Intergovernmental Group of Experts on

FINANCING FOR DEVELOPMENT

1st SESSION

8–10 November 2017
Palais des Nations, Geneva

Background paper prepared by

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Illicit financial flows: An overview

1. Definition, impact and scale
2. Profit shifting by multinationals
3. Policy recommendations

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Summary

'Illicit financial flows' (IFF) is an umbrella term for a broad group of cross-border economic and financial transactions, of which the common element is not illegality but the use of financial secrecy to remain hidden from public and regulatory view. In part 1 of this paper we identify four main groups of IFF, highlighting the overlaps in the channels used by each and addressing the main definitional disputes in the literature. The key development threats are seen to occur through a loss of resources for public expenditure, with direct costs for e.g. health outcomes; a weakening of governance, undermining the social benefits of public expenditure that does take place; a loss of state capacity to redistribute in order to curtail inequality; and a deepening of state fragility. The leading estimates of IFF scale are critically surveyed, and some conclusions drawn about the most reliable approaches and their implications for policy.

In part 2 of the paper, we focus on a core element of IFF: the profit shifting of multinational companies. An overview of the underlying issues, including the inappropriate basis of international tax rules and ongoing lack of transparency in corporate disclosures, is followed by an evaluation of the leading methodologies and estimates of the associated revenue losses. The findings indicate that only a small number of jurisdictions are consistently the recipients of disproportionate volumes of profit related to economic activity elsewhere; that revenue losses are widely distributed across other jurisdictions, with the highest values in high-income countries but the most intense losses in relation to GDP and especially to tax revenues, in lower-income countries; and that worldwide revenue losses may lie between $500 billion and $650 billion annually.

Finally, in part 3, we offer a series of policy recommendations aimed at achieving progress in three key areas: global commitment to the ABC of tax transparency and ultimately a UN convention to reflect the need for ongoing progress; indicators for the Sustainable Development Goals target to reduce IFF which will support accountability of financial secrecy jurisdictions and profit shifting hubs;

and a national and/or regional tax policy agenda to draw a line under the scale of revenue losses to profit shifting by multinationals.

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PART 1: IFF: DEFINITION, IMPACT AND SCALE

Introduction

The emergence of a global 'tax justice' movement, following the formal establishment of the Tax Justice Network in 2003, has had a powerful impact on international policymaking. By 2013, a range of innovative policy proposals had risen onto the agendas of the G8, G20 and OECD groups of countries. And by 2015, the UN Sustainable Development Goals (SDGs) themselves had come to embody that shift also.

Most obviously, tax appears the first 'means of implementation' in the SDGs (target 17.1). This stands in stark contrast to the predecessor framework, the Millennium Development Goals, which contained no single reference to tax as a source of finance for development. In addition, the closely related issue of illicit financial flows has also gained major policy traction.

The illicit flows agenda emerged in a fair degree as an opposition to a view which saw corruption as a problem overwhelmingly in lower-income countries. In 2007, the Tax Justice Network began the process to create the Financial Secrecy Index, which identifies major financial jurisdictions like Switzerland – which typically does very well in perceptions of corruption – as central to the problem of producing and promoting corrupt flows elsewhere (see Cobham, Janský, & Meinzer (2015)). A narrative that sees corruption in lower-income countries only will miss this central driver of the problem – and so an important element of the illicit flows agenda is that recognises the centrality of financial secrecy in particular, often high-income jurisdictions, to the undermining of revenues, the undermining of good governance in countries all around the world. Rather than saying 'Why is your country corrupt?', it says, 'What are the drivers of corruption – and where?'

Underpinning every major case of corruption around the world, and many major cases of tax abuse, can be found anonymously owned companies, from the British Virgin Islands to Delaware; opaque corporate accounting, typically in the biggest stock markets in the world, that cover the degree of profit-shifting and tax avoidance; and deliberate failures to exchange financial information that protect, even now, banking secrecy.

As such, international cooperation is needed – at least as much as domestically focused efforts. The global agreement on a target (16.4) in the SDGs committed to the reduction of illicit financial flows (IFF) is therefore particularly significant. Politically, the target can be traced back to the work of the High Level Panel on IFF out of Africa, chaired by former South African president Thabo Mbeki, which worked with the UN Economic Commission for Africa to build the case for urgent action both on the continent and globally, and obtained unanimous African Union backing. It was natural that the subsequent report of the Secretary-General's High Level Panel of Eminent Persons on the Post-2015 Development Agenda, co-chaired by President Susilo Bambang Yudhoyono of Indonesia, President Ellen Johnson Sirleaf of Liberia, and Prime Minister David Cameron of the United Kingdom, also clearly identified IFF as an issue to be included in the new framework.

Despite this broad backing, however, the IFF target has proven to be one of the most difficult to pin down. Even now in late 2017, there is no specific indicator or group of indicators agreed as the basis to track progress. Worse, there has been a concerted effort to subvert the target by removing multinational companies from the scope, despite the consistent emphasis on their tax avoidance

practices in the academic and policy literature and in the reports of the two high level panels that set the basis for global agreement on the target in 2015.

With UNCTAD and the UNODC now leading a technical expert process to agree proposals, for agreement in 2018, there is the potential – but not yet the certainty – of ensuring the target has indicators which both reflect the original policy intention, and also create appropriate accountability mechanisms to support genuine progress.

In this paper we lay out the main issues around illicit financial flows, as a guide to inform policy thinking – including with respect to the SDG indicators. In part 1 we identify four main groups of IFF, highlighting the overlaps in the channels used by each and addressing the main definitional disputes in the literature – including the extent to which the inclusion of multinational avoidance is supported by each of the underlying definitions, the political context to the decision of SDG inclusion, and the substantive analysis of development impact. The key development threats are seen to occur through a loss of resources for public expenditure, with direct costs for e.g. health outcomes; a weakening of governance, undermining the social benefits of public expenditure that does take place; a loss of state capacity to redistribute in order to curtail inequality; and a deepening of state fragility. The leading estimates of IFF scale are critically surveyed, and some conclusions drawn about the most reliable approaches and their implications for policy.

In part 2 of the paper, we focus on a core element of IFF: the profit shifting of multinational companies. An overview of the underlying issues, including the inappropriate basis of international tax rules and ongoing lack of transparency in corporate disclosures, is followed by an evaluation of the leading methodologies and estimates of the associated revenue losses. Finally, in part 3, we offer a series of policy recommendations aimed at achieving progress in three key areas: global commitment to the ABC of tax transparency and ultimately a UN convention to reflect the need for ongoing progress; indicators for the Sustainable Development Goals target to reduce IFF which will support accountability of financial secrecy jurisdictions and profit shifting hubs; and a national and/or regional tax policy agenda to draw a line under the scale of revenue losses to profit shifting by multinationals.

Definition

There is no single, agreed definition of illicit financial flows (IFF).[1] This is, in large part, due to the breadth of the term 'illicit'. The (Oxford) dictionary definition is: "forbidden by law, rules or custom." The first three words alone would define 'illegal', and this highlights an important feature of any definition: illicit financial flows are not necessarily illegal. Flows forbidden by "rules or custom" may encompass those which are socially and/or morally unacceptable, and not necessarily legally so.

To take a specific example, commercial tax evasion affecting a low-income country where the tax and authorities have limited administrative capacity is much less likely to be either uncovered or successfully challenged in a court of law, than would be the same exact behaviour in a high-income country with relatively empowered authorities. A strictly legal definition of IFF is therefore likely to result in systematically – and wrongly – understating the scale of the problem in lower-income, lower-capacity states.

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[1] The discussion of IFF definitions draws closely from that of Cobham (2014).

For this reason, a narrow, legalistic definition of IFF should be rejected. The phenomenon with which we are concerned is one of hidden flows, where either the illicit origin of capital or the illicit nature of transactions undertaken is deliberately obscured. The most well-known classification stems from Baker (2005), an American businessman who was so shocked by the degree of profit shifting by multinationals he encountered while working in a number of sub-Saharan African countries that he subsequently wrote a book, *Capitalism's Achilles Heel*, and established the NGO Global Financial Integrity to challenge the abuses. In Baker's assessment, grand corruption accounted for just a few per cent of illicit flows, and laundering of the proceeds of crime between a quarter and a third. The largest component by far was 'commercial tax evasion', through the manipulation of trade prices, accounting for around two thirds of the problem.

While Baker (quite reasonably) views all of the latter activity as illegal (and GFI's definition follows from this), it is clear that much that has been labelled multinational tax avoidance by others would be included. Prof. Sol Picciotto has highlighted that there are in fact three categories to consider, rather than two: instead of looking at illegal evasion and legal avoidance, policy should identify illegal evasion; unlawful avoidance; and lawful (successful) avoidance, while recognising that there are likely to be grey areas between each.

Criminology has seen a growing zemiological critique (e.g. Hillyard & Tombs (2004) and Dorling et al. (2008)), which emphasises a range of shortcomings in the crime-led approach, among them that crime is a social construct based on value judgements and so varies across time and geography – thereby undermining it as a consistent basis of comparison; and that crime as a category excludes many serious harms (e.g. poverty or pollution). As such, working on the basis of the harm demonstrably done provides a more consistent basis. In the case of illicit flows, such an approach would clearly support the inclusion of multinational profit shifting since the revenue impacts and related harms in the grey area of 'possibly legal but untested' avoidance are indistinguishable from those which are firmly in the 'unlawful' category.

Baker also sat on the High Level Panel on Illicit Financial Flows out of Africa, which put avoidance squarely at the forefront of their scrutiny: "The various means by which IFFs take place in Africa include abusive transfer pricing, trade mispricing, misinvoicing of services and intangibles and using unequal contracts, all for purposes of tax evasion, aggressive tax avoidance and illegal export of foreign exchange." (p.24)

Table 1 provides a broader overview of the transaction types, elaborated in Cobham (2014). It is unlikely to be comprehensive because there is potential to engineer an illicit flow in any transaction, and the range of potential illicit motivations is wide indeed; but nonetheless demonstrates the breadth of IFF phenomena. Clear clusters are captured in the column 'IFF Type', which shows the main illicit motivations: 1 – market/regulatory abuse, 2 - tax abuse, 3 – abuse of power, including the theft of state funds and assets, 4 – proceeds of crime. As the final two columns indicate, all four IFF types are likely to result in reductions in both state funds and institutional strength.

Table 1: A typology of illicit financial flows and immediate impacts

Flow	Manipulation	Illicit motivation	IFF type	Impact on state funds	Impact on state effectiveness
Exports	Over-pricing	Exploit subsidy regime	2	↓	↓
		(Re)patriate undeclared capital	1	↓	↓
	Under-pricing	Shift undeclared (licit) income/profit	2	↓	↓
		Shift criminal proceeds out	4	↓	↓
		Evade capital controls (including on profit repatriation)	1		↓
Imports	Under-pricing	Evade tariffs	2	↓	↓
		(Re)patriate undeclared capital	1	?	↓
	Over-pricing	Shift undeclared (licit) income/profit	2	↓	↓
		Shift criminal proceeds out	4	?	↓
		Evade capital controls (including on profit repatriation)	1	↓	↓
		Shift undeclared (licit) income/profit	2	↓	↓
Inward investment	Under-pricing	Shift undeclared (licit) income/profit	2	↓	↓
		Shift criminal proceeds out	4	?	↓
		Evade capital controls (including on profit repatriation)	1	↓	↓
	Over-pricing	(Re)patriate undeclared capital	1	?	↓
	Anonymity	Hide market dominance	1		↓
	Anonymity	Hide political involvement	3		↓
Outward investment	Under-pricing	Evade capital controls (including on profit repatriation)	1		↓
	Over-pricing	Shift undeclared (licit) income/profit	2	?	↓
		Shift criminal proceeds out	4	↓	↓
	Anonymity	Hide political involvement	3		↓
Public lending	(If no expectation of repayment, or if under-priced)	Public asset theft (illegitimate allocation of state funds)	3	↓	
Public borrowing	(If state illegitimate, or if over-priced)	Public asset theft (illegitimate creation of state liabilities)	3	↓	
Related party lending	Under-priced	Shift undeclared (licit) income/profit	2	↓	
Related party borrowing	Over-priced	Shift undeclared (licit) income/profit	2	↓	
Public asset sales	Under-pricing	Public asset theft	3	↓	
	Anonymity	Hide market dominance	1		↓
	Anonymity	Hide political involvement	3		↓
Public contracts	Over-pricing	Public asset theft	3	↓	
	Anonymity	Hide market dominance	1		↓
	Anonymity	Hide political involvement	3		↓
Offshore ownership transfer	Anonymity	Corrupt payments	3	↓	↓

Source: Cobham (2014). 'IFF type' is defined as follows: 1 – market/regulatory abuse, 2 - tax abuse, 3 – abuse of power, including theft of state funds, 4 – proceeds of crime.

These in turn allow identification of the major actors in IFF:

- private actors (individuals, domestic businesses and multinational company groups committing tax and regulatory abuse, and the related professional advisers – tax, legal and accounting) – these are the leading actors in IFF types 1, 2 and 3;
- public officeholders (both elected and employed) – these are important actors in IFF types 3 and 4, and may be involved in type 1; and
- criminal groups (a term used here to indicate both those motivated primarily by the proceeds of crime, and those using crime to fund political and social agenda) – the leading actors in IFF type 4.

There is substantial overlap in the mechanisms used for IFF, regardless of motivation. The opportunity to hide, where it exists, is likely to be exploited for multiple purposes. For example then, the legal use by a multinational of highly secretive jurisdictions may both provide cover for illegal use of the same secrecy, and also inadvertently legitimize such behaviour. Identifying illicit flows in a particular mechanism will tend to be insufficient to specify the type of IFF in action.

Table 1 shows a roughly equal number of potential IFF in each of the first three categories, and rather fewer for the proceeds of crime; but this rests on an assumption made for descriptive clarity which is unlikely to hold in practice: namely, that businesses operating internationally are not used to launder the proceeds of crime. This distinction in turns highlights a more important one: namely, that IFF can take place with capital which is anywhere on a spectrum of legality. At one end are criminal proceeds and stolen public funds, with legitimate income and company profits at the other.

A second spectrum exists in relation not to the capital but rather the transaction itself. At one end there are clearly illegal transactions, such as bribery of public officials by commercial interests; at the other end, transactions which are likely to be legal (at least in the sense of not having been challenged successfully in a court of law) but may well be illicit; in this category would be, for example, some of the more aggressive transfer pricing behaviour of multinational companies.

Figure 1: Main IFF types by nature of capital and transaction
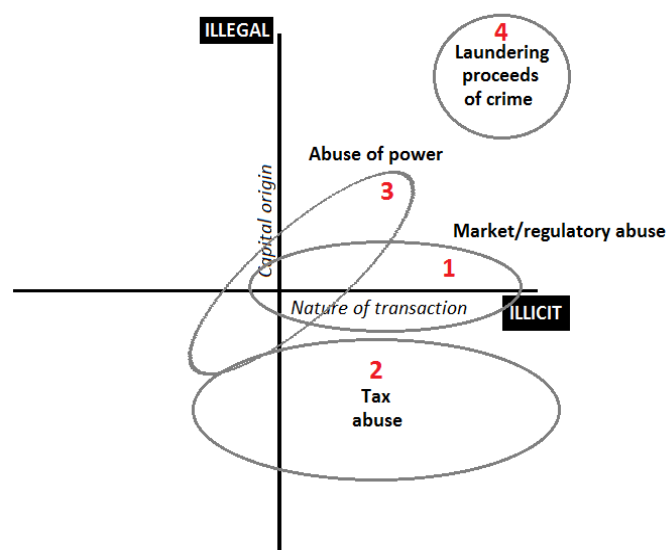
Source: Cobham (2014).

Figure 1 provides a rough plotting of the four IFF types identified, on a quadrant diagram showing the spectra of transaction licitness and capital legality. The historical emphasis of both research and policy has been on those IFF types that are furthest, in general, to the northeast quadrant (i.e. where both the capital origin and the transaction are in question); and least attention to those in southeast (i.e. those where the capital origin is less likely to be in question than the manipulations involved in the transaction.

Most attention, in other words, has been paid to the clusters relating to abuse of power, and more recently to the proceeds of crime – at least in relation to efforts against 'terrorism financing' subsequent to the World Trade Center attacks of September 2001. The areas of market abuse and tax abuse have been relatively neglected in terms of policy focus, with the result that the dominant discourse has largely excluded the role of private sector actors in driving illicit flows – at least until the financial crisis affecting may countries that began in 2008.

It is worth reiterating that in all cases in the typology, the behaviours in question are in some sense reprehensible. They rely on being hidden because there would be substantial negative ramifications to their becoming publicly visible. These ramifications might be legal or social – that is, they may reflect violations of law or of 'rules and custom' – and in each case are sufficiently powerful to justify any costs of hiding. As such, it is inevitable that estimates of these deliberately hidden phenomena exhibit a degree of uncertainty. Moreover, since different IFF types use the same channels, estimates of particular channels will inevitably combine some IFF types to some degree; and since different IFF types use multiple channels, 'clean' estimates of individual IFF types may be difficult to obtain.

Impact

The impacts of illicit financial flows are, like the phenomena themselves, many and varied. Figure 2 provides one stylisation of these, distinguishing between IFF that rely on illegal and on legal capital respectively.

Figure 2: Overview of IFF and security linkages
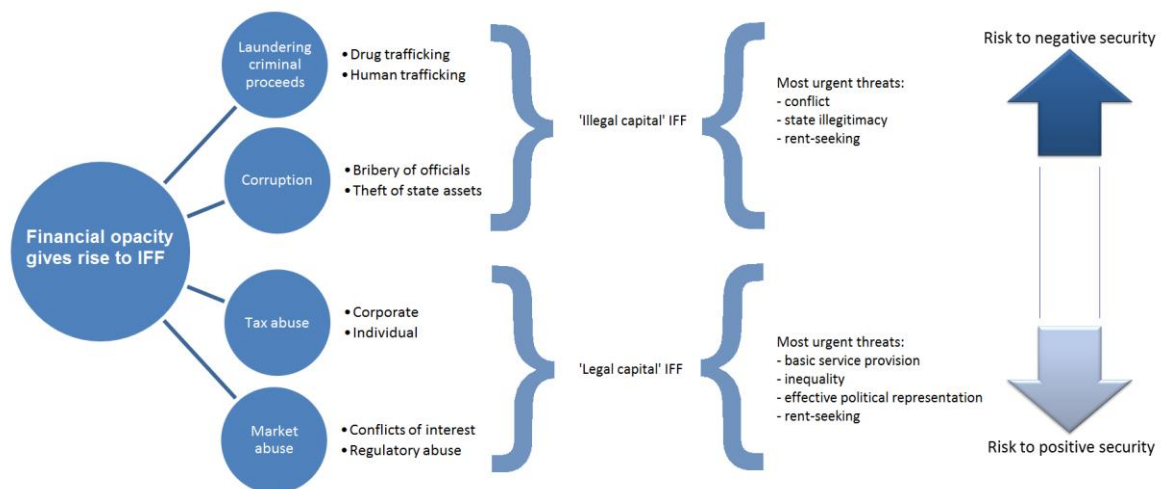
Source: Cobham (2014).

Illegal capital IFF, in general, are seen as providing the greatest threat to negative security: that is, the ability of states to prevent, or to negate, insecurity at the personal, community, environmental and political levels: more specifically, the ability and willingness of states to act to reduce the risk of violence against the person, the risk of insecurity due to tensions between groups, the risk of environmental degradation and the risk of political rights violations. The state can be increasingly undermined by the growing role of criminal activity, including the trafficking of drugs, people and illegal goods from e.g. logging, fishing and mining, which may come to require or rely on the support of some state functions such as the military or customs agents; and also by the growth of crimes directly against the state, namely bribery to subvert state power for private gain (typically of multinational companies), and the effective theft by people in positions of power of state assets (or per table 1, the creation of illegitimate state liabilities).

As figure 3 illustrates, illegal capital IFF can give rise to a vicious cycle of negative insecurity, in which the growth of IFF further undermines the state's legitimacy and/or fuels internal conflict; weakening in turn the state's will or ability to act against IFF, and so increasing the returns to the underlying activity and the incentives to take part.

Figure 3: The vicious cycle of negative insecurity and illegal capital IFF
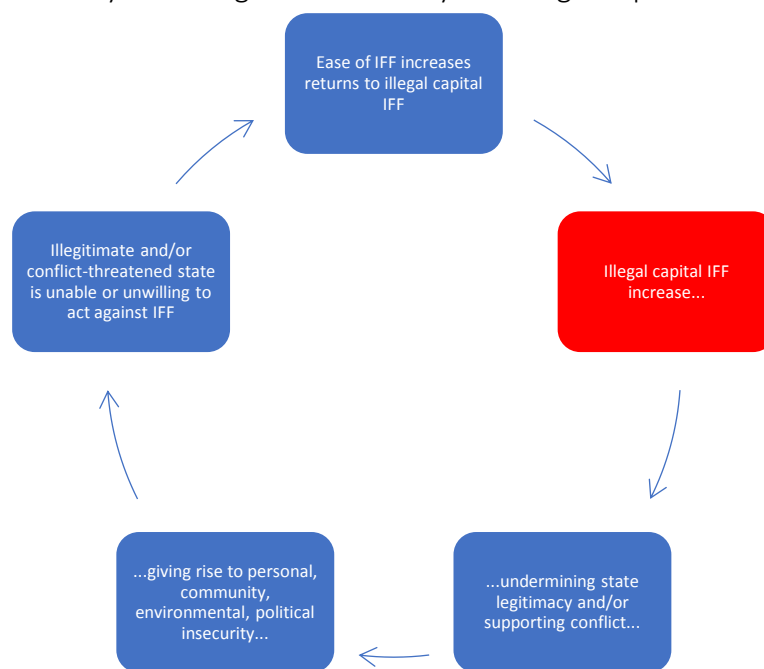
Source: Cobham (2014).

Legal capital IFF are seen as forming a similar vicious cycle with respect to positive security – that is, the ability of states to provide, to positively construct, secure conditions in which rapid human development can take place. This relates to economic opportunity and freedom from extreme economic inequality; and to the security of basic human development outcomes related to health and nutrition.

Tax is fundamental to the emergence of a State which is both able and willing to support the progressive realisation of human rights – and the relationships here go far beyond revenue. The 4Rs of tax (Cobham, 2005; 2007) provide a simple framework to consider these. Revenue is clearly

crucial to States' ability to provide public services from effective administration and the rule of law to health, education and infrastructure; as redistribution is crucial to contain or eradicate both horizontal and vertical inequalities. Less obvious may be the role of taxation in re-pricing – ensuring that the true public costs and benefits of social goods (like education) and ills (such as tobacco consumption and carbon dioxide emission) are reflected in market prices.

Perhaps the most important result of tax, however, is also often overlooked: political representation. Prolonged reliance on revenues from natural resources or foreign aid tends to undermine channels of responsive government, giving rise to corruption and broader failures of accountability. The act of paying tax provides an important accountability link (Brautigam, Fjeldstad, & Moore, 2008; Broms, 2011). Empirical studies suggest the higher the share of tax in government spending, the stronger the process of improving governance and representation (Ross, 2004; and powerfully confirmed with much stronger data by Prichard, 2015); while direct tax – taxes on income, profits and capital gains – appears to play a particularly strong role (Mahon, 2005).

Figure 4 shows the potential vicious cycle that could arise with respect to legal capital IFF and positive (in)security. If the starting point is taken as an increase in legal capital IFF, the risks are of undermining both the available revenues to provide positive security, but also the political responsiveness to be willing to do so. The resulting insecurity and inequalities have the potential to further weaken both the capacity and the willingness of the state to fight IFF, reinforcing the cycle.

Figure 4: The vicious cycle of positive security and legal capital IFF
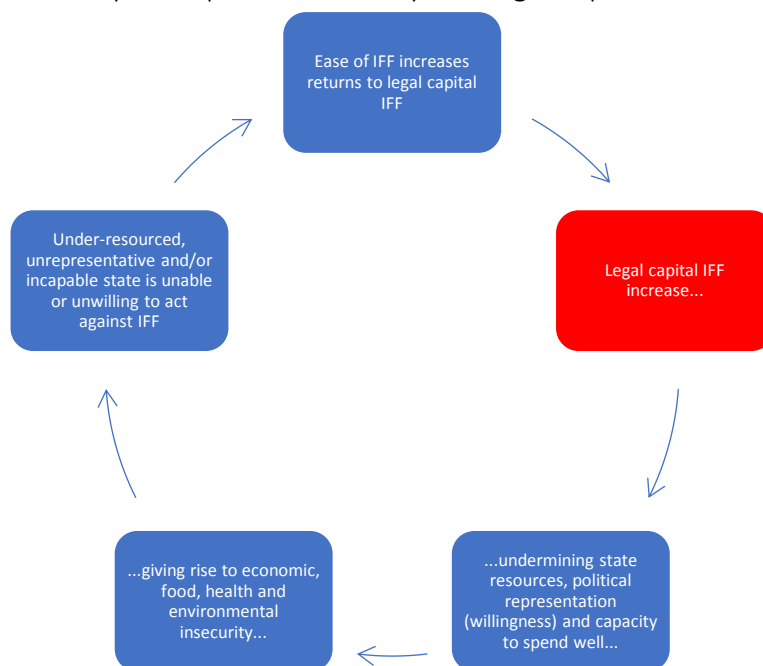
Source: Cobham (2014).

Work on health impacts in particular has indicated potentially very powerful effects of IFF. Christian Aid (2008) began the current wave of tax justice campaigning by international development NGOs with an estimate that revenue losses due to trade-based tax abuse could result in the needless deaths of nearly 1,000 children each day. More recently, O'Hare, Makuta, Bar-Zeev, Chiwaula, & Cobham (2014) use illicit flow estimates with GDP elasticities of mortality to show that of 34 sub-

Saharan African countries, a curtailment of illicit flows could see substantial mortality reductions – such that 16 countries rather than 6 would have reached their MDG target by 2015.

Reeves et al. (2015) explore the underlying relationship and find that "tax revenue was a major statistical determinant of progress towards universal health coverage" in lower-income countries, and that this is overwhelmingly driven by direct taxes on profits, income and capital gains. Using alternative revenue data, and a more robust regression approach, Carter & Cobham (2016) confirm the importance of tax generally, while adding some caveats and more detailed findings. In particular, they find a larger statistical association between direct taxes and public health expenditure than between indirect taxes and health spending; and that countries making greater use of direct taxes tend in general to exhibit higher public health spending, broader coverage of and access to public health systems.

A growing body of work has looked at the relationship between IFF and inequality. Income and wealth inequality are increasingly recognised as an obstacle to economic growth as well as to human development (e.g. Ostry, Berg, & Tsangarides, 2014; Piketty, 2014), and explicitly targeted and tracked throughout the Sustainable Development Goals framework. Cobham, Davis, Ibrahim, & Sumner (2016) show that allowing for IFF could be sufficient in many countries to require an upward adjustment to recorded income inequality of the same order as that required in adjusting top incomes for income reporting held by tax authorities (but systematically not provided in response to the household surveys on which most income distribution data is based) – perhaps 5 points on the Gini coefficient. Alstadsaeter, Johannesen, & Zucman (2017) use leaked data to show how strongly tax evasion in Scandinavia is concentrated in the top 0.01% of the wealth distribution; and hence how understated inequality will be if estimates rest on household surveys and tax reporting data alone. The ability of elites to opt out of direct taxation – whether as individuals or as major companies – not only undermines the redistribution possible through given tax policies, but also contributes with lobbying to reduce the attractiveness of pursuing redistribution. In the case of corporate taxation, multinational profit shifting creates an artificial disadvantage for smaller, national businesses – which are typically responsible for the majority of employment in a country.

Illicit financial flows have, therefore, tremendous power to cause damage to states, economies and societies. The extent of that damage depends ultimately on the scale of IFF themselves. The following section surveys current attempts to estimate the scale of these deliberately hidden phenomena.

Scale

Almost all approaches to IFF estimation are based on exploiting anomalies in data that may arise from the process of hiding. We do not here focus on multinational profit-shifting since this is addressed in part 2. That literature (see e.g. UNCTAD, 2015; Crivelli et al., 2016; and Cobham & Janský, 2017) is largely self-contained, drawing variously from data on multinationals' balance sheets and/or survey and FDI data to identify anomalies in the distribution of the international corporate tax base. Most IFF approaches focus instead on anomalies in the capital account (unrecorded capital movements) and in the current account (via mispriced trade, which is assessed to be dominated by unrelated party transactions rather than multinationals' intra-group profit shifting)l we treat these in turn. We also consider briefly a range of 'tax gap' estimates, largely based on analyses of taxpayer compliance. Finally, we explore a potentially complementary approach which allows for specific

comparisons of vulnerability to IFF, rather than estimates of scale in currency terms. For various reasons, such an approach may yield significant insights to policymakers and so may generate valuable additions to the SDG indicator set.

Capital account-based estimates

For capital account anomalies, the two most commonly used methods are the World Bank Residual Method (WBR) and the Hot Money 'Narrow' Method (HMN). Both these methods rely on anomalies in the Balance of Payment (BoP) identity:

$$A + B + C + D + E + F + G + H = 0$$

Where:

A: current account balance

B: net equity flows (including net FDI and FPI)

C: other short-term capital of other sectors

D: FPI involving other bonds

E: change in deposit-moneybanks' foreign assets

F: change in reserves of the central bank

G: net errors and omissions (NEO)

H: change in external debt

The World Bank residual method (WBR) captures the difference between recorded inflows and recorded uses, which is given by the (negative) sum of the current account balance, net equity flows, change in reserves of the central bank and change in external debt. By the BoP identity:

$$-(A + B + F + H) = C + D + E + G$$

Of the components on the right-hand side, however, C+D+E are licit: composed of other short-term capital of other sectors, FPI involving other bonds, and the change in deposit-money banks' foreign assets. As such, the WBR method is likely to exhibit a substantial upwards bias as an estimator of IFF.

The main alternative, the Hot Money 'Narrow' method (HMN), is given by the remaining right-hand side component, G: net errors and omissions. G is simply the balancing residual constructed to maintain the BoP identity, and so serves as an indicator of error – and possibly of illicitness – in the overall capital account. The most well-known estimates, produced by Global Financial Integrity, have shifted from using the WBR method (e.g. Kar, Cartwright-Smith, & Hollingshead, 2010) to the HMN (e.g. Kar & Freitas, 2011).

The longest-standing series of estimates, although published for African countries only, are those of Ndikumana & Boyce (e.g. 2008). These authors also contrast sources and uses of foreign exchange in the capital account, but adjust for exchange rate fluctuations on the value of external debt, for debt writeoffs and for under-reported remittances (the latter on the basis of discrepancies between IFAD estimates and BoP data).

Trade-based estimates

Both Global Financial Integrity and Boyce & Ndikumana also include a trade-related IFF component as the second part of their flow estimates. While this may include some transfer mispricing by multinationals for the purpose of profit-shifting, trade misinvoicing is a more crude approach to tax reduction than those challenged in the OECD Base Erosion and Profit Shifting action plan, the major international attempt to curtail the problem. Instead, these anomalies are more likely to reveal unrelated party transactions that aim to shift part of one party's income into a different jurisdiction.

In both approaches, the authors use national trade data to establish anomalies in the declared values of total exports and imports, on the basis that these reveal illicit shifts of value. On one view, these estimates are rather conservative. They pick up only one form of trade misinvoicing, which occurs via reinvoicing. The data does not pick up, for example, trade transactions where the misinvoicing is incorporated in the same invoice exchanged between exporter and importer. In addition their data does not pick up misinvoicing of services and intangibles.

Within the same broad approach type are more detailed trade studies, such as those carried out by Pak & Zdanowicz (2002) (and various other) and United Nations Economic Commission for Africa & African Union (2015), and these may suggest a need for some caution. Greater confidence is possible in estimates such as the latter which are based on more granular data – at detailed commodity level at least, and ideally at transaction level. The difficulties in obtaining consistent, high-quality data of this type mean that the leading global estimates at present rely instead on national-level data – and serious criticisms, including of the GFI approach, have been raised (Hong & Pak, 2017; Johannesen & Pirttilä, 2016; Nitsch, 2016). An important difference in approach between Boyce & Ndikumana and GFI is that the former net off their estimates of illicit inflows, to obtain a more conservative (and also more volatile) series, while GFI argue that because there is no such thing as 'net crime; it makes sense to consider gross outflows.

While illicit inflows could be considered to counteract detrimental effects of illicit outflows by increasing available capital resources, this position is questionable (see UNECA (2012) and AUC-UNECA (2015) for a more detailed discussion) because the damage of IFF to governance may be more important than the net resource effect. The benefits to the economy of illicit financial inflows to the economy may well be less than those of licit inflows, since the illicit inflows may themselves be going to fund the illicit economy (e.g. repatriation of profits by transnational organized criminal organizations may be used to fund expansion of activities in the country in question; the flows could also represent financing of terrorism); or be circumventing regulation or taxation designed to ensure fair competition. For our purposes in this paper, illicit financial inflows seem just as likely as illicit outflows to be distributed as or more unequally than funds in the licit economy, and so our primary interest is in estimates that do not 'net out' illicit financial inflows.

Figure 5 shows a comparison for estimates of total African IFF, between GFI methodology with WBR and HMN – Kar & Cartwright-Smith (2010), and Kar & Freitas (2011), respectively – and the Ndikumana & Boyce approach. Note that differences between the series frequently exceed the total value of the lowest estimate. Ndikumana & Boyce demonstrates greater volatility, as would be expected given in particular their use of net rather than gross trade mispricing. At the aggregate level, GFI's updated (HMN) methodology tends to produce the more conservative estimates.

Figure 5: Comparison of illicit financial outflow estimates for Africa, US$ billion
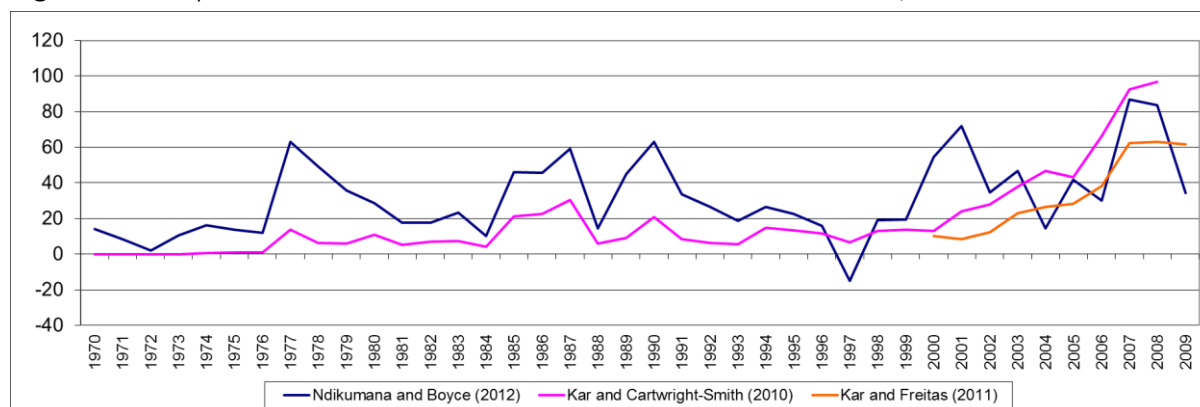
Source: Cobham et al., 2016

These differences provide an important illustration of the sensitivity of estimates to assumptions. Note, too, that these are shown at the aggregate level; disaggregated, there are examples of quite different country patterns over time.

Ndikumana and Boyce have generally focused more on the stock of capital held outside African countries, than on the annual outflows. Similarly, Henry (2012) produces global estimates with a largely common methodology, scaling up from outflows to estimates stocks of capital held offshore. The alternative approach here is to use data on international asset and liability positions in order to establish anomalies in the position of particular jurisdictions. Zucman (2013) follows this line of approach, focusing on a group of pre-determined 'tax haven' jurisdictions and the potential undeclared wealth held there. Henry's estimate, reflecting a wider set of asset types and without the limitation on jurisdictions holding assets, is unsurprisingly much larger: in the range of $21 trillion to $32 trillion, compared to around $8 trillion for Zucman. It is possible to estimate the income streams that may accrue on offshore assets.

Both Henry (2012) and Zucman (2013) estimate an offshore income stream of around $190 billion annually (Henry assumes a much more cautious rate of his return, on his much higher estimated stock). When country-level estimates are available, this may provide an alternative source of hidden income data to include in national distribution analysis. However, the additional extrapolations (from outflows to stocks, and then to potential income streams) inevitably add a higher degree of uncertainty. Similarly, the new global analysis of Alstadsaeter, Johannesen, & Zucman (2017b) follows Zucman (2013) in resting on an extrapolation from Swiss data.

Alternatives to currency estimates

There are two reasons to consider additional approaches. First, anomaly-based estimates inevitably attract criticism over the possibility that they may confuse 'innocent' anomalies including data errors and mismatches due to timing and rounding errors with evidence of illicitness, and the sensitivity to some of the assumptions made – see for example the various views expressed in five chapters of the World Bank's illicit flows volume (Reuter, 2012: chapters by Eden; Fuest & Riedel; Leite; Murphy; and Nitsch). As such, while the range of estimates have established the scale of the issue in terms of the broad order of magnitude, the degree of confidence in the estimates may be less suited to specific policy analysis at the level of countries and IFF types.

The second concern relates to the bluntness of the leading estimates. While it is useful to compare the component attributable to trade with that attributable to the capital account, and to separate out some individual and corporate tax abuses, greater specificity of the channels of IFF would be valuable to support policy prioritisation.

Underlying these issues is the simple fact that flows that are hidden by design do not lend themselves to measurement. It is, however, possible to analyse more precisely the risks that any given flow contains a hidden component. The central idea behind the new approach is this: that precisely because illicit financial flows are, by definition, hidden, the likelihood of an illicit component will be increasing in the degree of financial opacity in any given transaction. The assumption is this: that all else being equal, the easier is to hide something, the more likely that something will be hidden.

Box: Calculating 'Exposure' to IFF risk

Partner Opacity	Scale	Exposure
$$V_i = \frac{\sum F_{i,j} \cdot SS_j}{F_i}$$	$$I_i = \frac{F_i}{Y_i}$$	$$E_i = \frac{\sum F_{i,j} \cdot SS_j}{Y_i}$$

Where:

$i : \{1, \ldots, I\}$ — Country of interest

$j : \{1, \ldots, J\}$ — Partner country

$F_{i,j}$ — Flow between reporter i and partner j

Y_i — GDP of country of interest

SS_j — Secrecy Score of partner country. Ordinal, 0-100.

This approach, pioneered in the work of the African Union/Economic Commission for Africa's High Level Panel on Illicit Flows out of Africa (2015), can be simply illustrated: trading with Switzerland, or accepting investment from the British Virgin Islands, exposes a country to a greater risk of IFF than trading with Denmark or accepting investment from France. This does not of course imply that all trade with Switzerland is illicit, nor that all multinationals with BVI subsidiaries are committing tax evasion. However, the greater is the transparency of the partner jurisdiction in a given bilateral transaction, then the lower, all other things being equal, will be the risk of something being hidden. Not all transactions of a less transparent nature will be illicit; but the likelihood of illicit transactions within a less transparent flow will be higher. The greater the degree of opacity, in other words, the higher the risk of IFF.

To the extent that financial opacity of partner jurisdictions can be measured, this provides the basis to assess the risk of IFF facing a given country or region, according to the pattern of partners in economic and financial cross-border activity. The first step is therefore to create a measure of average Partner Opacity in each stock or flow for which data are available on a bilateral basis. This measure reflects the extent to which countries face a risk of 'hiddenness' in each stock or flow.

Figure 6: IFF risk exposure, commodity trade
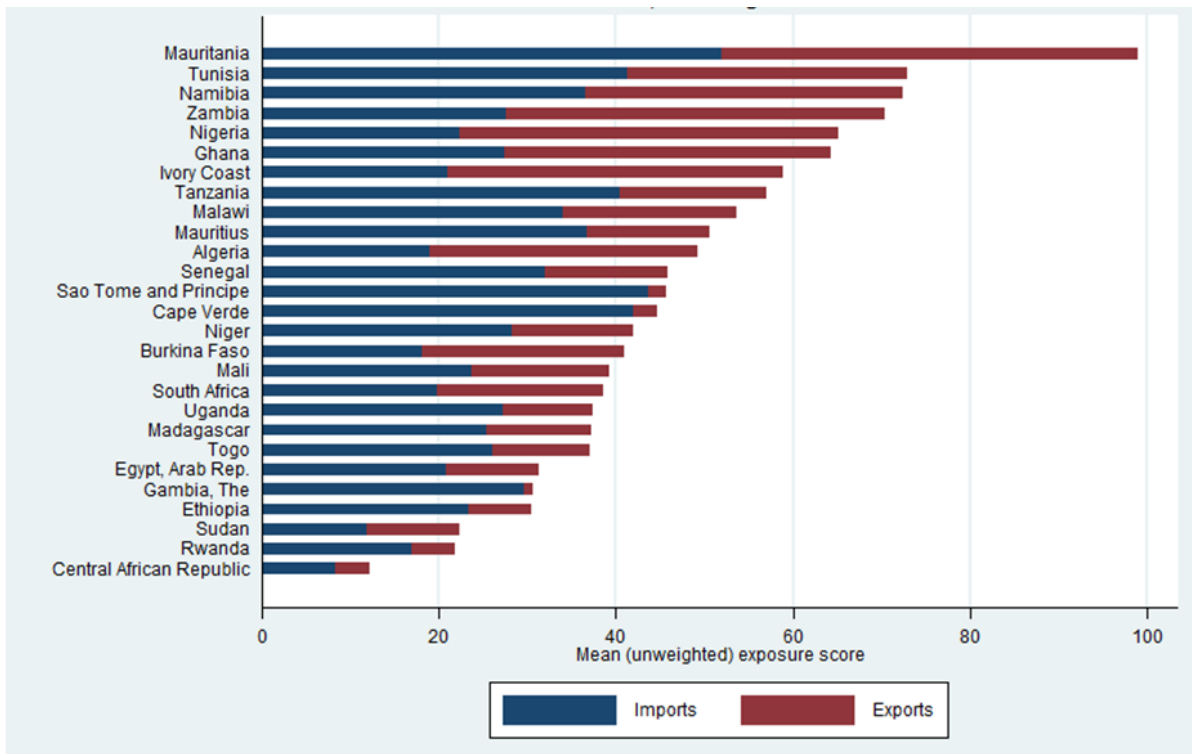
Source: Cobham (2014).

Figure 7: IFF risk exposure, direct investment
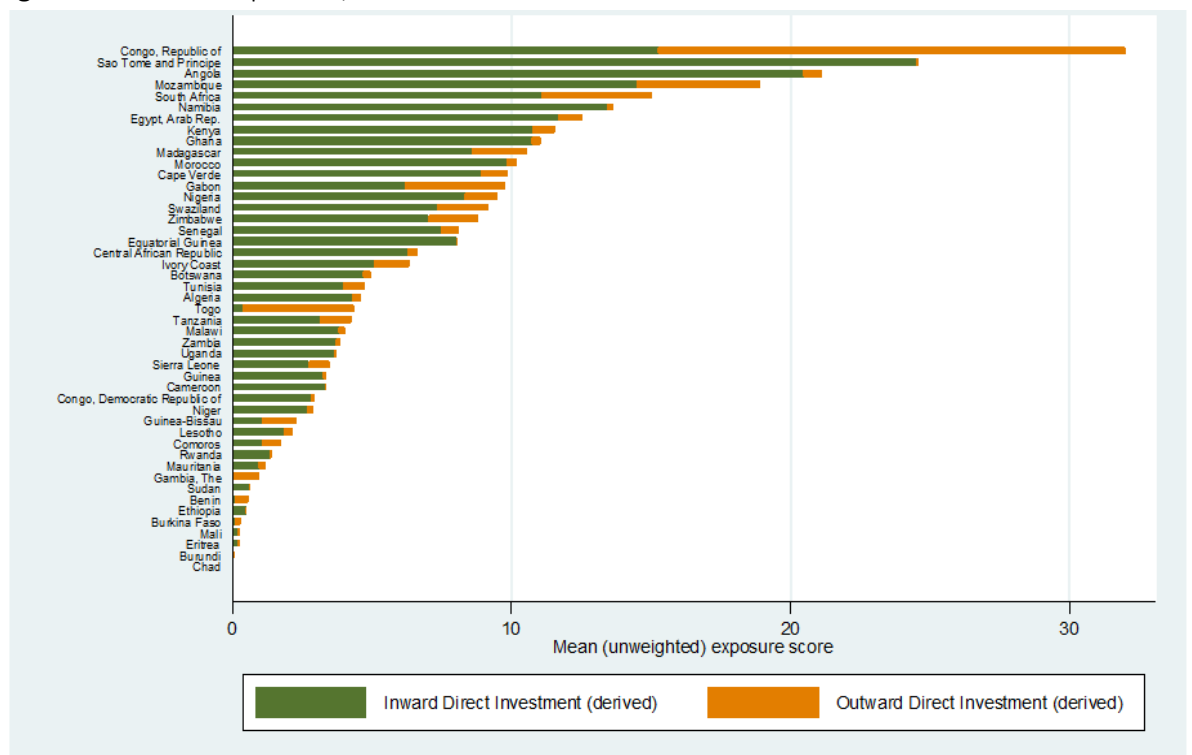
Source: Cobham (2014).

Multiplying Partner Opacity with 'Scale' (the importance of a given bilateral stock or flow in relation to the GDP of the country of concern) yields values of 'Exposure' (see Box). If all possible partner jurisdictions were either completely transparent, or completely secretive, the Exposure values would simply be the share of GDP involved in transactions with pure secrecy jurisdictions. Exposure scores can therefore be interpreted as measures of the overall risk to an economy from financial secrecy, or equivalently as measures of IFF risk.

Exposure scores have been calculated for African countries, subject to data availability, in respect of flows of trade in goods and services (figure 6); stocks of direct investment (figure 7) and stocks of portfolio investment (figure 8). Underlying data are for 2011 and sourced from UN Comtrade, IMF CDIS and IMF CPIS respectively. One immediate suggestion of figure 6 is that trade exposure tends to be higher in imports, with the exception of major commodity exporters. Indeed, as would be expected, countries with great natural resource wealth are among the most exposed in all categories. Inward direct and portfolio investment exposure dominates outward, although this in part reflects weaknesses in international reporting of outward positions. In addition, many countries are simply missing altogether. Enhanced regional data collation and reporting would offer clear advantages in terms of policymakers' ability to track and manage IFF exposure in different areas.

Figure 8: IFF risk exposure, portfolio investment
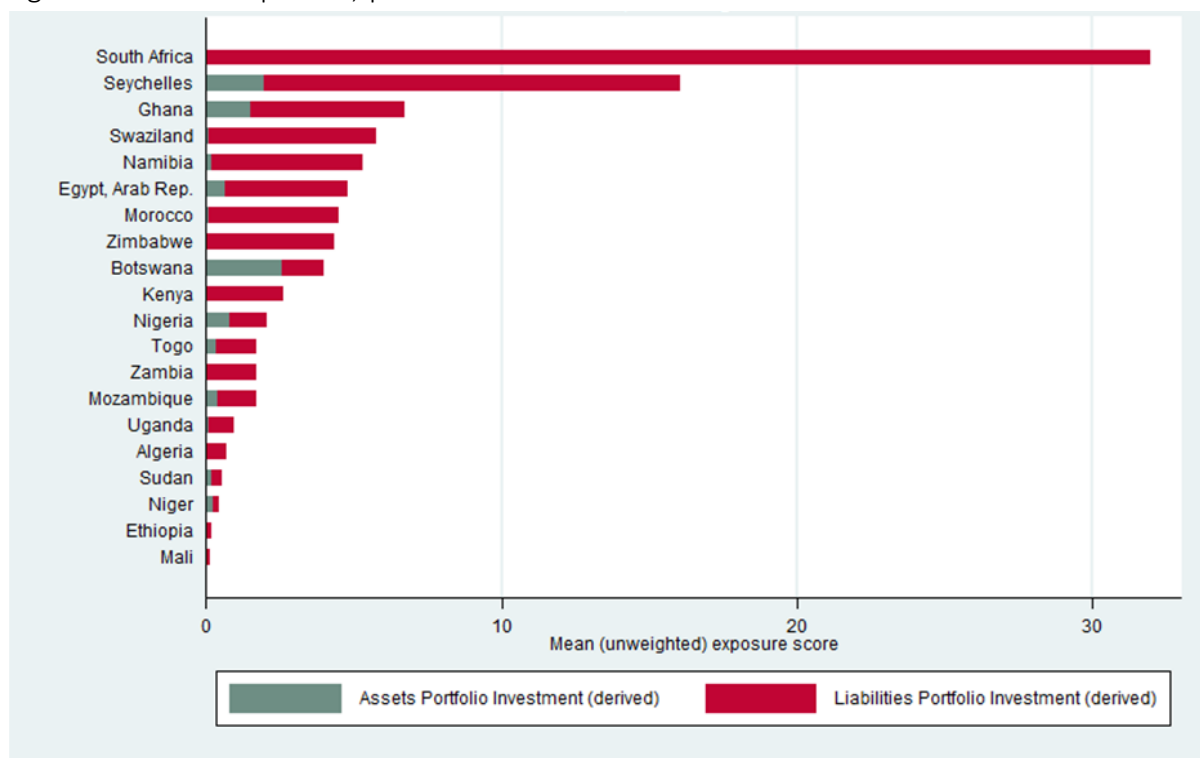
Source: Cobham (2014).

Note that exposure on investment stocks should not be compared directly with that in trade flows; and in addition, note from the typology that illicit flows in trade are likely to be a relatively small proportion of the total value (i.e. the mispriced element), while illicit flows in investment may be 100% of the total where ownership is hidden for illicit purposes. Policymakers are likely to have

more detailed data with which to carry out this assessment, and should consider carefully the specific circumstances in their country in making decisions to prioritise particular areas.

Such vulnerability measures – or the related concept of bilateral Financial Secrecy Indices (see e.g. Janský et al., forthcoming) – provide the potential to track the exposure of countries to IFF risk on a consistent basis over time, using existing data. While not a full alternative to estimates of the scale of IFF, the consistency and granularity for policy prioritisation may offer useful complementarity.

Conclusion

Why do we want estimates of scale? To build political will; and to support strong, well-targeted policies. For the first, loose estimates that are broadly credible may be sufficient; but for the second, we need more granular and robust measures that can be a good guide to policy prioritisation. Over time, and as the issues have become more well established on the international policy agenda, the research literature has evolved in this direction.

In terms of trade-based IFF, there are two extreme positions that should be resisted. One is a view that estimates using national-level trade data are 'good enough' – they're not. Commodity-level data, or ideally transaction-level data, is needed, and ideally should matched at both ends of the trade. At the same time, caution is needed with respect to methodological decisions. The other extreme position is one that holds that criticisms of the data and/or of methodologies are sufficiently strong that we should act as if the problem is small, or unimportant. The range of estimates available may be imperfect, but certainly take us beyond this point. When individual governments make transaction-level trade data available to researchers, in anonymised form, the most detailed analysis possible is able to identify the scale and location of abnormal pricing. Future work in collaboration with governments could see the development of real-time models to curtail future mispricing.

In addition, capital account-based estimates, and other estimates of undeclared offshore wealth and the associated illicit income streams, have become more well-established and robust, and also make clear – along with the now repeated leaks of data from offshore law firms – that the issues are global, systemic, and large.

As Part 2 shows next, we also have increasingly strong evidence, using multiple data sources and multiple methodologies, that the scale of multinationals' profit shifting represents a problem of first-order economic importance – to say nothing of the damage inflicted on the effectiveness of states and their governance, on the provision of public services and of redistribution, and on the resulting human development outcomes.

Setting aside unhelpful extreme positions, we can conclude on the importance of obtaining better data, and conducting better research with continually improving methodologies; and on the crucial need to challenge IFF in as targeted a way as possible, given the evidence available at each point. Additionally, as proposed in the Mbeki report, estimates of scale can be complemented by more granular measures of risk related to the level of financial secrecy of partner jurisdictions for trade and investment – since it is the secrecy of partner jurisdictions that makes illicit flows both possible and profitable. Progress on key elements of tax transparency, discussed in the policy recommendations in Part 3 below, will be crucial to improve both the available data and the precision of the analysis, and so agreement on these steps is also fundamental.

PART 2: PROFIT SHIFTING BY MULTINATIONALS

We start with the introduction and then discuss empirical findings in three subchapters. First, we discuss an estimation framework used frequently by economists and we show the results, often available for specific channels or selected countries. Second, we discuss the methodologies and results of a few studies that provide global estimates of profit shifting scale. Third, we introduce findings related to one specific profit shifting channel, trade mispricing.

Introduction

Tax avoidance by multinational companies is the most widely recognised tax 'injustice'. The tax affairs of technology companies such as Google and Facebook, or commodity companies such as Glencore and Chevron, have sparked both popular anger and policy responses from Italy to Indonesia, and from Australia to Zambia. The related revenue losses for lower-income countries have been a particular target for tax justice activists, development advocates and researchers at international organisations.

A clear conclusion emerges from the existing research that the international tax system provides MNEs with opportunities to decrease their taxes through intra-company transfer prices, strategic management of the location of intangible assets or distortion of the corporate debt structure. The research confirms that many MNEs do often make use of these opportunities and do shift income to tax havens (Clausing, 2003; J. R. Hines & Rice, 1994; Huizinga & Laeven, 2008). However, until recently at least, the literature has been less conclusive in respect of scale of profit shifting flows and revenue implications.

This is, nonetheless, an aspect of illicit financial flows (IFF) where the evidence for stronger impacts on lower-income countries is relatively compelling – and hence there is a strong case for its inclusion in the Sustainable Development Goals' target to curtail IFF. But lobbying and arguments based on the presumed legality of corporate tax avoidance, coupled with an insistence on interpreting 'illicit' as synonymous with 'illegal', has led to disagreement.

Such an insistence appears to overlook the fact that many avoidance schemes are found to be unlawful, without reaching the point of criminality. Are these illicit? Equating 'illicit' with 'illegal' is often taken to bring a clarity and a technical neutrality to the IFF discussion – but in practice would introduce a systematic bias against lower-income countries. Legal findings of criminal tax evasion, or illegal avoidance, depend on a range of factors. These include whether the underlying legislation is clear and up-to-date; whether the tax authority has both the resources and the political independence and/or support to prosecute a multinational; and whether the legal system is sufficiently well resourced and independent to try such a case well and fairly. By and large, each of these factors is less likely to be met in a low-income country as opposed to a high-income country – and so considering only proven illegal tax behaviour by multinationals will result in estimates that are systematically biased against finding IFF in lower-income countries, *even assuming* that multinationals' tax behaviour does not vary between countries.

In this section we proceed on the basis of the wider definition of illicit, as set out above, including cross-border flows which are deliberately hidden. The main focus of this part, is the evaluation of the scale of multinationals' profit shifting (and we also discuss the corresponding corporate income tax revenue losses). We use the term 'profit shifting' in order to abstract from the questions of legality and criminality that can be assessed only for individual transactions within a given multinational, and instead to cover the range of underlying phenomena that result in profit misalignment. We view this as in line with (i) the dictionary definition of 'illicit', covering socially

unacceptable behaviour as well as proven illegality; and (ii) the international consensus, expressed in the G20/OECD Base Erosion and Profit Shifting (BEPS) project, that multinationals' profit misalignment should be curtailed. This consensus is expressed most clearly in the single aim of the BEPS Action Plan: 'The G20 finance ministers called on the OECD to develop an action plan to address BEPS issues in a co-ordinated and comprehensive manner. Specifically, this Action Plan should provide countries with domestic and international instruments that will *better align rights to tax with economic activity*' (OECD, 2013, p.11, emphasis added). Those involved in other policy processes, such as the indicator setting for the SDGs, will necessarily take their own view.

As with the other aspects of IFF, assessments of the individual channels that give rise to profit shifting largely reflect the evaluation of deviations from some expected 'normal' pattern of data. A specific channel by which multinationals seek to achieve profit misalignment, the mispricing of commodity trade, is assessed in a subchapter on trade mispricing below; but in the preceding subchapters we largely focus on other profit shifting channels and the overall degree of misalignment eventually achieved discussed and estimated for many countries in the studies covered in a subchapter below. The studies covered there are mostly aiming for a global coverage of countries and obtain estimates of country-level scale of profit shifting. Still, before moving to these studies, in the following subchapter we survey the detailed profit shifting studies that have over the past years and recent decades developed into a vast body of literature.

There are three main recognised profit shifting channels: debt shifting through loans within one MNE group, location of intangible assets and intellectual property, and strategic transfer pricing. Table 2 sums up these three main profit shifting channels and provides a few examples of related studies. All three are motivated mostly by the MNEs' desire to lower their taxes by transferring their profits to countries where they pay lower taxes. In the case of debt shifting, this transfer is achieved through loans at high interest rates from one MNE unit located in a country with low taxes to a profitable affiliate in a country with high taxes. In the case of location of intangible assets, intellectual property such as brands or research and development is located artificially at an MNE's subsidiary in a tax haven, to which high service fees are then paid by other affiliates of the MNE. In the case of strategic manipulation of transfer prices, profits are shifted by increasing or decreasing the prices of goods or services being transferred between the various foreign parts of a MNE in such a way as to minimise the tax burden faced in all the countries put together. In addition to these three main channels MNEs engage in other profit shifting strategies that might also result into illicit financial flows. As discussed in the following subchapter below, the common feature to most channels is the manipulation of prices for intra-group transactions. Since these are prices for which data are not typically available publicly, we briefly survey the key findings in this area, but focus primarily on estimates that relate to the achieved scale of profit shifting, ideally with comparable estimates for many countries.

Table 2: The main profit shifting channels of MNEs

The main profit shifting channels	Examples of relevant studies
Debt shifting	Fuest, Hebous, & Riedel (2011), Buettner & Wamser (2013)
Location of intangible assets and intellectual property	Dischinger & Riedel (2011), Evers, Miller, & Spengel (2015)
Strategic transfer pricing	Clausing (2003), Davies, Martin, Parenti, & Toubal (2017)

To this end, there are three main types of data on which researchers have drawn. First, and generally preferable, are data on the reporting of individual multinationals. At present, the available datasets of this type tend to have major limitations; but the results can also be the most compelling for the partial activity they refer to, based on deviations in reported profit from the location of reported activity. Second, estimates can be based on deviations in jurisdictions' apparent efficiency in raising corporate tax revenues, using national-level data on revenue and activity. Third, falling between the first two in terms of the aggregate level of data and analysis, estimates can be based on deviations in the reported national-level profitability of foreign direct investment (FDI) in each jurisdiction.

The following section 5.1 summarises research findings which do not generally aim to provide a global scale, but rather to establish particular patterns of multinational tax behaviour that give rise to the overall issue, i.e. individual channels of profit misalignment. This section also surveys some key research that provides partial scale estimates. The remaining sections 5.2 to 5.7 deal with what we consider the main currently available global estimates. Finally, we identify main conclusions from the existing research, and proceed to offer policy recommendations and to identify key areas that would benefit from improvements in methodology and in the availability of data. On the last question, the most obvious recommendation is for large multinationals' reporting under the new OECD standard for country-by-country reporting to be made public – which at a stroke, and with near-zero cost, would radically change what is known about these leading global economic actors and the associated IFF.

Empirical findings

We begin with reviewing briefly some relevant research into the phenomenon which is more closely focused than to yield directly any estimates of profit shifting scale or tax revenue loss for more than one country.

Data

The bulk of the analysis here has been concerned with microeconomic responses, through various channels, to tax rate differentials between jurisdictions. Typically, authors have relied on company balance sheet data – often taken from Bureau van Dijk's Orbis or Amadeus data bases. Orbis, has been used intensively by other profit shifting studies as recently reviewed by Dharmapala (2014). Some of the recent studies include OECD's Johansson et al. (2017) and Johannesen et al. (2017).

Although Orbis is likely the most frequently and one of the most suitable used data set in papers looking at profit shifting, the latter being a reason why we use it in this paper, Orbis has its limitations. They are discussed at some length by Cobham and Loretz (2014), Clausing (2016), and recently acknowledged by Schimanski (2017) and Garcia-Bernardo et al. (2017). Perhaps the most relevant limitation for similar research papers as ours is that the Orbis data is biased against tax havens (and developing countries), i.e. the group of countries that we aim to study. In reality there are likely more MNEs from our sample that are linked with Panama Papers tax havens than is visible in the Orbis data and, depending on the characteristics of these firms, this might bias our estimates either downwards or upwards. In this paper we address some of the Orbis limitations by data imputation described below, but these are aimed at missing information for firms in the sample rather than compensating for firms outside the sample.

Also in response to these limitations of Orbis, other data have been used to examine profit shifting. For example, tax revenue data are the basis for the estimations of IMF's Crivelli et al. (2016) and Cobham and Janský (2017a). Another alternative to Orbis are datasets that exist for a few countries with information on MNEs headquartered there. The data set by the United States Bureau of Economic Analysis has been used recently by Zucman (2014), Clausing (2016) and Cobham and Janský (2017b), while the German's MiDi data has been employed, for example, by Weichenrieder (2009), Hebous & Johannesen (2015) and Gumpert et al. (2016). Even more promising is the use of confidential corporate tax returns, as done by Dowd et al. (2017) for the United States or Habu (2017) for the United Kingdom, which brings us to a discussion of profit shifting studies in these eight countries.

A number of countries, including Germany, Japan, the United Kingdom and the United States, provide limited public, or more extensive private access to researchers to datasets on the activities of multinationals to which they are either home, or host economies (or both). This has given rise to studies which, while not global in scope, do provide the basis for assessments of the scale of profit-shifting. In addition, they can offer complementary evidence in respect of particular channels. We survey the key contributions here.

Methodology

Economists often study the sensitivity of reported income to differences in tax rates and so there are a number of studies providing evidence of profit shifting, especially on how tax rate differentials affect reported pre-tax profits and on which strategies MNEs employ to reallocate profits within the group. Since the related literature is voluminous and growing, we refer to a recent review article by Dharmapala (2014) and more recent articles, such as Clausing (2016) or Dowd, Landefeld, & Moore (2017), for additional details.

Dharmapala (2014) reviews the literature on how the reported income changes with respect to tax rates differences across countries, represented by Hines Jr & Rice (1994) and Huizinga & Laeven (2008). For example, Dharmapala (2014) defends the prevailing use of statutory tax rates as more exogenous than effective tax rates (the actual tax rates faced by an affiliate), which might differ widely from the statutory ones due to deductions that in part reflect endogenous choices made by the firm, such as its decisions about the use of debt. Additionally, although Dharmapala (2014) considers the economists' approach more rigorous, he also points to the accountants' related research (Collins, Kemsley, & Lang, 1998; Dyreng & Markle, 2013; Klassen & Laplante, 2012).

The Hines–Rice approach modified for panel data, in the words and notations of Dharmapala (2014), can be simplified as:

$$\log \pi_{it} = \beta_1 \tau_{it} + \beta_2 \log K_{it} + \beta_3 \log L_{it} + \gamma X_{it} + \mu_i + \delta_t + \varepsilon_{it}$$

where π_{it} is the profit of affiliate *i* in year *t*, τ_{it} is the tax rate difference between the parent and the affiliate, K_{it} is capital input, L_{it} is labour input, X_{it} are additional affiliate-level controls, μ_i is an affiliate fixed effect (which controls for the unobserved characteristics of affiliate *i* that do not change over time), δ_t is a year fixed effect (which controls for unobserved common changes in the profitability of all affiliates in a given year), and ε_{it} is the error term. The main coefficient of interest is β_1 and reflects the extent to which the multinational shifts profits into or out of affiliate *i*. It is a marginal effect, i.e. the change in reported profits associated with a small change in the difference between the tax rates in the parent and affiliate economies, holding all else constant.

This original basic framework has been extended over the past decades in a few areas, for example, by moving from aggregate country-level analysis to the micro-level analysis of the behaviour of individual multinational affiliates and by relying on panel data (both already included in the version described by the equation above) or by using other indicators than fixed tangible assets and employment compensation for capital and labour inputs, respectively. Further innovations have been introduced more recently. For example, Huizinga & Laeven (2008) used the overall pattern of tax rates faced by all affiliates of the MNE rather than only the difference between the parent and the affiliate, Dharmapala & Riedel (2013) included a variable for arguably exogenous profit shocks, and Dowd, Landefeld & Moore (2017) allow for non-linear semi-elasticity with respect to the tax rates.

Some of the most convincing empirical evidence is on specific profit shifting channels with pioneering estimates for Europe by Huizinga & Laeven (2008). Some similar approaches with applications to lower-income countries have been developed by Fuest & Riedel (2012) and Johannesen, Tørsløv, & Wier (2016). Both indicate the importance of profit shifting for lower-income countries, but their methodological approaches do not extent to evaluate the scale of profit shifting or the associated tax revenue losses.Recently, in an unpublished draft, Nicolay, Nusser, & Pfeiffer (2016) review the literature on the effectiveness of anti-avoidance legislation and use a sample of European multinationals to test whether firms substitute between profit shifting strategies and whether this implies interdependence between different anti-avoidance regulations in place. Their empirical results, further strengthened by exploiting a reform of thin capitalization rules in France in a difference-in-difference approach, suggest that substitution between profit shifting channels takes place and that thin capitalization rules are not effective in reducing total profit shifting if no strict transfer pricing rules are present.

Riedel (2015) reviews the related literature and concludes that existing results at the lower (upper) end suggest that MNEs transfer less than 5% (30% or more) of their income earned at high-tax affiliates to lower-tax entities. Neither Riedel (2015) nor most other academics develop their estimates of profit shifting into estimates of revenue impacts. Together with Fuest, Spengel, Finke, Heckemeyer, & Nusser (2013) we observe that empirical studies scarcely extrapolate their estimates to profit shifting volumes. An early exception is Huizinga & Laeven (2008) with estimates of profit shifting scale and related tax revenue losses for 21 European countries (with losses largely concentrated in Germany) that has been rarely followed with respect to these country-level estimates.

There are other exceptions and, even more optimistically, their number as well as reliability seem to be increasing with time. In addition to the mostly global estimates discussed in the sections below, there are two other exceptions - Clausing (2009) and Zucman (2014) with their estimates for the United States. The following section looks at these and other country-specific assessments, before we move to global findings.

Their as well as most other estimation methodologies can be summarised as:

$$CIT\ revenues\ lost\ from\ BEPS = (applicable\ tax\ rate) \times (a\ hypothetical\ counterfactual\ (without\ BEPS)\ CIT\ base - current\ CIT\ base).$$

where CIT stands for corporate income tax and, of course, one of the difficulties in estimating the scale of the profit shifting problem is the limited data that are available, as well as the difficulty associated with establishing the counterfactual levels of profit in each country absent profit shifting incentives and the applicable tax rate. Indeed, a counterfactual tax base and a relevant tax rate are

needed in most of the similar estimations. The problem with a counterfactual is that firms' true economic profit before profit shifting is not observable, but we need a reasonable estimate of it for any estimates of the revenue implications. Additionally, whether we have data on taxes paid according to financial or tax accounting is important. The problem with a tax rate is that an applicable rate is seldom known, it might be the statutory rate, an estimated effective tax rate or some other rate.

Results

According to survey of the recent literature by Heckemeyer & Overesch (2017), who follow the earlier meta-analysis by Mooij & Ederveen (2008) and suggest that transfer pricing and licensing are the dominant profit-shifting channels, a semi-elasticity of reported income with respect to the tax rate differential across countries amounts to 0.8. In Dharmapala's (2014) example this entails that a 10 percentage point increase in the tax rate difference between an affiliate and its parent (e.g. because the tax rate in the affiliate's country falls from 35% to 25%) would increase the pre-tax income reported by the affiliate by 8% (for example, from $100,000 to $108,000).) Dharmapala's (2014) observes that the estimated magnitude of BEPS is typically much smaller than that found in earlier studies and that the magnitude, at least as estimated by the semi-elasticity, has been decreasing over time. However, the data used usually suffer by important issues discussed, for example, by Keightley & Stupak (2015), and the methodology, for example, does not allow for non-linearity of the semi-elasticity with respect to the size of tax rates Dowd, Landefeld, & Moore (2016).

Even when ignoring the various downsides of the estimates, an important dilemma ensues, which Dharmapala (2014) describes in the following way. He considers the semi-elasticity relatively small and in contrast to a widespread policy discourse that points to descriptive statistics regarding the fraction of income reported by MNEs in tax havens as indicating that international corporate tax avoidance is large in magnitude and importance. The kind of estimates reviewed by Dharmapala (2014) capture, however, marginal effects (i.e. the change in reported profits associated with a small change in tax rates, holding all else constant), and therefore, as Miller (2014) sums up, are not necessarily inconsistent with evidence that large amounts of income have been shifted offshore. Also, Dharmapala (2014) addresses this question directly and he ponders whether the large fraction of the net book income of MNCs reported in havens might reflect 'inframarginal' income shifting that empirical analysis focused on semi-elasticity cannot detect or it has some other explanation. He argues that in the policy discourse it would be common to point to the reporting of 40 percent of the MNEs' income (which he observes on the basis of Bureau of Economic Analysis data) constituting BEPS activity, whereas he argues that it might be termed an 'inframarginal' phenomenon that is difficult to explain using the estimated elasticities. He argues that a semi-elasticity in the range of 0.4 to 0.8 would (if it were possible to extrapolate from small changes in the tax rate) imply that 10–20 percent of income (rather than 40 percent) would be shifted to havens. Furthermore, similar analyses do not take into account the finding of Kawano & Slemrod (2015) that countries tend to implement policies that both lower the corporate tax rate and broaden the corporate tax base, and this might bias the estimates of semi-elasticity, as they show using the replications of Clausing (2007) and Devereux (2007).

Also further similar research belongs to this heterogeneous group of recent estimates, for which we however do not have sufficient space in this review since the priority is the estimated impact of international corporate tax avoidance on government tax revenues. Therefore, in the remainder we focus on recent publications that provide specific estimates in terms of dollars, tax or percentages of GDP.

United States

Two of the exceptions are Clausing (2009) and Zucman (2014) with their estimates for the United States. Zucman (2014) on page 130 assumes that profits reported in tax havens are taxed negligibly in tax havens and mostly untaxed in the headquarters' or owners' countries and estimates:

$$CIT\ revenues\ lost\ from\ BEPS =$$

$$Share\ of\ profits\ reported\ in\ tax\ havens \times corporate\ tax\ base$$

On the basis of this formula and available data, he concludes that profit-shifting to low-tax jurisdictions reduces the tax bill of US-owned companies by about 20 percent. In another estimate on page 131, Zucman (2014) assumes that AETRs decrease due to BEPS, mostly (the other effects can be taken into account and the BEPS is responsible for the rest) and estimates:

$$CIT\ revenues\ lost\ from\ BEPS =$$

$$AETR\ historical\ decrease\ (due\ to\ BEPS) \times corporate\ tax\ base$$

He observes that the effective tax rate paid by US-owned firms has been reduced by a third, from 30 to 20 percent, between 1998 and 2013. Using the formula he argues that these companies would have, all else equal, paid $200 billion in additional taxes in 2013 if it had stayed constant.

Clausing (2009) estimates the tax responsiveness or semi-elasticity of gross profits reported by United States MNE entities in foreign countries to effective tax rate differentials between foreign affiliates and their United States parent, based on Bureau of Economic Analysis survey data on foreign activities of United States MNEs aggregated at the country level. She then uses this result to calculate, in five steps, how much government revenue would differ in the United States without profit shifting and arrives at USD 60 billion lost from profit shifting from United States MNEs in 2004, which represents 35% of United States federal corporate income tax collections. More recently, Clausing's (2011) best estimate of the revenue loss associated with the income shifting of multinational firms in 2008 is approximately $90 billion, or about 30 percent of U.S. government corporate tax revenues.

More recently, Clausing (2016) uses the BEA data to estimate the US government revenue losses implied by BEPS and extends, speculatively, as she says, these estimates to the world and that is why we include it below together with other global estimates, in the following subchapter.

Some other studies focus only on the United States. Keightley & Stupak (2015) review the data relevant for BEPS estimates. United States Joint Committee on Taxation (2014) calibrate the level of current profit shifting at about 20% of the corporate tax base in 2013 and OECD (2015) derive that the effect on corporate taxes would be larger than the 20% or USD 70 billion, because tax collections are not proportional to the tax base due to tax credits. Its staff members, Dowd et al. (2017), estimate that reported profits in Bermuda, the Cayman Islands, Ireland, Luxembourg, the Netherlands, and Switzerland would decline by more than $100 billion in 2010 had these countries had statutory tax rates of 29 percent and average tax rates of 17 percent. Importantly, they observe that the effect on profits reported in a foreign subsidiary of a 1 percentage point increase in the net of tax rate (that is, a tax decrease in a foreign country) depends crucially on whether the country has a low rate or a high rate. Under the quadratic specification, a change in the tax rate from 5 percent to 4 percent results in 4.7 percent increase in profits while a change from 30 percent to 29 percent results in a 0.7 percent increase in profits (in contrast with 1.4 percent increase in case of the traditional linear specification).

Germany

In a related area of research, governments around the world are concerned with a tax gap as the difference between the true amount of tax legally due and what taxpayers actually pay. We discuss this concept only briefly and focus on results for Germany. The efforts of the EU's Tax Gap Project Group resulted in a report by European Commission (2016) that discusses the concept of tax gaps generally and focuses on VAT gap estimations across a number of EU states. Some tax gap estimates include international corporate tax avoidance and are thus relevant here (Bloomquist, Hamilton, & Pope, 2014). According to European Commission (2016), only Germany seems to carry out and publish estimates of corporate income tax gaps, namely using a top-down approach by Bach (2013) and a bottom-up one by Finke (2014). There is also a lively discussion in the United Kingdom - in somewhat contrasting contributions, Murphy (2012) and Oxford University Centre for Business Taxation (2012) discuss the corporate tax gap by UK corporations.

In an unpublished draft, Finke (2014) used propensity-score matching to account for missing counterfactual of MNEs' profit before profit shifting. Her results suggest that MNEs in Germany on average pay 600,000 EUR (about 27%) less profit taxes than German domestic counterfactual, which, extrapolated to the full sample, implies a revenue loss of about 8.6 bn Euro. She finds that the effect exists only for MNE with at least one subsidiary in low-tax jurisdiction and that a 2008 reform substantially reduced difference in tax payments between MNEs and domestic control group.

In another important German-focused research, Weichenrieder (2009) uses the MiDi database of the Deutsche Bundesbank on German inbound and outbound FDI to find an empirical correlation between the home country tax rate of a parent and the net of tax profitability of its German affiliate that is consistent with profit shifting behaviour. Using the same data as well as another German data set on services, Hebous & Johannesen (2015) document that the service trade of tax havens partly reflects genuine specialization in service industries and partly profit shifting and argue that the loss of government revenue resulting from this type of corporate tax evasion is likely to be modest.

Trade mispricing

Here we focus on one specific profit shifting channel, trade mispricing. Some of the early approaches used in this literature and discussed above use international trade data to study trade mispricing. Trade mispricing occurs when transactions between both related and unrelated parties are mispriced to avoid taxes or achieve similar objectives (in contrast to a more narrowly defined transfer mispricing that describes only transactions between related parties within a multinational corporation). Trade mispricing enables shifting profits out of countries either through import over-invoicing or export under-invoicing. Academic studies have used trade data, ideally at transaction level (Clausing, 2003; De Boyrie, Pak, & Zdanowicz, 2005; de Boyrie, Pak, & Zdanowicz, 2005; Pak, 2007; Zdanowicz, 2009), and they broadly support the view that tax indeed motivates trade pricing decisions. One of the methods used is the so called mirror trade statistics method, which compares import and export data for the same trade flow. Mirror trade statistics have been applied by Beja (2005) and Berger & Nitsch (2012). Chalendard, Raballand, & Rakotoarisoa (2016) used the abnormal prices as the main indicators. Measured by their impact on a country's national trade statistics, together with Nitsch (2017), we distinguish four types of trade misinvoicing, outlined in Table 3.

Methodology problems have been discussed by Nitsch (2012), Nitsch (2016), and Nitsch (2017). The accuracy of trade misinvoicing estimates is unknown, since, as Nitsch (2017) argues, only an unknown fraction of all misreported trade activities is identified from official statistics. Also, misinvoicing in customs declarations is not necessarily limited to the unit value but may also affect

the weight or quantity of a shipment. As these types of fraud are ignored (by definition) in the analysis of unit values, the accuracy of the aggregate result remains unknown. A highly disaggregated transaction-level data is usually not available to researchers. Nitsch (2017) observes that misinvoicing behaviour is then often identified from more aggregate trade information, which introduces at least two types of problems. First, at a more aggregate level, discrepancies in mirror trade statistics from misinvoiced trade transactions may cancel each other out. Second, for the analysis of aggregate data, the set of assumptions that is used for the identification of misinvoicing practices typically becomes even more restrictive (and debatable). In view of these difficulties, Nitsch (2017) argues that estimates of the extent of trade misinvoicing activities often seem to lack any substantive meaning.

Promisingly, a more recent research employs very detailed trade data and uses more credible methodologies, but is limited in geographical coverage. Since the trade-related estimates are not the focus of this review, I briefly discuss only two papers using French data as good examples for further research to be done in the future for more countries. Vicard (2015) uses detailed French firm level trade data to estimate revenue impact of profit shifting through transfer pricing. He shows that the price wedge between arm's length and related party transactions varies systematically with the corporate tax rate differential between France and its trading partner. He estimates that this profit shifting decreased French corporate tax base by 8 billion USD in 2008 and the related missing tax revenues amount to 10% of the corporate tax paid by multinational groups located in France that trade with a related party. He estimates the so called semi-elasticity of corporate profits to tax differentials at 0.5 (a 10 percentage point increase in tax differential would increase the pre-tax income reported by the affiliate by 5%). This is based on transfer pricing in goods trade only and is thus relatively high by the other estimates on balance sheet data, which he challenges.

Using similar data, Davies, Martin, Parenti, & Toubal (2015) arrive at a somewhat lower estimate, most of which is driven by the exports of 450 firms to ten tax havens. For Denmark, Cristea and Nguyen (2016) use firm-level panel dataset of Danish exports to find evidence of profit shifting by MNEs through transfer pricing. For the UK, Liu, Schmidt-Eisenlohr, & Guo (2017) use data on export transactions and corporate tax returns of MNEs and find that MNEs manipulate their transfer prices to shift profits to lower-taxed destinations. For the US, Flaaen (2017) shows profit-shifting behavior by MNEs via the strategic transfer pricing of intra-firm trade. These studies derive their credibility from and build on detailed, country-specific data and, therefore, cross-country estimates are usually not available.

Table 3. Trade mispricing types

	Overinvoicing	Underinvoicing
Export	Export overinvoicing To take advantage of export subsidies - Celasun & Rodrik (1989a), Celasun & Rodrik (1989b)	Export underinvoicing To evade export restrictions, to circumvent trade restrictions (a misclassification of products or a misdeclaration of the final destination of a shipment) - Fisman & Wei (2009)
Import	Import overinvoicing	Import underinvoicing

	To misclassify other imports (underreport some imports and thus overreport other imports) - Chalendard, Raballand, & Rakotoarisoa (2016)	To reduce the payment of customs duties - Yang (2008), Kellenberg & Levinson (2016), Chalendard, Raballand, & Rakotoarisoa (2016)

Source: Nitsch (2017), authors

Results for the world and lower-income countries in particular

To estimate global IFF, data with global coverage is clearly preferable. In practice, however, there exists at present no public data source on the economic activities of multinationals which does not suffer from grave and systematic weaknesses in coverage. In terms of methodology, the results could in most cases be strengthened by allowing for the tax and/or secrecy behaviour of counter-party jurisdictions; and by modelling profit-shifting as a response to actual tax rates paid, rather than statutory rates or other often misleading proxies. However, these are also areas in which data is typically lacking. Ultimately, in terms of global coverage of countries and with specific estimates of scale of profit shifting, the currently best available estimates are those summed up in Table 4 below and studied in more detail in subchapters below.

Table 4 sums up the following research contributions to estimating the scale of profit shifting for many countries: IMF's Crivelli et al. (2016), UNCTAD (2015), OECD (2015b), Clausing (2016), Cobham & Janský (2017), IMF (2014). We focus on these studies because most of them have been influential in the policy debate, all include an answer to what is the scale of profit shifting and how much tax revenue governments lose, in most cases providing estimates for many countries worldwide. We list these studies in an approximate order of perceived credibility and relevance of their estimates. We discuss them in detail below, although without the aim to provide a definitive comparative evaluation of these approaches. IMF's Crivelli et al. (2016) estimate losses due to profit shifting related to tax havens by looking at a counterfactual if the tax havens' tax rates were not lower than in other countries. UNCTAD (2015) estimate tax revenue losses due to tax avoidance schemes that exploit a direct investment relationship on the basis of lower reported rate of return for investment from offshore hubs (tax havens). OECD (2015b) combines estimates of revenue losses due to both profit shifting related to tax rate differentials (differences in tax rates across countries) and differences in average effective tax rates for large affiliates of MNEs and domestic companies.

We discuss the studies' methodologies and results in the individual estimates' sections below, where we also cover some of the important assumptions and drawbacks, but we discuss some general issues here. One of the studies itself, OECD (2015b), argues that given the many uncertainties associated with global estimates of the scale and economic impacts of BEPS, no single empirical estimate can be definitive, but they add that such estimates are generally of more value for policymakers than extrapolating from more narrow studies involving a limited number of companies or countries. On a similar note, EPRS (2015) observe that most economists concede that estimating aggregate tax revenue losses due to tax avoidance and evasion remains elusive. Still, it is not an objective of this paper to provide their full evaluation and quite likely in due time (most of the studies were only relatively recently published) these studies are bound to receive their share of criticism, if only because some of the earlier studies' problems preserve: a number of strong assumptions, a lack of direct implications for policy and a lack of counterfactual.

Both Clausing (2016) and Cobham & Janský (2017) use data focused on US-headquartered multinationals only. While Clausing (2016) estimates profit shifting scale from derived semi-elasticities, Cobham & Janský (2017) quantify the extent of misalignment between reported profits and indicators of economic activity. IMF (2014) for the world, and EPRS (2015) with a slightly different methodology for European countries, estimate corporate income tax revenues related to differences in countries' corporate income tax efficiency ratio (using gross and net operating surplus, respectively) relative to the average ratio in the other countries. As we explain in detail below, this methodology's results, similarly to Cobham & Janský (2017), provide a comparatively very wide scope for other interpretations than international corporate tax avoidance.

Table 4. Summary of estimates of global profit shifting and associated tax revenue losses

Reference	Annual corporate income tax revenue loss estimates	International corporate tax avoidance estimated	More details on methodology	Published in an academic journal	Country-level estimates
IMF's Crivelli et al. (2016)	Long-run approximate estimates are $400 billion for OECD countries (1% of their GDP) and $200 billion for lower-income countries (1.3%) of their GDP.	BEPS related to tax havens.	BEPS related to tax havens by looking at a counterfactual if the tax havens' tax rates were not lower than for other countries.	Yes	Yes (by a later study of Cobham & Janský (2018))
UNCTAD (2015)	Around 8% of CIT, USD 200 billion in 2012 globally and USD 90 billion for lower-income countries.	BEPS through tax avoidance schemes that exploit a direct investment relationship.	Tax revenue losses due to tax avoidance schemes that exploit a direct investment relationship on the basis of lower reported rate of return for investment from offshore hubs.	No	Yes (by a later study of Janský & Palanský (2017))
OECD (2015b)	USD 100-240 billion, or anywhere from 4-10% of global corporate income tax (CIT) revenues in 2014. It ranges from 7.5 to 14% of lower-income countries' CIT revenue.	BEPS due to tax rate differentials and differences in average effective tax rates for large affiliates due to mismatches between tax systems and tax preferences.	BEPS related to tax rate differentials and differences in average effective tax rates for large affiliates of MNEs and domestic companies.	No	No
Clausing (2016)	Between $77 billion and $111 billion in corporate tax revenue losses of US government due to profit shifting by 2012. Revenue	Profit shifting due to tax rate differentials.	Profit shifting scale from derived semi-elasticities	Yes	Yes

	loses total $279 billion for a group of selected countries, 20 percent of their total corporate tax revenues.				
Cobham & Janský (2017)	As much as a quarter of the global profits of US multinationals may be shifted to locations other than where the underlying real activity takes place. This estimate amounts to some $660 billion in 2012, or almost 1 per cent of world GDP.	Misalignment between the location of US multinationals' economic activity versus the location of their profits.	They quantify the extent of misalignment between reported profits and indicators of economic activity.	Yes	Yes
IMF (2014)	5% of CIT in OECD and almost 13% in non-OECD countries in 2012.	Corporate income tax efficiency, the spillover effects of profit shifting.	Corporate income tax revenues related to differences in countries' corporate income tax efficiency ratio (using gross operating surplus) relative to the average ratio in the other countries.	No	Yes

Source: Authors on the basis of the cited literature

The lack of considering realistic counterfactuals (i.e. what the tax base would be in the absence of profit shifting) seems especially crucial. The studies usually aim to estimate how the actual amount of corporate tax paid differs from the counterfactual of a world without international corporate tax avoidance. The first part of this equation might be the easier one to estimate, but it is not straightforward due to data limitations and as shown, for example, in a review of research in accounting for income taxes by Graham, Raedy, & Shackelford (2012). The second part is, as any counterfactual, intrinsically hard to estimate. The main approach is to estimate it indirectly by estimating the extent of international corporate tax avoidance and adding it to the tax paid now. An alternative would be to assume that the counterfactual would be consistent with a full or partial alignment of economic activity with reported incomes generated by this activity across countries

(Alex Cobham & Janský, 2017b; Alex Cobham & Loretz, 2014). So it is naturally quite difficult to quantify what the corporate tax base would be without being affected by profit shifting, but some studies seem not to consider this as their objective and do not work with or even look for any counterfactual value of corporate tax base without profit shifting. This is discussed for example by Finke (2014) using language from the research on treatment effects. She argues that, indeed, the main problem in measuring the volume of tax avoidance through profit shifting is that the true profit before profit shifting is itself not observable as a reference point.

Furthermore, the studies might have difficulties to capture the current scale of international corporate tax avoidance, but they are probably even less suited to be informative about the future prospects, especially in the view of ongoing policy changes. They also mostly focus only on corporate income tax (rather than capital gains and withholding or other tax) and leave out other tax revenues and other potentially dynamic effects of international corporate tax avoidance. Furthermore, most of the studies use statutory rather than effective tax rates and they should employ the latter at least as a robustness check. On the one hand, average effective tax rates (AETRs) seem generally more suitable for these estimates than nominal tax rates since AETRs reflect better than the statutory rates the actual tax paid on average, which is what is usually relevant for the estimates. AETRs can differ substantially from nominal tax rates. On the other hand, there is less consensus on how to estimate AETRs and less information on AETRs across years and countries. Furthermore, differences in AETRs may be due to reasons such as R&D tax credits, i.e. other than international corporate tax avoidance, and thus might be partly misleading. Overall, good practice might be to report results using both nominal tax rates and AETRs as done by Crivelli et al. (2016) or Cobham & Janský (2018).

These estimates share not only a number of drawbacks but also other common characteristics (although, of course, there are differences in the specific international corporate tax avoidance phenomena studied, the methodologies as well as how open the authors are with sharing data and other files). On the downside, all the estimates are only indicative or illustrative estimates. The main reason seems to be that the currently available data do not enable estimates of substantially higher quality, although some of the estimates unnecessarily suffer from methodology insufficiencies or unclear or too ambitious interpretations. On the upside, they seem to be aware of limitations of their estimates. We appreciate their attempts and that they publish them and we believe that these estimates add substantial value – both in terms of their results as well as advancing how researchers go about understanding these phenomena and estimating their scale. Their research approaches can be refined in the future, by adjusting the methodologies as well as applying newer data and methodologies. Nonetheless, we derive from studying these estimates that however illustrative they might be due to data and methodology limitations, they are in part expert estimates in the sense that they reflect the authors' informed perspective on how large the scale might be. Therefore we interpret these estimates loosely as meaning that they are all more or less in the range that they as experts expect them to be.

We would likely be too optimistic to claim that there seems to be agreement on the order of scale of profit shifting and related tax revenue losses in absolute numbers, but there is certainly disagreement on whether these numbers should be considered small or big. Let us discuss briefly some opinions that the estimated scale is relatively small rather than large. Dharmapala (2014) addresses, but does not fully settle this question, and provides some possible explanations as well as suggestions for future research. Similarly, Hines (2014) discusses various estimates, does not come up with new ones, and explains why some of the existing estimates probably overstate the potential tax revenue to be had by eradicating BEPS. In a similar way as Dharmapala (2014), Hines (2014) discusses the relatively low values of semi-elasticities and argues that even 2 or 4 percent figures probably overstate the potential tax revenue to be had by eradicating BEPS, but on its own terms

the potential tax revenue from 2 or 4 percent of pre-tax incomes of multinational corporations would make an extremely modest contribution to the government finances of most countries. However, Hines (2014) focuses on OECD countries and seems to consider a too narrow definition of tax havens, as in Hines (2010). More importantly, Hines' (2014) empirical puzzle is why there is not more tax avoidance than appears to be the case – so this seems a half full or half empty glass of water argument.

Along similar lines, Forstater (2015) criticises the existing numbers as overestimates, but does not come up with new estimates. Furthermore, Forstater (2015) claims that there is a popular narrative that there is a large 'pot of gold' for funding which could be released by cracking down on the questionable tax practices of multinational enterprises. We are not aware of a large pot of gold, but we can see a glass of water – it is not full (profit shifting is real and there are only some corporate income tax revenues from MNEs, i.e. water) and we are not sure how big the glass is (the research does not say what the potential revenues could be without profit shifting), but we propose this framework for the debate is more useful and constructive. To us the estimates seem substantial in absolute terms (especially for lower-income countries, where corporate tax revenues are relatively large and overall tax revenues relatively small (Prichard, Cobham, & Goodall, 2014)), i.e. the glass is half full, but limited for some, especially developed, countries as a potential source of additional tax revenue, i.e. the glass is half empty. It follows that differences across countries should be the subject of further research.

Overall, conclusions about the scale of any IFFs – including those related to multinational profit shifting – must be drawn on the basis of a range of methodologies and data that are all, necessarily, flawed. Nonetheless, the range of data and applied methodologies in respect of profit shifting give rise to a broadly higher degree of confidence in the findings in this area. There are three areas of particular convergence. First, in terms of the contours of the problem, the findings indicate that only a small number of jurisdictions are consistently the recipients of disproportionate volumes of profit related to economic activity elsewhere. Second, the scale of shifted profits and revenue losses are widely distributed across other jurisdictions, with the highest values in high-income countries but the most intense losses in relation to GDP and especially to tax revenues, in lower-income countries. Third, the overall scale of multinationals' profit shifting may reach the level of being a material distortion to global economic accounts; and the worldwide revenue losses may lie between $500 billion and $650 billion annually.

PART 3: POLICY RECOMMENDATIONS

Our main recommendations relate the indicators for the SDG target on illicit financial flows; but we also put forward proposals in relation to the policy opportunities for individual countries and regional groupings; and the global architecture within which relevant policy decisions are considered.

Indicators for the IFF target in the SDGs

Almost certainly the weakest approach to indicators for the SDG target would be to limit these to dollar estimates of scale. In addition to the inevitable uncertainty over estimates discussed in this paper, such an approach would also have potentially worrying implications for the associated accountability. Since reporting would be on the basis of the IFF suffered by individual countries, the implication could be that each country is responsible alone for any progress made – or lack thereof. Given the central role of financial secrecy elsewhere, and the recognised need for global cooperation as well as domestic action, this also seems out of keeping with the intention of the target.

If dollar estimates are to be pursued, the strongest by far is likely to be an option based on multinational companies' country-by-country reporting, under the new OECD standard based on an original Tax Justice Network proposal. This data, if collated and partially aggregated as the OECD is now assessing, will allow a precise evaluation for each country of the extent to which declared profit is aligned or misaligned with the country's share of global economic activity of multinationals. This will provide a mechanism to track progress both of countries losing out to profit shifting, and those who aim to benefit from it.

A second approach, following the IFF vulnerability measures developed for the Mbeki panel, would be to require reporting by countries on their progress against key financial transparency measures: the proportion of the assets held of citizens of each partner country for which information is automatically exchanged with the authorities of the partner country; the proportion of companies, trusts and foundations for which ultimate beneficial ownership information is held in public registers; and the proportion of multinational companies for which there is public country-by-country reporting. This again would allow accountability at both ends, since countries could also publish directly their measures of vulnerability to financial secrecy and track progress in reducing this.

Policy opportunities

Relatedly, countries and regional groupings can follow a range of policies outside of the SDGs to make progress against IFF. These include removing the backing of legal protection for any companies, trusts and foundations – from any jurisdiction – for which beneficial ownership information is not held in public registers. Measures such as the forthcoming EU blacklist of non-cooperative jurisdictions could also be used to reduce economic and financial relationships with financial secrecy jurisdictions that continue not to meet the new standards of transparency and cooperation.

In the key area of multinational taxation, countries and regional blocs could take the decision to break with the OECD's international tax rules, recognising the growing consensus that the arm's length principle and the related need for transfer pricing are incompatible even with the agreed G20 and OECD aim to reduce the misalignment between where profits are declared and the location of

multinationals' real economic activity. Instead, the option is to tax at the unit of the multinational – rather than at the level of individual subsidiaries. Such an approach, unitary taxation, can be combined with formulary apportionment to calculate the proportion of the multinational's global profits that should be allocated as the tax base in the given country – in line with the share of economic activity, in terms of e.g. sales and employment.

While such an approach might draw political pressure from the OECD and from multinationals and their advisers, an alternative is to maintain nominal allegiance, but to introduce an alternative minimum corporate tax based on a unitary approach. For example, under this approach a tax authority could apportion to itself in taxable profit the proportion of a multinational's global profit equal to the proportion of its sales and employment taking place in the jurisdiction in question; and then levy tax at a smaller share of the statutory rate, say 80%, *if and only if* the multinational had through its transfer pricing and other arrangements achieved a lower level of taxable profit to declare under the arm's length principle. Such a formulary alternative minimum corporate tax (or FAMICT) would allow the country or bloc to maintain the OECD rules in principle at least, while also drawing a line on the extent of profit shifting that would be tolerated. For multinationals, it would offer the appeal of certainty and the chance to save on all transfer pricing (manipulation) costs. If adopted more widely, as success in revenue raising would likely encourage, this could be the evolutionary approach to a revolution in tax rules.

The EU's move to a Common Consolidated Corporate Tax Base, and the application of formulary apportionment within the bloc, would put it alongside Canada, Switzerland and the USA as major economies using a formulary approach to apportion taxable profits within their borders. But in the EU cases, the sub-bloc administrations are national governments rather than provinces, cantons or states within a national federation – and so the EU move would more obviously set the path to take a worldwide formulary approach. In fact, without doing so, the CCCTB would address internal profit shifting but open the bloc even more to profit shifting out of the EU; and so a worldwide approach may quickly become necessary even if it is not implemented from the outset.

The bare minimum that countries should pursue, supporting the same eventual outcomes, is the policy decision to require publication of country-by-country reporting. The ongoing, annual accountability this would ensure for profit misalignment at the level of multinational companies, their big four advisers, and of jurisdictions, would lock in a policy dynamic that seems highly likely to eventually lead to widespread adoption of unitary tax approaches. More immediately, the disinfectant of transparency is likely to cut sharply some of the most egregious profit shifting IFF. In a similar vein, countries commit to and deliver full cooperation in automatic exchange of tax information, and in public registers of beneficial ownership.

Global architecture

Finally, we recognise that the underlying problems of financial secrecy – without which IFF would be of much lower scale – are global and systemic. While countries can and should take powerful steps at home, there is a need for a global political forum in which to ensure that the interests of all countries are included – especially lower-income countries which are excluded from the G20 and OECD. While moving towards a high-level, global commission at the UN might be a long road, countries could more immediately take a lead in deciding to negotiate and agree, over the next 2-3

years, an international convention on financial transparency. Such a convention could require commit to all the transparency measures discussed here, along with annual reporting on progress.

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