, 2018).

3.4.2 Effects on developing economics, esp. Sub-Saharan Africa

Recent estimates

There are no recent studies that estimate the effect of Dutch tax policy on revenues in developing economies. Circumstantial evidence suggests that these costs may be comparatively small in relation to losses imposed on other countries. FDI flows between high- and middle-income countries are orders of magnitude larger than those between lower income countries and this group (see also Hers et al., 2018a). The costs for SSA economies, however, may still be significant (see section 5 below).

Based on Tørsløv et al. (2018), the European Parliament (2019) suggests that EU jurisdictions lose around € 11 bln. in revenues through the Netherlands. If the US base shift of USD 14-42 bln. estimated by Blouin and Robinson (2019) implies a USD 4.9-14.7 bln. tax loss at the 2012 statutory rate of 35 percent or USD 2.9-8.8 bln. at the current 21 percent statutory rate. Relative to the estimate of Lejour (2020) noted above, this would suggest a revenue loss of between USD 0-11 bln. for jurisdictions other than the EU and US.

Hers et al. (2018a) show that around 41 percent of the inflows in Dutch SFIs in 2016 came from jurisdictions other than the EU28, the US or LTJs. SSA is likely to constitute a comparatively small part of this remaining 41 percent. Lejour et al. (2018) reveal that Singapore accounts for around 10-20 percent of dividends and 10-20 percent of royalties (leaving less of the remainder to be unaccounted for by e.g. SSA economies). Similarly, OECD data shows that in 2018 FDI inflows in the Netherlands from SSA economies amounted to around 1 percent of total inflows. Dutch Central Bank (DNB) data on the geographic distribution of inward FDI positions in SFIs indicate that the share of SSA in the total is around 0.5 percent. It should be noted that these figures exclude flows or positions from SSA economies arriving in the Netherlands through third countries. If we assume a prorated distribution of geographic incidence of tax revenue losses (proportional to OECD flows of 1 percent) Lejour's (2020) estimate of 25 bln. in global losses translates to € 250 mln. of revenue losses in SSA due to the Netherlands.

This assumption of prorated incidence may be too stringent. Country level data reported by Tørsløv et al.⁹ suggests that Nigeria loses USD 183 mln. and South Africa loses USD 127 mln. due to the Netherlands. Taken together, this would suggest that the prorated estimate of € 250 mln. of revenue losses in SSA due to the Netherlands may be too low.

Older estimates

An older literature suggests tax losses for developing economies due to the Netherlands (Oxfam, 2013; Weyzig & Van Dijk, 2007; Kerste et al., 2013). These studies suggest a comparatively small effect on developing economies in relation to total avoidance. Their interpretation, however, requires care, as they typically only constitute partial analyses (e.g. excluding royalties, only withholding taxes, etc.) and/or identifying assumptions are imposed ex-ante (e.g. a 5 percent tax differential).

Assuming a 5 percent tax differential, Oxfam (2013) estimates that developing economies lose at least € 460 mln. annually (3-year average) through tax avoidance through Dutch entities. Oxfam (2013) argues that this is likely an underestimation because the data excluded royalties, and data limitations did not permit estimating the effects of 'transfer mispricing'. An earlier study by Weyzig

⁹ See <https://missingprofits.world/>

& Van Dijk (2007) employed a similar 5 percent differential, yet estimated a more significant loss of € 640 mln. annually (3-year average), of which € 76 mln. in SSA. Kerste et al. (2013) suggests lower losses for developing economies due to withholding tax losses as a result of tax treaties with the Netherlands of € 70 mln. in 2010, or € 145 mln. in 2011 (dividends only; in both cases based on a roughly 5 percent tax rate differential). For a sample of economies, SOMO (2013) reports revenue losses worth € 711 million in 2011 due to the lower withholding tax rates in Dutch treaties on dividend and interest income. A 2018 study by Oxfam Uganda suggested that Uganda alone may lose up to USD 400 million in revenues due to a taxation agreement with the Netherlands affecting a single oil well.¹⁰

¹⁰ See <https://allafrica.com/stories/201908130800.html>.

4 Sizing up the effects: tax gaps

‘Tax gaps’ express to what extent the actual tax take falls short of the potential tax yield. Several factors may drive the gap between actual and potential tax yield, including avoidance. Other factors include the business cycle, demographics, and institutional quality. The literature offers several perspectives on the tax gap, as outlined in Box 4.1.

European Parliament (2014) outlines several factors driving tax gaps in developing economies. It notes that evasion may be a significant contributor, but also remarks that other factors are at play. Developing economies may lose revenues due to tax incentives offered to attract investment and spur growth – an issue noted by OECD (2014) as well. This is especially damaging to the tax base if companies would have invested capital regardless of the tax incentives offered. Another issue singled out in European Parliament (2014) is the extent to which extractive industries share revenues with governments or are appropriately taxed.

Other drivers of the tax gap stem from political, administrative or economic constraints. Political favouritism through tax policy, as well as entrenchment and political power of tax administrators, reduce the incentive or potential for reform. Similarly, special interest groups lobby fervently for tax policy changes in their interest. Such efforts are often more successful against a backdrop of high inequality (European Parliament, 2014). Administrative constraints deal largely with limited capacity at tax collection offices (including difficulties in attracting and retaining talent), institutional weaknesses such as tax authorities not fully implementing advanced tax administration techniques (e.g. large taxpayer unit, simplification of tax systems and procedures; European Parliament, 2014), or weak overall enforcement. Economically, European Parliament (2014) notes the presence of income-related tax exemptions in economies with a large poor population, an underdeveloped economy with large sectors that are difficult to tax (e.g. agricultural, informal), as well as an overreliance on trade and commodity-based taxes.

Box 4.1 Tax performance, tax capacity, tax potential, tax effort, tax gap: clarifying the terms

The terms mentioned here are sometimes used interchangeably, or one and the same term is employed by different authors with different meanings. We provide some basic definitions to reflect the mainstream understanding in each case, based on Bird (1976); Fenochetto and Pessino (2013); Glenday, Bharali, and Wang (2019); IMF (2011); Lotz and Morss (1967); Teera and Hudson (2004); von Haldenwang and Ivanyna (2012):

- **Tax performance** is often used as a general reference to the relationship of actual tax take or tax base to potential tax yield or tax base
- **Tax capacity** refers to the theoretical maximum level of tax revenue that a government can collect, accounting for economic, demographic and other factors (the selection of which is open to debate).
- **Tax potential** is sometimes used synonymously to tax capacity, but sometimes it refers to the legal maximum a government can collect (i.e., including policy choices regarding tax rates and tax expenditures).
- **Tax effort** refers to the ratio of actual revenues (or tax ratio) to tax capacity or potential, usually with reference to individual countries or country group averages.
- **Tax gap** refers to the difference between tax potential and actual tax effort. It is sometimes computed with reference to individual taxes (most notably, the VAT).

Source: SEO Amsterdam Economics.

Tax gaps in SSA are significant as a result of the aforementioned issues. OECD (2014) remarks that many SSA economies have revenue mobilisation less than 15 percent of GDP. In relation to multinational tax avoidance, both OECD (2014) and the IMF (2014) note that the share of

corporate tax in the overall tax mix is large in SSA economies, both relative to the share of CIT in more developed economies, but also in absolute levels. OECD (2014) notes several cases in which the MNE tax base comprises the lion's share of the total tax base, for instance Rwanda (70 percent) and Nigeria (88 percent). The effect of curtailing avoidance by MNEs may thus be significant for developing economies, yet to our knowledge no literature directly assesses and quantifies the extent to which tax gaps are accounted for by tax avoidance.

A (overly) simple back of the envelope calculation suggests that the effects of avoidance on tax gaps may be significant. Coulibaly & Gandhi (2018) suggest an average gap between actual tax revenues and capacity equivalent to 4 percent of nominal GDP or USD 80 bln. in 2018 for SSA as a whole. Recalling that for instance Cobham & Jansky (2018) (see above) report estimated CIT revenue losses due to avoidance of between 2.01 percent and 2.31 percent of GDP on average in SSA (min: -1.19 percent; max: 8.05 percent), would suggest that over half of SSA tax gaps are accounted for by CIT avoidance (i.e. $2.31 / 4 = 0.58$). We stress that such back-of-the-envelope calculations are highly uncertain. Above, we already discussed the challenges of measuring avoidance. Similar issues apply to estimating tax gaps. As a result, tax gap estimates are highly variable. Whereas Coulibaly & Gandhi (2018) suggest a gap between actual tax and tax capacity of 4 percent on average, Maweije & Sebudde (2019) suggest a gap between actual tax and tax potential over four times as large. This would shrink the contribution of CIT avoidance to SSA tax gaps to less than 15 percent.

The role of the Netherlands in tax avoidance in SSA may be roughly estimated by dividing the 250 mln. estimate based on Lejour (2020) by this total gap estimate of 80 bln., suggesting that tax evasion associated with the Netherlands' tax policy would account for losses equivalent to around 0.31 percent of the total average revenue gap in SSA in 2018 (i.e. $250 \text{ mln.} / 80 \text{ bln.}$) or around 0.54 percent lost revenues due to CIT evasion (i.e. $250 \text{ mln.} / (0.58 * 80 \text{ bln.})$). Again, such calculations are fraught with uncertainty. Employing the gaps suggested by Maweije & Sebudde (2019) shrink these estimates by at least a factor of four. Larger estimates for the role of the Netherlands in SSA tax avoidance would increase this contribution.

5 Effects of anti-avoidance measures in DTTs

Bilateral tax treaties play a key part in international capital flows, including those that are fiscally driven. Indeed, some of the literature on revenue in relation to treaty shopping has been discussed above.

The literature on the relationship between DTTs and investment is mixed. Lejour (2014) for instance finds that bilateral treaties increase bilateral FDI, whereas Egger et al. (2006) finds the converse, and Neumeyer (2007) documents that the observed sign of the effect is country-specific with only middle-income countries benefitting from a treaty. Studies focusing on specific provisions are more uniformly suggestive of an effect of DTTs on investment. Provisions or mechanisms of DTTs such as double taxation relief (Blonigen, Oldenski, & Sly, 2014), tax sparing provisions (Azémar & Dharmapala, 2019), or cross-border M&A (Huizinga, Voget & Wagner, 2012) all contribute to investment.

Certain jurisdictions that facilitate a disproportionate amount of capital flows (so called ‘investment hubs’) do so in part due to their strong treaty network. In general, the literature on these hubs concludes that such jurisdictions largely drive the rerouting of investments and funds, but that there are potential real effects on the margin (cf. Hers et al., 2018b; Hines, 2010). Using network approaches, Petkova et al. (2019) and Van ’t Riet & Lejour (2018) suggest that treaties do drive the overall flow of funds between countries, especially (only) when treaties affect tax obligations.

Focusing specifically on SSA, Beer and Loeprick (2018) present difference-in-difference estimates to suggest that DTTs between SSA economies and (the investment hub) Mauritius do not drive additional investments, but instead drive the rerouting of investments through tax favourable jurisdictions. On the margin, Beer and Loeprick (2018) report CIT losses worth 5-15 percent of CIT revenue in SSA as a result. On the other hand, Hines (2013) documents a ‘distance effect’, with countries closer to investment hubs receiving more investments. The literature currently offers no reconciliation between these two diverging effects. One possibility is that effects for SSA economies are different from economies close to investment hubs in general (a large part of which are in the LAC area).

This directly prompts the question to what extent anti-abuse provisions could remedy such SSA tax losses whilst retaining investments. However, specific research on anti-abuse provisions in DTTs is lacking. Some papers assess the effects of anti-abuse regulation outside of DTTs. Blouin et al. (2014) suggest that thin-capitalisation rules affect the extent to which firms employ debt shifting, but effects on tax revenues remain unquantified. Using firm level data de Mooij and Liu (2018) show that tighter transfer pricing regulation leads to decreased bilateral investments, but stable overall investments suggesting a shift of investment to other countries. Beer et al. (2018) remark that such shifts and substitution of avoidance to different channels could limit the effectiveness of targeted rules in restricting tax avoidance and note that more research on anti-abuse rules is warranted.

In relation to the Netherlands, both Lejour et al. (2019) and Hers et al. (2018) have argued that the introduction of the Dutch conditional withholding tax in 2021 is unlikely to have a significant impact on global tax avoidance because fiscally driven flows are likely to be shifted to another tax-friendly jurisdiction (i.e. shifts will no longer take place through the Netherlands). Put differently, it is unlikely that anti-avoidance provisions in tax treaties will significantly impact global revenue collection unless uptake of such provisions is international. Earlier (unilateral) Dutch policy proposals charted by Kusters (2014) suffer from limitations as well. The effectiveness of substance requirements may be limited by the fact that Dutch tax authorities will inform foreign competent authorities of non-substance typically only after tax payments have already been subject to treaty rates. This, together with under-staffed and under-qualified foreign tax authorities, could limit the effectiveness of substance requirements.

6 Conclusion

The literature identifies several mechanisms for tax avoidance. Broadly speaking, these mechanisms either largely affect the tax base (hybrid mismatch, IPR regimes, treaty shopping, avoidance of PE status) or the tax rate (CFC schemes, debt shifting, transfer mispricing). For developing economies, especially treaty shopping, avoidance of PE status, debt shifting, and transfer mispricing are argued to be relevant mechanisms. The Netherlands fiscal system can facilitate such mechanisms, for instance through the extensive Dutch treaty network, fiscal facilities such as the participation exemption, the Dutch policy with respect to dividend withholding taxes and exemptions, the practice of tax rulings on the interpretation of the tax code, as well as the tax treatment of some legal structures (e.g. cooperation, limited partnership, etc.). Beyond such features of the legal system, the historical role of the Netherlands as an attractive conduit for foreign capital (self-) reinforces its role in facilitating international capital flows.

The literature has attempted to quantify the revenue loss associated with tax avoidance. As a result of methodological limitations, however, the literature has not converged on a consensus figure of global costs of tax avoidance. Estimates based on macro-data estimate costs as high as USD 500 and 650 bln., while studies based on micro-data estimate costs up to orders of magnitude smaller. Given the limitations of both approaches, it is not possible to identify a single best estimate. Estimated costs for SSA economies are equally divergent, with estimates ranging as high as USD 200 bln., but also significantly lower. For the role of the Netherlands, only a single estimate is available. Synthesizing the literature, Lejour (2020) estimates that countries lose USD 25 bln. due to Dutch policies and entities that facilitate avoidance. Lejour (2020) does not estimate which part of this 25 bln. is related to SSA economies. Assuming a distribution proportional to the distribution of FDI flows to/from the Netherlands suggests that around 1 percent of this amount is related to SSA economies. Note that this calculation essentially combines disparate sources that all employ different methodologies and data. This implies unquantified but most likely large margins of uncertainty. Indeed, the sum of some country-level estimates would exceed the amount of avoidance due to the Netherlands implied by a prorated distribution of the incidence of avoidance. This suggests that the estimate of revenue loss for SSA countries due to Dutch policies based on a prorated distribution is probably a lower bound.

Relating this figure to tax gaps in SSA is difficult because estimates of tax gaps differ significantly. A back-of-the-envelope calculation based on Lejour's (2020) estimate suggests that the Netherlands may account for around 0.5 percent of revenue losses in SSA due to CIT avoidance, but employing a different denominator (i.e. overall gap) would shrink this estimate by at least a factor of four.

The literature is inconclusive on whether anti-avoidance provisions in DTTs could significantly affect tax losses in SSA. No studies on this specific topic are available. However, studies on treaties in relation to avoidance in general typically note that the mobility of fiscally driven capital flows is high, and that as a result unilateral changes to fiscal policies will most likely result in flows shifting away from economies that take unilateral action to other jurisdictions without affecting the overall revenue outcomes. Such concerns highlight the importance of international coordination in addressing tax avoidance.

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Appendix A Reproduced tables

Table A. 1 Cobham & Jansky (2018)

	IMF billion	GRD billion	IMF % GDP	GRD GDP %
Albania	-0.17	-0.15	-1.32	-1.15
Antigua and Barbuda	0.01	0.01	0.90	0.78
Argentina	24.71	21.41	5.10	4.42
Armenia	-0.04	-0.04	-0.42	-0.37
Australia	8.90	6.05	0.60	0.41
Austria	0.80	0.54	0.19	0.13
Bangladesh	2.40	2.08	1.71	1.48
Barbados	0.04	0.03	0.90	0.78
Belarus	0.39	0.34	0.56	0.49
Belgium	5.13	3.49	1.01	0.69
Belize	0.01	0.01	0.90	0.78
Benin	0.23	0.20	2.70	2.34
Bhutan	0.06	0.05	2.70	2.34
Bolivia	0.26	0.22	0.86	0.75
Bosnia and Herzegovina	-0.25	-0.22	-1.32	-1.15
Botswana	0.00	0.00	0.03	0.02
Brazil	-25.19	-21.82	-1.15	-1.00
Bulgaria	-0.71	-0.62	-1.32	-1.15
Burkina Faso	0.21	0.18	1.71	1.48
Burundi	0.07	0.06	2.70	2.34
Cambodia	-0.07	-0.06	-0.42	-0.37
Canada	4.98	3.39	0.27	0.19
Cape Verde	0.02	0.01	0.86	0.75
Central African Republic	0.06	0.05	2.70	2.34
Chad	1.09	0.95	8.05	6.97
Chile	-0.26	-0.18	-0.09	-0.06
China, P.R.: Mainland	77.13	66.81	0.86	0.75

	IMF billion	GRD billion	IMF % GDP	GRD GDP	%
Colombia	3.19	2.76	0.86	0.75	
Comoros	0.03	0.03	5.10	4.42	
Costa Rica	1.36	1.18	2.81	2.43	
Côte d'Ivoire	0.24	0.21	0.86	0.75	
Croatia	-0.25	-0.21	-0.42	-0.37	
Cyprus	-0.30	-0.26	-1.37	-1.19	
Czech Republic	-0.27	-0.18	-0.14	-0.09	
Denmark	0.62	0.42	0.19	0.13	
Djibouti	0.01	0.01	0.86	0.75	
Dominica	0.01	0.01	2.81	2.43	
Dominican Republic	1.36	1.18	2.29	1.98	
Ecuador	0.02	0.02	0.03	0.02	
Egypt	-1.10	-0.96	-0.42	-0.37	
El Salvador	0.67	0.58	2.70	2.34	
Eritrea	0.16	0.14	4.58	3.96	
Estonia	-0.01	-0.01	-0.05	-0.03	
Ethiopia	1.28	1.11	2.70	2.34	
Fiji	0.08	0.07	1.90	1.65	
Finland	0.41	0.28	0.16	0.11	
France	29.08	19.78	1.06	0.72	
Gambia, The	0.02	0.02	2.70	2.34	
Georgia	-0.18	-0.16	-1.15	-1.00	
Germany	22.09	15.02	0.61	0.42	
Ghana	0.39	0.34	0.86	0.75	
Greece	0.64	0.43	0.26	0.18	
Grenada	0.02	0.02	2.81	2.43	
Guatemala	1.69	1.47	3.14	2.72	
Guinea	0.33	0.29	5.10	4.42	
Guinea-Bissau	0.01	0.01	0.86	0.75	
Guyana	0.24	0.21	8.05	6.97	

	IMF billion	GRD billion	IMF % GDP	GRD GDP	%
Haiti	0.22	0.19	2.70	2.34	
Honduras	0.16	0.14	0.86	0.75	
Hungary	-0.18	-0.12	-0.14	-0.09	
Iceland	-0.01	-0.01	-0.09	-0.06	
India	47.53	41.17	2.70	2.34	
Indonesia	7.48	6.48	0.86	0.75	
Iraq	-2.55	-2.21	-1.15	-1.00	
Ireland	-0.66	-0.45	-0.30	-0.20	
Israel	0.52	0.35	0.19	0.13	
Italy	7.84	5.33	0.38	0.26	
Jamaica	0.12	0.11	0.86	0.75	
Japan	68.79	46.79	1.37	0.93	
Jordan	-0.43	-0.38	-1.28	-1.11	
Kenya	1.22	1.06	2.70	2.34	
Korea, Republic	1.64	1.12	0.14	0.09	
Kyrgyz Republic	-0.10	-0.08	-1.32	-1.15	
Lao People's Dem. Rep.	0.19	0.17	1.90	1.65	
Latvia	-0.35	-0.30	-1.15	-1.00	
Lebanon	-0.52	-0.45	-1.19	-1.03	
Lesotho	0.02	0.02	0.86	0.75	
Liberia	0.02	0.02	0.90	0.78	
Lithuania	-0.54	-0.47	-1.15	-1.00	
Luxembourg	0.33	0.23	0.55	0.37	
Macedonia	-0.14	-0.12	-1.32	-1.15	
Madagascar	-0.04	-0.04	-0.42	-0.37	
Malawi	0.10	0.09	2.70	2.34	
Malaysia	2.70	2.33	0.86	0.75	
Maldives	-0.03	-0.02	-1.19	-1.03	
Mali	0.31	0.27	2.70	2.34	
Malta	0.49	0.43	5.30	4.59	

	IMF billion	GRD billion	IMF % GDP	GRD GDP	%
Mauritania	0.04	0.03	0.86	0.75	
Mauritius	-0.14	-0.12	-1.19	-1.03	
Moldova	-0.10	-0.09	-1.32	-1.14	
Mongolia	-0.15	-0.13	-1.32	-1.15	
Montenegro	-0.06	-0.05	-1.29	-1.12	
Morocco	2.83	2.45	2.70	2.34	
Mozambique	0.53	0.46	3.60	3.11	
Myanmar	0.51	0.44	0.86	0.75	
Namibia	0.56	0.49	4.58	3.96	
Nepal	0.17	0.14	0.86	0.75	
Netherlands	1.53	1.04	0.19	0.13	
New Zealand	0.76	0.52	0.42	0.29	
Nicaragua	0.31	0.26	2.70	2.34	
Niger	0.20	0.17	2.70	2.34	
Pakistan	12.06	10.45	5.10	4.42	
Panama	0.36	0.32	0.90	0.78	
Paraguay	-0.40	-0.35	-1.32	-1.15	
Peru	5.69	4.93	2.70	2.34	
Philippines	7.36	6.37	2.70	2.34	
Poland	-0.70	-0.47	-0.14	-0.09	
Portugal	1.63	1.11	0.74	0.51	
Romania	-1.93	-1.67	-1.05	-0.91	
Rwanda	0.21	0.18	2.70	2.34	
San Marino	-0.02	-0.02	-0.96	-0.83	
Sao Tome and Principe	0.00	0.00	0.86	0.75	
Senegal	0.42	0.36	2.70	2.34	
Serbia	-0.50	-0.44	-1.15	-1.00	
Seychelles	0.01	0.01	0.90	0.78	
Sierra Leone	0.12	0.11	2.70	2.34	
Singapore	-2.76	-2.39	-0.96	-0.83	

	IMF billion	GRD billion	IMF % GDP	GRD GDP	%
Slovak Republic	0.06	0.04	0.06	0.04	
Slovenia	-0.10	-0.07	-0.20	-0.14	
Solomon Islands	0.03	0.03	2.70	2.34	
South Africa	6.73	5.83	1.90	1.65	
Spain	8.11	5.52	0.60	0.41	
Sri Lanka	1.24	1.07	1.90	1.65	
St. Kitts and Nevis	0.03	0.03	4.23	3.66	
St. Lucia	0.06	0.05	4.40	3.81	
St. Vincent and the Grenadines	0.03	0.03	3.98	3.45	
Swaziland	0.10	0.09	2.70	2.34	
Sweden	0.03	0.02	0.01	0.00	
Switzerland	-0.26	-0.18	-0.04	-0.03	
Taiwan Province of China	-4.49	-3.89	-0.93	-0.80	
Tajikistan	0.07	0.06	0.86	0.75	
Tanzania	0.86	0.75	2.70	2.34	
Thailand	-1.69	-1.46	-0.42	-0.37	
Togo	0.10	0.09	2.29	1.98	
Tunisia	1.31	1.13	2.70	2.34	
Turkey	-0.77	-0.52	-0.09	-0.06	
Turkmenistan	-0.50	-0.43	-1.24	-1.07	
Uganda	0.61	0.53	2.70	2.34	
Ukraine	-1.07	-0.93	-0.61	-0.53	
United Kingdom	1.56	1.06	0.06	0.04	
United States	277.61	188.83	1.66	1.13	
Uruguay	0.49	0.43	0.86	0.75	
Uzbekistan	-0.71	-0.62	-1.29	-1.12	
Zambia	1.13	0.98	5.10	4.42	
Zimbabwe	0.09	0.08	0.86	0.75	

Table A. 2 Jansky & Sedivy (2018)

Country	Year	Dividend loss	Interest loss	Combined loss	Percentage of GDP
Bangladesh	2015	74,736	55	74,791	0.03834
Cape Verde	2015	0	7	7	0.00044
Ghana	2014	8,496	0	8,496	0.02201
Mongolia	2015	7,117	12,848	19,965	0.17004
Mozambique	2015	5,103	81	5,183	0.03503
Nigeria	2015	27,14	131	27,271	0.00567
Pakistan	2015	214,081	474	214,555	0.07934
Philippines	2015	492,796	16,228	509,024	0.17386
Rwanda	2015	495	–	495	0.00599
Senegal	2014	945	227	1,172	0.00766
Sri Lanka	2015	1,314	–	1,314	0.00163
Tanzania	2013	11	0	11	0.00003
Uganda	2015	13,021	218	13,239	0.04753
Zambia	2015	5,09	–	5,09	0.02406