Impact of Subsidiary Locations & Corporate Governance on Tax Haven Utilization

Evidence from Developed World Multinational Enterprises

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THESIS SUMMARY

The objective of this thesis is to provide an empirical contribution to tax haven literature and improve the understanding of firm behaviour relating to tax haven utilization. The thesis sets out to explore 1) the understudied relationship between corporate governance and tax haven utilization and 2) the hitherto unexplained relationship between subsidiary locations of a Multinational Enterprise and tax haven utilization.

This work reviews corporate governance and tax avoidance literature and synthesizes a theoretical bridge to explain tax haven utilization as a function of corporate governance. Two key variables are identified, ownership concentration and women members of the Board of Directors. Empirical results show negative effect of both measures on the likelihood of a firm to own tax haven subsidiaries, confirming the author's predictions.

Secondly, the thesis provides rationale for investigating subsidiary locations and tax haven utilization. The empirical results point to a strong relationship between the two, with evidence suggesting a role of unrecorded capital flight in the relationship. In the larger picture, the findings could point to wealth extraction by Developed world multinational enterprises from developing world, often vulnerable, countries.

Keywords: *Tax Havens, Capital Flight, Corporate Governance, Ownership Concentration, Women on Board of Directors*

I dedicate this thesis to my parents

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This thesis would not have been possible without my parents, whose support and belief in me set me on this path and my siblings who stayed with them, allowing me to pursue this project so far away from home with my mind at ease.

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Contents

List of Tables

List of Figures

List of Abbreviations

ALS	Arm's Length Standard
BEPS	Base Erosion & Profit Shifting
BOD	Board of Directors
BvD	Bureau van Dijk
CME	Co-ordinated Market Economy
CSP	Corporate Social Performance
CEO	Chief Operating Officer
DOTS	Direction of Trade Statistics
DMNE	Developed country Multinational Enterprise
EATR	Effective Average Tax Rate
EMTR	Effective Marginal Tax Rate
EU	European Union
FDI	Foreign Direct Investment
FOFs	Foreign-owned Firms
FSI	Financial Secrecy Index
GFC	Global Financial Crisis
GFI	Global Financial Integrity
GDP	Gross domestic product

GIH	Google Ireland Holdings
GIL	Google Ireland Limited
HQ	Head Quarters
IMF	International Monetary Fund
IP	Intellectual Property
LME	Liberal Market Economy
MNEs	Multinational Enterprises
NACE	Statistical classification of economic activities in the EU
OECD	Organisation for Economic Co-operation and Development
OFC	Offshore Financial Centres
PRT	Preferential Tax Regime
R&D	Research and development
RoW	Rest of the World
TIEA	Tax Information Exchange Agreements
TJN	Tax Justice Network
TPG	Transfer Pricing Guidelines
UAE	United Arab Emirates
UK	United Kingdom
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
US	United States (of America)
VOC	Varieties of Capitalism

Chapter 1: Introduction

Corporate tax avoidance has been high on the political agenda in developed countries in recent years. The debate stems from a deeper public sentiment that the rich do not "pay their fair share" as US Senator Bernie Sanders put to great effect during the 2016 primaries. This has been on the back of much media coverage on multinational enterprises (MNEs), such as Apple's large offshore reserves, $215 billion by 2016, and Google's trouble with tax authorities in the UK. At the centre of the heated discussions are tax havens, secretive jurisdictions with low or zero corporate tax rates, that have been blamed as a primary tool for corporate tax avoidance and an important actor behind the Global Financial Crises (Palan, Murphy & Chavagneux, 2010). Calls for the abolishment of tax havens in lieu of their role in tax avoidance have been raised at the United Nations by both independent experts (United Nations, 2016) & recently by heads of state (United Nations, 2019).

Tax havens serve as financial hubs which handle enormous amounts of capital and trade, even if no significant productive industrial activity is recorded there. This has made them nerve centres of the global trade networks and a permanent fixture in international business. An increasing number of MNEs own tax haven subsidiaries or, in some cases, are owned by parent companies based and registered in a tax haven, with Zucman (2014) estimating the use of tax havens to have grown tenfold since 1980 and UNCTAD (2013) stating that investments in Offshore Financial Centres (OFCs) are at historically high levels.

The relationship between MNEs and their use of tax havens has been an important part of corporate strategy for more than half a century, yet the management and strategy literature has only recently attempted to explain this intriguing and topical phenomenon. The complexity and nature of profit shifting via tax havens therefore demands further quantitative, qualitative as well theoretical understanding at many levels, be it at the individual (micro), firm (meso) and country (macro) level (Christensen 2011; Beugelsdijk, Hennart, Slangen and Smeets 2010; Eden 2001; Jones and Temouri 2016; 2018).

Looking at the popular context of the last decade, one of the main factors that resulted in the Global Financial Crises (GFC) of 2008, is thought to be the pervasiveness of extreme risk-taking behaviour of the US banking sector which adversely affected many other countries (Rose and Spiegel, 2010). An examination of the US banking sector has revealed inefficient corporate governance and control mechanisms as well as a lax institutional and regulatory environment (Vazquez and Federico, 2015). Following the repercussions that the GFC has had on the real economy in many countries, there has been a substantial backlash on the corporate world. For example, MNEs are characterised as undermining economic development and are seen as a set of institutions, which do not pay back their fair share to the societies and communities in which they operate. The new wave of popular sentiment centres on the idea of crony capitalism. Perhaps nowhere is this more evident than in the US and the UK. For example, in the US - traditionally a bastion of capitalistic ideology - the *Occupy Wall Street movement* of 2011 to the Bernie Sanders presidential election campaign in 2016 can be classified as manifestations of an anti-capitalist, anti-corporation sentiment.

So what exactly are the complaints against MNEs that have galvanized and sustained such movements over the ten years since the GFC? One of the key issues that has created such hostility is avoidance and the role of tax havens. Indeed, regular news about the minimal tax filings of large MNEs keep the public opposed and worried on the state of public finances. For example, news of Amazon having paid £62 million in corporation tax over a 20-year period after generating £7 billion in revenue over the same period are a point in case (Sweney, 2017). Amazon of course achieved this through corporate structuring that allows it to hold its intellectual property (IP) in its European headquarters in Luxembourg (i.e. a tax haven) and classifies its UK branch of the company as a subsidiary for providing services. Such utilization of tax havens is followed by other MNEs across the globe, which allows them to take a very aggressive tax avoidance approach in order to increase shareholder value (see recent call for papers on this topic by Temouri et al. (2018) and Pereira et al., (2018)).

However, it is not only the public that is wary of these arrangements, it is also the public authorities. The GFC has left many governments across the industrialized world short on revenue and, coupled with the anti-corporate tax avoidance sentiment among the public, has incentivised them to take measures aimed at penalizing MNEs. Amazon, Apple, Google and others have faced fines by governing authorities, as large as 13 billion euros (Farrell and McDonald, 2016) over their use of tax havens to minimize corporate tax.

Despite the fact that the issue of offshore tax haven activity has been on the policy agenda for multiple decades and previous government initiatives have been limited in their impact, corporate tax avoidance has become a more prominent topic in recent years and has led to a change in public policy across the developed countries. For example, the Base Erosion and

Profit shifting initiative of 2013 agreed by the G8 included new measures to deal with tax avoidance by allowing access to each other's information held on individual and company tax affairs. The BEPS Report (OECD, 2015), which is endorsed by the OECD council, committing countries to a comprehensive action plan to address these issues. The Action Plan identified 15 actions along three key pillars: introducing coherence in the domestic rules that affect cross-border activities, reinforcing substance requirements in the existing international standards, and improving transparency as well as certainty. The objective of these policies is to create a system of global tax reform designed to have a significant impact upon MNE strategy in terms of taxation. At the same time that the EU is looking to implement a Common Consolidated Corporate Tax Base (European Union, 2016) in order to mitigate profit shifting.

However, many leading commentators would agree that BEPS has largely failed in its objectives (Graetz, 2016). Indeed, the international corporate tax policy landscape is full of contradictions and represents a one step forward, two steps back approach. For example, even as the OECD and European Union take actions to tighten up the corporate taxation systems, the US has just enacted legislation that significantly liberalises its corporate tax regime (Kaplan and Rappeport, 2017). The tax holiday thus awarded has indeed increased repatriation of capital to the US (UNCTAD, 2019), but this comes at the expense of validating the use of tax havens to withhold taxes until such an opportunity does arrive.

Given this policy background and media attention, the academic literature is multi-disciplinary in nature and explores in the role of tax havens in the world economy. For example, the accounting and finance literature focusses on estimating the overall degree of profit shifting from high-tax to low-tax jurisdictions (Palan, Murphy and Chavagneux 2010; Zucman, 2016),

whereas the economic geography and public economics literature focusses on location factors and firm determinants driving tax avoidance (e.g., Clausing, 2003; Desai and Dharmapala, 2006; Goh *et al.*, 2016; Graham and Tucker, 2006; Higgins, Omer, and Phillips, 2015 Huizinga and Laeven, 2006; Jaafar and Thornton, 2015; Klassen, Lisowsky, and Mescall, 2017; Lisowsky, 2010; Lisowsky, Robinson, and Schmidt 2013; Rego, 2003).

Based on the above discussion and context of the GFC, the overarching objective of the 2nd chapter of this thesis is to review the literature that examines tax avoidance in conjunction with tax havens, the determinants and characteristics of tax havens, the methods availed by multinational enterprises (MNEs) to utilize tax havens and the role that corporate governance arrangements can play driving or hindering to tax haven activity.

The 3rd chapter of this thesis aims to investigate the theoretical underpinnings of corporate governance literature and how scholars have investigated tax avoidance in general with corporate governance implications. The chapter tries to synthesize corporate governance and tax avoidance literature to form a bridge that would forge a relationship between tax havens & corporate governance. Lastly, this chapter provides an empirical study on the relationship between corporate governance & tax haven utilization by MNEs. After defining, in broad terms, two theoretical lenses for analysis of corporate governance, the study focuses on an empirical investigation of the role of ownership concentration & female members in the Board of Directors (BOD) in a firm's likelihood of owning a tax haven subsidiary.

The 4th chapter studies the use of tax havens by MNEs and its interaction with their geographical or political areas of operation. Based on the internationalisation theories this chapter derives a new theoretical framework to investigate MNE decision to invest in tax havens,

hypothesis developed and tested empirically through a longitudinal study of thousands of MNEs across 24 developed world countries.

This work is especially relevant in times when MNEs face unprecedented levels of scrutiny. The thesis contributes to literature by providing a resource to understand what tax havens are, where they fit in the international business framework, how to identify tax havens, what are the methods MNEs use to take advantage of tax havens and what existing literature says about the determinants of tax haven usage. The thesis also provides an examination of corporate governance theories and how scholars have linked governance mechanisms to both tax avoidance and tax havens and contributes further by identifying a relationship between one aspect of corporate governance with tax haven utilization, opening the door for further exploration. Lastly an empirical and theoretical contribution is made with the identification of subsidiary locations as a key factor in determining MNE decision to invest in tax havens and the moderation effect of capital flight in said relationship. Chapter 5 in conclusion

Chapter 2: Tax & tax havens

This chapter contributes to the thesis by identifying and mapping how the extant academic and policy literature has hitherto investigated tax competition, tax evasion & tax avoidance, the magnitude of tax haven activity over time, channels and mechanisms via which individual MNEs are able to use tax havens and the main determinants that seem to drive MNEs to tax havens. This chapter sets the stage for the thesis, providing the definitions, classifications and understanding of the world of international tax avoidance and tax havens that are then built on in the next two chapters and empirical studies.

The first half of the chapter outlines the various concepts involved in tax haven activity and starts with an overview of corporate taxation issues, including the notions of tax competition, the difference between tax avoidance and tax evasion, transfer pricing, international debt shifting and corporate inversions. Section 2 describes the subtle differences in how tax havens are defined and section 3 outlines the existing literature on the determinants and impact of tax haven activity. This background information is important in order to make a coherent link with how corporate governance arrangements can help explain tax haven activity.

2.1 Tax competition

It is widely believed that tax rates and reforms/harmonization in developed countries have important repercussions on company behaviour and particularly on MNE location choice (European Commission, 2001; OECD brief 2008). A vast literature, since the 1980s, tends to support this belief by offering many estimates of a significant effect of taxes on FDI flows. Generally, in measuring how FDI responds to changes in taxes, the literature makes a distinction between which tax rates to consider or which are considered by foreign investors. For example, Devereux and Griffith (1998) using a conditional logit model show that the effective average tax rate (EATR) – as opposed to the effective marginal tax rate (EMTR) – plays a significant deterring role in the location decision of US MNEs in the period 1980-1994 that locate in Europe, including the UK, Germany and France.

In particular, Devereux and Griffith (1998) show that the sensitivity of the UK to average tax increases is higher than Germany and France. The marginal effect of increasing the UK EATR by 1 percentage point will reduce the conditional probability of a firm locating in the UK by 1.29 percentage points. Similarly, for France a 1 percentage point increase in the EATR reduces the conditional probability of a firm locating there by 0.50 percentage points, whereas the for Germany the impact is 0.97 percentage points. The mean elasticities of the probability of choosing each location with respect to the EATR are reported as -0.4 for the UK and -1.7 for France and Germany.

Bénassy-Quéré et al. (2005) also show evidence that tax differentials play a significant role in understanding foreign location decisions. Based on a panel of bilateral FDI flows for 11 OECD countries over the period 1984–2000, they report negative and significant coefficients on tax differentials, highlighting the adverse effect of higher taxation on FDI inflows into a host

country. They measure the semi-elasticity of the statutory tax differential to be −4.22, which means that a 1-point rise in the host corporate statutory rate relative to the investor country rate reduces FDI inflows by 4.22%.

Overall, many studies differ in the tax rates considered and country and method used, which partly explains the range of outcomes. However, according Mooij and Ederveen's (2003) meta-analysis on 25 empirical studies, the median value of elasticity of FDI to tax rates is around -3.3 which means that a 1 per cent reduction in the host country tax rate raises FDI in that country by 3.3 per cent. The range of semi-elasticities starts from −10.9 per cent (Hines, 1996) to +1.3 per cent (Swenson, 1994), which mostly depends on the estimation method (Desai and Hines, 2001). However, the vast majority of the reported elasticities are negative. Other extensive reviews of the literature include Hines (1997, 1999) and Gordon and Hines (2002) who suggests an estimate on the basis of the literature between −0.5 and −0.6 (i.e. a 1% higher tax rate leads to a reduction in FDI inflows of 0.5 to 0.6 per cent). Another literature review by Gorter and De Mooij (2001) suggests that intra-European investment flows tend to be more responsive to tax rate differentials than intercontinental flows.

Taken together, the literature as well as the trend of corporate tax rates has shown significant competition across countries to attract foreign investment as well as remain competitive for indigenous domestic investments (Zodrow, 2003; Devereux et al, 2008; Devereux and Loretz, 2013a). However, Jones and Temouri (2016) show that this "race to the bottom" type competition on statutory corporate tax rates has done little to reduce tax haven activity. They show that despite observing a significant reduction in the top statutory tax rates across the OECD and the expectation that this would negatively impact on tax haven

investments, the stylised facts suggest that the use of tax havens is becoming increasingly more frequent even as countries become more competitive over their corporate tax rates (OECD, 2013). This indicates that the impact of home country corporate tax rates seems small; implying that MNEs are likely to use tax havens regardless of the home country statutory rate and take significant advantage of the strong host country-specific advantages that tax havens can provide. The specific advantage being a sizeable reduction in their tax liability. The pursuit of lower and lower tax liability, and in turn higher profits, by MNEs has placed their tax planning strategies under scrutiny by not just tax authorities, but increasingly by the general public. The question often asked is of morality, even legality of MNEs tax minimization activities, particularly with regards to the use of tax havens.

2.2 Tax avoidance versus tax evasion

Since the objective of any MNE is to increase profits, corporate taxes appear as a cost, which MNEs naturally try to minimize. The minimization of taxes that are set on profits has been the focus of a large section of literature. Tax minimisation strategies are also sometimes termed tax avoidance; tax sheltering; tax planning; tax evasion and even tax fraud. With this plurality of nomenclature comes a plurality of definitions. Tax avoidance, as viewed by Dyreng, Hanlon and Maydew (2008) is simply anything that reduces a firm's effective tax rate, in compliance with the law or at least within the realm of grey-area interpretations of it. The definition is an empirical one, aimed at measuring tax avoidance in empirical studies through estimations surrounding effective tax rates. Fisher (2014) states that tax avoidance practices seek to accomplish one of three things: payment of "less tax than might be required by a reasonable

interpretation of a country's law," payment of a tax on "profits declared in a country other than where they were really earned," or tax payment that occurs "somewhat later than the profits were earned." In practical terms, this translates to taking advantage of tax loopholes, credits, shifting of profits to a different jurisdiction to avoid taxes and deferral, sometimes indefinite, of taxes owed in country of residence.

Hanlon and Heitzman (2010) offer a conceptual understanding, terming tax avoidance as any activity that reduces the explicit taxes of a firm. This understanding covers activities that are directly motivated by tax gains as well as those that produces tax benefits as a by-product. They acknowledge that this covers the spectrum of activities from perfectly legal to what others have described as tax aggressive, non-compliance and even evasion, but chose not to make a distinction.

Eden and Smith (2011) provide for a distinction between some of the terms discussed. They assign the use 'tax avoidance' and 'tax minimization' for methods of tax cost reduction that are in conformity of the legal requirements of the jurisdiction(s) in question. 'Tax evasion' for tax cost reduction measures that may or may not be legal and 'tax fraud' for methods that are illegal with clear intent (such as falsifying records). There exists however no conformity in the use of these terms in literature. For example, Payne and Raiborn (2018) define the term 'tax avoidance' as retention of wealth by legal means and 'tax evasion' as a failure to pay legally due taxes, an activity they classify clearly as illegal. Furthermore, the term 'aggressive tax avoidance' is introduced as a bad faith interpretation of the law that takes advantage of legal 'loopholes' that allow for minimization of tax liability under the law.

Perhaps the most simplistic distinction is offered by Abney and Monnin (2018), who refer to the US Supreme Court judgement stating,

"[t]he legal right of a taxpayer to decrease the amount of what otherwise would be his taxes, or altogether avoid them, by means which the law permits, cannot be doubted."

They contend thus that tax avoidance is any measure aimed at reduction of taxes that the law permits and tax evasion is criminal activity and requires the government(s) to prove that a taxpayer violated a known legal duty intentionally. This has the benefit of settling the grey-area or bad faith interpretations of the law issue, removing them from the realm of evasion into that of avoidance.

However, this work is aimed at tax accounting professionals and helps clarify how they view the issue of tax. Most of these professionals are in the tax planning industry (Eden and Smith 2011). The primary function of such professionals is helping firms to increase profits by minimizing tax costs (Sikka, 2008; Sikka and Hampton, 2005; Sikka and Wilmott, 1995). Sikka and Hampton (2005), for example, have argued that the Big Four accounting firms no longer focus on auditing and are in fact now more focused towards tax planning and the selling of tax avoidance products to MNEs and individuals. In fact, this assertion is supported by the work of Jones, Temouri and Cobham (2018) who find that MNEs that are clients of the Big Four accountancy firms are likely to build and maintain a larger network of tax haven subsidiaries than MNEs who are not.

The importance of the use of tax haven subsidiaries for both tax avoidance and tax evasion cannot be understated. Fisher (2014) notes that, "Several of the methods that modern MNCs use to avoid taxes have a common denominator – the tax haven. The use of tax havens is

a common way to evade taxes. Tax havens are naturally a common site for tax avoidance activities, as well. In fact, the vast majority of international tax avoidance involves tax havens."

2.3 Transfer Pricing & the Arm's Length Standard.

According to the Organisation for Economic Co-Operation and Development (OECD), a transfer price is "a price, adopted for book-keeping purposes, which is used to value transactions between affiliated enterprises integrated under the same management at artificially high or low levels in order to effect an unspecified income payment or capital transfer between those enterprises." (OECD 2010). Tax havens are not always directly involved in transfer pricing and the Arm's Length Standard (ALS) is a guideline for conducting "legitimate" transfer pricing. However, the system is open to manipulation.

Scholars define transfer pricing as the setting of prices for transactions between or among firms that are commonly controlled or related parties; in other words, the pricing of related-party transactions (also known as non–arm's length or controlled transactions) (Byrnes and Cole, 2018; Eden, 1998, 2016). For firms operating across international boundaries, transfer pricing presents a key operational imperative and an opportunity to maximize profits. This is because different jurisdictions have different tax rates, laws and loopholes, presenting a natural incentive for MNEs to structure their transactions in such a way that the highest tax liability is manifested in low or lowest tax rate jurisdictions. Transfer pricing thus represents an instrument that is used as tax planning tool; i.e., properly chosen transfer pricing strategies can enable the distribution of

the tax risks and profits, resulting in a reduction of the overall corporate tax liability, (Buus , 2009; Swenson, 2001; Solilova & Nerudova , 2012, 2013).

In 1933 the arm's length principle was created to guard against manipulating transfer prices (to prevent manipulation of tax owed on business) and has since become the key pillar of the transfer pricing rules. Modern day bilateral tax treaties between countries as well as guidelines by international bodies on how to split tax revenues generated from cross border economic or business activity use the Arm's length principle as the basis (Byrnes and Cole, 2018; Eden, 1998, 2009). In theory the principle is simple. It requires enterprises within the same group to set transfer prices for intra group transactions in accordance with, or similar to, the prices that would be set if the transaction was taking place between two un-associated parties.

The idea behind this arrangement is to prevent distortion of profits, that would be the basis for taxation, during intra-group transactions. Businesses would naturally be inclined to distort the profits in a manner that would minimize their tax liability. To prevent the distortion, an added step in the Arm's length principle is to not only maintain the price but maintain conditions for intra group transactions that would also be comparable to conditions that would be present in a comparable "uncontrolled" transaction (between un-associated parties).

The authoritative statement of the arm's length principle can be found in Article 9(1) of the OECD Model Convention on Income and Capital known as primary adjustment:

"When conditions are made or imposed between two enterprises in their commercial or financial relations which differ from those which would be made between independent enterprises, then any profits which would, but for those conditions, have accrued to one of the enterprises, but, by reason of those conditions, have not so accrued, may be included in the profits of that enterprise and taxed accordingly."

Thus, in theory, authorities can tax MNEs in their own jurisdictions on a base that they deem fair, as opposed to a base produced by accounting manipulations by MNEs. Since the mid-1960s, most countries have followed the OECD Model Income Tax Convention and adopted the separate accounting approach, treating MNE foreign subsidiaries as independent entities whose income is taxable in the host country up to the "water's edge". In 1979, the OECD began to issue guidelines to tax authorities and MNEs on how to set transfer pricing rules to implement Article 9. The Transfer Pricing Guidelines (TPG) was first issued in 1995 and has been updated several times.

This OECD initiative (TPG) has now been adopted in more than 60 countries as the foundation for their transfer pricing regulations. Although that has been a forward step in harmonising international tax & transfer pricing regimes, significant differences across countries - both in the specific rules and in their application - still remain (Byrnes and Cole, 2018; Eden, 2009, 2016). These are widespread even within the EU; two Member States (Cyprus and Malta) still don't have transfer pricing regulations, & the sophistication of transfer pricing regulations among states that do have them varies significantly. The United Nations has built on early and important work by OECD, the key international organization at the heart of the international tax transfer pricing regime, with measures & guidelines designed particularly for tax authorities in developing countries. The UN Model Double Taxation Convention between Developed and Developing Countries includes a similar article (Art. 9) to the key OECD Model Convention article on "associated enterprises" with the same arm's length test. The first set of transfer pricing guidelines for developing country tax authorities was published by the UN in 2013 and a second one issued in 2017 (United Nations, 2013, 2017). Thus, both the OECD and the UN

Model Tax Conventions, which provide the foundation for nearly all bilateral tax treaties around the globe, endorse the Arm's Length Standard (ALS).

Operationalizing the arm's length principle is a complicated & sometimes elusive endeavour. In both sets of guidelines, implementation of the ALS requires the completion of a comparability analysis, between associated party transactions and non-associated party transactions, that involves four steps. First, the different branches/subsidiaries/parts of an MNE are treated as if they were separate entities and intra-group transactions singled out. Then an assessment takes place of the conditions in such transactions that differ from conditions that would be present in a comparable transaction in the market place. Then a judgement is made on whether the accounts, that have arisen or changed because of said intra-group transaction, of the MNE in different jurisdictions need to be corrected to represent fair tax liabilities, in accordance with the Model Tax Convention Art 9. Lastly profit and tax is calculated for the hypothetical scenario that the transaction was to take place in the market for un-associated MNEs. These steps in practice are difficult to accurately implement, especially with differentiated products, brands, patents etc which might not have an accurate comparable example in the open market. In fact, some scholars have argued that the arm's length standard might not reflect economic realities of the modern world (Taylor et al. 2015; Bartelsman & Beetsma,2000; Wells and Lowell, 2014; Hines and Rice,1994; Huizinga and Laeven, 2006).

With national jurisdictions trying to tax international corporations, in an environment where the OECD & UN Model Tax Conventions are not applied equally, nor are they without own inefficiencies, there is plenty of room for profit shifting through transfer pricing and

aggressive tax planning. The OECD itself estimates that 4-10% of global income tax revenues are lost, coming to $100-$240 billion. In the EU, the estimation of loss of corporate income tax is in the EUR 50-70 billion range. In 2013 the OECD & G20 launched the Base Erosion & Profit Shifting project to combat tax evasion & shutdown opportunities for profit shifting that arise because of an inconsistent and unenforceable international tax regime.

The use of transfer pricing via tax havens is perhaps one of the best examples of this arbitrage opportunity. Tax havens allow MNEs to shift profits out of high tax locations into low tax locations (Eden, 2009). They are associated with extremely low (often zero) rates of tax on corporate profits for non-resident companies and offer a high degree of secrecy in terms of information exchange that could be used by revenue authorities to raise tax both at home and in foreign locations. The arm's length principle is hard to apply when dealing with intellectual property. Intangible assets like patents, trademarks, copyrights etc. increasingly hold huge value for the global firm. That value is set in house, and, as explained above, since business set the value themselves, governments are hard pressed to find comparable transactions between unrelated parties, leaving room for tax-induced manipulation of transfer prices (Grubert, 2003; Desai et al, 2006).

Transfer pricing thus forms the basis on the international tax avoidance system, and tax havens provide the tools to exploit it to an extreme level. Beer, de Mooij and Liu (2018) identify transfer pricing as a main channel of international tax avoidance, but also name a few others; strategic IP location, international debt shifting, tax treaty shopping, tax deferrals and corporate inversions or HQ locations. Following is a brief look some of these methods utilized for avoidance and description of the role of tax havens in each tax avoidance activity.

2.3.1 Intangible asset location:

One way firms' take advantage of the inefficiency of the international tax regime and increasingly global nature of business is by moving their intangible assets to tax havens, or low tax jurisdictions. Dischinger and Riedel (2008) find that a lower a subsidiaries corporate tax rate, the higher the is its level of intangible asset investment. Once moved to a tax haven, intangible property can be sub-licensed to different subsidiaries within the corporate group, generating royalty payments to the tax haven subsidiary. This is a very effective way of shifting profits out of high tax zones.

MNEs can create intellectual property (IP) by conduct their research and development (R&D) activities in one country but transfer the ownership of the IP to a different country. Often the country where the MNE transfers ownership of IP is one with very low tax rates, resulting in royalty payments and license fees going into a jurisdiction that provides huge tax savings for the MNE. As there often exists no comparable transactions of IPs between unrelated parties, applying the arm's length price for an MNE's intangible transactions is usually an unfeasible task for tax authorities. This leaves room for tax-induced manipulation that MNEs employ to minimize tax liability and increase their post-tax profits. (see e.g. Grubert, 2003; Desai et al, 2006).

2.3.2 International Debt Shifting

International debt shifting refers to the practice of intercompany loans across international boundaries. Subsidiaries of the same group, or even a subsidiary and a parent company, can exchange loans. MNEs can therefore load up subsidiaries, or parent company, operating in a high

tax jurisdiction with loans from a subsidiary, or parent, in a tax haven. There is evidence of large firms setting up low-tax (tax haven) affiliates for internal debt shifting purposes (Weyzig 2014). Weyzig (2014) particularly highlights the role of Dutch "special purpose entities) for internal debt shifting as well as in avoiding withholding taxes when moving funds. This method allows for paying off profits generated in high tax jurisdictions as interest or loan repayment to subsidiaries in tax havens, before tax. Thus minimizing the MNEs tax bill without exposing it to risk.

2.3.3 Corporate Inversions

Corporate inversion refers to the practice of MNEs reincorporating in a tax haven country in order to reduce their tax liability. In a typical inversion, of say a U.S. firm, the MNE merges with a foreign company. The entity that ultimately emerges from this transaction is invariably incorporated in a tax haven, or a "low tax jurisdiction", yet remains operative in the home country, in this case the U.S. (Fischer and Marsh; 2018).

An examination of corporate inversions by Desai and Hines (2002) between 1982 and 2002 emphasised the tax planning element in motivation, showing that the foreign firm that eventually became parent on average faced lower tax rates. A similar argument is put forward by Seida and Wempe (2004) after examining ETRs faced by 12 MNEs that underwent inversions. Huizinga and Voget (2009) also look at international M&As and find that the resulting pattern of subsidiary ownership is a product of efficient tax planning by MNEs as the location of the new parent company is likely to be in lower tax jurisdiction.

Until 2004, US firms simply had to change their domicile to achieve an inversion. This was stopped with the enactment of the American Jobs Creation Act of 2004 (Qi Dong and Xin Zhao, *2018*), which denied the tax benefits of an inversion if the original U.S. stockholders owned 80% or more of the new firm. (White, 2014). Inversions have become harder since then, with larger population centre tax havens like Ireland typically the targeted jurisdiction instead of the "dot" tax havens like the Cayman Islands, but they are still an issue.

2.4 Classifying tax havens

Tax competition among sovereign states & the "race to the bottom", distinctions between tax avoidance & tax evasion, as well as strategies that MNEs utilize to avoid taxes, and the role of tax havens in each of these phenomena have been outlined so far. This paper will now focus on this key cog in the international tax (avoidance) system; tax havens.

The first question that arises regarding tax havens is one of definition, what exactly constitutes a tax haven. Given the unwelcome scrutiny and criticism of tax avoidance and by extension tax havens, jurisdictions labelled as tax havens tend to contest the assertion. The contestations and arbitrary nature of the definition has not gone unnoticed by academics, with earlier work by scholars noting that tax havens lack a clear definition and its application is often controversial (Sharman, 2006).

The literature has tackled the issue since, with Larudree (2009) defining tax havens as jurisdictions that provide two facilities "(1) zero or near-zero taxes on business activities; and (2) secrecy regarding financial assets". Secrecy laws prevent individuals privy to information about investments in tax havens; bank staff, as well as professionals like accountants and attorneys,

from revealing said information about bank accounts, about financial assets and transactions. Typically, this includes the name and origin of the beneficial owner of said investments.

The book “Tax Havens: How Globalization Really Works” (Palan, Murphy, and Chavagneux 2010), also endeavours to provide a clear criterion. With a full chapter devoted to discussing salient features of tax havens, a detailed summary of which will be beyond the scope of this paper, certain defining characteristics of tax havens are singled out. These include ease of incorporation, the provision of secrecy and, most importantly, zero or nominal tax rates.

In the nation state era sovereign states strive to control all laws and regulations within their borders. In an increasingly interconnected world, this becomes more of a challenge as well as more desirable. Tax havens are jurisdictions that look to profit from their ability to set the laws of international business within their borders. Admittedly, in this endeavour they are not alone. Preferential Tax Regimes (PTRs), light touch regulation and one-window operations are tools that both the developed world, and especially developing world, have utilized in order to increase their attractiveness to foreign capital. Only with tax havens, these arrangements are taken to the extreme.

Traditionally, most PTRs are targeted towards the manufacturing and services sectors, or assembly lines. The idea behind them is increased employment and spill over benefits for the host jurisdiction. Tax havens however target the financial sector, where the idea is to capture mobile capital, which in an ever more interconnected world market, is a valuable and abundant commodity. With business taking place across jurisdictions, tax havens provide the ease of doing business and nominal tax rates that make them the most attractive location for capital. In other words, the most optimal location for transactions to virtually take place, “booking”, in order to

minimize taxation, which is a cost. Thus Palan (2003) terms tax havens as "virtual" centres, where trade takes place only on paper.

2.4.1 Dot Tax Havens

Dharmapala and Hines (2009) investigate countries that become tax havens and find that the likelihood of a country becoming a tax haven increases from 26% to 61% percent as governance quality improves, for countries with a population of less than one million. Governance quality is important because firms or individuals do not want to entrust their capital to countries that are politically volatile or have low levels of property rights, investor or capital protections, as well as weak institutional structures. In fact, their evidence shows that low tax rates offer much more powerful inducements to foreign capital when the jurisdiction in question is well governed. Thus, the "dot tax havens" as distinguished by Hines and Rice (1994) and Desai et al. (2006b), which differentiate low population centres from the larger tax havens referred to as the "Big 7", such as Switzerland, Hong Kong and Singapore.

The distinction between the smaller, dot tax havens and the bigger population centres has been at the heart of some debate. The matter of size, i.e. many jurisdictions that could provide low tax rates, ease of incorporation and secrecy also have viable domestic economic activity and serve as "legitimate" centres of business. Therein arises the complication of tax havens and "Offshore Financial Centres" (OFCs).

Morriss (2010) has argued that OFCs provide a valuable financial service and beneficial regulatory competition. They create an environment for improved asset and risk management, as well as financial planning. The easy access to certain markets they provide for firms is of benefit

to home country economies as well. The negative connotations that come with the tax haven label should not affect OFCs, is the argument, but where is the line between the two?

The term OFCs is used most commonly to describe financial centres specializing in non-resident financial transactions, especially those known as Euro-market transactions (Palan et al., 2010). Many tax havens vie for this term as opposed to classification as a tax haven, and larger population centres have a more legitimate claim. Indeed, Palan et al. (2010) agree that the definition concerning countries like Switzerland, Singapore or Luxembourg is a complex question. They answer it by positing another question in turn, would these centres continue to thrive if the tax haven provisions on offer were eliminated? They suggest the answer is in the negative.

2.4.2 Switzerland

Perhaps a look at how some of these jurisdictions developed into the financial centres of trade they are today or how they operate would provide the answer. Zucman, Fagan and Piketty (2016) provide a brief history of the development of Switzerland into the financial behemoth it is today. Zucman et al. (2016) trace the origins of Swiss financial services industry to the era right after the first world war. He argues that in the wake of the war, it was the wealth of French and some German residents that bolstered the Swiss banks. Governments after the war raised taxes rapidly in order to fund the rebuilding of Europe, and wealthy residents moved their capital to Switzerland in order to avoid the higher taxation. To succeed in doing so, they deposited in Swiss banks not only cash or gold, but financial securities, in the shape of bonds and stocks. Because of the Swiss secrecy laws, residents of other European countries were able to not only

hide the wealth from home country tax authorities, but continued to earn income on the financial securities, often American, they had deposited in Swiss banks tax free.

Indeed, Switzerland has done away with some of the secrecy provisions, such as numbered accounts, but Zucman et al. (2016) assert that these have been replaced by letter accounts, i.e. shell companies. Individuals or firms can make arrangements to hold financial securities inside Switzerland even today, as long as they hold them through shell companies incorporated in other tax havens.

2.4.3. Ireland

A more modern case that parallels Switzerland is that of Ireland. Ireland has a stated corporate tax rate of 12.5% and the government has contested the label of tax haven allotted to it on this basis. Tobin and Walsh (2013) have laid out Ireland's case in detail. They point to OECD's 4-point definition of tax havens as laid out here.

1. No or only nominal taxes (and offering, or being perceived as offering, a place for non-residents to escape tax in their country of residence);

2. Lack of transparency (such as the absence of beneficial ownership information and bank secrecy);

3. Unwillingness to exchange information with the tax administrations of OECD member countries; and

4. Absence of a requirement that activity be substantial (transactions may be "booked" in the country with no or little real economic activity).

With Ireland's statutory tax rate at 12.5% and open economy, they argue that Ireland does not qualify. The concentration of high R&D or intangible asset holding industries in Ireland, often an indicator of tax havens (Desai et all, 2006; Jones and Temouri 2016) is credited to an agglomeration effect and strong educational system. Furthermore, they point to a number of regulatory, transparency measures taken by Ireland (EU Saving Directive, FACTA) to refute allegations of opacity or secrecy.

Harding (2014) as well as Hickson (2012) also address the case of Ireland as a tax haven and have the opposite point of view. While Ireland's tax rate of 12.5% is not as low as other tax havens, it is pointed out that companies can use the "double Irish" strategy to get significantly lower tax rates. American MNEs in particular, it is argued, make use of this strategy to use Ireland as a tax haven.

A good example of this is Google. Google uses subsidiaries located in Ireland, the Netherlands and Bermuda in a complex structure to avoid taxes. Both Ireland and the Netherlands have investment friendly policies, highly developed legal and financial consultancy and administrative services and infrastructures to support MNEs' special purpose entities (SPEs) (Altshuler and Grubert, 2006; Weyzig and Van Dijk, 2009). The "double Irish" structure works by shifting taxable profits from subsidiaries where profits are generated to tax havens by using royalty payments for intangible assets (Intellectual property).

Google holds its intellectual property in a subsidiary called "Google Ireland Holdings" (GIH) which is incorporated in Ireland but is tax resident in Bermuda. GIH in turn licensed the Intellectual Property (IP) to "Google Ireland Limited" (GIL). Subsequently, Google used GIL to

sublicense the use of its IP all google subsidiaries actually operating in Europe, Middle East and Africa. By charging loyalty payments to its subsidiaries, Google was able to shift all its profits from Europe, Middle East and Africa to GIL.

GIL is subject to the 12.5% Irish corporate tax rate, but since it owes royalty payments to GIH, profits can again be shifted out without taxation. The slight problem is that Irish firms have to pay withholding taxes for royalty payments out of the European Union, which GIH is considered being a tax resident in Bermuda.

To avoid the withholding taxes, GIL routes the royalty payments though a subsidiary in the Netherlands since there are no withholding taxes on royalty payments within the EU. The Dutch authorities consider GIH to be an Irish firm, and thus Google can simply transfer the money from GIL to GIH through the Dutch subsidiary without paying any taxes at all.

2.4.4 Luxembourg

Luxembourg is another jurisdiction that is widely considered a tax haven but with a stated corporate tax rate of 27.8%, it often contests that label. Luxembourg, for practical purposes, is however a tax haven and uses a host of loopholes and special tax treatments to provide tax relief to foreign capital. This can be examined with a look at how Amazon used Luxembourg and avoided paying taxes in many European countries.

Amazon's standard operator of the business and retail services offered through European websites is Amazon EU Sarl. Amazon EU Sarl (Luxembourg) is owned by Amazon Europe

Technologies Holding SCS (Technologies, Luxembourg) which is ultimately owned by Amazon Inc. (the US). Amazon developed intangible assets in the United States and transferred them to Amazon Europe Technologies Holding SCS (Technologies, Luxembourg). Therefore, Amazon Europe Technologies Holding SCS is able to extract rent from all of Amazon's European business and retail offerings in the form of a license fee for using the intellectual property. This business arrangement works for Amazon because of favourable tax rulings it has obtained from the Luxembourg tax authorities. The European Union does not look upon the arrangement favourably and launched a European Commission enquiry to ascertain whether the tax arrangement between Amazon and Luxembourg amounts to state aid (European Commission 2014). Subsequently a preliminary report by the European Commission enquiry ruled that the tax ruling was favourable to Amazon to the extent that it indeed constituted state aid (European Commission 2014).

Technologies Holding SCS is a partnership company and is set up so that it does not operate a Permanent Entity in Luxembourg. This means the company has no tangible presence in Luxembourg, no offices or employees. Without a permanent presence, it is not liable for tax in Luxembourg. The partners of the company are American and do not reside in Luxembourg either, meaning their income should has to be taxed in America and not in Luxembourg either. In theory that is a viable arrangement, but the American partners only have to pay tax on their income once it is repatriated to the US. Opening the door for indefinite deferral of taxes. Remarkably, this calculation arrangement was accepted by the Luxembourg authorities.

The European Commission was not provided with any report by Luxembourg that could have provided support for the Transfer Pricing arrangement in place. The ruling request on the

transfer pricing arrangement made by Amazon was assessed within eleven days, meaning limited time for analysis. Furthermore, the Luxembourgish authorities accepted the transfer pricing method proposed by Amazon in a manner that did not seem to correspond to any of the methods in the OECD Guidelines (OECD 2010).

The OECD Guidelines (para 6.16) states: *'a royalty would ordinarily be a recurrent payment based on the user's output, sales, or in some rare circumstances, profits.'*

The arrangement determines the royalty payment for the use of IP rights owed by Amazon EU Sarl (Luxembourg) – that deals with all of Amazon's European business - to Technologies (Luxembourg) – a firm that, as pointed out earlier, is not a tax resident in Luxembourg.

The European Commission preliminary report cited a letter from Amazon to the Luxembourgish tax authorities in October 2003 (European Commission 2014) that set out the specific transfer pricing arrangement under which the licence fee from European businesses of Amazon would be calculated. This Fee was to be calculated as a percentage of all revenue (the Royalty Rate) received by EU Sarl Luxembourg in connection with its operation of the European web sites.

Cooper (2018) looks at the Amazon case and concludes that:

"This arrangement allows Amazon to calculate the royalty as a residual profit. A calculation is made to determine the profit that is attributable to Amazon EU Sarl through its operation of the EU websites. The remainder of the profit is paid as the Licence Fee to Technologies. This royalty is clearly a 'residual' but according to Amazon is 'expressed' as a percentage of revenues. This does not comply with the OECD Guidelines that state that the residual should be calculated as a percentage of revenues. Expressing the amount as a percentage of revenues is merely cosmetic, how the figure is presented rather than how it is

calculated. The consequence is that Amazon EU Sarl (Luxembourg) receives only 4 – 6% of operating expenses as remuneration for its work."

Thus for all practical purposes, Luxembourg acts as a tax haven for Amazon and allows the giant internet marketplace to evade taxes on most of its European business activities, despite a relatively high tax rate.

2.4.5 Tax Haven; Defining a variable

The empirical literature so far has largely focussed more on nominal or low tax offerings by jurisdictions, and perhaps overlooked secrecy provisions when defining tax havens. This thesis will attempt to correct this oversight. First, the tax rate question. Hines & Rice (1994) and Desai et al. (2006b) talk of "dot tax havens", geographically small, isolated, often island economies that thrive as financial hubs with little indigenous population or industry; Cayman Islands, Andorra, Monaco, Seychelles etc. These are in contrast to the Big 7; Hong Kong, Ireland, Switzerland, Liberia, Lebanon, Singapore and Panama, all with populations over 2 million and significant indigenous economic activity. Jones & Temouri (2016) stick with the "dot tax havens" in their investigation on market orientation and its effects, as that allows for looking at investments inarguably designed for tax avoidance.

It has however been argued that many countries with significant populations and economic activity independent of foreign investment for tax avoidance purposes, can be classified as tax havens.

The argument is based on the second defining feature of a tax haven; the financial secrecy they offer to individuals and corporations (Palan et al., 2010). This secrecy in turn can provide mechanisms that defeat the purpose of a relatively high tax rate, as shown by "double Irish" method & the Amazon-Luxembourg case. This argument is also supported by recent literature that links Switzerland and Luxembourg among others to profit shifting activity from within the European Union (Jansky and Kokes, 2016).

The Tax Justice Network (TJN) is a group of independent researchers focusing on international tax, international aspects of financial regulation and tax havens. TJN have constructed a Financial Secrecy Index (FSI). The index ranks jurisdictions based on secrecy provisions and their share of global financial services. This list is utilized to identify not only the significant "dot" tax havens but larger havens based on secrecy provisions. Switzerland, Hong Kong, Singapore and the UAE between them control 15.31% of the global financial services export market and are ranked 3rd, 4th, 5th and 10th respectively on the secrecy index, and are thus also warrant inclusion in list of tax havens used to create the dependent variable for this thesis.

In an effort to be more thorough with the analysis, this study utilizes a number of different tax haven variables. For chapter 3, two different dependent variables are used; one consisting of the dot tax havens, named "Tax Island" and one that includes the 4 larger havens listed above, named "Tax Haven". The final list of jurisdictions categorized as tax havens for chapter 3 therefore includes the dot tax havens as utilized by Jones & Temouri (2016) plus the UAE, Switzerland, Hong Kong & Singapore because of their significant secrecy provisions and role as centres for offshore booking. The jurisdictions are; Antigua, Andorra, Anguilla Barbados, Bahrain, Bermuda, Bahamas, Belize, British Virgin Islands, Cayman Islands, Cook Islands, Cyprus, Isle of Man, Jersey, Gibraltar, Grenada, Liechtenstein, Luxembourg, Macao, Malta,

Monaco, Netherlands Antilles, Saint Kitts and Nevis, Saint Lucia, Saint Vincent, Seychelles, Marshall Islands, UAE, Switzerland, Hong Kong & Singapore.

The dependent variables “Tax Island” and “Tax Haven” are constructed from the above list of jurisdictions, are binary dummies. The variable equals 1 for any firm that owns a subsidiary in the list of tax havens outlined above, and zero otherwise.

For chapter four, a total of four variants are utilized. These variables will be explained in the corresponding chapter data section.

2.5 Determinants and impact of tax havens

The literature dealing directly with determinants tax haven utilization is not as rich as their importance warrants, but there is considerable work done indirectly which addresses tax avoidance or profit shifting. For example, it has been shown that companies with higher levels of IP are increasingly able to shift profits through the use of royalty payments (Dischinger and Riedel, 2011; Grubert, 2003; Mutti and Grubert, 2007), but the direct role of tax havens is often left unsaid.

Part of the reason is that measuring actual FDI in tax havens, or actual economic activity, is still not easy. This difficulty in ascertaining actual activity of MNEs inside tax havens is highlighted by Beugelsdijk, Hennart, Slangen and Smeets (2010). They argue that measuring MNEs tax haven affiliate activity as a function of their FDI inflows can be misleading. There are two broad reasons outlined for this. One is that FDI inflows often do not actually represent any productive activity, since the capital is often transferred to tax havens to be held, not used. Another problem is that FDI inflows do not account for the local fund raising MNEs carry out in

havens with developed financial markets. With FDI only being collected on a bilateral basis for years, this leads to biases in the data. Hence, the commonly used approach can lead to both overestimation and underestimation.

Despite these issues around FDI measurement, a general picture can be formed about determinants of tax haven. Academic findings have identified firm size, multi-nationality, intangible assets and technology intensity among principal determinants of tax haven usage.

Graham and Tucker (2006) relate firm size and profitability with utilization of tax havens. Firms that make use of tax shelters are shown to accumulate a smaller amount of debt than firms that do not employ such tactics. The conclusion drawn is that tax sheltering has become a pillar of corporate strategy at such firms as it offers distinct advantages.

Desai, Foley and Hines (2006a) focus on American MNEs and find that use of tax havens is part of their strategy to avoid taxes. Tax havens have a positive relationship with size and multi-nationality. Similarly, firms with large R&D operations will be more likely to use tax haven affiliates while intra-firm trade exhibits a positive relation with tax haven usage as well. The paper concludes that MNEs benefit from tax haven usage through avoiding or deferring tax liabilities, but the impact on home economies is not clear.

Grubert and Mutti (2007) also find evidence for this important role for intangible assets in the utilization of tax havens. They show that US parent R&D investments are a weak predictor for royalty payments from foreign affiliates to the parent firm based in the home country, but they significantly increase the earnings of group affiliates in tax havens. They argue that this is a function of the incentive parent firms based in high tax jurisdictions have to shift patents, and thus royalty payments, to affiliates in low tax jurisdictions, i.e. tax havens.

Taylor, Richardson and Taplin (2015) have a focused study on the determinants of tax haven utilization based on data from 200 Australian firms. The data provides evidence of a positive correlation between a number of determinants and tax haven utilization. These include intangible assets, withholding taxes, multi-nationality and transfer pricing, basically confirming the conventional wisdom borne out of earlier papers discussed here.

Jones and Temouri (2016) confirm previous findings and relate tax haven utilization to intangible assets and technology intensiveness but find no statistical significance of home country tax rates. Additionally, using the Varieties of Capitalism (Hall and Soskice, 2001; and later Hancke, 2009) approach, they show that MNEs based in coordinated market economies (such as Germany) are less likely to invest in tax havens than MNEs based in liberal market economies (such as the US) regardless of statutory tax rates at home.

The Varieties of Capitalism (VOC) approach divides countries based on a number of factors, including employer-labour relations, national institutions and corporate governance. The results from Jones and Temouri (2016) can indeed be viewed as scratching the surface of the effect of the factors in VOC on tax haven utilization. As laid out by Hall and Soskice (2001) Germany is one of the foremost examples of the stakeholder model, since the different firm constituencies -labour, managers, customers, community and so on- enjoy a strong formal 'voice' in decision-making through representation on company boards.

In contrast, in the USA or the UK, LMEs, markets play a much more significant role not only in influencing inter-firm relationships but also in regulating the interactions between the actors mentioned above. The UK is one of the primary examples of the shareholder model of governance due to the weak formalized role of constituencies other than shareholders in firm

decision-making. The findings of Jones and Temouri (2016) thus open the door for research on tax haven utilization from the prism of different models or corporate governance, even outside institutions and cultural differences.

2.5.1 The impact of tax havens

The centrality of tax havens to the question of tax avoidance and evasion has placed them at the forefront of charged debate in the political sphere. The same has spilled over into academic literature with scholars inspecting what are the positive and negative aspects associated with tax havens, especially for home countries, i.e. countries where firms originate or commercial activity actually takes place.

Desai, Foley and Hines (2006a) present a favourable view of tax havens, arguing that MNEs translate the lower costs achieved through the use of tax havens into greater investment activity around the world. Some more positive impacts of tax havens are discussed in the paper, "Do tax havens divert economic activity?" While the work doesn't provide any evidence of impact on home economies, Desai, Foley, and Hines (2006b) are able to capture evidence of impact on neighbours of tax haven countries. They argue that tax havens make capital more mobile and allow firms to operate without heavy costs. This in turn accelerates economic activity in non-haven countries that are in close proximity to tax havens.

Similar work by Blanco and Rogers (2014) finds evidence of positive spill-overs from tax havens to nearby developing countries, but not to nearby developed countries. Additionally, they

state that geographic distance matters for financial flows. The developing countries, which are the closest to a nearby tax haven benefit the most in terms of FDI inflows.

Rose and Spiegel (2007) investigate what they term OFCs through the prism of the financial sector. Although they agree that OFCs often serve as tax havens and might encourage activities otherwise prohibited, they profess that OFCs still make good neighbours. Their study finds that an OFC with a strong banking sector has positive effects for neighbouring countries, providing more economic activity and perhaps contributing to better domestic banking system.

Hong and Smart (2010) take that argument, or at least part of it, to home countries. They posit that tax havens facilitate mobility of capital and hence investment. By reducing, or helping MNEs avoid, tax burden on activities in non-tax haven countries, tax havens make operations in non-haven countries more profitable. This, it is argued in their model, is a net benefit for citizens of non-tax haven countries.

Among academics who contend that tax havens have a net negative effect are Slemrod and Wilson (2009), who call tax havens "parasitic". Their argument is that tax havens are not generating economic activity on their own, but actually siphoning off tax revenues from productive "home" economies. They construct a model to show that removing some tax haven jurisdictions could be beneficial for other countries.

Hines and James (1994) are among the first ones to look at the impact of tax havens usage on US firms. They estimate that around 20% of all US FDI could be traced to tax haven affiliates. A further 1/3rd of all profits of US MNEs were also diverted to subsidiaries located in foreign low tax jurisdictions.

Jansky and Prats (2015) present a study of 1,500 MNEs operating in India. Their results show that firms which are linked with tax havens report lower profits than those firms that do not have such links. Therefore, the authors argue that corporations with tax haven presence are able to shift their profits and pay lower taxes to the authorities.

Gravelle (2009) also presents a US focused argument in which it is concluded that tax havens are definitely a source of revenue losses for the US tax authority. US MNEs shift profits abroad to low tax jurisdictions in the Caribbean and Europe to the tune of $60 billion per year. Furthermore, it is stated that tax havens act as a tool for tax evasion, which is illegal, by individuals, which causes further losses in revenue to the US.

Still harsher criticism has come from Eden and Kudrle (2005) who believe tax havens represent “renegade states”. This title is warranted as they operate outside the OECD developed international tax system, the purpose of which was to help states tax MNEs in an international environment. However, the non-compliance of tax havens with the OECD efforts has presented loopholes to MNEs that they have exploited, to the detriment of the home states.

Palan (2002) believes that the presence of tax havens has called into question one of the basic tenants of the state, its sovereignty. However, Palan does not see tax havens as the cause, but the effect. It is argued that in the increasingly interconnected global market, interests are commercial and states are looking to maximize those. Tax havens come into being when the state is willing to commercialize one its most basic rights. This allows MNEs to dictate lower and lower tax rates, as well as provisions for secrecy etc., that, in his view, eat away at the state’s sovereignty.

In terms of the scale of the issue, Alstadstaeter, Johannesen and Zucman (2018) estimate that 10% of global wealth is stashed away in tax havens, but the distribution is unequal, affecting developing regions disproportionately. Zucman (2014) has also argued that the wealth stashed in tax havens is on an upward trend, casting doubt on recent measures aimed at controlling the issue.

Tax haven utilization has largely been attributed to be a determined by a firm's financial or technological characteristics, among others. But is there a relationship between corporate governance and tax haven utilization? This paper gives a brief overview of corporate governance issues and their relationship with tax as laid out in previous literature, and then identifies two aspects that might have an influence on tax haven utilization. Using two datasets obtained from ORBIS, the paper shows a negative association between ownership concentration and female appointments to the board of directors with the likelihood of owning a subsidiary in a tax haven. The study is limited in scope but opens the door for further investigation in this area.

3.1 Introduction

This chapter starts with a section identifying and outlining a number of themes in the corporate governance literature & the link between corporate governance & tax havens in existing literature. Section 2 outlines stakeholder theory (board of directors, gender diversity) is utilised as a lens to view tax haven activity, whereas 3 reviews agency theory (compensation, incentives, alignment of interests, ownership concentration, institutional ownership) as another important theoretical perspective in the literature that can play a role in explaining tax haven activity. I draw on recent studies to form a hypothesis about the role of female members of the board of governors and possible impacts on tax haven utilization, and then extend the ownership concentration and tax avoidance argument to tax haven activity and derive a 2nd hypothesis. Section 4 describes the data available for an empirical examination of the hypothesises and identifies the methodology. Section 5 presents the results, which show a negative association

between ownership concentration and tax haven subsidiary ownership, as well as between female presence on board of directors and tax haven subsidiary ownership. The chapter is concluded in section 6 with taking stock of the existing literature on corporate governance and tax havens and outline several avenues of further research.

This thesis looks at tax haven activity with a tax avoidance lens. In that view, tax havens represent what Dunning (1993) termed escape investments. These are investments made specifically to avoid high corporate tax rates at home. Apple's investment in Ireland and Amazon's European headquarters in Luxembourg fall neatly into this category. Recent work by Van Tulder (2015) has split FDI investment motivations into 'intrinsic' and 'extrinsic'. Intrinsic motivations are inherent to being a MNE, maximizing firm specific advantages or acquiring new advantages, these could be resources, markets and so on. Extrinsic motives are more interesting, for they talk about motivations borne out of the environment the firm operates in. Extrinsic motivations align with the "escape investments" Dunning has talked about, in that MNEs facing high tax rates at home would want to invest in tax havens where they can avoid the taxation. What is even more relevant about Van Tulder's work is the reference to culture and home country institutions, which he argues will influence the mindset of managers when making such "tax avoidance" investments.

As discussed earlier, the work of Jones and Temouri (2016) provides support for this point of view with the implicit suggestion that different approaches to capitalism colour managerial decisions with regards to investment in tax havens. These different approaches to capitalism consist of different national attitudes, different culture, different institutional systems, different government systems and, importantly for our purposes, different approaches to

corporate governance (Hall and Soskice, 2001). Thus Van Tulder's work helps explain both the intrinsic and extrinsic determinants of tax haven utilization identified in literature so far, and also provides a bridge to investigate impact of corporate governance on tax haven utilization, since corporate governance can also be split into internal(incentive compensation, board composition) & external factors(Audit, capital market pressure, enforcement & government regulations), with effects for example on executive compensation (Wright & Kroll, 2002; Kini, Kracaw & Mian, 2004).

Corporate governance, broadly defined, is the sum of supervision and management rules and practices for firms with multiple shareholders. Within corporate governance literature, the agency theory of corporate governance (Jensen and Meckling, 1976; Shleifer and Vishny, 1997) and the Stakeholder theory (Freeman 1984) are of particular interest.

The literature that deals specifically with corporate governance and tax havens is young and scarce, especially considering the importance of tax havens in global business. Furthermore, there is sometimes a lack of cohesion between corporate governance theory, tax avoidance and tax haven. For example, Taylor et al. (2015) measure tax haven utilization across a number of variables, including multi-nationality, performance-based management remuneration and corporate governance. They have a narrow data set looking at Australian firms and an opaque description of the "strength of corporate governance" variable that they have based their findings on. Furthermore, there is no model specified defining the corporate governance variable, nor a theory to explain the relationship with tax haven utilization.

There is however considerable work done on tax avoidance and corporate governance. Instructive surveys of the literature are provided by Shackelford & Shevlin (2001), Hanlon &

Heitzman (2010), Wilde & Wilson (2018) and Kovermann & Velte (2019). Kovermann & Velte (2019) surmise that the previous reviews have been too broad, with corporate governance a part of the picture but not the subject. They do concede that that Wilde & Wilson (2018) have covered corporate governance as a determinant but have focused only on the relationship between management & shareholders, leaving aside other stakeholders. Therefore, they base their analysis of the literature on the Stakeholder Agency Theory (Hill & Jones, 1992).

The purpose of this thesis is to draw a bridge between corporate governance theories, tax avoidance and tax havens. Therefore, this chapter will first lay out the corporate governance theories that inform most of the work in this field, then identify the work done on tax avoidance and finally link it with the literature on tax havens to derive the theoretical basis for hypothesises.

3.2 Agency Theory and Tax Havens

There are two theories of corporate governance that have interested scholars investigating tax avoidance and in some instances tax havens; the agency theory and the stakeholder theory. The agency theory posits a principal-agent view of the firm. The principal is the shareholder(s) who has invested capital in the firm and expects a return. The agent(s) is the manager of the firm who is tasked with running the business and providing returns to the principal. An obvious conflict of interests arises; what may be best for the manager, will not necessarily best for the shareholders. From Eisenhardt (1989);

"Agency theory is concerned with resolving two problems that can occur in agency relationships. The first is the agency problem that arises when (a) the desires or goals of the

principal and agent conflict and (b) it is difficult or expensive for the principal to verify what the agent is actually doing. The problem here is that the principal cannot verify that the agent has behaved appropriately. The second is the problem of risk sharing that arises when the principal and agent have different attitudes toward risk. The problem here is that the principal and the agent may prefer different actions because of the different risk preferences."

Outright misappropriation is insured against through the enforcement of contracts, courts and legal safeguards, yet interests still diverge. These manifest in the form of inefficiencies or different priorities. One example is the cash flow problem, highlighted by Jensen (1986) through evidence from the oil industry. Where shareholders interest is in getting a return on their investment, managers are interested in growing the firm and increasing their own power. This results in profits being invested back into the company, rather than being paid out as dividends to investors.

Much of the literature on corporate governance and agency theory deals with how to align the interest of managers, or agents, with those of the principals, or shareholders (Shleifer and Vishny, 1997). The supervisory board, government regulations and courts are the main avenues available to the shareholder to exercise control over managers. Making use of these resources, shareholders look to ensure that managers do not divert funds for personal enrichment, don't waste the firm's capital and work to maximise profits.

There have been many approaches to achieve this goal, two are of interest the current context. The first is large ownership blocks in a firm that give major shareholders a controlling stake in the firm (Shliefer & Vishney, 1997; Shliefer & Vishney, 1986). This in turn means they

control the board of directors and can effectively monitor management, while reducing the costs of doing so.

The second is to offer incentive compensation to managers, tying their remuneration with firm profits (Murphy, 1985), or offer them firm stock (Demsetz, 1983). These measures, and government regulations, have allowed the corporate governance structures in some firms, mostly the US and UK (Gilson, 2006), to move away from large ownership stakes.

With manager remuneration dependant on stock prices, and the managers getting company stock as a form of incentive, the interest of managers shifts to increases in stock prices. Shareholders profit from this arrangement by treating stocks as a trading commodity rather than a long-term investment. The basic agency problem has led to several proposition when it comes to corporate tax avoidance which we turn to now.

3.2.1 Compensation, Incentives and Alignment of Interests

The first proposition identified by Hanlon and Heitzman (2010) considers the alignment of interests between shareholders and managers; the shareholder goal being increase in value and the tool for alignment being incentive compensation. In this case tax avoidance, an activity that reduces tax cost on the firm, should increase as managers look to increase profitability, and hence their remuneration. Indeed, Phillips (2003) uses survey data to show that compensating managers on after-tax income leads to lower effective tax rates. This would suggest that weaker control, or weaker governance mechanisms would then result in less tax avoidance, as managers avoid the risk in the absence of the reward (incentive compensation) or monitoring. Robinson,

Sikes and Weaver (2010) also consider the effect of incentives on tax executives and find that when the tax department is considered a profit centre GAAP ETRs are lower but Cash ETRs are not.

Armstrong, Blouin, and Larcker (2012) find a negative association between tax director compensation incentives and GAAP ETRs while Rego and Wilson (2012) suggest that mangers are encouraged to operate in a more tax aggressive manner through managerial equity incentives. After-tax compensation incentives have also been found to have an association with corporate behaviour (Gaertner 2014) while CEO performance bonuses result in firms reporting lower cash effective rates compared to when the bonuses are based on earnings metrics.

Desai and Dharmapala (2006) model the effect of incentive compensation and governance structures on tax avoidance. They find a negative association between equity based compensation and tax avoidance but they find that this holds only in firms with weaker shareholder rights and lower levels of institutional ownership. Their argument is that tax avoidance, or "sheltering" requires obfuscation to prevent detection. This would require shell companies in tax havens, that are often hidden and operations within whom are not required to be publicly explained, in fact intentionally left unexplained. This in turn creates an opportunity for diversion for the managers.

Note that the interests of the principal and the agents are not always aligned and due to information asymmetry, agent's selfish behaviour (opportunism) is always present (Jensen and Meckling, 1976). Thus, in absence of strong monitoring mechanisms, proxied here by weaker shareholder rights and low institutional ownership, the manager has incentive to act against

interests of the owners. This also explains empirical literature regarding private family firms, that documents that family firms are less tax aggressive than non-family firms (Chen et al., 2010). Essentially, family-owned firms are willing to forgo tax benefits to avoid concerns by minority shareholders of family rent seeking masked by tax avoidance activities.

However, it can also be argued that the result is consistent with the individual's model for tax evasion, which links aggressive tax reporting to an individual's risk aversion and costs for flagging by the tax authorities would appear more prohibitive to individual wholly responsible than a large number of shareholders. In fact, Gallemore, Maydew and Thornock (2014) show that managers are not affected by allegations of using tax shelters, nor are the firms that engage in them. This is further reflected in a recent study of UK companies (Brooks, Godfrey, Hillenbrand and Money, 2016) which found that investors are not concerned by tax avoidance activities of managers, only with stock prices. Additionally, stock prices were not affected by the tax payments of firms.

Recently Bennedsen and Zeume (2018) have looked at transparency through Tax Information Exchange Agreements (TIEAs) with tax havens. They find that firm value, for poorly governed firms, increases 2.5% if TIEAs are signed with tax havens they are operating in. Furthermore, some MNEs relocate to more secretive or opaque tax havens after TIEAs are agreed between their home countries and current tax haven states. This behaviour hints at expropriation risk and suggests divergent interests between managers and shareholders.

Atwood and Lewellen (2019) have also published current empirical findings in a similar vein. They build on the tax avoidance theory of managerial diversion when corporate governance mechanisms are ineffective, put forth by Desai and Dharmapala (2006, 2009a, b) and Desai et al.

(2007) within the agency framework. The sample consists of 6,734 tax haven and 83,541 non–tax haven firm-year observations, consisting of multinational firms based in 28 countries, and tax haven firms are identified by parent company incorporation into tax havens jurisdictions. They provide evidence that manager diversion and tax avoidance are complementary for tax haven firms, measured by dividend payouts, based in countries with weak investor protections but not for tax haven firms based in countries with strong investor protections. This is an important contribution to literature as it sheds some light on the mixed results previous literature has displayed when dealing with tax avoidance when using the agency framework.

Further, it highlights an important overlooked factor, i.e. investor protections. Desai and Dharmapala (2006) mention shareholder rights and weak governance mechanisms in the initial theory, which can both be affected by investor protections in a particular region or jurisdiction. Investor protections are among a number of governance institutions outside the firm that could stand to have a role in tax haven utilization, not just in terms of manager expropriation opportunities.

One study that highlights this in the context of profit shifting was by Sugathan and George (2015) conducted with Indian firms that had foreign ownership. Their empirical study concludes that on average foreign owned firms' shift 6% of total pre-tax income outside of the country. They credit the weak government institutions in India for this, noting that tax-motivated profit shifting is interlinked with the quality of institutions at the country level. Furthermore, they find "that governance infrastructure that improves collective action and transparency in both the foreign- and host-country reduces shifting."

3.2.2 Institutional ownership

Firms' managers have significant individual effects on tax avoidance (Dyreng, Hanlon, and Maydew 2010), and logically would weigh the costs of tax avoidance (enforcement action by tax authorities and reputational costs) against the benefits for the themselves and the firm. It has been discussed earlier how owners try to align manager interests with their own through incentive compensation and better monitoring.

Different owners however have different capacities and competencies, and different visions for the firm. Of interest in the tax context are quasi-indexer institutional investors (Bushee 1998, 2001) who hold diverse, large portfolios and have significant competencies of their own and expectations from managers. Chen, Huang, Li and Shevlin (2018) investigate the effect of quasi-indexer institutional ownership on firms' tax avoidance behaviour. They suggest that although institutional investors don't have an explicit mandate to reduce taxes, they put pressure on managers to improve post-tax profit. Indeed, quasi-indexers position themselves as long-term investors and there is some literature that relates institutional ownership with improvements in firms' long-term performance metrics such as Tobin's Q (Appel et al., 2016a). The argument is that this pressure to increase firm performance will also lead towards an increase in tax savings(avoidance). Using a regression discontinuity design, Chen et al (2018) find evidence for their hypothesis; higher institutional ownership leads to greater tax savings. They find that this is achieved through a focus on increasing performance, not tax avoidance, and that the tools used by investors to achieve this include, at least partially, executive equity incentives and information environment. These results corroborate earlier findings by Khan, Srinivasan and Tan (2017)

Bird and Karolyi (2017) pose the same question but extend it to the use of tax havens. Using a regression discontinuity design they examine the effect of positive shocks to institutional ownership on effective tax rates, finding a negative association. Furthermore, they find that a 1 percentage point increase in institutional ownership is associated with a 1.3 percent increase in the likelihood of having a subsidiary in at least one tax haven country. These effects are smaller for firms with initially strong governance and high executive equity compensation, suggesting that an increase in tax avoidance and tax haven utilization comes about with significant improvement in corporate governance.

3.2.3 Ownership concentration

Another strand of thought builds around the traditional view of the agency theory but focuses on ownership concentration instead of manager remuneration. Manager remuneration is a means to align interests, whereas ownership concentration reduces the costs of monitoring, but also could shift the interests of owners. As seen earlier in the case of private family firms, the model of tax avoidance for firms in certain situations shifts towards the individual's model, with risk aversion and costs becoming a significant factor.

Badertscher, Katz and Rego (2013) extend this argument to ownership concentration and tax avoidance. They argue that tax avoidance has certain costs associated with it, which makes it a risky business decision. These costs include "fees paid to tax experts, time devoted to the resolution of tax audits, reputational penalties, and penalties paid to tax authorities". In firms where ownership and control is concentrated in the hands of a few, this would result in managers taking less risky decisions, i.e. less tax avoidance.

Conversely in firms where ownership is diversified and there exist less effective measures of control over management, managers are likely to make more risky decisions, i.e. more aggressive tax avoidance. This is also complimented with diversified shareholders' lack of concern with tax avoidance activities (Brooks et al 2016). Thus, Badertscher et al (2013) confirm their theory with an analysis of private manager-owned firms and private firm owned by Private Equity firms and find divergence in their tax behaviour.

This thesis extends this argument to tax havens. Tax havens are a tool for tax avoidance, perhaps the most potent tool, but they can also mask manager diversion activities. Literature to this effect has been cited earlier in the paper (Atwood & Lewellen, 2019) and a citable case study is that of Siemens. Siemens, as revealed by the Panama Papers, ran a number of secret tax haven subsidiaries. Hans-Joachim Kohlsdorf, a high-ranking employee who was involved in running slush funds through the subsidiaries is believed to have funnelled around $2 million into his own accounts. Atwood & Lewellen (2019) suggest higher costs of diversion would discourage this behaviour, which a concentrated ownership would represent. Furthermore, concentrated ownership models represent shareholders with different motivations than diluted ownership shareholders, i.e. diluted shareholders are less concerned with tax avoidance (Brooks et al. 2016).

In MNEs with high ownership concentration, shareholders are less averse to take risks and more likely to take a longterm view, thus making less risky decisions. With tax havens constantly in the news, they also carry a reputational penalty that would discourage large shareholders. A manifestation of this reputational penalty is perhaps the trend of reducing the number of subsidiaries disclosed, at least in the US, by MNEs that Donohoe, McGill and Outslay (2012) argue could be because of media interest in tax havens. Similar phenomena can be seen in

firms with private family ownership private family ownership (Chen, Chen, Chenq & Shevlin 2013), who forego tax avoidance in order to allay fears of diversion and avoid reputational penalties and investor suspicion.

On the other hand, firms with low ownership concentration, shareholders are likely to take the short-term view, with post tax profits and stock price a primary concern. This behaviour incentivizes high risk decisions by managers, especially tax avoidance and by extension tax haven utilization. Small shareholders are also less likely to be perturbed by reputational penalties and would have weaker control, reducing the costs on managers for diversion. Therefore, I can hypothesize that:

H1: Higher ownership concentration reduces the likelihood of MNEs owning tax haven subsidiaries

3.3 Stakeholder Theory and Tax Havens

The agency theory presents the equation of corporate governance as one with only two factors, the principals (shareholders) and the agents (managers). The corporate governance mechanisms are thus derived to mediate the relationship between the two. This leads to a somewhat limited view of the firm, a shortcoming addressed by Kovermann & Velte (2019) by using the stakeholder agency theory, a theory that takes into consideration both agency and stakeholder motivations, instead of the classical agency theory.

This is because in the context of tax avoidance, the stakeholder view is important as it brings the focus to managers & directors as individuals instead of the just agents & principals. Literature suggests that tax avoidance is a decision that rests with managers (Kovermann &

Velte, 2019), this is why incentives are offered to align manager interests with shareholders motivations for tax avoidance, and, as Crocker and Slemrod (2004) point out, why penalties on the tax managers represent a more effective tool in reducing tax evasion than penalties on the shareholder.

A purely agency view of the firm would be in danger of overlooking the individual roles & motivations. Dyreng, Hanlon and Maydew (2010) identified the gap in the literature concerning the impact that key executives play in determining the tax strategy of a firm. Their work provides evidence of the impact of both CEOs and CFOs in company tax strategy and find an 11 per cent difference between the GAAP ETRs when moving between the top and bottom quartile of executives.

Shareholders are, in practice, not the sole consideration of managers when making decisions. Other groups exert pressure on managers as they too are responsible for or effected by the decisions that managers take. These groups today include governments, labour unions, communities and suppliers and buyers, among others.

The stakeholder theory (Freeman 1984) simply proposes that the principal-agent contract is not all that defines a firm, instead there are stakeholders impacted by the firm's actions and they too are part of the equation. Though it may still be argued that shareholders are the most important among the stakeholders of a firm, stakeholder theory posits that they do not have a monopoly when it comes to manager decisions. From a stakeholder-centric perspective of corporate governance, managers of public corporations are tasked not only with protecting and maximizing shareholder wealth but are also responsible for ensuring that strategic decisions prove beneficial for all other stakeholders.

Corporate governance can thus be framed as rules and practices that ensure that managers act with the interests of the firm's stakeholders in mind, rather than just focus on value creation for shareholders. Wood (1991) describes the term corporate social performance (CSP) as the outcome of corporate activities undertaken to fulfil the legal, discretionary, economic and ethical responsibilities of a firm towards its stakeholders, rather than just the shareholders.

Shahzad, Rutherford and Sharfman (2016) identify corporate governance mechanisms that in theory could impact CSP and use an empirical study to confirm that these do in practice as well. Measures used in their study include board size, board gender diversity, auditor independence, CEO duality and board committees among others.

3.3.1 Board of Directors

The board of directors is an oversight system for managers, a tool used to ratify and monitor the corporation's most important decisions and to hire, fire, and compensate top-level managers within the corporation (Fama and Jensen, 1983). It

Tax haven literature however is scant when it comes to measuring the impact of variables identified by the stakeholder theory, such as the Board of Directors (BOD). This is because the framing of the issue has revolved mostly around the agency theory (Desai and Dharmapala 2006; Crocker and Slemrod 2005). There is though work done in tax avoidance literature, and a significant empirical effort in this regard is undertaken by Lanis and Richardson (2011) who measure the effect of board of director composition on tax aggressiveness. Their study of Australian corporations shows that the inclusion of a higher proportion of outside members on the board of directors reduces the likelihood of tax aggressiveness.

There are competing narratives about the role of outside directors as other studies (Richardson, Lanis, and Taylor, 2015; McClure, Lanis, Wells, and Govendir, 2018) have shown the opposite effect, i.e., the presence of outside directors is positively associated with tax avoidance. Kovermann and Velte (2019) explain the dichotomy as a function of other conditions effecting the firm, like financial distress, culture of company, country or time period of study falling before or after the GFC.

Outside directors are significantly important in the tax avoidance context because they have an implicit duty of care not only to shareholders, but also to other key stakeholders and critically to society as a whole (Ibrahim, Howard, and Angelidis, 2003; Pearce and Zahra, 1991; Rose, 2007), and while corporation's adoption of tax aggressive is often viewed to have a negative impact on society (Slemrod, 2004; Landolf, 2006; Williams, 2007).

3.3.2 Gender diversity

Dyreng et al. (2010) pointed out that individual managers can have significant effects on firm's tax behaviour, other scholars have investigated individuals if there exist individual characteristics, traits or backgrounds that effect the firms' tax behaviour. Subsequently, studies have releaved relationships between a number of individual traits and backgrounds within managers to behaviour of the firm with regard to tax. For example, Chyz (2013) show an association between personal aggressiveness of managers with tax outcomes, Feller and Schanz (2017), point to manager power and Koester, Shevlin and Wangerin (2017) identify managerial ability. Further traits relating to tax avoidance include military background (Law and Mills,

2007), political orientation (Christensen, Dhaliwal, Boivie, Graffin, 2015) and narcissism (Olsen and Stekelberg, 2016).

Other work has looked at the management team has found interesting insights for tax avoidance. For example, Abernathy, Kubick, and Masli (2016) find an increase in tax avoidance associated with the ascension of the general counsel—i.e., a lawyer—into the top management team. As discussed earlier, managers are decision makers when it comes to tax avoidance.

This is all relevant since the board of directors monitors management, and different traits and characteristics of the board should in turn effect management, and in turn tax strategy. For this study, we are particularly interested in board gender diversity.

Previous literature has revealed that women are more likely to bring expertise from outside of business and therefore may have different perspectives on the issues facing the board (Hillman et al., 2002). Women are thought to take a different approach to board membership with research demonstrating that they take a more participative and democratic approach (Eagly and Johnson 1990; Eagly, Johannsen-Schmidt and van Engen, 2003).

Early research on board gender diversity by Betz *et al.* (1989) found that women members of the board of directors are less likely to take risks compared to male directors with regards to financial matters and corporate reporting. Peni and Vähämaa (2010) took the same question to managers and found that firms with female Chief Female Oficers(CFOs) adopt a more conservative, risk-averse financial reporting style compared to firms with male CFOs.

Carter *et al.* (2003) argue that women directors generally are likely to display more independent thinking than male directors, which is crucial for effective board oversight. Daily *et al.* (2000) observe that compared to all-male boards, women bring different viewpoints to the

boardroom and facilitate more informed decisions that increase the level of transparency at the board level. McLeod-Hemingway (2007) find that women are likely to contribute positively to the general functioning and deliberations of the board by enhancing the degree of trustworthiness of the board to the firm's various stakeholders.

Kruger (2009) found that companies with higher female board representation have higher incidence of positive social responsibility. More specifically, the study indicates more generous attitude towards communities and more attention to the welfare of a firm's natural stakeholders (e.g. communities, employees or the environment) for companies with a higher proportion of women on the board of directors.

Similar arguments were put forward by Bear et al. (2010) who found a positive relationship between CSR and the number of women on the board of directors. They identified that two major strengths, participative decision making styles (Konrad et al. 2008) and increased sensitivity (Williams 2003), brought by the women to the board are found to be the key reasons for corporate responsibility strength ratings (Bear et al. 2010).

Relationship between female members of the board of governors and tax has also been investigated. Adams and Ferreira (2009) examine the association between women in the boardroom and corporate governance and firm performance. They find gender composition of the board being positively associated with board effectiveness. They argue that higher female participation on the board acts comparably to outside directors and is threfore likely to reduce tax aggressiveness.

Early work by Baldry (1987) shows that females are likely to be more compliant in tax-reporting decisions than males. Ruegger and King (1992) too find that in most cases, gender

diversity is significant in explaining attitude changes in tax ethics. This has recently been further confirmed by Richardson, Taylor and Lanis (2016) who find that in a sample of Australian firms, female presence on the board of directors reduces the likelihood of tax aggressiveness. This effect is relative to increase in the proportion of women from a baseline of 1, suggesting that alone they might not have a drastic impact but an increase in percentage amplifies the effect.

These studies focusing on the tax aggressiveness and tax ethics aspect of gender diverse board, backed by the positive CSR outcome studies, form the basis of the 2nd hypothesis;

H2: The presence of female members on the board of directors will reduce the likelihood of an MNE operating a subsidiary in a tax haven jurisdiction

3.4 Data & Methodology

To test the hypothesis this study draws on ORBIS database by Bureau van Dijk that compiles detailed information, including financials, shareholdings, locations, subsidiaries and more, from around the globe. For our ownership concentration model the data set selected contains a snapshot of published details for over 7,000 MNEs from 12 developed world countries for the year 2016. These include USA, UK, Japan, Germany, Australia, New Zealand, Austria, Sweden, Norway, Finland, Denmark & Canada.

Home countries firms are defined in ORBIS as Global Ultimate Owners based in said country with at least a 50.01% stake in a foreign enterprise. Admittedly, some MNEs that have used corporate inversion to relocate in a tax haven might not show up in the data.

The ORBIS data contains published information by MNEs that also includes disclosures about location of their subsidiaries. Using this information, we can map out how many subsidiaries each MNE has in a tax haven jurisdiction. This leads to creation of the dependent variables “Tax Haven” & “Tax Island” which are binary measures for each MNE signalling ownership, or lack thereof, of a tax haven subsidiary.

If we look at the sample by MNEs’ country of origin, we get the Japan as the most well represented with over 1,900 MNEs and New Zealand occupying the other end of the spectrum with just 13.

Among the MNEs in the sample over 3,000 own at least one subsidiary in a tax haven location. Japan boasts the highest percentage of MNEs with tax haven subsidiaries at 45% while Finland has the lowest average at 20%, signalling plenty of diversity in the sample.

Table 1: Country distribution of MNEs (Ownership Concentration)

Country	Freq.	Percent	Cum.
Austria	102	1.32	1.32

Australia	167	2.16	3.48
Canada	70	0.91	4.38
Germany	995	12.87	17.25
Denmark	290	3.75	21
Finland	270	3.49	24.49
United Kingdom	1,285	16.62	41.11
Japan	1,929	24.95	66.05
Norway	100	1.29	67.35
New Zealand	13	0.17	67.52
Sweden	798	10.32	77.84
USA	1,714	22.16	100
Total	7,733	100	

Table 2: Classification of whether MNEs are in tax havens or not

Country	Tax Haven

	0	1	Total
Austria	68	34	102
Australia	111	56	167
Canada	39	31	70
Germany	650	345	995
Denmark	216	74	290
Finland	213	57	270
United Kingdom	724	561	1,285
Japan	926	1,003	1,929
Norway	55	45	100
New Zealand	8	5	13
Sweden	608	190	798
USA	653	1,061	1,714
Total	4,271	3,462	7,733

Table 3: Summary statistics Ownership Concentration sample

Country	Summary	TaxHaven

	Mean	Std. Dev.	Freq.
Austria	0.333	0.473	102
Australia	0.335	0.473	167
Canada	0.442	0.500	70
Germany	0.346	0.476	995
Denmark	0.255	0.436	290
Finland	0.211	0.408	270
United Kingdom	0.436	0.496	1,285
Japan	0.519	0.499	1,929
Norway	0.45	0.5	100
New Zealand	0.384	0.506	13
Sweden	0.238	0.426	798
USA	0.619	0.485	1,714
Total	0.447	0.497	7,733

3.4.1 Variable of Interest: Ownership Concentration

The sample size is very large but across and contains MNEs of a multitude of sizes. This is to capture as much variation in the snapshot as possible. This study does acknowledge that scholars have argued (Thomsen and Pedersen, 1997) that "more variation in ownership patterns [can be expected] for large [than for small] companies" (p. 766). This argument is consistent with the

view of Faccio and Lang (2002) who indicate that cross-country differences are less significant among small firms than they are among large ones. However, to get a richer dataset we abstain from restricting the sample to just firms of a large size, as has been done in previous studies on ownership concentration (Richter & Weiss, 2013)

The concept of 'ownership' in this study pertains to financial holdings (capital blocks), which may diverge from the voting rights that owners may hold (Morck et al., 2005). However, it can be argued that the financial stakes that owners hold provide the economic basis for the return rights associated with ownership. Furthermore, previous literature (Faccio and Lang, 2002) shows that discrepancies between financial ownership and control are not widespread. Among the 13 countries Faccio and Lang (2002) investigated, the ratio between cash flow rights and control rights varied only between 0.74 and 0.94, and the standard deviation of this ratio across all countries is less than a third of its mean. Using financial holdings, or percentage of shareholdings, as the basis for calculating the ownership concentration ratio in this study was assessed to be the correct decision.

Existing studies on ownership concentration use two main types of concentration measures. First, ownership-specific count measures, such as the sum of the ownership percentages of the five largest owners(cr5). Increasing the number of owners taken into account when creating the measurement variable, i.e. using the largest 20 instead of largest 10 or largest 5, does not enhance, but rather decreases the precision of the measure of ownership concentration (Sanchez-Ballesta and Garcia-Meca, 2007; Van der Elst, 2004).

The second measure studies use is the 'universal' concentration estimates such as the Herfindahl-Hirschman-Index (HHI), defined as the sum of the squared percentages of ownership

shares. The HHI has an advantage over the cr5 in that it takes into account all owners, thereby drawing a comprehensive picture of ownership dispersion. However, the problem this measure presents is that of the availability of data. With the ORBIS data set, complete shareholder ownership details are not available for a wide range of MNEs. Using HHI in this scenario will result in accurate measures of some MNEs, drawing on complete information, but for a majority of MNEs the measures would be drawn from incomplete information. Previous work has shown that when complete ownership information is available for some firms, but not for others, the comparability of the HHI suffers (Sanchez-Ballesta and Garcia-Meca, 2007; Van der Elst, 2004).

After taking this into account and going through the data sample available for the study, it has been decided to use a cr4 measure of ownership concentration, i.e. a measure of percentage ownership by the 4 largest shareholders. There are shortcomings in this measure. One problem that applies to both the largest shareholder method as well as the HHI is that they sometimes do not take into account the possibility that shareholders may act in concert, whether through informal or through formal mechanisms (e.g. written shareholder agreements; for an overview of the latter see Chemla, Habib, & Ljungqvist, 2007, pp. 117–119). If two or more shareholders act in concert, their power may exceed the sum of their voting rights, and this phenomenon has even been formally recognized in some jurisdictions e.g. in the context of takeover legislation (for an example see Nierkirk, 2000). According to a study commissioned by the European Commission (ISS, Shearman Sterling & ECGI, 2007, pp. 31–32), shareholder agreements constitute a control-enhancing mechanism that is widely considered to be in line with the principle of contractual freedom of economic actors.

ORBIS provides an answer to this problem by providing details of controlling shareholders by both their direct & indirect (through intermediaries) control over shareholding blocks. This goes a long way in negating the indirect shareholding problem faced by previous studies but the information is still reliant on public disclosures. In cases where MNEs weren't required to, and chose not to, disclose such details, the accuracy of the measure will suffer.

3.4.2 Variable of Interest: Appointment of female members of the board of directors

The second variable of interest is the appointment of female members to the board of directors. The dataset utilized for this study is focused on UK & US firms, looking at over 650 firms across an 8 year period; 2010 to 2018. The variable "Female Appointments" represents the number of women appointed to the board of directors by an MNE between the years 2010 to 2012. The data is extended up to 2018 in order to measure the longterm effects of these appointments.

Table 4: Tax haven dummies by year for UK & US (2010 – 2018)

Year	Tax Island 0	Tax Island 1	Tax Haven 0	Tax Haven 1	Total
2010	419	144	274	289	563
2011	461	164	295	330	625
2012	487	196	311	372	683
2013	440	202	264	378	642
2014	399	225	234	390	624
2015	336	284	191	429	620
2016	248	374	111	511	622
2017	162	416	59	519	578
2018	131	360	40	451	491

In order to capture the effect of female representation on board of directors, this study also utilizes two measures of tax havens.

3.4.2 Explanatory Variables:

Explanatory variables employed for the purpose of this study are identified by drawing on previous literature. These include multi-nationality, a factor identified as contributing to an MNEs use of tax haven subsidiaries by (Taylor, Richardson & Taplin, 2015) and proxied by the number of foreign subsidiaries each MNE owns. Size has been identified as an explanatory variable by (Graham & Tucker 2006), and measures to account for this range from revenues to assets to number of employees. Technology intensiveness & ownership of patents, intangible assets is a key indicator of an MNEs propensity to invest in tax havens, because of the specific transfer pricing opportunities afforded to MNEs on account of these. The ownership concentration study uses NACE industry codes to form categorizations of firms by industry by

technology intensiveness, as was done by Jones & Temouri (2016). This is important because it captures industry level differences that effect tax haven utilization and would remove biases in the data.

For the female appointment model the industries are more finely classified, for a total of 20 different classifications, again by using the NACE industry code and Eurostat categorizations. The larger number of classifications used in the female appointment model is to cater for any bias that could arise with gender preferences for certain industries. Which might not be clearly accounted for in the broad technology-intensiveness based classifications.

3.4.3 Model

The dependent variable for the hypothesis is a dummy created to represent the presence of a tax haven subsidiary. If an MNE has a tax haven subsidiary the dependent variables "Tax Island"/"Tax Haven" will signal this with a value of 1 and signal absence of a tax haven subsidiary with a value of 0. With a binary dependent a probit model is used as seen in previous work of this nature (Jones & Temouri 2016). The study runs 2 variations of 2 different models, one for calculating effect of female board member appointments in the UK & US and second for 'OWNCON' (Ownership Contentration) across firms from the 12 home countries. For robustness count models are also run, these measure the number of tax haven subsidiaries owned by each firm at a certain point in time.

1) $\text{Tax Haven} = \beta_0 + \beta_1 \text{OWNCON} + \beta_2 \text{FSA}_{kit} + \beta_3 \text{SectorTech} + \beta_4 \text{Tax}_{it} + \varepsilon_{it}$

FSA contains firm specific independent variables identified in earlier studies. SectorTech vector refers to industry sectors that cover High tech manufacturing, Medium/high tech manufacturing, Medium/low tech manufacturing, low tech manufacturing, Knowledge intensive & less knowledge intensive. TAX is tax rates represent the corporate tax rate faced by each MNE in 2016, this is a country level variable.

For the female appointment hypothesis, the model is modified.

$$\text{Tax Haven} = \beta_0 + \beta_1 \text{ Fem Appoint} + \beta_2 FSA_{kit} + \beta_3 \text{ SectorWide} + \beta_4 \text{ Tax}_{it} + \varepsilon_{it}$$

Here the SectorWide variable represents the different finely tuned industry classifications used. Tax is the corporate tax rate each MNE faced in the UK or the US from 2010 through to 2018.

3.5 Results

The model for ownership concentration was run with two specifications, one with each definition of tax haven dummy. In both cases, the results supported the initial hypothesis, that ownership concentration has a negative association with an MNEs propensity to own a tax haven subsidiary.

Table 5 Results on Ownership Concentration

VARIABLES	(1) Tax Island	(2) Tax Haven
Own Con	-0.00196***	-0.00103***
	(0.000233)	(0.000216)
Foreign Subs	0.0152***	0.0181***
	(0.000604)	(0.000566)
High Tech Manufacturing	-0.00749	0.0170
	(0.0414)	(0.0378)
Knowledge Intensive Services	0.0476**	0.0636***
	(0.0190)	(0.0170)
Less Knowledge Intensive Services	0.0610**	0.0623***
	(0.0241)	(0.0215)
Operating Revenue	-0.0198*	-0.0202**
	(0.0109)	(0.0102)
Total Assets	0.0480***	0.0464***
	(0.00757)	(0.00710)
Cashflow	-0.156	-0.184*
	(0.0994)	(0.0980)
Low Tech	0.0269	0.0349
	(0.0281)	(0.0257)
Medium High Tech	-0.103***	-0.0453**
	(0.0237)	(0.0228)
Medium Low Tech	0.0441**	0.0424**
	(0.0206)	(0.0190)
Number of employees	-4.71e-07	-3.83e-07
	(4.44e-07)	(4.38e-07)
Top Corp Tax	0.00677***	0.00544***
	(0.00113)	(0.00106)
Observations	7,527	7,527

Note: Each column reports probit regression. The dependent variable is whether a firm owns a subsidiary in a tax haven. Two variations of tax haven dummy. Marginal effects are reported. Some controls, the constant and the fixed effect coefficients are unreported for brevity. Total turnover, free cash flow and assets are entered as their natural logarithms. Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The marginal effects reported indicate a negative, significant association between owning a subsidiary in a tax haven and ownership concentration. A 1% increase in ownership concentration signals a 0.13 percent increase in the likelihood of owning a subsidiary in a Tax Haven and almost a 0.2% increase in likelihood of owning a subsidiary in a Tax Island. These results seem to align with previous work on both tax avoidance (Badertscher et al., 2013; Chen et al. 2010) and the recent study on tax havens (Atwood & Lewellen, 2019) in so far as the theoretical basis, but since those studies are not directly based on measures of ownership concentration, there can be no definitive conclusion drawn on the variable.

The rest of the variables provide results in line with previous studies. MNEs tax haven subsidiary ownership is positively related with size, multi-nationality, technology intensiveness etc. The recent findings (Jones & Temouri, 2016) that MNEs based in liberal market economies are more likely to own tax haven subsidiaries also holds.

Notice that the relationship holds when the regression is run for the count variables. This indicates that ownership concentration is negatively related with the number of subsidiaries in a Tax Island. This is statistically significant. We get statistically insignificant results for the count of Tax Haven variable, which is a measure that includes some larger tax havens. For the models testing the female board member hypothesis, results are also encouraging.

Table 6: Results on Ownership Concentration by count

VARIABLES	(1) Tax Island	(2) Tax Haven
Own Con	-0.00160***	0.00494*
	(0.000175)	(0.00291)
Foreign Subs	0.00146***	0.119***
	(0.000101)	(0.00168)
High Tech Manufacturing	0.0410	-0.797
	(0.0306)	(0.508)
Knowledge Intensive Services	0.0658***	0.141
	(0.0143)	(0.238)
Less Knowledge Intensive Services	0.0688***	0.827***
	(0.0187)	(0.310)
Operating Revenue	0.0269***	-0.833***
	(0.00804)	(0.134)
Total Assets	0.0542***	0.583***
	(0.00564)	(0.0936)
Cash flow	-0.0462*	0.356
	(0.0248)	(0.413)
Low Tech	0.0567***	-0.0798
	(0.0210)	(0.349)
Medium High Tech	-0.0172	-1.248***
	(0.0173)	(0.288)
Medium Low Tech	0.0790***	-0.809***
	(0.0156)	(0.259)
Number of employees	-7.41e-07***	-1.20e-05***
	(2.11e-07)	(3.50e-06)
Top Corp Tax	0.00206**	0.0615***
	(0.000838)	(0.0139)
Observations	7,527	7,527

Each column reports a regression. The dependent variable is the number of tax haven subsidiaries owned by a firm. Two variations of tax haven used. Some of the controls and constant are unreported for brevity. Total long-term debt, turnover, free cash flow and intangible assets are entered as their natural logarithms and lagged. Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 7: Results on Female Appointments in Board Of Directors

VARIABLES	(1) Tax Island	(2) Tax Haven
Fem Appoint	-0.0792***	0.00988
	(0.0137)	(0.00971)
Turnover	-0.00518	0.00932
	(0.0119)	(0.00817)
Cashflow	0.0363***	0.0188***
	(0.0104)	(0.00704)
Long term debt	0.0272***	0.0121***
	(0.00588)	(0.00372)
Intangible fixed assets	0.0383***	0.0114***
	(0.00667)	(0.00433)
Corp Tax	-0.0119***	-0.00535***
	(0.00143)	(0.00103)
Foreign Subsidiaries	0.00340***	0.00342***
	(0.000161)	(0.000121)
Agriculture	-0.0252	-0.358
	(0.250)	(0.246)
Mining	0.106	-0.0881
	(0.0914)	(0.0756)
Manufacturing	0.0365	0.0123
	(0.0747)	(0.0482)
InfoCom	0.0560	0.00949
	(0.0796)	(0.0500)
Financial	0.470***	0.138***
	(0.0367)	(0.0279)
Real Estate	0.385***	0.0627
	(0.0663)	(0.0573)
Education	0.487***	0.141***
	(0.0453)	(0.0464)
Arts & Ent	0.242	0.0800
	(0.148)	(0.0977)
Observations	5,448	5,448

Note: Each column reports probit regression. The dependent variable is whether a firm owns a subsidiary in a tax haven. Two variations of tax haven dummy. Marginal effects are reported. Some of the industry category controls, constant and the fixed effect coefficients are unreported for brevity. Total long-term debt, turnover, free cash flow and intangible assets are entered as their natural logarithms and lagged. Robust standard errors in parentheses. Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 8: Results on Female Appointment on Board Of Directors 2

VARIABLES	(1) Tax Island	(2) Tax Haven
Fem Appoint	-0.179	-1.063**
	(0.306)	(0.519)
Turnover	-0.485**	-0.404
	(0.230)	(0.334)
Cashflow	0.0904	-0.140
	(0.174)	(0.228)
Long term debt	0.477***	0.506***
	(0.0983)	(0.132)
Intangible fixed assets	-0.217*	-0.316*
	(0.126)	(0.183)
Corp Tax	-0.105***	-0.114***
	(0.0222)	(0.0284)
Foreign Subsidiaries	0.0495***	0.135***
	(0.00140)	(0.00184)
Agriculture	-0.0858	-1.183
	(4.350)	(6.987)
Mining	0.679	-1.675
	(1.964)	(3.225)
Manufacturing	0.229	-0.593
	(1.568)	(2.585)
InfoCom	1.600	0.495
	(1.671)	(2.758)
Financial	7.681***	4.767
	(1.832)	(3.029)
Real Estate	6.545***	6.966*
	(2.262)	(3.761)
Education	3.988	4.818
	(4.192)	(6.875)
Arts & Ent	-1.447	-5.670
	(3.390)	(5.630)
Observations	5,448	5,448

Note: Each column reports xt regression. The dependent variable is the number of tax haven subsidiaries owned by a firm. Two variations of tax haven used. Some of the industry category controls are unreported for brevity. Total long-term debt, turnover, free cash flow and intangible assets are entered as their natural logarithms and lagged.

*** p<0.01, ** p<0.05, * p<0.1

The first one is calculated using the "*Fem Appoint*" variable and the results confirm the hypothesis that female representation on the board reduces the likelihood of MNEs operating a subsidiary in tax haven jurisdictions. The marginal effects indicate a large negative relationship between owning a Tax Island subsidiary and Female appointments to the board of directors. Specifically, each appointment reduces the likelihood of owning a Tax Island subsidiary by 7.9%. The finding is statistically significant. The relationship with the Tax Haven variable, the variable including larger countries, is insignificant.

Results for the count variable of tax haven subsidiaries indicate a similar relationship with female representation in the board of directors, i.e. a negative effect on the MNEs propensity to operate a subsidiary in a tax haven location. However, these are not statististically significant. These results are largely in line with previous work by Taylor et al. (2016) that link the presence of female members on the BOD to a negative effect on the tax aggressiveness of the firm. Similarly, Law & Mills (2017) have found that male members of the BOD tend to be more aggressive than female members. As a direct study measuring the effect of female members of the BOD on tax haven utilization hasn't been conducted, the aforementioned studies provide the best comparable empirical findings.

3.6. Conclusion, Limitations and Future Research Avenues

Tax havens play a key role in tax avoidance in today's interconnected world. In fact, most methods of international tax avoidance – transfer pricing, strategic intellectual property location, corporate inversions, international debt shifting - would not be possible without tax havens. The academic and policy literature talks about the "under-sheltering puzzle" that can at least be

partially explained by the work that identifies key determinants such as intangible assets, firm size, multi-nationality, debt and technology intensiveness.

However, it is the work by Jones and Temouri (2016) that has identified another significant factor; orientation of the particular economy of the MNE using the VOC approach. This suggests that differences in culture, national ethos, institutional environment and corporate governance may play a significant role in a firm's decision to invest in tax havens. Among these, corporate governance is a factor that is largely rooted in agency theory and scholars have identified ownership concentration, private ownership, manager incentives, manager diversion and institutional investors as determinants of tax avoidance. Recently studies have built on the work of Desai and Dharmapala (2006) to extend the managerial diversion, in the presence of weak corporate governance mechanism, theory to tax havens and found supportive evidence. Similarly, institutional ownership is also shown to not only be associated with tax avoidance, but also with tax havens. However, tax avoidance determinants rooted in the stakeholder theory, such as board composition and diversity, remain less explored in tax haven literature.

The results for the female appointments on propensity to own tax havens are also interesting. This is especially true when looked at in light of literature that links presence of women on board of directors with positive CSR outcomes or ratings (Braun, 2010; Kruger, 2009; Bear et al. 2010). Could it be that firms who appoint female directors tend to close down subsidiaries in dot tax havens, which carry a greater reputational penalty, but not in the larger Big 7 havens due to CSR concerns?

This study has only scratched the surface of the relationship between corporate governance & MNEs' tax haven utilization. Results from this paper suggest that arguments

forwarded by scholars about the negative association between tax avoidance and costs of diversion (Atwood & Lewellen, 2019) or private family ownership (Chen, Chen, Chenq & Shevlin 2013) hold weight and may apply to use of tax havens as well. Might other areas of corporate governance, other theories also hold some answers? The questions can certainly be asked. What are the differences between co-ordinated market economies and liberal market economies that drive the divergence in tax haven utilization? Can tax haven activity be partly explained by the stakeholder model of corporate governance? Or the representation of labour on boards of directors? Or the greater participation by women in managerial positions? Or diversity in educational backgrounds? Or employment history? All these questions are worth posing and have basis in the tax avoidance literature already.

Another fruitful area of research would be to combine corporate governance at the MNE level and institutional theory (Peng et al., 2009), which can lead to a better understanding of the motivations that emerging market MNEs (EMNEs) may have when deciding to shift capital into tax havens. For example, there are various dimensions to the institutional environment that are common across many emerging markets, affecting a significant number of EMNEs which are either state-owned, partially state-owned; or former state-owned enterprises that have been privatized. Given their sheer size and the speed of expansion internationally, the rise and spread of state capitalism in the emerging world has increasingly caused concern (e.g. Huawei with government backing). Yet the impact of state ownership and political connections of state-owned enterprises on their internationalization, and the use of tax havens, is an under-explored area. Do state-owned firms have different objectives compared to privatized firms in terms of tax haven use?

Last, but not the least, the identification of government institution quality as a factor in profit shifting (Sugathon and George, 2015) and the effect of investor protections on the relationship between manager diversion and tax avoidance (Altwood and Lewellen, 2019) pose other interesting research questions. What is the effect of governance structures not in home countries, but in other institutional weak or corrupt countries that MNEs operate in with respect to tax haven utilization?

The answer to such research questions that arise from the intersection of tax avoidance and tax havens, could provide important insights not only to the under-sheltering puzzle, but also increase our understanding of the role of corporate governance on a firm's strategic choices and decision-making process.

Chapter 4: Complementarity between capital flight and tax haven utilization

This chapter investigates the determinants of tax havens use by Multinational Enterprises (MNEs). The study focuses on MNEs' subsidiary locations and measures the impact of presence in different geographical and political regions on the use of a tax haven. The work expands on current literature and internalization theory to form a conceptual framework that can investigate the impact of subsidiary locations on tax haven utilization by MNEs from the developed world. Results show that presence of developed world MNE subsidiaries in the developing world, especially countries with large unrecorded capital outflows, has a strong positive impact on tax haven utilization. This implies that tax havens serve as a tool for wealth transfer and exploitation of developing world economies for MNEs originating from the developed world.

4.1 Introduction

. Tax havens, second home to some of the richest people – and firms – in the world and at the centre of many corruption scandals, have received widespread media attention in recent years. The light regulations, nominal tax rates and strict secrecy they provide make tax havens a popular destination for capital from around the world, which increasingly includes, as the panama papers have shown, the developing world. Oligarchs from Russia and even the former Prime Minister of Pakistan have been shown to hold or hide property in tax havens, But is this

just a phenomenon common in rich, seemingly corrupt individuals? Or is there a larger game afoot.

In this paper, we explore the relationship between tax haven use and foreign direct investment (FDI) into developing countries often characterised by weak institutions, market imperfections and a propensity for significant capital flight. This is of critical importance because tax havens are increasingly being characterised as wealth extractors that undermine economic development in countries with weak institutions and at the same time contribute to rising inequality in developed nations (Torslov, Wier and Zucman, 2018).

Andersen et al. (2017) show that 15% of the windfall gains to petroleum producing countries with autocratic rulers is diverted to accounts in tax havens. A recent World Bank report (Andersen, Johannesen and Rijkers, 2020) also shows that aid disbursements to highly aid-dependent countries is strongly associated with an increase in bank deposits to tax havens (also known as offshore financial centers). Coupled with disclosures in the Panama Papers, Paradise Papers and the Luanda Leaks (Ndikumana, 2020), there is a clear pattern of abuse by elites in the developing world to amass wealth by using tax havens. Capital flight, Ndikumana (2020) argues, has had a negative impact on the citizens of developing countries in Africa, depriving governments of the resources to invest in public services such as education, clean drinking water, healthcare, childcare services and sanitation systems.

A significant share of all MNEs own tax haven subsidiaries or, in some cases, are owned by parent companies that are registered in tax havens or more broadly offshore financial centres, that offer low tax rates or beneficial fiscal treatment of cross-border financial transactions, extensive bilateral investment and double taxation treaty networks, and access to international

financial markets, which make them attractive to companies large and small (UNCTAD, 2016). Enormous amounts of capital flow in and out of tax havens each year. Indeed, Oxfam has estimated this flow at over $18.47 trillion in 2013, while Zucman (2013) finds that close to 40% of the world's FDI is routed through tax havens. Almost exclusively, this type of investment is not used for productive economic activity in the tax haven location. Instead, it is held there to avoid corporate tax levied at higher rates across an MNE's global network. Subsequently, it deprives locations that actually create the economic value-added from revenues that could be used to finance public investment and it may increase taxes on less mobile forms of income, such as wages and salaries paid to workers.

Using panel data for a sample of MNEs from 19 developed economies, I find that MNEs which have subsidiaries in developing countries with a high degree of capital flight also have a much stronger propensity to own tax haven subsidiaries relative to other MNEs who only have conventional subsidiaries in developed economies. This suggests MNEs which extend their networks to regions of the world characterised by weak institutions and a high degree of capital flight are perhaps more interested in diverting untaxed profits out of said regions, hence depriving them of precious resources needed for their development.

This is an important finding and contributes to the literature both conceptually and empirically. First, the findings extend our conceptual understanding of how institutional voids impact on developing countries. Buckley, Sutherland, Voss and El-Gohari (2015) apply internalisation theory and the economic geography of FDI to tax havens and offshore financial centres with a particular emphasis on Chinese MNEs. They argue that weak capital market imperfections and poor institutional environments create significant transactions costs that can be alleviated by the use of tax havens. Hence, this paper tests the theory but extends the model to a

specific phenomenon – countries that experience significant capital flight. Empirical contribution lies in the large panel dataset which allows for testing the relationship between MNEs from 19 developed countries and their various FDI locations around the world, including tax havens. This allows for a cross-country comparison that is rare in the literature on tax havens, which mostly focuses on single country analysis.

The rest of this chapter is set out as follows. In the second section I discuss some previous literature, the gap and motivation, the 3rd section the conceptual framework is laid out, which allows for generating two testable hypotheses. The fourth section gives an overview of the data and defines methodology for the empirical tests. The fifth section reports results and the sixth section concludes with a discussion of findings, policy implications and suggestions for future research.

4.2 Literature Gap and Motivation

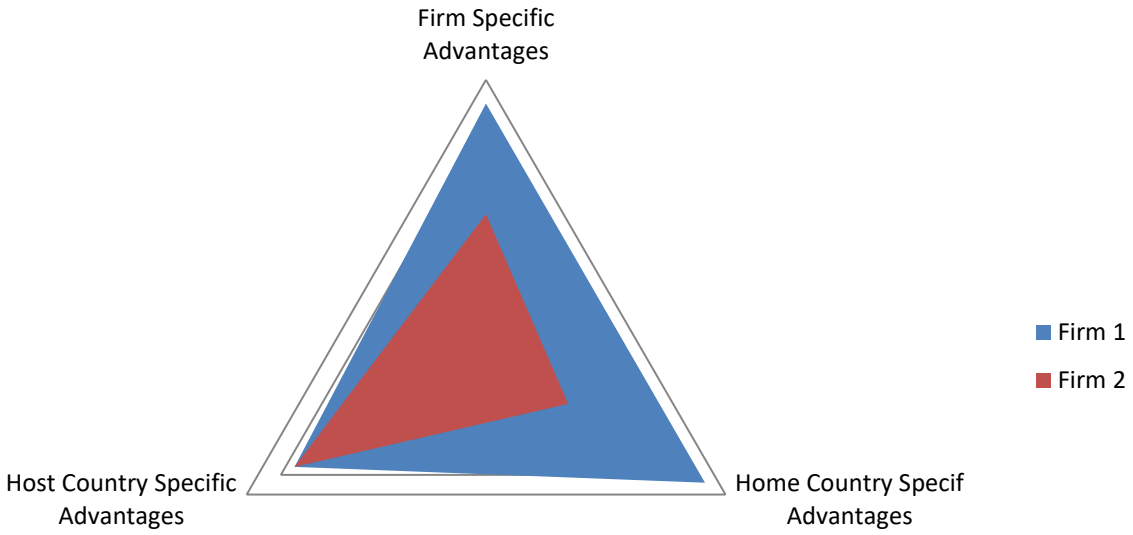
Literature concerned with determinants of tax havens has focused on different aspects of the firm. Graham & Tucker (2006) relate firm size & profitability with utilization of tax havens. Desai, Foley, & Hines (2006a) focus on American MNEs and find that firms with large R&D operations will be more likely to use tax haven affiliates while intra-firm trade exhibits a positive relation with tax haven usage as well. Taylor, Richardson & Taplin (2015) have a focused study on the determinants of tax haven utilization based on data from 200 Australian firms. Their focus is on intangible assets, withholding taxes, multi-nationality and transfer pricing.

Jones & Temouri (2016) depart from the convention and bring into focus the characteristics of an MNE's home country when trying to explain tax haven utilization. They segregate home countries according to the Varieties of Capitalism (VOC) approach (Hall & Soskice 2001, Hall & Gingerich 2009) creating a dummy variable for home country market orientation in their firm level data-set, and use the approach to show that MNE's originating from Liberal Market Economies (LMEs) are more likely to use tax havens when compared with MNE's from Co-ordinated Market Economies (CMEs).

Figure 1 shows a plot for likelihood of tax haven FDI in two MNE's as argued by Jones & Temouri (2016). The plot 3 dimensional with the interaction of 3 separate axis; the Firm Specific Advantages (FSAs), the Home-Country Specific Advantages (CSAs) and the Host-CSAs. Since the host country here are tax havens, the Host-CSAs present the same value, their "non-marketable assets" of low tax rates and secrecy, and it is the interaction of Home-CSAs and FSAs with them that gives us the value for, or makes the most impact on, tax haven FDI.

Figure 1: Plot for tax haven FDI of two firms with different FSAs and Home-CSAs

(note: Host country here refers to tax havens)



This paper builds on previous work by introducing the location of MNE subsidiaries as a primary factor to explain tax haven utilization, something that has not been conceptualized before. This factor has escaped the attention of international business scholars, who have been focused on traditional view of the firm, the host country and the home country. Let us for now look at a real-world example of tax avoidance and the use of tax havens and understand where the motivation to address subsidiary locations as a factor comes from.

The Citizens for Tax Justice (CTJ), the Institute on Taxation and Economic Policy (ITEP) & the U.S. Public Interest Research Group Education Fund (U.S. PIRG Education Fund) released a report on the use of tax havens by Fortune 500 companies recently. The report titled

Offshore Shell Games 2016 (2016) tracks the use of tax havens by the biggest US MNEs. The report states that at least 367 of the Fortune 500 operate tax haven subsidiaries.

The most solid contribution of the report is devising a method to calculate the taxes avoided by these companies by operating tax haven subsidiaries. US firms are theoretically required to declare their tax exposure in the US on profits they have booked abroad. Now US firms claim that these are profits made on economic activity outside the United States and can choose not to fulfil the obligation of reporting the tax exposure if they deem it "not practical". Only 58 of the 298 Fortune 500 companies with offshore earnings declare the tax they would pay if they brought earnings outside the US to the country.

The US government gives tax credits for earnings made abroad, that is companies won't be taxed twice and tax paid abroad will be deductible for tax purposes on the relevant income in the US. The CTJ report uses this provision to calculate the percentage tax paid by MNEs abroad by subtracting the percentage tax they declare they are liable to in the US.

For example, in the case of Apple, the firm has booked $214.9 billion offshore and declared that it would owe the US government $65.4 billion if the earnings were shifted to the US, as of 2015. This comes to a rate of 30.6%, which when subtracted from the US corporate tax rate of 35% gives the tax rate paid by Apple on its earnings abroad: 4.6%.

Needless to say, 4.6% is a very low tax rate and it is fair to conclude that the firm has placed most of its profits abroad into tax havens, thus avoiding applicable tax rates in actual areas of economic activity. On average, the report finds that the 58 Fortune 500 companies that declared their tax liability in the US paid taxes at only 6.2% on their operations abroad, saving $212 billion in taxes. The CTJ argue that this is revenue denied to the US government.

However, this thesis will argue that this is revenue denied to foreign governments, and points to an exploitation of weaker government institutions around the world for minimizing tax liability there.

Some existing literature backs up this argument and also provides some clues as to how the subsidiary locations of MNEs effects their propensity to invest in tax havens. Sundari & Susanti (2016) provide an empirical study of Indonesian firms to tease out determinants of transfer pricing. The key finding from their study is that foreign ownership is a significant positive factor for transfer pricing activity in the firm. With ownership held abroad, or concentrated abroad, Indonesian firms were more likely to shift profits outside the country through transfer pricing. Thus stripping tax revenue in Indonesia.

Jansky & Prats (2015) present a study of 1500 MNEs operating in India. Their results show that firms which are linked with tax havens report lower profits than those firms that do not have such links. Therefore, the authors argue that corporations with tax haven presence are able to shift their profits and pay lower taxes to the authorities.

Sugathan & George (2015) conducted a similar, more in depth study with Indian firms that had foreign ownership. Their empirical study concludes that on average foreign owned firms' shift 6% of total pre-tax income outside of the country. They credit the weak government institutions in India for this, noting that tax-motivated profit shifting is interlinked with the quality of institutions at the country level. Furthermore, they find "that governance infrastructure that improves collective action and transparency in both the foreign- and host-country reduces shifting."

From the CTJ report and some literature it can be concluded that large US firms, from the developed world with strong governance institutions & enforcing mechanisms, avoid taxes in their foreign subsidiaries by shifting the profits to tax havens. The studies of Indonesian and Indian firms, both developing world with comparatively weaker country level governance infrastructures, show that foreign ownership increases profit shifting outside the country. The work of Sugathan & George is particularly important as it links profit shifting with country level institutions.

This clear gap in literature concerning the incentive (or disincentive) provided to MNEs from operating subsidiaries in specific locations when it comes to tax haven utilization has, at the time of writing, has not been addressed or identified in International Business literature and forms the motivation for this chapter.

4.3 Conceptual Framework and Hypotheses

Figure 2 illustrates the conceptual framework that shows the complementary relationship between tax haven investment and investing in overseas non-tax haven subsidiaries. The framework draws on the traditional internalisation theory (see Rugman, 1980; 2010) and combines it with insights from Buckley, Sutherland, Voss and El-Gohari (2015) who apply internalisation theory to offshore FDI with respect to Chinese capital flows. I lean on Buckley et al's (2015) framework which is based on a case-based empirical approach but extend it in a different direction (laid out later), developing a conceptual framework which allows us to

generate empirical hypotheses that can be estimated with firm-level data using panel data econometrics. The benefit of this larger scale empirical analysis lies in capturing cross-country evidence for a set of heterogeneous DMNEs which have different incentives and subsidiary structures in developing and tax haven countries.

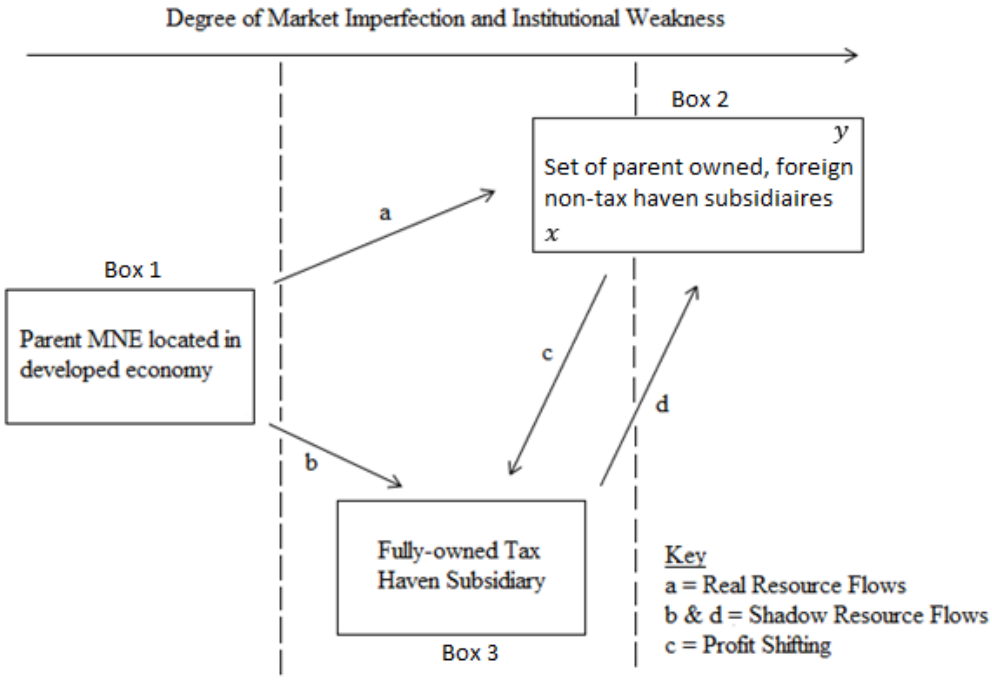
The profit shifting activities of MNEs is a complex process (Holtzblatt, Jermakowicz, & Epstein, 2015; Pun, 2017). MNEs who choose to undertake this type of activity need to employ a set of well qualified accountants and tax experts to take advantage of the so-called hybrid miss-match opportunities that result from differences in the tax code across countries (Kemme, Parikh & Steigner, 2017; OECD, 2013). In general, this is not a difficult task for MNEs to set up because there is an army of tax specialists, law firms and accountancy firms, such as the Big 4, who are ready to meet the demands of firms to undertake this type of activity (see Cobham, Jones & Temouri, 2018; Sikka, 2015; Sikka & Willmott, 2010). This can be observed by the recent Panama papers and Paradise papers scandals that generated widespread media attention across the world from the International Consortium of Investigative Journalists.

At present, countries across the world are party to over 3,000 bilateral international tax treaties. Although this is a significant number and the tax landscape is constantly changing (David, 2018), this complexity allows firms to use standard transfer pricing techniques to shift profits out of high tax jurisdictions and in to low tax jurisdictions (Eden,1998; Eden & Kurdle, 2005). It is important to note, that this type of activity is not necessarily illegal. In some circumstances, transfer pricing is actually needed in order to evaluate the performance of divisions across a MNEs corporate structure. But very often this is abused for tax and secrecy purposes and many scholars and NGOs believe it does not play to the spirit and intention of the rules as they have been developed since the 1920s. Indeed, some scholars argue that it

undermines the undoubted ability of capitalism to enhance living standards across the world (Shaxson, 2014; Palan et al. 2010).

In order to abstract away from the complexity of the structures used to undertake international profit shifting, Figure 2 shows a simple tax avoidance structure. This basic framework is useful because it can encompass all motivations as to why MNEs may wish to use tax haven subsidiaries. In order to simplify the theory I will subsume all of these factors under a simple heading: "profit shifting". Figure 2 includes three boxes from left to right. In box 1 I have the parent MNE which I assume originates from a developed economy, for example from the OECD. In the second box I have the tax haven subsidiary. This subsidiary is located in an offshore jurisdiction that fits the parent company's needs. Previous literature suggests that MNEs do not just choose a tax haven location in a vacuum. Offshore locations specialise in different ways, for example geographical proximity or cultural ties to centres of large economic activity, quality of governance & institutions, small local populations and so on (Dharmapala & Hines, 2009). Nevertheless, one common aspect of tax haven locations is that they usually have institutions in place that protect the interests of investors. These include a stable political environment, a legal system that aligns with the interests of private property, privacy and high levels of secrecy for investors, light touch regulation and low, often zero, rates of tax on corporate profits. Finally, box 3 includes the parent firm's set of (non-tax haven) conventional subsidiaries. There could be any number of such subsidiaries included in this box, from any location (except a tax haven) across the world. Let's assume that the parent has a significant degree of control over these subsidiaries but it is not necessary to assume that they are fully owned.

Figure 2: Conceptual Framework



The simple profit shifting structure illustrated in Figure 2 can be described as follows. The parent MNE, by its own definition, will set up subsidiaries in foreign markets to mitigate transaction costs. This type of FDI is based on the 4 standard FDI motives (Dunning, 1980; 1988): (1) market-seeking; (2) resources-seeking; (3) efficiency-seeking; and (4) strategic asset-seeking. Hence real resources will flow back and forth from the set of subsidiaries to the parent. This could include knowledge transfers, intangible assets and capital goods and is illustrated by capital flow "*a*" in Figure 2, which is equal to the sum of capital flows from the set of subsidiaries. At some stage in the MNEs life cycle, the MNE may choose to take advantage of the financial benefits of setting up a tax haven subsidiary. This could be prior to the conventional investment overseas or it could be at a later date. Once the tax haven has been set up, what I call "shadow resource flows" can be shifted between the tax haven subsidiary and the set of

conventional overseas subsidiaries. These flows can be seen by shadow-resource flows "*b*" and "*d*" in Figure 1 which are equal to the sum of shadow resource flows from the set of subsidiaries. Furthermore (not shown on the diagram), these flows may end up back in the parent firm's location of origin if the tax rules change i.e. there is a repatriation tax holiday (Bloink, 2011, Kyj & Romeo, 2015). An example of a shadow resource flow could be the use of an intangible asset such as intellectual property like a brand or business process. Ownership of the intangible is booked into the tax haven, and the conventional subsidiary has to pay a royalty fee to utilise the intellectual property. Hence, profits are shifted from the conventional subsidiary in the high-tax location to the tax haven subsidiary in the low tax location. This is shown by capital flow "*c*" in Figure 2 which is equal to the sum of all the profit shifting from each of the conventional subsidiaries. A classic example of this type of structure is that of Starbucks. In 2012 it was revealed that though Starbucks had sales worth £1.2 billion in the United Kingdom in the 3 years preceding 2012, the company paid zero income tax, as they reported zero profits. This was made possible by using practices such as transfer pricing, by registering patents with a subsidiary in a low tax jurisdiction outside of the UK and then paying royalty payments to it, and by paying interest on loans; basically through a robust profit shifting structure (Campbell & Helleloid, 2016).

So how does this simple profit shifting structure relate to the key research question of this paper? Our focus is on the complementary relationship between the use of tax haven subsidiaries and investment in overseas non-tax haven subsidiaries that are owned in order to conduct conventional FDI. In figure 2, the arrow at the top of the figure shows the degree of market imperfection and institutional weakness as posited by Buckley, Sutherland, Voss and El-Gohari (2015). As we move eastwards, this degree is increasing i.e. as market imperfections and

institutional weakness increase, firms are more likely to undertake FDI with a physical presence as opposed to running joint ventures, licensing or simply exporting (Puck et al, 2009). Hence, it is plausible to argue that box 2 contains a continuum of foreign subsidiaries, controlled by the parent and ranked in terms of the level of economic development of the location in which they are based. For instance, a UK firm may own a conventional overseas subsidiary in Poland represented by position x and a conventional overseas subsidiary in the Democrat Republic of the Congo represented by position y where we assume that the degree of market imperfection and institutional weakness is such that $y > x$. Therefore, MNEs are more likely to own tax havens, if they have interests in developing economies. This means that capital flows "c" and "d" between the conventional subsidiaries and the tax haven will be much stronger from location y relative to location x. This leads to the first hypothesis:

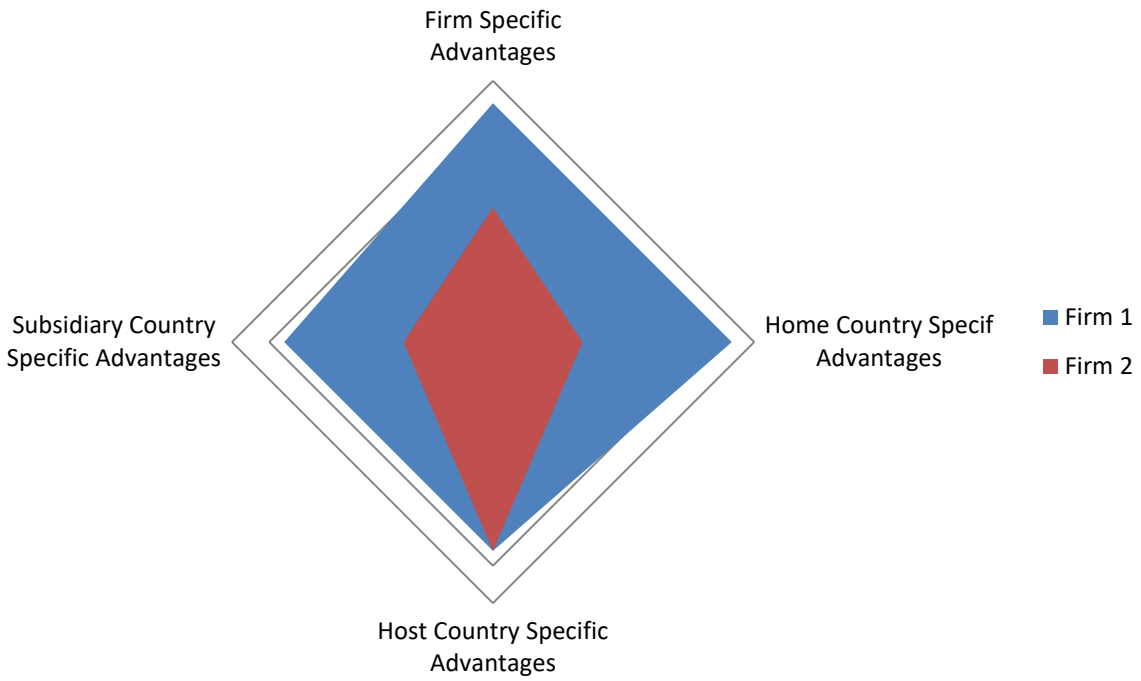
Hypothesis 1: *MNEs who control foreign subsidiaries in developing economies have a higher likelihood of owning a tax haven subsidiary relative to MNEs who only control foreign subsidiaries in developed economies.*

The first hypothesis helps to reaffirm internalisation theory set within this context. It builds upon Buckley, Sutherland, Voss and El-Gohari (2015) by allowing us to econometrically verify its core predication. However, there is already a significant body of literature that provides substantial evidence in favour of internalisation theory (de Oliveira Concer & Turolla, 2013). Hence, I build upon this first hypothesis by adopting a more nuanced focus that allows us to interpret our findings in a different way and moves away from the Buckley framework. The internalisation perspective that relies on transactions cost economics (Oxelheim et al, 2001,

Rugman, 2010) and market imperfections as the key driver of FDI is somewhat all encompassing and can become quite misleading. It explains very well why FDI occurs but does not offer a normative perspective as to whether the FDI flows are welfare enhancing or detrimental. Under normal circumstances, IB scholars typically view FDI as being positive in terms of economic well-being. There are a number of studies that investigate the causal mechanisms between FDI and economic growth (Moudatsou & Kyrkilis, 2011.). However, in this context, where FDI flows are being routed in to and out of tax havens is it simply enough to say that the casual mechanism of this is a market imperfection? The market imperfection could be related to how a developing country has developed its corporate tax regime. As is well known in the public economics literature, all taxes have a tendency to result in deadweight loss and hence the market imperfection in this context is the result of a tax regime that has been designed to collect revenue to finance public goods.

The contention in this thesis is that the use of tax havens is not confined as a response to the problem of market imperfection, rather it is, especially in the context of the developing world, a response to an opportunity.

Figure 3 **:Plot for tax haven FDI of two firms with different FSAs, Home-CSAs & Subsidiary-CSAs. Host country here refers to tax havens.**



Consider figure 3 that plots the propensity of two MNEs investing in a tax haven. The host country here is the tax haven. The advantages offered by the tax haven to either MNE are the same: low tax rate and secrecy. However, the likelihood of investing in the tax haven depends on other factors as well; home country advantages, firm specific advantages (Jones & Temouri) and, I argue, subsidiary country advantages.

In layman's terms, tax havens are only attractive to firms that can move untaxed capital into tax havens. Moving capital without taxation could be harder in some countries compared to others. The OECD has been working for over two decades to combat what it perceives as the harmful effect of tax havens. The OECD's efforts in this regard can be traced back to 1998 with the OECD Harmful Tax Competition report (Kurdle 2008). Since 2002 the OECD has been encouraging Tax Information Exchange Agreements (TIEAs) between its member states and tax

havens in order to facilitate the exchange of tax information. Bilicka & Fuest (2014) found that tax havens were indeed signing the TIEAs with OECD countries they had strong links with, noting that tax havens do not systematically undermine tax information exchange by signing TIEAs with irrelevant countries. The OECD has also focused on transfer pricing, with the transfer guidelines and agreement among member states over the arm's length principle. Other efforts focused on combating tax base erosion and profit shifting (BEPS) are only just coming into effect but point to the determination of the OECD in this regard. BEPS particularly focuses on the tax planning strategies that exploit gaps and mismatches in tax rules across jurisdictions that allow firms to artificially shift profits to low or no tax jurisdictions.

Much of the developing world outside the OECD is far behind when it comes to battling profit shifting, transfer pricing etc. In fact, the first set of transfer pricing guidelines for developing country tax authorities was published by the UN only in 2013 and a second one issued in 2017 (United Nations, 2013, 2017). Thus the opportunity to shift profits from a country outside the OECD must be much greater than from countries inside the OECD. Hitherto increasing the likelihood a MNE operating outside the OECD uses a tax haven. The weakness in institutions discussed earlier is not necessarily confined to weak capital controls of individual states, quality of governance or corruption, but in the context of tax havens more relevant are larger bilateral TIEAs and multinational organisations like the OECD.

Over recent decades, some of the weakest economies in the world – notably Sub-Saharan Africa - have experienced significant outflows of foreign capital into Western financial centres. Ndikumana and Boyce (2018 and 2010) calculate capital flight for 30 sub-Saharan African countries from 1970-2015 and find that total capital flight amounted to 1.4 trillion US dollars

over this period, far exceeding the stock of debt owed by these countries as of 2015 ($496.9 billion). They go on to point out these countries lose more through capital flight than they receive in the form of foreign aid. Furthermore, they state that "promoting international cooperation to lift the veil of secrecy in offshore banking jurisdictions" would go a long way to curtail future capital flight. Hence, there seems to be a strong association between countries that experience significant capital flight and tax haven use. This is not necessarily to say that the capital flight is completely attributable to MNEs. Many nations suffer from corruption and much of the money going out could be in the form of bribes or rent extraction by local elites.

However, what is clear is that capital flight is indicative of the opportunity present to make use of tax havens. This is especially true for unrecorded capital flight, which avoids taxation. It is this phenomenon that MNEs, who operate across borders and move capital frequently, must view as an opportunity but has not been investigated. If an MNE operates in a country associated with heavy unrecorded capital flight, it is presented with an opportunity to shift profits out much more easily than it would in an OECD country with strong regulations and low unrecorded flight. But for MNEs based in the developed world, shifting untaxed profit to their high tax home countries would only result in taxation in said country. This would defeat the purpose of profit shifting. In order to keep the profits untaxed, they need to move them into a tax haven,

As far as I am aware, estimates of the complementary relationship between MNEs investing in countries associated with capital flight and their use of tax havens are non-existent in the literature. We simply do not know whether the propensity of MNEs to use tax havens is stronger when MNEs concurrently decide to invest in incredibly weak economies where capital can easily

flow out. Hence, our dataset allows us to shed light on this phenomenon and offer an explanation of this type of flow. Thus, hypothesis 2 examines the complementary relationship between the use of tax havens and, at the same time, undertaking FDI into countries that experience significant capital flight.

> **Hypothesis 2**: *The likelihood of owning a tax haven subsidiary increases if an MNE controls subsidiaries in countries associated with a significant degree of capital flight*

4.4 Data & Methodology

The primary source of data for this study is the *ORBIS* database published by Bureau van Dijk. *ORBIS* is a firm level data set that contains published information on accounts, financials, ownership and location of companies from all across the world. Furthermore, the database includes the number and location of all the owned subsidiaries for each firm. This is valuable as it allows us to map the operations of MNEs across the globe and allows us to identify investments into locations classified as tax havens. The secrecy provisions in tax havens make it hard to trace subsidiaries or any companies incorporated there, not to mention their financial details. The geographical identification of subsidiaries provided by the data from *ORBIS* thus presents one of the best and only ways to shed light on this type of activity.

For the purpose of this study, the dataset includes MNEs from the following 19 developed countries: Australia, New Zealand, Canada, United States, United Kingdom, Germany, Austria, Japan, Denmark, Sweden, Norway, Iceland, France, Greece, Portugal, Italy, Belgium, Netherlands and Finland . An MNE is defined as a firm with at least a 50% stake in a

foreign enterprise. The data consist of an unbalanced panel for the years 2009 to 2017 and the dataset consists of over 149,000 observations across 34,000 MNEs.

Table 9 : MNEs distribution by home country

Origin Country	Number of Parent MNEs
Austria	1,160
Australia	516
Belgium	1,680
Canada	105
Germany	4,126
Denmark	701
Spain	3,956
Finland	899
France	4,129
Great Britain	1,850
Greece	214
Iceland	43
Italy	7,960
Japan	1,867
Netherlands	863
Norway	420
New Zealand	27
Portugal	832
Sweden	1,316
US	1,383
Total	34047

Source: *ORBIS*.

4.4.1 Dependent Variable: Defining tax havens

Defining which counties are classified as tax havens is not straightforward. In their book *Tax Havens: How Globalization Really Works*, Palan et al (2010:8) define tax havens as ‘‘places or countries that have sufficient autonomy to write their own tax, finance, and other laws and regulations. They all take advantage of this autonomy to create legislation designed to assist non-resident persons or corporations to avoid the regulatory obligations imposed on them in the

places where those non-resident people or corporations undertake the substance of their economic transaction.''

Tax havens are, first and foremost, legal entities; countries, cities, or states, that have the authority to make their own laws, specifically tax laws. These entities thus have legal control or jurisdiction over certain geographical areas that they use to offer individuals and corporations incentives for investment. The incentives come in a number of ways, the most significant of which are low tax rates on mobile capital and the provision of secrecy (Palan et al., 2010).

The literature so far has focussed more on nominal or low tax offerings by jurisdictions, and perhaps overlooked secrecy provisions when defining tax havens. This paper will attempt to correct this oversight.

Researchers that have taken a conservative approach include Hines & Rice (1994) and Desai et al. (2006b) who talk of "dot tax havens"; geographically small, isolated, often island economies that thrive as financial hubs with little indigenous population or industry. Cayman Islands, Andorra, Monaco, Seychelles etc. These are in contrast to the Big 7; Hong Kong, Ireland, Switzerland, Liberia, Lebanon, Singapore and Panama, all with populations over 2 million and significant indigenous economic activity. Jones & Temouri (2016) stick with the "dot tax havens" in their investigation on market orientation and its effects, as that allows for looking at investments inarguably designed for tax avoidance.

In order to capture a broader picture, we consider two more categories; the Big 7 tax haven - Switzerland, Ireland, Hong Kong, Liberia, Lebanon, Panama and Singapore – and the European Union's list of non-cooperative jurisdictions for tax purposes (European Council, 2017; 2019). The European Union's list of non-cooperative jurisdictions for tax purposes is an important resource because it identifies countries that administer harmful preferential tax regimes, don't apply BEPS minimum standards or are lacking in terms of automatic exchange of information agreements.

Thus, for the purposes of this paper we utilise 4 variants of tax havens. First is the list of dot tax havens used in previous studies, most recently Jones and Temouri (2016); second is a definition that also includes the EU list of non-cooperative jurisdictions in addition to the dot tax havens; the third combines the Big 7 with the dot tax havens and lastly we have a measure that

combines all 3 definitions. The jurisdictions that fall in each of the groups are laid out in detail in table 10.

Table 10 Tax Haven Definitions

Jones & Temouri (2016) Dot Tax Havens	EU Non-Cooperative Jurisdictions	Hines & Rice Big 7
Andorra	Bahrain	Hong Kong
Anguilla	Barbados	Ireland
Antigua	Belize	Lebanon
Barbados	Grenada	Liberia
Bahrain	Guam	Panama
Bermuda	Macao SAR	Singapore
Bahamas	Marshall Islands	Switzerland
Belize	Mongolia	
British Virgin Islands	Namibia	
Cayman Islands	Palau	
Cook Islands	Panama	
Cyprus	St Lucia	
Isle of Man	Samoa	
Jersey	Trinidad & Tobago	
Gibraltar	Tunisia	
Grenada	UAE	
Guernsey		
Liechtenstein		
Luxembourg		
Macao		
Malta		
Monaco		
Netherlands Antilles		
Saint Kitts and Nevis		
Saint Lucia		
Saint Vincent		
Seychelles		
Turks and Caicos Islands		

These are binary dummies; the variable equals 1 for any firm that owns a subsidiary in the list of tax havens outlined above, and zero otherwise. The data is contemporaneous 2009 to

2017 and provides the records of subsidiary ownership at each point of time in the data set. The dependent variables are thus time variant across the sample. That is to say, if an MNE were to close a tax haven subsidiary at one point in time or open a new one, the tax haven dummy would switch to represent that change.

4.4.2 Explanatory Variables:

Previous literature identifies a number of variables that have explanatory power in explaining the determinants of tax haven use. Taylor, Richardson & Taplin (2015) utilize data based on 200 Australian firms. They find intangible assets, withholding taxes and multi-nationality to have significant explanatory pwer. Graham & Tucker (2006) relate firm size & profitability with the utilization of tax havens. Desai, Foley, & Hines (2006a) focus on American MNEs and find that firms with large R&D operations will be more likely to use tax haven affiliates while intra-firm trade exhibits a positive relationship with tax haven usage.

With these studies as guidelines, the yearly financial accounts provided by *Orbis* give us a number of our control variables, such as turnover, number of foreign subsidiaries and total assets to capture firm size and internationalisation. Also accounted for is firm age, intangible fixed assets & longterm debt. It is important to point out that this data is for the parent only and not the foreign subsidiaries. I also use country level data by incorporating top statutory and effective corporate tax rates from the Oxford Centre for Business Taxation. Effective tax rates are lower than statutory rates. Overall tax rates show a downward trend across the spectrum over the study's time period which is indicative of tax competition between OECD memebers.

NACE two-digit industry codes are relied upon to create broad sector categorizations to control for unobserved heterogeneity. This is to capture the effect of industry type and technology intensity. The categories are as follows: high technology manufacturing, medium high-technology manufacturing, medium low-technology manufacturing, low technology manufacturing, knowledge-intensive services, and less-knowledge intensive services.

4.4.3 The developed & developing world

In order to classify countries as developed or developing, the study looks at categorizations both economic and institutional. For this we will rely on the United Nations and the Organization for Economic Co-operation & Development. The World Economic Situation and Prospects(WESP) is a joint product of the United Nations Department of Economic and Social Affairs (UN/DESA), the United Nations Conference on Trade and Development (UNCTAD) and the five United Nations regional commissions (Economic Commission for Africa (ECA), Economic Commission for Europe (ECE), Economic Commission for Latin America and the Caribbean (ECLAC), Economic and Social Commission for Asia and the Pacific (ESCAP) and Economic and Social Commission for Western Asia (ESCWA))

The 2014 WESP country classifications reflect the basic economic conditions in the country and serve as a reliable marker for development for the time period used in the data set of this paper. In order to make a more deliberate classification I rely on the OECD.

Thus, the OECD and the steps it has taken reflect the kind of institutional strength and cross border transparency lacking in the developing world, and which MNEs can take advantage of for the purposes of profit shifting to tax havens. Keeping this in mind, we classify the

developed world countries as those with full membership of the OECD and are also classified as developed world by the UN's 2014 WESP country classifications.

The countries that qualify as developed for this paper are: Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, the Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Turkey, the United Kingdom, and the United States.

With this classification as the template, I create a dummy variable called "*Developed*" to represent the presence of subsidiaries of MNEs in the developed world. If an MNE has a subsidiary in the developed world the "*Developed*" variable will be set equal 1 and otherwise 0. The developing world is represented by regional dummies created for Africa, Oceania, Western Europe, Eastern Europe, the Middle East, North America, South & Central America, South & Central Asia and East Asia. This is done by tracking in which countries each MNE owns a subsidiary. The binary dummy with a value of 1 & 0 signals the presence/absence of a subsidiary in said region(s).

Both the developing world geographic variables as well as the developed world "*Developed*" variable exclude tax havens. This means that if an MNE operates in country classified as a tax haven inside Africa, and not in any other country in Africa, then the Africa dummy for said MNE will have the value of zero. Similarly, the developing world regional dummies exclude OECD member developed state from each region pool. For example, if an MNE operates a subsidiary in Japan, an OECD country, but not anywhere else in East Asia, the

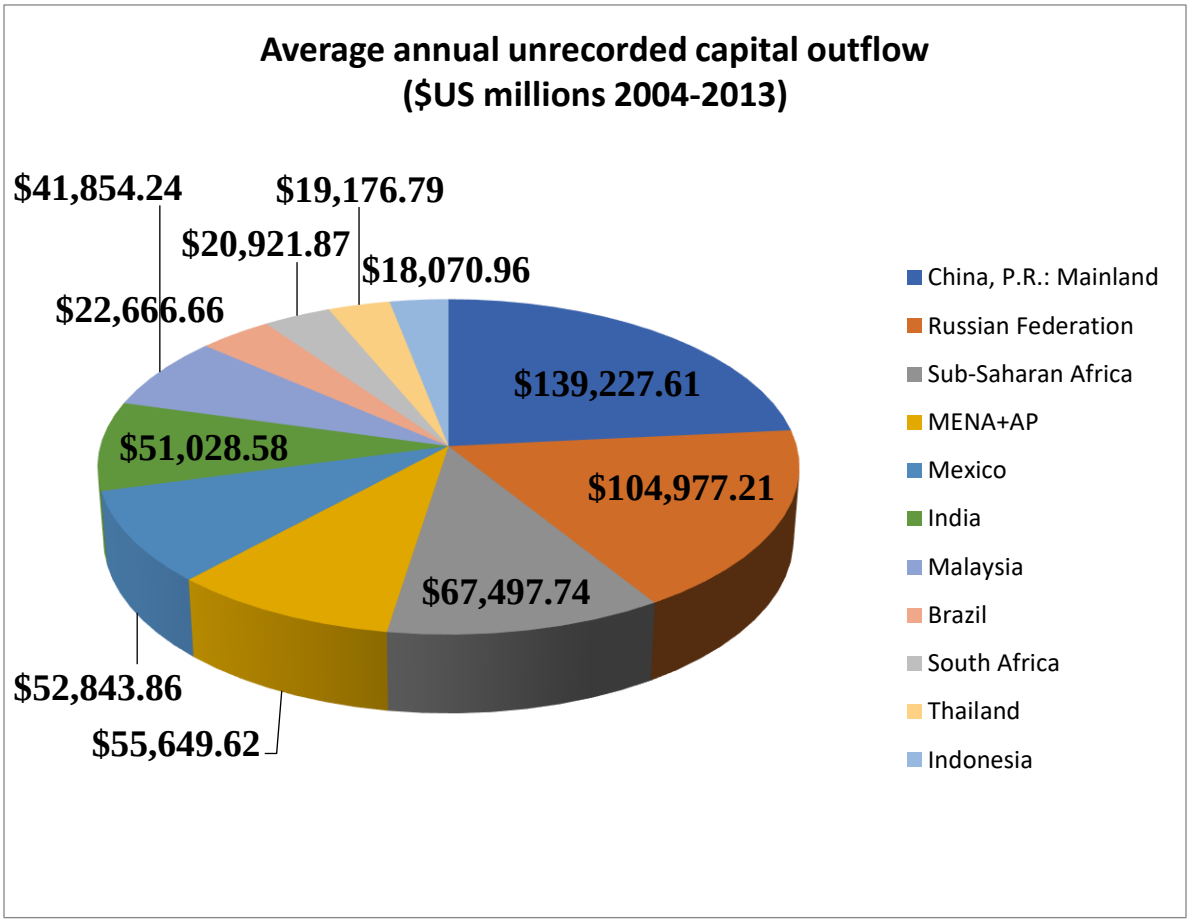
East Asia dummy for said MNE will have a value of zero. Table 20 in the appendix section gives a regional breakdown.

4.3.4 Unrecorded capital flight

Global Financial Integrity (GFI) is a non-profit Washington DC-based research and advisory organization, working on the analyses of illicit financial flows and promoting pragmatic transparency measures in the international financial system as a means to global development and security. GFI put out data as well as periodic reports for what they regard "illicit financial flows" from the developing world. This paper makes use of the data from two GFI reports, *Illicit Financial Flows from Developing Countries: 2004-2013* and *Illicit Financial Flows to and from Developing Countries: 2005-2014*.

The data captures unreported financial outflows from the developing world by obtaining IMF data regarding balance of payments of each country and the Directions of Trade Statistics (DOTS), enabling analysis of discrepancies. World Bank data on debt is taken into account for the analysis of broad capital flight. Their calculations put the total unrecorded capital flight from the developed world over the 10-year period (2004-2013) to roughly $7.8 trillion, peaking in 2013 at $1.1 trillion. The figures reflect a 6.5% increase per annum.

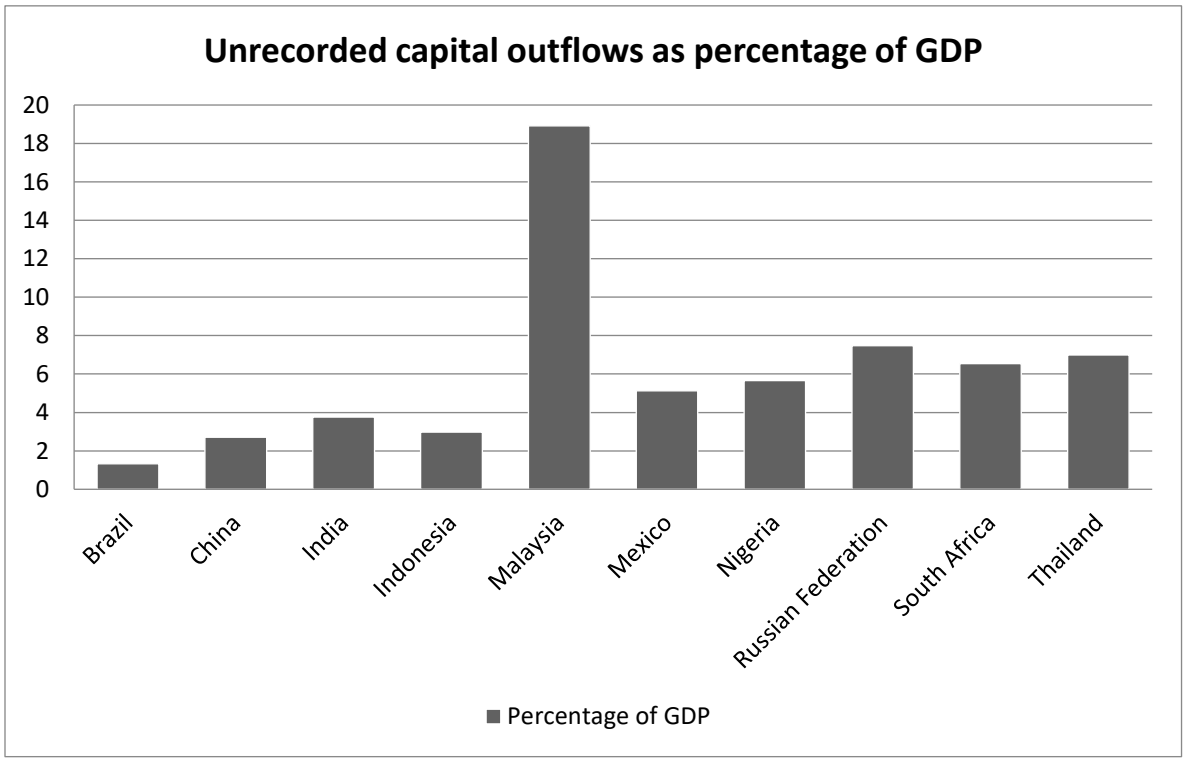
Figure 4: **Largest developing world entities by unrecorded capital outflows**



This paper uses the GFI data to form a ranking of average annual unreported capital flight from developing countries. The countries are then divided into 3 groups. The "Capital Flight Top 10" is the top ten countries by average capital flight. The "Capital Flight 11-30" is the next 20 countries and the "Capital Flight 31-50" is the group of the next 20 countries rounding up the top 50. I then create binary dummy variables that record the presence of an MNE subsidiary in each group. This will allow us to capture what effect having a subsidiary in a large capital flight group country has on an MNE's propensity to use a tax haven.

These measures are targeted at capturing total capital flight, but another way to look at the data, and institutional weakness, is by calculating capital flight as a percentage of Gross Domestic Product(GDP). Figure 3 captures the 10 largest regions and countries by average unrecorded capital flight between 2004 and 2013. Naturally, a number of large economies, such as China, India and Brazil, feature in the discussion. However, some unexpected countries, such as Malaysia, also make the cut. In 2013, Brazil's economy was over 5 times the size of Malaysia's, yet unrecorded capital flight from Malaysia is almost twice as much as from Brazil.

Figure 5: Average annual unrecorded capital outflows as percentage of GDP (2004-2013)



This means that developing world countries do not suffer a uniform level of unrecorded capital outflows, and the full effect cannot be captured by measuring total outflows alone. In the

case in question, Brazil loses only 1.3% of its GDP as unrecorded capital outflows, whereas the figure stands at 18.9% for Malaysia. I use GFI data to form a ranking of countries based on unrecorded capital outflows as a percentage of their GDP, taking an average figure for each country from 2004 to 2013. This allows for a new classification that gives us 4 new variables. These measure the presence of MNE subsidiaries in developing countries with unrecorded capital flight as a percentage of GDP. Specifically: i) below 2% of GDP; ii) between 2% to 5% of GDP; iii) between 5% to 10% of GDP; and iv) above 10% of GDP.

4.4.5 Empirical Model

Jones & Temouri (2016) use a probit model for their estimation of tax haven determinants when focusing on the Varieties of Capitalism. This study uses the same *ORBIS* database employed in that paper while increasing the number of binary dummies employed. Thus the data lends itself to econometric analysis using a probit model, which is consistent with the studies undertaken in the past. For this study I use three variants of the same econometric model, the first one of which deals with hypothesis 1 as follows:

$$\text{Tax Haven} = \beta_0 + \beta_1 \textit{Developed} + \beta_2 \text{Region dummy} + \beta_3 \text{FSA}_{kit} + \beta_4 \text{Sector} + \varepsilon_{it} \qquad (1)$$

where *Tax Haven* refers to the dependent variable which takes the value of 1 if an MNE owns a tax haven subsidiary and 0 otherwise. *Developed* represents the presence of developed world subsidiaries, again a dummy with values either 1 or 0. *Region dummies* are binary

dummies to measure presence of subsidiaries of an MNE in North America, South & Central America, South & Central Asia, East Asia, Oceania, Middle East, Western Europe and Eastern Europe. The vector *FSA* contains firm specific independent variables identified in earlier studies (Jones & Temouri, 2016; Graham & Tucker 2006). These include intangible assets, firm age, total assets, turnover, no of subsidiaries & longterm debt. The *SECTOR* vector refers to industry sectors that cover High tech manufacturing, Medium/high tech manufacturing, Medium/low tech manufacturing, low tech manufacturing, Knowledge intensive & less knowledge intensive.

The model above is adjusted twice for the 2nd hypothesis, with the first iteration outlined as:

$$\text{Tax Haven} = \beta_0 + \beta_1 \textit{Developed} + \beta_2 \text{Capital Flight} + \beta_3 \text{Region dummy} + \beta_4 FSA_{kit} + \beta_5 \text{Sector} + \varepsilon_{it} \quad (2)$$

Tax Haven is again the binary variable measuring presence of a subsidiary in tax haven and new *capital flight* dummies are introduced, corresponding to presence of subsidiaries in high capital flight risk countries. As outlined in the data section these variables measure presence of subsidiaries in 3 categories of high unrecorded capital flight countries. Region dummies are adjusted to take this into account, leaving just "rest of world" and "rest of Africa" variables. For a second iteration of hypothesis 2 I adjust the equation as follows:

$$\text{Tax Haven} = \beta_0 + \beta_1 \textit{Developed} + \beta_2 \text{GDP\%} + \beta_3 FSA_{kit} + \beta_4 \text{Sector} + \varepsilon_{it} \quad (3)$$

Regional dummies are completely eliminated in the model. Instead developing world countries are classified by ranking unrecorded capital outflows as a percentage of their GDP. The

GDP% variables record the presence of subsidiaries in countries where unrecorded capital outflows account for i) above 10% of GDP ii) 5-10% of GDP iii) 2-5% of GDP and iv) below 2% of GDP. *OECD* variable and the FSA, SECTOR vectors are the same.

4.5 Results

The empirical results (marginal effects) are shown in Tables 11, 12 and 13. Each table has four columns within it corresponding to different tax haven dependent variables, starting with the narrowest definition of a tax haven and finishing with the broadest definition of a tax haven. Table 11 specifically tests hypotheses 1, whereas Tables 12 and 13 investigate the impact of capital flight and hence test hypothesis 2.

First to be tested is hypotheses 1, which predicts that parent firms who own subsidiaries in the developing world will have a greater propensity to use tax havens. This is operationalised by including dummy variables for a specific region where a parents owns subsidiaries. As can be seen for each tax haven measure in columns 1-4 of table 11, parent firms who own a subsidiary in a developed country compared to not owning a subsidiary in a developed country are much less likely to own a tax haven subsidiary. The magnitude of this effect gets larger as the tax haven measure shifts from the narrow definition to the broad definition. Hence, this represents our first part of the evidence that MNEs who only own subsidiaries in the developed world are less likely to use tax havens.

The other regional dummies are of even greater interest and specifically test hypothesis 1. The dummy variable for Africa is positive and significant. Using the narrowest definition of a tax

haven it would appear that parent firms who own a subsidiary in Africa have a 5.3 % greater probability of utilising a tax haven compared to firms who do not own a tax haven subsidiary. Interestingly, the magnitude increases to 11.4 % when the measure for tax havens includes the EU blacklisted jurisdictions but falls when utilising the broadest measure of tax havens in column 3. This suggests that the ownership of subsidiaries in Africa is strongly correlated with the most secretive tax haven locations – the so-called "dot" tax havens and the tax havens identified by the EU as being the most non-cooperative in terms of transparency.

Similar evidence can be seen for the other regional dummy variables for developing countries but the magnitude of the effect across the tax haven measures is not quite as large compared to Africa. One exception to this however, is the ownership of subsidiaries in Oceania. However, this can perhaps be explained as an outlier due to the fact that subsidiary ownership in this region comprises a very small part of the sample and the possibility that these locations themselves are tiny island economies, arguably working as auxiliaries to neighbouring havens. In summary, therefore, our results indicate quite strong support for hypothesis 1 in that it appears that subsidiary ownership in the developing world, which is characterised by market imperfections and weaker institutions, is strongly correlated with the ownership of tax haven subsidiaries.

Table 11: OECD versus Rest of the world

Variables	Dot Tax Havens	Dot + EU Non-Cooperative	Dot + Big7	Dot + EU NC + Big7
Developed	-0.0462***	-0.0985***	-0.188***	-0.214***
	(0.00272)	(0.00356)	(0.00459)	(0.00399)
Africa	0.0526***	0.114***	-0.0243***	0.0283***
	(0.00266)	(0.00384)	(0.00588)	(0.00612)
East Asia	0.00660***	0.0153***	0.171***	0.160***
	(0.00189)	(0.00258)	(0.00476)	(0.00478)
South & Central Asia	0.0165***	0.0335***	0.110***	0.101***
	(0.00248)	(0.00341)	(0.00576)	(0.00573)
Rest of Europe	0.0297***	0.0307***	-0.0556***	-0.0667***
	(0.00191)	(0.00251)	(0.00528)	(0.00511)
Middle East	0.0464***	0.186***	0.0879***	0.0673***
	(0.00439)	(0.0118)	(0.0112)	(0.0183)
North America	0.00955***	0.0520***	-0.0196***	-0.0199***
	(0.00251)	(0.00380)	(0.00674)	(0.00666)
South America	-0.00208	0.0240***	-0.0173***	-0.0166***
	(0.00198)	(0.00281)	(0.00499)	(0.00499)
Oceania	0.134***	0.177***	0.186***	0.167***
	(0.0142)	(0.0230)	(0.0345)	(0.0361)
Ln Intangible fixed assets	0.00599***	0.00715***	0.0148***	0.0150***
	(0.000366)	(0.000469)	(0.000747)	(0.000738)
Ln Long term debt	0.00537***	0.00605***	-0.00355***	-0.00350***
	(0.000427)	(0.000545)	(0.000827)	(0.000820)
Ln Cash flow	0.0134***	0.0126***	0.0289***	0.0253***
	(0.000758)	(0.000976)	(0.00158)	(0.00155)
Ln Turnover	-0.00639***	-0.00620***	0.0160***	0.0148***
	(0.000739)	(0.000982)	(0.00167)	(0.00163)
Foreign Subsidiaries	0.000900***	0.00179***	0.0133***	0.0145***
	(2.99e-05)	(7.91e-05)	(0.000512)	(0.000500)
Sector Dummies	Yes	Yes	Yes	Yes
Time Dummies	Yes	Yes	Yes	Yes
Observations	149,244	149,244	149,244	149,244

Note: Each column reports probit regression. The dependent variable is whether a firm owns a subsidiary in a tax haven. Two variations of tax haven dummy. Marginal effects are reported. Period dummies, the constant and the fixed effect coefficients are unreported for brevity. Total long-term debt, turnover, free cash flow and intangible assets are entered as their natural logarithms. Robust standard errors in parenthesis.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

For hypothesis 2 concerning capital outflows, the results also appear to support our hypotheses. The propensity of MNEs to utilise tax havens is increased if they own subsidiaries in countries with high levels of absolute unrecorded capital outflows. However, the results in Table 12 shows a very interesting dynamic in play for the use of particular variants of tax havens. The strongest positive relationship for subsidiaries in the top 10 countries by capital flight is with the Big7 variant of tax havens. This suggests that when investing in these larger economies, such as China, MNEs are more likely to go through the larger "offshore financial centres", for example Hong Kong or Singapore. However, for economies outside the top 50 by absolute capital flight, the strongest marginal effect are associated with the smaller, more secretive locations ((5.6% for dot tax havens and 13.8% for dot + the EU blacklist tax havens).

This dynamic is again highlighted in results reported in Table 13, which look at clusters of countries grouped by capital flight as a percentage of each country's GDP. The highest percentage of GDP outflows are associated most strongly with the smaller and blacklisted tax haven locations(5.1% more likely), meanwhile the inclusion of the Big7 produces the strongest relationship with countries in the 2-5% of GDP outflow range. This range again includes larger economies like India and China, while the above 10% range has smaller, less often poorer countries such as Laos and The Gambia (for a full list see appendix Table 21 and 20).

In terms of our control variables, the results are again consistent with earlier studies in that intangible assets and size, measured by total number of subsidiaries and assets, show a positive relation with investment in tax havens. Our results also confirm a positive relationship between knowledge-intensive MNEs and the likelihood of investing in tax havens.

Table 12 : Unrecorded capital outflows (Absolute)

Variables	Dot Tax Havens	Dot + EU Non-Cooperative	Dot + Big7	Dot+EU NC + Big7
Developed	-0.0437***	-0.0915***	-0.194***	-0.220***
	(0.00273)	(0.00367)	(0.00463)	(0.00397)
Capital Flight Top 10	0.00258	0.0131***	0.0637***	0.0501***
	(0.00172)	(0.00235)	(0.00440)	(0.00432)
Capital Flight 11-30	0.0190***	0.0689***	0.0373***	0.0558***
	(0.00253)	(0.00372)	(0.00566)	(0.00555)
Capital Flight 31-50	0.0422***	0.0458***	-0.0746***	-0.0777***
	(0.00221)	(0.00274)	(0.00507)	(0.00498)
Rest of Africa	0.0568***	0.138***	-0.0569***	-0.00436
	(0.00369)	(0.00678)	(0.00797)	(0.00964)
Rest of World	0.0163***	0.0517***	0.0514***	0.0390***
	(0.00239)	(0.00345)	(0.00599)	(0.00590)
Ln Intangible fixed assets	0.00660***	0.00840***	0.0151***	0.0153***
	(0.000370)	(0.000473)	(0.000744)	(0.000734)
Ln Long term debt	0.00520***	0.00616***	-0.00453***	-0.00449***
	(0.000428)	(0.000545)	(0.000824)	(0.000808)
Ln Cash flow	0.0137***	0.0133***	0.0300***	0.0266***
	(0.000765)	(0.000984)	(0.00158)	(0.00154)
Ln Turnover	-0.00615***	-0.00674***	0.0190***	0.0176***
	(0.000749)	(0.000987)	(0.00168)	(0.00163)
Foreign Subsidiaries	0.000978***	0.00200***	0.0141***	0.0152***
	(3.19e-05)	(8.50e-05)	(0.000476)	(0.000432)
Sector Dummies	Yes	Yes	Yes	Yes
Time Dummies	Yes	Yes	Yes	Yes
Observations	149,244	149,244	149,244	149,244

Note: Each column reports probit regression. The dependent variable is whether a firm owns a subsidiary in a tax haven. Four variations of tax haven dummy. Marginal effects are reported. Period dummies, the constant and the fixed effect coefficients are unreported for brevity. Total long-term debt, turnover, free cash flow and intangible assets are entered as their natural logarithms. Robust standard errors in parenthesis.
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 13: Unrecorded Capital Outflows (GDP %)

Variables	Dot Tax Havens	Dot + EU Non-Cooperative	Dot + Big7	Dot + EU NC + Big 7
Developed	-0.0456***	-0.0966***	-0.184***	-0.200***
	(0.00276)	(0.00361)	(0.00464)	(0.00426)
Above 10% GDP	0.0280***	0.0511***	0.141***	0.130***
	(0.00271)	(0.00375)	(0.00618)	(0.00620)
5% to 10% GDP	0.0236***	0.0390***	-0.000286	-0.00154
	(0.00196)	(0.00261)	(0.00168)	(0.00168)
2% to 5% GDP	0.0205***	0.0370***	0.0501***	0.104***
	(0.00180)	(0.00237)	(0.00428)	(0.00423)
Below 2%	0.00890***	0.0452***	-0.0247***	-0.0230***
	(0.00193)	(0.00272)	(0.00492)	(0.00487)
Ln Intangible fixed assets	0.00647***	0.00796***	0.0157***	0.0162***
	(0.000369)	(0.000468)	(0.000742)	(0.000737)
Ln Long term debt	0.00534***	0.00590***	-0.00471***	-0.00467***
	(0.000428)	(0.000540)	(0.000824)	(0.000820)
Ln Cash flow	0.0129***	0.0121***	0.0312***	0.0276***
	(0.000759)	(0.000964)	(0.00158)	(0.00155)
Ln Turn over	-0.00702***	-0.00729***	0.0195***	0.0169***
	(0.000741)	(0.000968)	(0.00168)	(0.00164)
Foreign Subsidiaries	0.00107***	0.00212***	0.0132***	0.0137***
	(3.17e-05)	(8.32e-05)	(0.000522)	(0.000516)
Sector Dummies	Yes	Yes	Yes	Yes
Time Dummies	Yes	Yes	Yes	Yes
Observations	149,244	149,244	149,244	149,244

Note: Each column reports probit regression. The dependent variable is whether a firm owns a subsidiary in a tax haven. Four variations of tax haven dummy. Marginal effects are reported. Period dummies, the constant and the fixed effect coefficients are unreported for brevity. Total long-term debt, turnover, free cash flow and intangible assets are entered as their natural logarithms. Robust standard errors in parenthesis.
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

4.6 Discussion:

In summary, our results consistently show that firms investing within the OECD developed world countries are less likely to invest in tax havens while firms investing in developing world countries are more likely to do the same. Developing parts of the Asia and especially Africa are the regions where investment by MNEs most strongly increases the likelihood of investment in a tax havens. This is explained by looking at unrecorded capital outflows from these regions, with Asia characterised by countries with both high total unrecorded capital outflows (China, Indonesia, India), as well as countries where unrecorded capital outflows form a large percentage of the GDP (Malaysia, Thailand). Meanwhile Africa is the region most vulnerable to unrecorded capital outflows, with sub-Saharan Africa as a region posting average unrecorded capital outflows that are 6.1% of the region's GDP (2004–2013), which suggests a relationship with the high propensity of MNEs investing in Africa to also utilise tax havens.

Also significant are estimates for developed world countries which consistently return significant, negative marginal effects. These findings could suggest that some of the measures the OECD has taken as a whole, and perhaps measures taken by tax authorities of individual developed countries, have been somewhat successful in discouraging tax haven utilisation by MNEs operating in those jurisdictions.

Inclusion of the big7 tax havens in the tax haven dummy are associated more strongly with subsidiaries in larger economies. An argument could be made that they just serve as facilitation locations or gateways to certain regions in the world, but the evidence also favours the suggestion that these locations serve as nodes to channel funds out and into the more secretive tax havens when firms are dealing with larger economies with arguably better developed institutions. In addition, if the Big7 do serve as regional headquarters that should also then

translate to OECD developed countries, especially for the Big 7 countries based in Europe or North America. This though does not hold. Instead of reducing the size of the negative marginal effects between dot tax havens and developed world subsidiary presence (around -4.5%), the inclusion of the Big 7 further expands the negative effect in all 3 specifications (up to -22.4%).

Another fascinating finding concerns the Africa region. Owning a subsidiary in the Africa increases the likelihood of owning a subsidiary in a "dot" tax haven, the effect increases with the inclusion of EU black-listed jurisdictions, but the effect is reduced with the inclusion of the Big7. Does this suggested African regimes are so weak MNEs don't need to operate through one of the larger havens to siphon out the profits? There certainly is a location bias for the use of tax havens by MNEs.

The implications here are twofold. First, the larger "tax havens" do indeed act as tax havens utilised by MNEs to shift profits. Second, the institutional strength of developed world governments, and the efforts made by the OECD for transparency and exchange of information, discourage MNEs from using tax havens at least when they are operating within the OECD members. Consider the case of Apple. Apple's $214.9 billion held offshore has been taxed at a paltry 4.6%, and if they were to bring the capital to the United States, $65.4 billion would be taxed at a rate of 30.4%. However, that is income that Apple derived from financial activity outside of the United States. On operations in the United States, Apple reserved $15.8 billion in income taxes at an effective tax rate of 25.8% (Helman, 2017). Indeed, Zucman (2015) says that 55% of foreign profits of US firms are stashed in tax havens.

This behaviour suggests that capital held in tax havens by DMNEs is actually generated in economic activities in developing world countries. When our results, which show DMNEs utilise

tax havens more when investing in developing countries with a large unrecorded capital flight problem, are looked at as part of this larger puzzle, an argument can be made that tax havens serve as tools for wealth extraction from these countries.

Chapter 5: Conclusion

The origin & utilization of tax havens has been traced as far back as the period between the first & second World Wars (Zucman et al., 2016) and today they are a key cog in the globalised business world. World organisations like the OECD, the EU and the UN have all been paying attention to tax havens and formulating policy to regulate, and in some instances combat, the impact havens have on the modern world. Tax havens now occupy space in many domestic political debates as well, especially since the release of the Panama Papers, often in the centre of arguments against graft or for fair taxation.

Given their importance & relevance in the global business & political world, it can be argued that not enough attention has been paid to tax havens in academic literature. Tax havens by their nature, often geographically inaccessible to large numbers of the human population and shrouded in mystery because of legal measures to ensure opacity, are difficult to investigate. Regardless of the reasons, academic understanding of how tax havens function & what are the determinants of their use by businesses has much room to expand.

This thesis makes several contributions to that end, providing both theoretical rationale and empirical examination to improve our understanding of determinants of tax haven utilization. Firstly, the results from this thesis suggest a connection between certain corporate governance mechanism and the likelihood of owning a subsidiary in tax havens. The particular variables are ownership concentration & female representation on the board of directors. Ownership concentration has been studies as a determinant for tax avoidance in previous literature (Badertscher, Katz and Rego, 2013; Chen et al. 2010) and in one study as determinant of tax havens (Bird and Karolyi, 2017). Using a "first four" shareholders concentration measure, results in this thesis show a negative relationship between ownership concentration & likelihood of owning a tax haven subsidiary. These results could indicate support for two possible theories. One is that concentrated ownership indicates long term investment or investors who are looking at the longterm health of a firm, and thus less likely to take risky decisions. As tax avoidance, the primary purpose for use of tax havens, can be viewed as a risky choice, with consequences such as fines and loss of reputation, they are less likely to engage in the behaviour. The second theory is Desai and Dharmapala (2006)'s argument of managerial diversion as a cause of tax avoidance, where low ownership concentration would represent weaker checks on managers.

The ownership concentration study is based on the agency theory of corporate governance, whereas the investigation into the role of female members of the board of directors is rooted in the stakeholder theory. The stakeholder theory posits the board of governors as a mechanism of control where different stakeholders, owing to different backgrounds or interests, could manifest in competing forces pulling the firm in a number of directions. Results show a

negative association between the appointment of female members in the board of directors of a firm and the likelihood of owning tax haven subsidiaries. These results build on literature that shows women have different backgrounds, charecteristics and priorities (Eagly and Johnson 1990; Eagly, Johannsen-Schmidt and van Engen, 2003; Carter *et al.*, 2003) compared to men in the board of directors and their presence on the board reduces the tax aggressiveness of the firm (Richardson, Taylor and Lanis, 2016)

The results summarily suggest that corporate governance does have a role in determining firm behaviour with regards to tax haven utilization, the extent and exact nature of the relationship is something that needs further study. These results were limited by the scarcity of data available for board of directors backgrounds, as well as some control variables, therefore it necessitated the large pool of MNEs from 12 developed world economies, with data from developing world economies even more rare. In the future, as developing and developed world economies start reporting data in a more transparent and comprehensive manner, the models in this thesis can be replicated in longitudinal studies that focus on individual countries or even a smaller group of countries. Modelling for individual countries could provide greater insights because behaviours tend to vary in different contexts and cultures. The above suggestions also constitute the principal limitation of the investigation into corporate governance as a determinant for tax haven utilization in this thesis. However, there is still enough empirical evidence to suggest the existence of relationships, and certainly enough to warrant further studies.

The 4th Chapter of the thesis makes significant empirical contributions. The thesis introduces a new variable to the international business literature, the existing subsidiary

locations. Running probit models to estimate likelihood of owning a tax haven subsidiary, results in this thesis show a strong relationship with existing subsidiary locations both positive and negative. These results are very interesting as they show positive relationship for MNEs operating subsidiaries in the developing world, and particularly in the developing world with large incidences of unrecorded capital flight. On the other hand, the results show strong negative association with MNEs operating subsidiaries in the developed world.

This suggests MNEs from the developed world are negatively inclined to use tax havens when operating within the developed world but do so aggressively when operating in the developing world. It can be interpreted that they are taking advantage of weaker institutions or international regulators and financial controls to siphon capital and profits out of developing world countries and stash them in tax havens.

These findings warrant a reset of the debate around both tax havens in 2 substantial ways. First, these findings negate the need or argument for the tax haven driven race to the bottom for tax rates across the developed world (Devereaux, Lockwood and Redoano 2008; Altshuler and Grubert 2006). As MNEs in the developed world are largely using tax havens when operating in the developing world, and thus arguably for extracting profits from the developing world, the change in tax rates at home is not going to influence their decision of using tax havens. Secondly, the debate about bringing tax money "back" into the developed world countries also needs a re-examination. Since findings from this empirical study suggest that MNEs use tax havens when they operate in the developing world, the likelihood that the capital parked in tax

havens, and thus the tax due on them, belongs to the developing world and that is where this capital should go “back” to cannot be understated.

In conclusion, this thesis provides a basis for further examining the link between corporate governance and tax haven utilization, a theoretical extension to examine the international process and empirical grounds for retooling the tax haven debate from one focused on stopping base erosion in the developed world to one concerned with the exploitation of the developing world.

These findings are relevant to policy makers with the OECD and the developed world, as perhaps a basis to rethink the ‘race to the bottom’ tax rates approach. However, their key relevance is to the developing world and the development sector, the UN, the World Bank and the likes as they endeavour to create better economic and governance conditions in countries outside the OECD.

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Appendix

Appendix 1

Table 14: Country by Country Classification

Developed World			
Australia	Germany	France	Norway
Austria	Greenland	Netherlands	United Kingdom
Belgium	Iceland	New Zealand	United States
Canada	Israel	Norway	Switzerland
Denmark	Italy	Portugal	Japan
Finland	Spain	Sweden	Ireland
Developing World			
Estonia	Guinea	Somalia	Congo, Rep.
Czech Republic	Guinea-Bissau	Sudan	Cuba
Korea, Rep.	Haiti	Tajikistan	Djibouti
Kuwait	India	Tanzania	Dominican Republic
Macao, China	Kenya	Timor-Leste	Ecuador
Taiwan, China	Korea, Dem. Rep.	Togo	Egypt, Arab Rep.
Puerto Rico	Kyrgyz Republic	Uganda	El Salvador
Qatar	Lao PDR	Uzbekistan	Fiji
Saudi Arabia	Liberia	Vietnam	Georgia
Slovenia	Madagascar	Yemen, Rep.	Guatemala
Bangladesh	Malawi	Zambia	Guyana

Benin	Mali	Zimbabwe	Honduras
Burkina Faso	Mauritania	Albania	Indonesia
Burundi	Mongolia	Algeria	Iran, Islamic Rep.
Cambodia	Mozambique	Angola	Iraq
Central African Republic	Myanmar	Armenia	Jamaica
Chad	Nepal	Azerbaijan	Jordan
Comoros	Niger	Belarus	Macedonia, FYR
Congo, Dem. Rep.	Nigeria	Bhutan	Moldova
Côte d'Ivoire	Pakistan	Bolivia	Morocco
Eritrea	Papua New Guinea	Bosnia and Herzegovina	Namibia
Ethiopia	Rwanda	Cameroon	Nicaragua
Gambia, The	São Tomé and Principe	Cape Verde	Paraguay
Ghana	Senegal	China	Peru
Serbia	Sierra Leone	Colombia	Philippines
Slovak Republic	Hungary	Sri Lanka	Samoa
South Africa	Kazakhstan	Suriname	Costa Rica
Uruguay	Latvia	Swaziland	Croatia
Venezuela, RB	Lebanon	Syrian Arab Republic	Panama
Ukraine	Libya	Thailand	Poland
Argentina	Lithuania	Tonga	Romania
Brazil	Malaysia	Tunisia	Russian Federation
	Mexico	Turkmenistan	Montenegro
		Bulgaria	Oman
		Chile	
Tax havens			
Switzerland	Bermuda	Isle of Man	St Kitts and Nevis
Malta	Channel Islands	Liechtenstein	St Lucia
Antigua	Cyprus	Luxembourg	St Vincent
Bahamas	Gibraltar	Macao	Turks and Caicos – Islands
Bahrain	Grenada	Netherlands Antilles	

Barbados	Mauritius	Singapore	HongKong
Belize	Cook Islands	Monaco	Andorra

Source: World Bank, United Nations, TJN

Appendix 2A

Technology and knowledge-intensive sectors

Data by sector is collected according to the Statistical classification of economic activities in the European Community - NACE Rev. 2 and aggregated into the agreed Eurostat high technology sectors. These are listed below.

*Table 15: **Classification of manufacturing industries by level of technology intensity***

Level of technology intensity	NACE two digits code	Divisions
High-technology sectors	21	Manufacture of basic pharmaceutical products and pharmaceutical preparations
	26	Manufacture of computer, electronic and optical products
Medium-high technology sectors	20	Manufacture of chemicals and chemical products
	27 to 30	Manufacture of electrical equipment; Manufacture of machinery and equipment n.e.c.
		Manufacture of motor vehicles, trailers and semi-trailers; Manufacture of other transport equipment

Medium-low technology sectors	19	Manufacture of coke and refined petroleum products;
	22 to 25	Manufacture of rubber and plastic products; Manufacture of other non-metallic mineral products; Manufacture of basic metals; Manufacture of fabricated metals products, excepts
	33	machinery and equipment; Repair and installation of machinery and equipment
Low technology sectors	10 to 18	Manufacture of food products, beverages, tobacco products, textile, wearing apparel, leather and related products, wood and of products of wood, paper and paper products, printing and reproduction of recorded media;
	31 to 32	Manufacture of furniture; Other manufacturing

Source: Eurostat-OECD classification of technology-intensive sectors

Appendix 2B

Table 16: Classification of services industries by level of technology intensity

Level of technology intensity	NACE two digits code	Divisions
Knowledge-intensive services	50 to 51	Water transport; Air transport;
	58 to 63	Publishing activities; Motion picture, video and television programme production, sound recording and music publish activities; Programming and broadcasting activities; Telecommunications; computer programming, consultancy and related activities; Information service activities (section J); Financial and insurance activities (section K);
	64 to 66	Legal and accounting activities; Activities of head offices, management consultancy activities;
	69 to 75	Architectural and engineering activities, technical testing and analysis; Scientific research and development; Advertising and market research; Other professional, scientific and technical activities; Veterinary activities (section M); Employment activities; Security and investigation activities;

	78	Public administration and defence, compulsory social security (section O); Education (section
	80	
	84 to 93	P), Human health and social work activities (section Q); Arts, entertainment and recreation
		(section R).
Knowledge-intensive high-technology services	59 to 63	Motion picture, video and television programme production, sound recording and music
	72	publish activities; Programming and broadcasting activities; Telecommunications; computer programming, consultancy and related activities; Information service activities;
		Scientific research and development;
Knowledge-intensive market services (excl. financial intermediation and high-tech services)	50 to 51	Water transport; Air transport;
		Legal and accounting activities; Activities of head offices, management consultancy activities;
	69 to 71	Architectural and engineering activities, technical testing and analysis;
	73 to 74	Advertising and market research; Other professional, scientific and technical activities;
	78	
	80	Employment activities;
		Security and investigation activities;
Knowledge-intensive financial services	64 to 66	Financial and insurance activities (section K).
Other knowledge-intensive services	58	Publishing activities;
	75	Veterinary activities;
	84 to 93	Public administration and defence, compulsory social security (section O); Education (section

		P), Human health and social work activities (section Q); Arts, entertainment and recreation (section R).
Less-knowledge-intensive market services	45 t6 47	Wholesale and retail trade; Repair of motor vehicles and motorcycles (section G);
	49	Land transport and transport via pipelines;
	52	Warehousing and support activities for transportation;
	55 to 56	Accommodation and food service activities (section I);
	68	Real estate activities (section L);
	77	Rental and leasing activities;
	79	Travel agency, tour operator reservation service and related activities;
	81	Services to buildings and landscape activities;
	82	Office administrative, office support and other business support activities;
	95	Repair of computers and personal and household goods;
Other less-knowledge-intensive services	53	Postal and courier activities;
	94	Activities of membership organisation;
	96	Other personal service activities;
	97 to 99	Activities of households as employers of domestic personnel; Undifferentiated goods- and services-producing activities of private households for own use (section T); Activities of extraterritorial organisations and bodies (section U).

Source: Eurostat classification of technology-intensive sectors

Appendix 3

NACE Rev 2 Statistical Classification of Economic Activities

Table 17: NACE Rev 2 Statistical Classification of Economic Activities

NACE 2 Rev Code	Parent	Description	Reference to ISIC Rev. 4
A		AGRICULTURE, FORESTRY AND FISHING	A
1	A	Crop and animal production, hunting and related service activities	1
1.1	1	Growing of non-perennial crops	11
1.11	1.1	Growing of cereals (except rice), leguminous crops and oil seeds	111
1.12	1.1	Growing of rice	112
1.13	1.1	Growing of vegetables and melons, roots and tubers	113
1.14	1.1	Growing of sugar cane	114
1.15	1.1	Growing of tobacco	115
1.16	1.1	Growing of fibre crops	116
1.19	1.1	Growing of other non-perennial crops	119
1.2	1	Growing of perennial crops	12
1.21	1.2	Growing of grapes	121
1.22	1.2	Growing of tropical and subtropical fruits	122
1.23	1.2	Growing of citrus fruits	123
1.24	1.2	Growing of pome fruits and stone fruits	124
1.25	1.2	Growing of other tree and bush fruits and nuts	125
1.26	1.2	Growing of oleaginous fruits	126
1.27	1.2	Growing of beverage crops	127
1.28	1.2	Growing of spices, aromatic, drug and pharmaceutical crops	128
1.29	1.2	Growing of other perennial crops	129
1.3	1	Plant propagation	13
1.3	1.3	Plant propagation	130
1.4	1	Animal production	14

1.41	1.4	Raising of dairy cattle	141
1.42	1.4	Raising of other cattle and buffaloes	141
1.43	1.4	Raising of horses and other equines	142
1.44	1.4	Raising of camels and camelids	143
1.45	1.4	Raising of sheep and goats	144
1.46	1.4	Raising of swine/pigs	145
1.47	1.4	Raising of poultry	146
1.49	1.4	Raising of other animals	149
1.5	1	Mixed farming	15
1.5	1.5	Mixed farming	150
1.6	1	Support activities to agriculture and post-harvest crop activities	16
1.61	1.6	Support activities for crop production	161
1.62	1.6	Support activities for animal production	162
1.63	1.6	Post-harvest crop activities	163
1.64	1.6	Seed processing for propagation	164
1.7	1	Hunting, trapping and related service activities	17
1.7	1.7	Hunting, trapping and related service activities	170
2	A	Forestry and logging	2
2.1	2	Silviculture and other forestry activities	21
2.1	2.1	Silviculture and other forestry activities	210
2.2	2	Logging	22
2.2	2.2	Logging	220
2.3	2	Gathering of wild growing non-wood products	23
2.3	2.3	Gathering of wild growing non-wood products	230
2.4	2	Support services to forestry	24
2.4	2.4	Support services to forestry	240
3	A	Fishing and aquaculture	3
3.1	3	Fishing	31
3.11	3.1	Marine fishing	311
3.12	3.1	Freshwater fishing	312
3.2	3	Aquaculture	32
3.21	3.2	Marine aquaculture	321
3.22	3.2	Freshwater aquaculture	322
B		MINING AND QUARRYING	B
5	B	Mining of coal and lignite	5
5.1	5	Mining of hard coal	51
5.1	5.1	Mining of hard coal	510
5.2	5	Mining of lignite	52
5.2	5.2	Mining of lignite	520
6	B	Extraction of crude petroleum and natural gas	6

6.1	6	Extraction of crude petroleum	61
6.1	6.1	Extraction of crude petroleum	610
6.2	6	Extraction of natural gas	62
6.2	6.2	Extraction of natural gas	620
7	B	Mining of metal ores	7
7.1	7	Mining of iron ores	71
7.1	7.1	Mining of iron ores	710
7.2	7	Mining of non-ferrous metal ores	72
7.21	7.2	Mining of uranium and thorium ores	721
7.29	7.2	Mining of other non-ferrous metal ores	729
8	B	Other mining and quarrying	8
8.1	8	Quarrying of stone, sand and clay	81
8.11	8.1	Quarrying of ornamental and building stone, limestone, gypsum, chalk and slate	810
8.12	8.1	Operation of gravel and sand pits; mining of clays and kaolin	810
8.9	8	Mining and quarrying n.e.c.	89
8.91	8.9	Mining of chemical and fertiliser minerals	891
8.92	8.9	Extraction of peat	892
8.93	8.9	Extraction of salt	893
8.99	8.9	Other mining and quarrying n.e.c.	899
9	B	Mining support service activities	9
9.1	9	Support activities for petroleum and natural gas extraction	91
9.1	9.1	Support activities for petroleum and natural gas extraction	910
9.9	9	Support activities for other mining and quarrying	99
9.9	9.9	Support activities for other mining and quarrying	990
C		MANUFACTURING	C
10	C	Manufacture of food products	10
10.1	10	Processing and preserving of meat and production of meat products	101
10.11	10.1	Processing and preserving of meat	1010
10.12	10.1	Processing and preserving of poultry meat	1010
10.13	10.1	Production of meat and poultry meat products	1010
10.2	10	Processing and preserving of fish, crustaceans and molluscs	102
10.2	10.2	Processing and preserving of fish, crustaceans and molluscs	1020
10.3	10	Processing and preserving of fruit and vegetables	103
10.31	10.3	Processing and preserving of potatoes	1030
10.32	10.3	Manufacture of fruit and vegetable juice	1030
10.39	10.3	Other processing and preserving of fruit and vegetables	1030
10.4	10	Manufacture of vegetable and animal oils and fats	104

10.41	10.4	Manufacture of oils and fats	1040
10.42	10.4	Manufacture of margarine and similar edible fats	1040
10.5	10	Manufacture of dairy products	105
10.51	10.5	Operation of dairies and cheese making	1050
10.52	10.5	Manufacture of ice cream	1050
10.6	10	Manufacture of grain mill products, starches and starch products	106
10.61	10.6	Manufacture of grain mill products	1061
10.62	10.6	Manufacture of starches and starch products	1062
10.7	10	Manufacture of bakery and farinaceous products	107
10.71	10.7	Manufacture of bread; manufacture of fresh pastry goods and cakes	1071
10.72	10.7	Manufacture of rusks and biscuits; manufacture of preserved pastry goods and cakes	1071
10.73	10.7	Manufacture of macaroni, noodles, couscous and similar farinaceous products	1074
10.8	10	Manufacture of other food products	107
10.81	10.8	Manufacture of sugar	1072
10.82	10.8	Manufacture of cocoa, chocolate and sugar confectionery	1073
10.83	10.8	Processing of tea and coffee	1079
10.84	10.8	Manufacture of condiments and seasonings	1079
10.85	10.8	Manufacture of prepared meals and dishes	1075
10.86	10.8	Manufacture of homogenised food preparations and dietetic food	1079
10.89	10.8	Manufacture of other food products n.e.c.	1079
10.9	10	Manufacture of prepared animal feeds	108
10.91	10.9	Manufacture of prepared feeds for farm animals	1080
10.92	10.9	Manufacture of prepared pet foods	1080
11	C	Manufacture of beverages	11
11	11	Manufacture of beverages	110
11.01	11	Distilling, rectifying and blending of spirits	1101
11.02	11	Manufacture of wine from grape	1102
11.03	11	Manufacture of cider and other fruit wines	1102
11.04	11	Manufacture of other non-distilled fermented beverages	1102
11.05	11	Manufacture of beer	1103
11.06	11	Manufacture of malt	1103
11.07	11	Manufacture of soft drinks; production of mineral waters and other bottled waters	1104
12	C	Manufacture of tobacco products	12
12	12	Manufacture of tobacco products	120
12	12	Manufacture of tobacco products	1200
13	C	Manufacture of textiles	13

13.1	13	Preparation and spinning of textile fibres	131
13.1	13.1	Preparation and spinning of textile fibres	1311
13.2	13	Weaving of textiles	131
13.2	13.2	Weaving of textiles	1312
13.3	13	Finishing of textiles	131
13.3	13.3	Finishing of textiles	1313
13.9	13	Manufacture of other textiles	139
13.91	13.9	Manufacture of knitted and crocheted fabrics	1391
13.92	13.9	Manufacture of made-up textile articles, except apparel	1392
13.93	13.9	Manufacture of carpets and rugs	1393
13.94	13.9	Manufacture of cordage, rope, twine and netting	1394
13.95	13.9	Manufacture of non-wovens and articles made from non-wovens, except apparel	1399
13.96	13.9	Manufacture of other technical and industrial textiles	1399
13.99	13.9	Manufacture of other textiles n.e.c.	1399
14	C	Manufacture of wearing apparel	14
14.1	14	Manufacture of wearing apparel, except fur apparel	141
14.11	14.1	Manufacture of leather clothes	1410
14.12	14.1	Manufacture of workwear	1410
14.13	14.1	Manufacture of other outerwear	1410
14.14	14.1	Manufacture of underwear	1410
14.19	14.1	Manufacture of other wearing apparel and accessories	1410
14.2	14	Manufacture of articles of fur	142
14.2	14.2	Manufacture of articles of fur	1420
14.3	14	Manufacture of knitted and crocheted apparel	143
14.31	14.3	Manufacture of knitted and crocheted hosiery	1430
14.39	14.3	Manufacture of other knitted and crocheted apparel	1430
15	C	Manufacture of leather and related products	15
15.1	15	Tanning and dressing of leather; manufacture of luggage, handbags, saddlery and harness; dressing and dyeing of fur	151
15.11	15.1	Tanning and dressing of leather; dressing and dyeing of fur	1511
15.12	15.1	Manufacture of luggage, handbags and the like, saddlery and harness	1512
15.2	15	Manufacture of footwear	152
15.2	15.2	Manufacture of footwear	1520
16	C	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	16
16.1	16	Sawmilling and planing of wood	161
16.1	16.1	Sawmilling and planing of wood	1610

16.2	16	Manufacture of products of wood, cork, straw and plaiting materials	162
16.21	16.2	Manufacture of veneer sheets and wood-based panels	1621
16.22	16.2	Manufacture of assembled parquet floors	1622
16.23	16.2	Manufacture of other builders' carpentry and joinery	1622
16.24	16.2	Manufacture of wooden containers	1623
16.29	16.2	Manufacture of other products of wood; manufacture of articles of cork, straw and plaiting materials	1629
17	C	Manufacture of paper and paper products	17
17.1	17	Manufacture of pulp, paper and paperboard	170
17.11	17.1	Manufacture of pulp	1701
17.12	17.1	Manufacture of paper and paperboard	1701
17.2	17	Manufacture of articles of paper and paperboard	170
17.21	17.2	Manufacture of corrugated paper and paperboard and of containers of paper and paperboard	1702
17.22	17.2	Manufacture of household and sanitary goods and of toilet requisites	1709
17.23	17.2	Manufacture of paper stationery	1709
17.24	17.2	Manufacture of wallpaper	1709
17.29	17.2	Manufacture of other articles of paper and paperboard	1709
18	C	Printing and reproduction of recorded media	18
18.1	18	Printing and service activities related to printing	181
18.11	18.1	Printing of newspapers	1811
18.12	18.1	Other printing	1811
18.13	18.1	Pre-press and pre-media services	1812
18.14	18.1	Binding and related services	1812
18.2	18	Reproduction of recorded media	182
18.2	18.2	Reproduction of recorded media	1820
19	C	Manufacture of coke and refined petroleum products	19
19.1	19	Manufacture of coke oven products	191
19.1	19.1	Manufacture of coke oven products	1910
19.2	19	Manufacture of refined petroleum products	192
19.2	19.2	Manufacture of refined petroleum products	1920
20	C	Manufacture of chemicals and chemical products	20
20.1	20	Manufacture of basic chemicals, fertilisers and nitrogen compounds, plastics and synthetic rubber in primary forms	201
20.11	20.1	Manufacture of industrial gases	2011
20.12	20.1	Manufacture of dyes and pigments	2011
20.13	20.1	Manufacture of other inorganic basic chemicals	2011
20.14	20.1	Manufacture of other organic basic chemicals	2011
20.15	20.1	Manufacture of fertilisers and nitrogen compounds	2012

20.16	20.1	Manufacture of plastics in primary forms	2013
20.17	20.1	Manufacture of synthetic rubber in primary forms	2013
20.2	20	Manufacture of pesticides and other agrochemical products	202
20.2	20.2	Manufacture of pesticides and other agrochemical products	2021
20.3	20	Manufacture of paints, varnishes and similar coatings, printing ink and mastics	202
20.3	20.3	Manufacture of paints, varnishes and similar coatings, printing ink and mastics	2022
20.4	20	Manufacture of soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations	202
20.41	20.4	Manufacture of soap and detergents, cleaning and polishing preparations	2023
20.42	20.4	Manufacture of perfumes and toilet preparations	2023
20.5	20	Manufacture of other chemical products	202
20.51	20.5	Manufacture of explosives	2029
20.52	20.5	Manufacture of glues	2029
20.53	20.5	Manufacture of essential oils	2029
20.59	20.5	Manufacture of other chemical products n.e.c.	2029
20.6	20	Manufacture of man-made fibres	203
20.6	20.6	Manufacture of man-made fibres	2030
21	C	Manufacture of basic pharmaceutical products and pharmaceutical preparations	21
21.1	21	Manufacture of basic pharmaceutical products	210
21.1	21.1	Manufacture of basic pharmaceutical products	2100
21.2	21	Manufacture of pharmaceutical preparations	210
21.2	21.2	Manufacture of pharmaceutical preparations	2100
22	C	Manufacture of rubber and plastic products	22
22.1	22	Manufacture of rubber products	221
22.11	22.1	Manufacture of rubber tyres and tubes; retreading and rebuilding of rubber tyres	2211
22.19	22.1	Manufacture of other rubber products	2219
22.2	22	Manufacture of plastic products	222
22.21	22.2	Manufacture of plastic plates, sheets, tubes and profiles	2220
22.22	22.2	Manufacture of plastic packing goods	2220
22.23	22.2	Manufacture of buildersâ€™ ware of plastic	2220
22.29	22.2	Manufacture of other plastic products	2220
23	C	Manufacture of other non-metallic mineral products	23
23.1	23	Manufacture of glass and glass products	231
23.11	23.1	Manufacture of flat glass	2310
23.12	23.1	Shaping and processing of flat glass	2310
23.13	23.1	Manufacture of hollow glass	2310

23.14	23.1	Manufacture of glass fibres	2310
23.19	23.1	Manufacture and processing of other glass, including technical glassware	2310
23.2	23	Manufacture of refractory products	239
23.2	23.2	Manufacture of refractory products	2391
23.3	23	Manufacture of clay building materials	239
23.31	23.3	Manufacture of ceramic tiles and flags	2392
23.32	23.3	Manufacture of bricks, tiles and construction products, in baked clay	2392
23.4	23	Manufacture of other porcelain and ceramic products	239
23.41	23.4	Manufacture of ceramic household and ornamental articles	2393
23.42	23.4	Manufacture of ceramic sanitary fixtures	2393
23.43	23.4	Manufacture of ceramic insulators and insulating fittings	2393
23.44	23.4	Manufacture of other technical ceramic products	2393
23.49	23.4	Manufacture of other ceramic products	2393
23.5	23	Manufacture of cement, lime and plaster	239
23.51	23.5	Manufacture of cement	2394
23.52	23.5	Manufacture of lime and plaster	2394
23.6	23	Manufacture of articles of concrete, cement and plaster	239
23.61	23.6	Manufacture of concrete products for construction purposes	2395
23.62	23.6	Manufacture of plaster products for construction purposes	2395
23.63	23.6	Manufacture of ready-mixed concrete	2395
23.64	23.6	Manufacture of mortars	2395
23.65	23.6	Manufacture of fibre cement	2395
23.69	23.6	Manufacture of other articles of concrete, plaster and cement	2395
23.7	23	Cutting, shaping and finishing of stone	239
23.7	23.7	Cutting, shaping and finishing of stone	2396
23.9	23	Manufacture of abrasive products and non-metallic mineral products n.e.c.	239
23.91	23.9	Production of abrasive products	2399
23.99	23.9	Manufacture of other non-metallic mineral products n.e.c.	2399
24	C	Manufacture of basic metals	24
24.1	24	Manufacture of basic iron and steel and of ferro-alloys	241
24.1	24.1	Manufacture of basic iron and steel and of ferro-alloys	2410
24.2	24	Manufacture of tubes, pipes, hollow profiles and related fittings, of steel	241
24.2	24.2	Manufacture of tubes, pipes, hollow profiles and related fittings, of steel	2410
24.3	24	Manufacture of other products of first processing of steel	241
24.31	24.3	Cold drawing of bars	2410

24.32	24.3	Cold rolling of narrow strip	2410
24.33	24.3	Cold forming or folding	2410
24.34	24.3	Cold drawing of wire	2410
24.4	24	Manufacture of basic precious and other non-ferrous metals	242
24.41	24.4	Precious metals production	2420
24.42	24.4	Aluminium production	2420
24.43	24.4	Lead, zinc and tin production	2420
24.44	24.4	Copper production	2420
24.45	24.4	Other non-ferrous metal production	2420
24.46	24.4	Processing of nuclear fuel	2420
24.5	24	Casting of metals	243
24.51	24.5	Casting of iron	2431
24.52	24.5	Casting of steel	2431
24.53	24.5	Casting of light metals	2432
24.54	24.5	Casting of other non-ferrous metals	2432
25	C	Manufacture of fabricated metal products, except machinery and equipment	25
25.1	25	Manufacture of structural metal products	251
25.11	25.1	Manufacture of metal structures and parts of structures	2511
25.12	25.1	Manufacture of doors and windows of metal	2511
25.2	25	Manufacture of tanks, reservoirs and containers of metal	251
25.21	25.2	Manufacture of central heating radiators and boilers	2512
25.29	25.2	Manufacture of other tanks, reservoirs and containers of metal	2512
25.3	25	Manufacture of steam generators, except central heating hot water boilers	251
25.3	25.3	Manufacture of steam generators, except central heating hot water boilers	2513
25.4	25	Manufacture of weapons and ammunition	252
25.4	25.4	Manufacture of weapons and ammunition	2520
25.5	25	Forging, pressing, stamping and roll-forming of metal; powder metallurgy	259
25.5	25.5	Forging, pressing, stamping and roll-forming of metal; powder metallurgy	2591
25.6	25	Treatment and coating of metals; machining	259
25.61	25.6	Treatment and coating of metals	2592
25.62	25.6	Machining	2592
25.7	25	Manufacture of cutlery, tools and general hardware	259
25.71	25.7	Manufacture of cutlery	2593
25.72	25.7	Manufacture of locks and hinges	2593
25.73	25.7	Manufacture of tools	2593
25.9	25	Manufacture of other fabricated metal products	259

25.91	25.9	Manufacture of steel drums and similar containers	2599
25.92	25.9	Manufacture of light metal packaging	2599
25.93	25.9	Manufacture of wire products, chain and springs	2599
25.94	25.9	Manufacture of fasteners and screw machine products	2599
25.99	25.9	Manufacture of other fabricated metal products n.e.c.	2599
26	C	Manufacture of computer, electronic and optical products	26
26.1	26	Manufacture of electronic components and boards	261
26.11	26.1	Manufacture of electronic components	2610
26.12	26.1	Manufacture of loaded electronic boards	2610
26.2	26	Manufacture of computers and peripheral equipment	262
26.2	26.2	Manufacture of computers and peripheral equipment	2620
26.3	26	Manufacture of communication equipment	263
26.3	26.3	Manufacture of communication equipment	2630
26.4	26	Manufacture of consumer electronics	264
26.4	26.4	Manufacture of consumer electronics	2640
26.5	26	Manufacture of instruments and appliances for measuring, testing and navigation; watches and clocks	265
26.51	26.5	Manufacture of instruments and appliances for measuring, testing and navigation	2651
26.52	26.5	Manufacture of watches and clocks	2652
26.6	26	Manufacture of irradiation, electromedical and electrotherapeutic equipment	266
26.6	26.6	Manufacture of irradiation, electromedical and electrotherapeutic equipment	2660
26.7	26	Manufacture of optical instruments and photographic equipment	267
26.7	26.7	Manufacture of optical instruments and photographic equipment	2670
26.8	26	Manufacture of magnetic and optical media	268
26.8	26.8	Manufacture of magnetic and optical media	2680
27	C	Manufacture of electrical equipment	27
27.1	27	Manufacture of electric motors, generators, transformers and electricity distribution and control apparatus	271
27.11	27.1	Manufacture of electric motors, generators and transformers	2710
27.12	27.1	Manufacture of electricity distribution and control apparatus	2710
27.2	27	Manufacture of batteries and accumulators	272
27.2	27.2	Manufacture of batteries and accumulators	2720
27.3	27	Manufacture of wiring and wiring devices	273
27.31	27.3	Manufacture of fibre optic cables	2731
27.32	27.3	Manufacture of other electronic and electric wires and cables	2732
27.33	27.3	Manufacture of wiring devices	2733

27.4	27	Manufacture of electric lighting equipment	274
27.4	27.4	Manufacture of electric lighting equipment	2740
27.5	27	Manufacture of domestic appliances	275
27.51	27.5	Manufacture of electric domestic appliances	2750
27.52	27.5	Manufacture of non-electric domestic appliances	2750
27.9	27	Manufacture of other electrical equipment	279
27.9	27.9	Manufacture of other electrical equipment	2790
28	C	Manufacture of machinery and equipment n.e.c.	28
28.1	28	Manufacture of general-purpose machinery	281
28.11	28.1	Manufacture of engines and turbines, except aircraft, vehicle and cycle engines	2811
28.12	28.1	Manufacture of fluid power equipment	2812
28.13	28.1	Manufacture of other pumps and compressors	2813
28.14	28.1	Manufacture of other taps and valves	2813
28.15	28.1	Manufacture of bearings, gears, gearing and driving elements	2814
28.2	28	Manufacture of other general-purpose machinery	281
28.21	28.2	Manufacture of ovens, furnaces and furnace burners	2815
28.22	28.2	Manufacture of lifting and handling equipment	2816
28.23	28.2	Manufacture of office machinery and equipment (except computers and peripheral equipment)	2817
28.24	28.2	Manufacture of power-driven hand tools	2818
28.25	28.2	Manufacture of non-domestic cooling and ventilation equipment	2819
28.29	28.2	Manufacture of other general-purpose machinery n.e.c.	2819
28.3	28	Manufacture of agricultural and forestry machinery	282
28.3	28.3	Manufacture of agricultural and forestry machinery	2821
28.4	28	Manufacture of metal forming machinery and machine tools	282
28.41	28.4	Manufacture of metal forming machinery	2822
28.49	28.4	Manufacture of other machine tools	2822
28.9	28	Manufacture of other special-purpose machinery	282
28.91	28.9	Manufacture of machinery for metallurgy	2823
28.92	28.9	Manufacture of machinery for mining, quarrying and construction	2824
28.93	28.9	Manufacture of machinery for food, beverage and tobacco processing	2825
28.94	28.9	Manufacture of machinery for textile, apparel and leather production	2826
28.95	28.9	Manufacture of machinery for paper and paperboard production	2829
28.96	28.9	Manufacture of plastics and rubber machinery	2829
28.99	28.9	Manufacture of other special-purpose machinery n.e.c.	2829

29	C	Manufacture of motor vehicles, trailers and semi-trailers	29
29.1	29	Manufacture of motor vehicles	291
29.1	29.1	Manufacture of motor vehicles	2910
29.2	29	Manufacture of bodies (coachwork) for motor vehicles; manufacture of trailers and semi-trailers	292
29.2	29.2	Manufacture of bodies (coachwork) for motor vehicles; manufacture of trailers and semi-trailers	2920
29.3	29	Manufacture of parts and accessories for motor vehicles	293
29.31	29.3	Manufacture of electrical and electronic equipment for motor vehicles	2930
29.32	29.3	Manufacture of other parts and accessories for motor vehicles	2930
30	C	Manufacture of other transport equipment	30
30.1	30	Building of ships and boats	301
30.11	30.1	Building of ships and floating structures	3011
30.12	30.1	Building of pleasure and sporting boats	3012
30.2	30	Manufacture of railway locomotives and rolling stock	302
30.2	30.2	Manufacture of railway locomotives and rolling stock	3020
30.3	30	Manufacture of air and spacecraft and related machinery	303
30.3	30.3	Manufacture of air and spacecraft and related machinery	3030
30.4	30	Manufacture of military fighting vehicles	304
30.4	30.4	Manufacture of military fighting vehicles	3040
30.9	30	Manufacture of transport equipment n.e.c.	309
30.91	30.9	Manufacture of motorcycles	3091
30.92	30.9	Manufacture of bicycles and invalid carriages	3092
30.99	30.9	Manufacture of other transport equipment n.e.c.	3099
31	C	Manufacture of furniture	31
31	31	Manufacture of furniture	310
31.01	31	Manufacture of office and shop furniture	3100
31.02	31	Manufacture of kitchen furniture	3100
31.03	31	Manufacture of mattresses	3100
31.09	31	Manufacture of other furniture	3100
32	C	Other manufacturing	32
32.1	32	Manufacture of jewellery, bijouterie and related articles	321
32.11	32.1	Striking of coins	3211
32.12	32.1	Manufacture of jewellery and related articles	3211
32.13	32.1	Manufacture of imitation jewellery and related articles	3212
32.2	32	Manufacture of musical instruments	322
32.2	32.2	Manufacture of musical instruments	3220
32.3	32	Manufacture of sports goods	323
32.3	32.3	Manufacture of sports goods	3230
32.4	32	Manufacture of games and toys	324

32.4	32.4	Manufacture of games and toys	3240
32.5	32	Manufacture of medical and dental instruments and supplies	325
32.5	32.5	Manufacture of medical and dental instruments and supplies	3250
32.9	32	Manufacturing n.e.c.	329
32.91	32.9	Manufacture of brooms and brushes	3290
32.99	32.9	Other manufacturing n.e.c.	3290
33	C	Repair and installation of machinery and equipment	33
33.1	33	Repair of fabricated metal products, machinery and equipment	331
33.11	33.1	Repair of fabricated metal products	3311
33.12	33.1	Repair of machinery	3312
33.13	33.1	Repair of electronic and optical equipment	3313
33.14	33.1	Repair of electrical equipment	3314
33.15	33.1	Repair and maintenance of ships and boats	3315
33.16	33.1	Repair and maintenance of aircraft and spacecraft	3315
33.17	33.1	Repair and maintenance of other transport equipment	3315
33.19	33.1	Repair of other equipment	3319
33.2	33	Installation of industrial machinery and equipment	332
33.2	33.2	Installation of industrial machinery and equipment	3320
D		ELECTRICITY, GAS, STEAM AND AIR CONDITIONING SUPPLY	D
35	D	Electricity, gas, steam and air conditioning supply	35
35.1	35	Electric power generation, transmission and distribution	351
35.11	35.1	Production of electricity	3510
35.12	35.1	Transmission of electricity	3510
35.13	35.1	Distribution of electricity	3510
35.14	35.1	Trade of electricity	3510
35.2	35	Manufacture of gas; distribution of gaseous fuels through mains	352
35.21	35.2	Manufacture of gas	3520
35.22	35.2	Distribution of gaseous fuels through mains	3520
35.23	35.2	Trade of gas through mains	3520
35.3	35	Steam and air conditioning supply	353
35.3	35.3	Steam and air conditioning supply	3530
E		WATER SUPPLY; SEWERAGE, WASTE MANAGEMENT AND REMEDIATION ACTIVITIES	E
36	E	Water collection, treatment and supply	36
36	36	Water collection, treatment and supply	360
36	36	Water collection, treatment and supply	3600
37	E	Sewerage	37

37	37	Sewerage	370
37	37	Sewerage	3700
38	E	Waste collection, treatment and disposal activities; materials recovery	38
38.1	38	Waste collection	381
38.11	38.1	Collection of non-hazardous waste	3811
38.12	38.1	Collection of hazardous waste	3812
38.2	38	Waste treatment and disposal	382
38.21	38.2	Treatment and disposal of non-hazardous waste	3821
38.22	38.2	Treatment and disposal of hazardous waste	3822
38.3	38	Materials recovery	383
38.31	38.3	Dismantling of wrecks	3830
38.32	38.3	Recovery of sorted materials	3830
39	E	Remediation activities and other waste management services	39
39	39	Remediation activities and other waste management services	390
39	39	Remediation activities and other waste management services	3900
F		CONSTRUCTION	F
41	F	Construction of buildings	41
41.1	41	Development of building projects	410
41.1	41.1	Development of building projects	4100
41.2	41	Construction of residential and non-residential buildings	410
41.2	41.2	Construction of residential and non-residential buildings	4100
42	F	Civil engineering	42
42.1	42	Construction of roads and railways	421
42.11	42.1	Construction of roads and motorways	4210
42.12	42.1	Construction of railways and underground railways	4210
42.13	42.1	Construction of bridges and tunnels	4210
42.2	42	Construction of utility projects	422
42.21	42.2	Construction of utility projects for fluids	4220
42.22	42.2	Construction of utility projects for electricity and telecommunications	4220
42.9	42	Construction of other civil engineering projects	429
42.91	42.9	Construction of water projects	4290
42.99	42.9	Construction of other civil engineering projects n.e.c.	4290
43	F	Specialised construction activities	43
43.1	43	Demolition and site preparation	431
43.11	43.1	Demolition	4311
43.12	43.1	Site preparation	4312
43.13	43.1	Test drilling and boring	4312

43.2	43	Electrical, plumbing and other construction installation activities	432
43.21	43.2	Electrical installation	4321
43.22	43.2	Plumbing, heat and air-conditioning installation	4322
43.29	43.2	Other construction installation	4329
43.3	43	Building completion and finishing	433
43.31	43.3	Plastering	4330
43.32	43.3	Joinery installation	4330
43.33	43.3	Floor and wall covering	4330
43.34	43.3	Painting and glazing	4330
43.39	43.3	Other building completion and finishing	4330
43.9	43	Other specialised construction activities	439
43.91	43.9	Roofing activities	4390
43.99	43.9	Other specialised construction activities n.e.c.	4390
G		WHOLESALE AND RETAIL TRADE; REPAIR OF MOTOR VEHICLES AND MOTORCYCLES	G
45	G	Wholesale and retail trade and repair of motor vehicles and motorcycles	45
45.1	45	Sale of motor vehicles	451
45.11	45.1	Sale of cars and light motor vehicles	4510
45.19	45.1	Sale of other motor vehicles	4510
45.2	45	Maintenance and repair of motor vehicles	452
45.2	45.2	Maintenance and repair of motor vehicles	4520
45.3	45	Sale of motor vehicle parts and accessories	453
45.31	45.3	Wholesale trade of motor vehicle parts and accessories	4530
45.32	45.3	Retail trade of motor vehicle parts and accessories	4530
45.4	45	Sale, maintenance and repair of motorcycles and related parts and accessories	454
45.4	45.4	Sale, maintenance and repair of motorcycles and related parts and accessories	4540
46	G	Wholesale trade, except of motor vehicles and motorcycles	46
46.1	46	Wholesale on a fee or contract basis	461
46.11	46.1	Agents involved in the sale of agricultural raw materials, live animals, textile raw materials and semi-finished goods	4610
46.12	46.1	Agents involved in the sale of fuels, ores, metals and industrial chemicals	4610
46.13	46.1	Agents involved in the sale of timber and building materials	4610
46.14	46.1	Agents involved in the sale of machinery, industrial equipment, ships and aircraft	4610
46.15	46.1	Agents involved in the sale of furniture, household goods, hardware and ironmongery	4610

46.16	46.1	Agents involved in the sale of textiles, clothing, fur, footwear and leather goods	4610
46.17	46.1	Agents involved in the sale of food, beverages and tobacco	4610
46.18	46.1	Agents specialised in the sale of other particular products	4610
46.19	46.1	Agents involved in the sale of a variety of goods	4610
46.2	46	Wholesale of agricultural raw materials and live animals	462
46.21	46.2	Wholesale of grain, unmanufactured tobacco, seeds and animal feeds	4620
46.22	46.2	Wholesale of flowers and plants	4620
46.23	46.2	Wholesale of live animals	4620
46.24	46.2	Wholesale of hides, skins and leather	4620
46.3	46	Wholesale of food, beverages and tobacco	463
46.31	46.3	Wholesale of fruit and vegetables	4630
46.32	46.3	Wholesale of meat and meat products	4630
46.33	46.3	Wholesale of dairy products, eggs and edible oils and fats	4630
46.34	46.3	Wholesale of beverages	4630
46.35	46.3	Wholesale of tobacco products	4630
46.36	46.3	Wholesale of sugar and chocolate and sugar confectionery	4630
46.37	46.3	Wholesale of coffee, tea, cocoa and spices	4630
46.38	46.3	Wholesale of other food, including fish, crustaceans and molluscs	4630
46.39	46.3	Non-specialised wholesale of food, beverages and tobacco	4630
46.4	46	Wholesale of household goods	464
46.41	46.4	Wholesale of textiles	4641
46.42	46.4	Wholesale of clothing and footwear	4641
46.43	46.4	Wholesale of electrical household appliances	4649
46.44	46.4	Wholesale of china and glassware and cleaning materials	4649
46.45	46.4	Wholesale of perfume and cosmetics	4649
46.46	46.4	Wholesale of pharmaceutical goods	4649
46.47	46.4	Wholesale of furniture, carpets and lighting equipment	4649
46.48	46.4	Wholesale of watches and jewellery	4649
46.49	46.4	Wholesale of other household goods	4649
46.5	46	Wholesale of information and communication equipment	465
46.51	46.5	Wholesale of computers, computer peripheral equipment and software	4651
46.52	46.5	Wholesale of electronic and telecommunications equipment and parts	4652
46.6	46	Wholesale of other machinery, equipment and supplies	466
46.61	46.6	Wholesale of agricultural machinery, equipment and supplies	4653

46.62	46.6	Wholesale of machine tools	4659
46.63	46.6	Wholesale of mining, construction and civil engineering machinery	4659
46.64	46.6	Wholesale of machinery for the textile industry and of sewing and knitting machines	4659
46.65	46.6	Wholesale of office furniture	4659
46.66	46.6	Wholesale of other office machinery and equipment	4659
46.69	46.6	Wholesale of other machinery and equipment	4659
46.7	46	Other specialised wholesale	466
46.71	46.7	Wholesale of solid, liquid and gaseous fuels and related products	4661
46.72	46.7	Wholesale of metals and metal ores	4662
46.73	46.7	Wholesale of wood, construction materials and sanitary equipment	4663
46.74	46.7	Wholesale of hardware, plumbing and heating equipment and supplies	4663
46.75	46.7	Wholesale of chemical products	4669
46.76	46.7	Wholesale of other intermediate products	4669
46.77	46.7	Wholesale of waste and scrap	4669
46.9	46	Non-specialised wholesale trade	469
46.9	46.9	Non-specialised wholesale trade	4690
47	G	Retail trade, except of motor vehicles and motorcycles	47
47.1	47	Retail sale in non-specialised stores	471
47.11	47.1	Retail sale in non-specialised stores with food, beverages or tobacco predominating	4711
47.19	47.1	Other retail sale in non-specialised stores	4719
47.2	47	Retail sale of food, beverages and tobacco in specialised stores	472
47.21	47.2	Retail sale of fruit and vegetables in specialised stores	4721
47.22	47.2	Retail sale of meat and meat products in specialised stores	4721
47.23	47.2	Retail sale of fish, crustaceans and molluscs in specialised stores	4721
47.24	47.2	Retail sale of bread, cakes, flour confectionery and sugar confectionery in specialised stores	4721
47.25	47.2	Retail sale of beverages in specialised stores	4722
47.26	47.2	Retail sale of tobacco products in specialised stores	4723
47.29	47.2	Other retail sale of food in specialised stores	4721
47.3	47	Retail sale of automotive fuel in specialised stores	473
47.3	47.3	Retail sale of automotive fuel in specialised stores	4730
47.4	47	Retail sale of information and communication equipment in specialised stores	474
47.41	47.4	Retail sale of computers, peripheral units and software in specialised stores	4741

47.42	47.4	Retail sale of telecommunications equipment in specialised stores	4741
47.43	47.4	Retail sale of audio and video equipment in specialised stores	4742
47.5	47	Retail sale of other household equipment in specialised stores	475
47.51	47.5	Retail sale of textiles in specialised stores	4751
47.52	47.5	Retail sale of hardware, paints and glass in specialised stores	4752
47.53	47.5	Retail sale of carpets, rugs, wall and floor coverings in specialised stores	4753
47.54	47.5	Retail sale of electrical household appliances in specialised stores	4759
47.59	47.5	Retail sale of furniture, lighting equipment and other household articles in specialised stores	4759
47.6	47	Retail sale of cultural and recreation goods in specialised stores	476
47.61	47.6	Retail sale of books in specialised stores	4761
47.62	47.6	Retail sale of newspapers and stationery in specialised stores	4761
47.63	47.6	Retail sale of music and video recordings in specialised stores	4762
47.64	47.6	Retail sale of sporting equipment in specialised stores	4763
47.65	47.6	Retail sale of games and toys in specialised stores	4764
47.7	47	Retail sale of other goods in specialised stores	477
47.71	47.7	Retail sale of clothing in specialised stores	4771
47.72	47.7	Retail sale of footwear and leather goods in specialised stores	4771
47.73	47.7	Dispensing chemist in specialised stores	4772
47.74	47.7	Retail sale of medical and orthopaedic goods in specialised stores	4772
47.75	47.7	Retail sale of cosmetic and toilet articles in specialised stores	4772
47.76	47.7	Retail sale of flowers, plants, seeds, fertilisers, pet animals and pet food in specialised stores	4773
47.77	47.7	Retail sale of watches and jewellery in specialised stores	4773
47.78	47.7	Other retail sale of new goods in specialised stores	4773
47.79	47.7	Retail sale of second-hand goods in stores	4774
47.8	47	Retail sale via stalls and markets	478
47.81	47.8	Retail sale via stalls and markets of food, beverages and tobacco products	4781
47.82	47.8	Retail sale via stalls and markets of textiles, clothing and footwear	4782
47.89	47.8	Retail sale via stalls and markets of other goods	4789
47.9	47	Retail trade not in stores, stalls or markets	479
47.91	47.9	Retail sale via mail order houses or via Internet	4791

47.99	47.9	Other retail sale not in stores, stalls or markets	4799
H		TRANSPORTATION AND STORAGE	H
49	H	Land transport and transport via pipelines	49
49.1	49	Passenger rail transport, interurban	491
49.1	49.1	Passenger rail transport, interurban	4911
49.2	49	Freight rail transport	491
49.2	49.2	Freight rail transport	4912
49.3	49	Other passenger land transport	492
49.31	49.3	Urban and suburban passenger land transport	4921
49.32	49.3	Taxi operation	4922
49.39	49.3	Other passenger land transport n.e.c.	4922
49.4	49	Freight transport by road and removal services	492
49.41	49.4	Freight transport by road	4923
49.42	49.4	Removal services	4923
49.5	49	Transport via pipeline	493
49.5	49.5	Transport via pipeline	4930
50	H	Water transport	50
50.1	50	Sea and coastal passenger water transport	501
50.1	50.1	Sea and coastal passenger water transport	5011
50.2	50	Sea and coastal freight water transport	501
50.2	50.2	Sea and coastal freight water transport	5012
50.3	50	Inland passenger water transport	502
50.3	50.3	Inland passenger water transport	5021
50.4	50	Inland freight water transport	502
50.4	50.4	Inland freight water transport	5022
51	H	Air transport	51
51.1	51	Passenger air transport	511
51.1	51.1	Passenger air transport	5110
51.2	51	Freight air transport and space transport	512
51.21	51.2	Freight air transport	5120
51.22	51.2	Space transport	5120
52	H	Warehousing and support activities for transportation	52
52.1	52	Warehousing and storage	521
52.1	52.1	Warehousing and storage	5210
52.2	52	Support activities for transportation	522
52.21	52.2	Service activities incidental to land transportation	5221
52.22	52.2	Service activities incidental to water transportation	5222
52.23	52.2	Service activities incidental to air transportation	5223
52.24	52.2	Cargo handling	5224
52.29	52.2	Other transportation support activities	5229

53	H	Postal and courier activities	53
53.1	53	Postal activities under universal service obligation	531
53.1	53.1	Postal activities under universal service obligation	5310
53.2	53	Other postal and courier activities	532
53.2	53.2	Other postal and courier activities	5320
I		ACCOMMODATION AND FOOD SERVICE ACTIVITIES	I
55	I	Accommodation	55
55.1	55	Hotels and similar accommodation	551
55.1	55.1	Hotels and similar accommodation	5510
55.2	55	Holiday and other short-stay accommodation	551
55.2	55.2	Holiday and other short-stay accommodation	5510
55.3	55	Camping grounds, recreational vehicle parks and trailer parks	552
55.3	55.3	Camping grounds, recreational vehicle parks and trailer parks	5520
55.9	55	Other accommodation	559
55.9	55.9	Other accommodation	5590
56	I	Food and beverage service activities	56
56.1	56	Restaurants and mobile food service activities	561
56.1	56.1	Restaurants and mobile food service activities	5610
56.2	56	Event catering and other food service activities	562
56.21	56.2	Event catering activities	5621
56.29	56.2	Other food service activities	5629
56.3	56	Beverage serving activities	563
56.3	56.3	Beverage serving activities	5630
J		INFORMATION AND COMMUNICATION	J
58	J	Publishing activities	58
58.1	58	Publishing of books, periodicals and other publishing activities	581
58.11	58.1	Book publishing	5811
58.12	58.1	Publishing of directories and mailing lists	5812
58.13	58.1	Publishing of newspapers	5813
58.14	58.1	Publishing of journals and periodicals	5813
58.19	58.1	Other publishing activities	5819
58.2	58	Software publishing	582
58.21	58.2	Publishing of computer games	5820
58.29	58.2	Other software publishing	5820
59	J	Motion picture, video and television programme production, sound recording and music publishing activities	59
59.1	59	Motion picture, video and television programme activities	591
59.11	59.1	Motion picture, video and television programme	5911

		production activities	
59.12	59.1	Motion picture, video and television programme post-production activities	5912
59.13	59.1	Motion picture, video and television programme distribution activities	5913
59.14	59.1	Motion picture projection activities	5914
59.2	59	Sound recording and music publishing activities	592
59.2	59.2	Sound recording and music publishing activities	5920
60	J	Programming and broadcasting activities	60
60.1	60	Radio broadcasting	601
60.1	60.1	Radio broadcasting	6010
60.2	60	Television programming and broadcasting activities	602
60.2	60.2	Television programming and broadcasting activities	6020
61	J	Telecommunications	61
61.1	61	Wired telecommunications activities	611
61.1	61.1	Wired telecommunications activities	6110
61.2	61	Wireless telecommunications activities	612
61.2	61.2	Wireless telecommunications activities	6120
61.3	61	Satellite telecommunications activities	613
61.3	61.3	Satellite telecommunications activities	6130
61.9	61	Other telecommunications activities	619
61.9	61.9	Other telecommunications activities	6190
62	J	Computer programming, consultancy and related activities	62
62	62	Computer programming, consultancy and related activities	620
62.01	62	Computer programming activities	6201
62.02	62	Computer consultancy activities	6202
62.03	62	Computer facilities management activities	6202
62.09	62	Other information technology and computer service activities	6209
63	J	Information service activities	63
63.1	63	Data processing, hosting and related activities; web portals	631
63.11	63.1	Data processing, hosting and related activities	6311
63.12	63.1	Web portals	6312
63.9	63	Other information service activities	639
63.91	63.9	News agency activities	6391
63.99	63.9	Other information service activities n.e.c.	6399
K		FINANCIAL AND INSURANCE ACTIVITIES	K
64	K	Financial service activities, except insurance and pension funding	64
64.1	64	Monetary intermediation	641

64.11	64.1	Central banking	6411
64.19	64.1	Other monetary intermediation	6419
64.2	64	Activities of holding companies	642
64.2	64.2	Activities of holding companies	6420
64.3	64	Trusts, funds and similar financial entities	643
64.3	64.3	Trusts, funds and similar financial entities	6430
64.9	64	Other financial service activities, except insurance and pension funding	649
64.91	64.9	Financial leasing	6491
64.92	64.9	Other credit granting	6492
64.99	64.9	Other financial service activities, except insurance and pension funding n.e.c.	6499
65	K	Insurance, reinsurance and pension funding, except compulsory social security	65
65.1	65	Insurance	651
65.11	65.1	Life insurance	6511
65.12	65.1	Non-life insurance	6512
65.2	65	Reinsurance	652
65.2	65.2	Reinsurance	6520
65.3	65	Pension funding	653
65.3	65.3	Pension funding	6530
66	K	Activities auxiliary to financial services and insurance activities	66
66.1	66	Activities auxiliary to financial services, except insurance and pension funding	661
66.11	66.1	Administration of financial markets	6611
66.12	66.1	Security and commodity contracts brokerage	6612
66.19	66.1	Other activities auxiliary to financial services, except insurance and pension funding	6619
66.2	66	Activities auxiliary to insurance and pension funding	662
66.21	66.2	Risk and damage evaluation	6621
66.22	66.2	Activities of insurance agents and brokers	6622
66.29	66.2	Other activities auxiliary to insurance and pension funding	6629
66.3	66	Fund management activities	663
66.3	66.3	Fund management activities	6630
L		REAL ESTATE ACTIVITIES	L
68	L	Real estate activities	68
68.1	68	Buying and selling of own real estate	681
68.1	68.1	Buying and selling of own real estate	6810
68.2	68	Rental and operating of own or leased real estate	681
68.2	68.2	Rental and operating of own or leased real estate	6810
68.3	68	Real estate activities on a fee or contract basis	682

68.31	68.3	Real estate agencies	6820
68.32	68.3	Management of real estate on a fee or contract basis	6820
M		PROFESSIONAL, SCIENTIFIC AND TECHNICAL ACTIVITIES	M
69	M	Legal and accounting activities	69
69.1	69	Legal activities	691
69.1	69.1	Legal activities	6910
69.2	69	Accounting, bookkeeping and auditing activities; tax consultancy	692
69.2	69.2	Accounting, bookkeeping and auditing activities; tax consultancy	6920
70	M	Activities of head offices; management consultancy activities	70
70.1	70	Activities of head offices	701
70.1	70.1	Activities of head offices	7010
70.2	70	Management consultancy activities	702
70.21	70.2	Public relations and communication activities	7020
70.22	70.2	Business and other management consultancy activities	7020
71	M	Architectural and engineering activities; technical testing and analysis	71
71.1	71	Architectural and engineering activities and related technical consultancy	711
71.11	71.1	Architectural activities	7110
71.12	71.1	Engineering activities and related technical consultancy	7110
71.2	71	Technical testing and analysis	712
71.2	71.2	Technical testing and analysis	7120
72	M	Scientific research and development	72
72.1	72	Research and experimental development on natural sciences and engineering	721
72.11	72.1	Research and experimental development on biotechnology	7210
72.19	72.1	Other research and experimental development on natural sciences and engineering	7210
72.2	72	Research and experimental development on social sciences and humanities	722
72.2	72.2	Research and experimental development on social sciences and humanities	7220
73	M	Advertising and market research	73
73.1	73	Advertising	731
73.11	73.1	Advertising agencies	7310
73.12	73.1	Media representation	7310
73.2	73	Market research and public opinion polling	732
73.2	73.2	Market research and public opinion polling	7320
74	M	Other professional, scientific and technical activities	74

74.1	74	Specialised design activities	741
74.1	74.1	Specialised design activities	7410
74.2	74	Photographic activities	742
74.2	74.2	Photographic activities	7420
74.3	74	Translation and interpretation activities	749
74.3	74.3	Translation and interpretation activities	7490
74.9	74	Other professional, scientific and technical activities n.e.c.	749
74.9	74.9	Other professional, scientific and technical activities n.e.c.	7490
75	M	Veterinary activities	75
75	75	Veterinary activities	750
75	75	Veterinary activities	7500
N		ADMINISTRATIVE AND SUPPORT SERVICE ACTIVITIES	N
77	N	Rental and leasing activities	77
77.1	77	Rental and leasing of motor vehicles	771
77.11	77.1	Rental and leasing of cars and light motor vehicles	7710
77.12	77.1	Rental and leasing of trucks	7710
77.2	77	Rental and leasing of personal and household goods	772
77.21	77.2	Rental and leasing of recreational and sports goods	7721
77.22	77.2	Rental of video tapes and disks	7722
77.29	77.2	Rental and leasing of other personal and household goods	7729
77.3	77	Rental and leasing of other machinery, equipment and tangible goods	773
77.31	77.3	Rental and leasing of agricultural machinery and equipment	7730
77.32	77.3	Rental and leasing of construction and civil engineering machinery and equipment	7730
77.33	77.3	Rental and leasing of office machinery and equipment (including computers)	7730
77.34	77.3	Rental and leasing of water transport equipment	7730
77.35	77.3	Rental and leasing of air transport equipment	7730
77.39	77.3	Rental and leasing of other machinery, equipment and tangible goods n.e.c.	7730
77.4	77	Leasing of intellectual property and similar products, except copyrighted works	774
77.4	77.4	Leasing of intellectual property and similar products, except copyrighted works	7740
78	N	Employment activities	78
78.1	78	Activities of employment placement agencies	781
78.1	78.1	Activities of employment placement agencies	7810
78.2	78	Temporary employment agency activities	782
78.2	78.2	Temporary employment agency activities	7820

78.3	78	Other human resources provision	783
78.3	78.3	Other human resources provision	7830
79	N	Travel agency, tour operator and other reservation service and related activities	79
79.1	79	Travel agency and tour operator activities	791
79.11	79.1	Travel agency activities	7911
79.12	79.1	Tour operator activities	7912
79.9	79	Other reservation service and related activities	799
79.9	79.9	Other reservation service and related activities	7990
80	N	Security and investigation activities	80
80.1	80	Private security activities	801
80.1	80.1	Private security activities	8010
80.2	80	Security systems service activities	802
80.2	80.2	Security systems service activities	8020
80.3	80	Investigation activities	803
80.3	80.3	Investigation activities	8030
81	N	Services to buildings and landscape activities	81
81.1	81	Combined facilities support activities	811
81.1	81.1	Combined facilities support activities	8110
81.2	81	Cleaning activities	812
81.21	81.2	General cleaning of buildings	8121
81.22	81.2	Other building and industrial cleaning activities	8129
81.29	81.2	Other cleaning activities	8129
81.3	81	Landscape service activities	813
81.3	81.3	Landscape service activities	8130
82	N	Office administrative, office support and other business support activities	82
82.1	82	Office administrative and support activities	821
82.11	82.1	Combined office administrative service activities	8211
82.19	82.1	Photocopying, document preparation and other specialised office support activities	8219
82.2	82	Activities of call centres	822
82.2	82.2	Activities of call centres	8220
82.3	82	Organisation of conventions and trade shows	823
82.3	82.3	Organisation of conventions and trade shows	8230
82.9	82	Business support service activities n.e.c.	829
82.91	82.9	Activities of collection agencies and credit bureaus	8291
82.92	82.9	Packaging activities	8292
82.99	82.9	Other business support service activities n.e.c.	8299
O		PUBLIC ADMINISTRATION AND DEFENCE; COMPULSORY SOCIAL SECURITY	O
84	O	Public administration and defence; compulsory social	84

		security	
84.1	84	Administration of the State and the economic and social policy of the community	841
84.11	84.1	General public administration activities	8411
84.12	84.1	Regulation of the activities of providing health care, education, cultural services and other social services, excluding social security	8412
84.13	84.1	Regulation of and contribution to more efficient operation of businesses	8413
84.2	84	Provision of services to the community as a whole	842
84.21	84.2	Foreign affairs	8421
84.22	84.2	Defence activities	8422
84.23	84.2	Justice and judicial activities	8423
84.24	84.2	Public order and safety activities	8423
84.25	84.2	Fire service activities	8423
84.3	84	Compulsory social security activities	843
84.3	84.3	Compulsory social security activities	8430
P		EDUCATION	P
85	P	Education	85
85.1	85	Pre-primary education	851
85.1	85.1	Pre-primary education	8510
85.2	85	Primary education	851
85.2	85.2	Primary education	8510
85.3	85	Secondary education	852
85.31	85.3	General secondary education	8521
85.32	85.3	Technical and vocational secondary education	8522
85.4	85	Higher education	853
85.41	85.4	Post-secondary non-tertiary education	8530
85.42	85.4	Tertiary education	8530
85.5	85	Other education	854
85.51	85.5	Sports and recreation education	8541
85.52	85.5	Cultural education	8542
85.53	85.5	Driving school activities	8549
85.59	85.5	Other education n.e.c.	8549
85.6	85	Educational support activities	855
85.6	85.6	Educational support activities	8550
Q		HUMAN HEALTH AND SOCIAL WORK ACTIVITIES	Q
86	Q	Human health activities	86
86.1	86	Hospital activities	861
86.1	86.1	Hospital activities	8610
86.2	86	Medical and dental practice activities	862
86.21	86.2	General medical practice activities	8620

86.22	86.2	Specialist medical practice activities	8620
86.23	86.2	Dental practice activities	8620
86.9	86	Other human health activities	869
86.9	86.9	Other human health activities	8690
87	Q	Residential care activities	87
87.1	87	Residential nursing care activities	871
87.1	87.1	Residential nursing care activities	8710
87.2	87	Residential care activities for mental retardation, mental health and substance abuse	872
87.2	87.2	Residential care activities for mental retardation, mental health and substance abuse	8720
87.3	87	Residential care activities for the elderly and disabled	873
87.3	87.3	Residential care activities for the elderly and disabled	8730
87.9	87	Other residential care activities	879
87.9	87.9	Other residential care activities	8790
88	Q	Social work activities without accommodation	88
88.1	88	Social work activities without accommodation for the elderly and disabled	881
88.1	88.1	Social work activities without accommodation for the elderly and disabled	8810
88.9	88	Other social work activities without accommodation	889
88.91	88.9	Child day-care activities	8890
88.99	88.9	Other social work activities without accommodation n.e.c.	8890
R		ARTS, ENTERTAINMENT AND RECREATION	R
90	R	Creative, arts and entertainment activities	90
90	90	Creative, arts and entertainment activities	900
90.01	90	Performing arts	9000
90.02	90	Support activities to performing arts	9000
90.03	90	Artistic creation	9000
90.04	90	Operation of arts facilities	9000
91	R	Libraries, archives, museums and other cultural activities	91
91	91	Libraries, archives, museums and other cultural activities	910
91.01	91	Library and archives activities	9101
91.02	91	Museums activities	9102
91.03	91	Operation of historical sites and buildings and similar visitor attractions	9102
91.04	91	Botanical and zoological gardens and nature reserves activities	9103
92	R	Gambling and betting activities	92
92	92	Gambling and betting activities	920
92	92	Gambling and betting activities	9200
93	R	Sports activities and amusement and recreation activities	93

93.1	93	Sports activities	931
93.11	93.1	Operation of sports facilities	9311
93.12	93.1	Activities of sports clubs	9312
93.13	93.1	Fitness facilities	9311
93.19	93.1	Other sports activities	9319
93.2	93	Amusement and recreation activities	932
93.21	93.2	Activities of amusement parks and theme parks	9321
93.29	93.2	Other amusement and recreation activities	9329
S		OTHER SERVICE ACTIVITIES	S
94	S	Activities of membership organisations	94
94.1	94	Activities of business, employers and professional membership organisations	941
94.11	94.1	Activities of business and employers membership organisations	9411
94.12	94.1	Activities of professional membership organisations	9412
94.2	94	Activities of trade unions	942
94.2	94.2	Activities of trade unions	9420
94.9	94	Activities of other membership organisations	949
94.91	94.9	Activities of religious organisations	9491
94.92	94.9	Activities of political organisations	9492
94.99	94.9	Activities of other membership organisations n.e.c.	9499
95	S	Repair of computers and personal and household goods	95
95.1	95	Repair of computers and communication equipment	951
95.11	95.1	Repair of computers and peripheral equipment	9511
95.12	95.1	Repair of communication equipment	9512
95.2	95	Repair of personal and household goods	952
95.21	95.2	Repair of consumer electronics	9521
95.22	95.2	Repair of household appliances and home and garden equipment	9522
95.23	95.2	Repair of footwear and leather goods	9523
95.24	95.2	Repair of furniture and home furnishings	9524
95.25	95.2	Repair of watches, clocks and jewellery	9529
95.29	95.2	Repair of other personal and household goods	9529
96	S	Other personal service activities	96
96	96	Other personal service activities	960
96.01	96	Washing and (dry-)cleaning of textile and fur products	9601
96.02	96	Hairdressing and other beauty treatment	9602
96.03	96	Funeral and related activities	9603
96.04	96	Physical well-being activities	9609
96.09	96	Other personal service activities n.e.c.	9609
T		ACTIVITIES OF HOUSEHOLDS AS EMPLOYERS; UNDIFFERENTIATED GOODS- AND SERVICES-	T

		PRODUCING ACTIVITIES OF HOUSEHOLDS FOR OWN USE	
97	T	Activities of households as employers of domestic personnel	97
97	97	Activities of households as employers of domestic personnel	970
97	97	Activities of households as employers of domestic personnel	9700
98	T	Undifferentiated goods- and services-producing activities of private households for own use	98
98.1	98	Undifferentiated goods-producing activities of private households for own use	981
98.1	98.1	Undifferentiated goods-producing activities of private households for own use	9810
98.2	98	Undifferentiated service-producing activities of private households for own use	982
98.2	98.2	Undifferentiated service-producing activities of private households for own use	9820
U		ACTIVITIES OF EXTRATERRITORIAL ORGANISATIONS AND BODIES	U
99	U	Activities of extraterritorial organisations and bodies	99
99	99	Activities of extraterritorial organisations and bodies	990
99	99	Activities of extraterritorial organisations and bodies	9900

Appendix 4

2004 to 2013 average and cumulative unrecorded outflows from developing world.

Table 18: Unrecorded Capital outflows per country (US$ Millions)

Country	2007	2010	2013	Cumulative	Average
Afghanistan, Islamic Republic of	0	0	0	1,331	133
Albania	220	190	18	1,234	123
Algeria	1,301	1,406	1,043	15,246	1,525
Angola	1,641	0	55	3,850	385
Antigua and Barbuda	4	0	0	49	5
Argentina	5,391	5,265	17,171	76,540	7,654
Armenia, Republic of	806	1,201	1,848	9,833	983
Aruba	13,517	319	647	80,577	8,058
Azerbaijan, Republic of	26,816	7,860	14,736	94,999	9,500
Bahamas, The	1,622	2,197	2,368	17,727	1,773
Bahrain, Kingdom of	1,677	0	123	7,907	791
Bangladesh	4,098	5,409	9,666	55,877	5,588
Barbados	66	86	67	1,138	114
Belarus	8,325	7,911	11,284	88,197	8,820
Belize	185	95	135	1,291	129
Benin	0	343	81	1,493	149
Bhutan	101	0	0	318	40
Bolivia	103	809	2,273	6,267	627
Bosnia and Herzegovina	67	0	0	198	20
Botswana	1,687	1,230	1,242	13,680	1,368
Brazil	16,430	30,770	28,185	226,667	22,667
Brunei Darussalam	5,860	6,131	.	45,595	5,066

Bulgaria	4,641	681	1,998	24,768	2,477
Burkina Faso	247	490	856	4,262	426
Burundi	53	14	227	866	87
Cabo Verde	43	27	48	431	43
Cambodia	1,046	1,273	4,007	15,086	1,509
Cameroon	1,121	622	291	7,523	752
Central African Republic	1	34	0	162	16
Chad	989	1,146	1,532	10,756	1,076
Chile	4,394	5,895	9,725	54,995	5,500
China, P.R.: Mainland	107,435	172,367	258,640	1,392,276	139,228
Colombia	608	625	1,185	14,745	1,475
Comoros	20	29	96	539	54
Congo, Democratic Republic of	170	175	18	2,254	225
Congo, Republic of	1,723	1,784	894	15,230	1,523
Costa Rica	5,816	15,788	21,383	113,459	11,346
Cote d'Ivoire	3,429	1,767	1,917	23,344	2,334
Croatia	4,111	2,338	2,354	34,556	3,456
Djibouti	385	486	413	3,745	375
Dominica	0	4	0	17	2
Dominican Republic	865	2,344	2,243	14,578	1,458
Ecuador	1,523	3,818	1,948	25,966	2,597
Egypt	4,817	2,145	3,619	39,827	3,983
El Salvador	1,725	1,600	1,846	17,437	1,744
Equatorial Guinea	947	2,851	4,455	21,750	2,175
Eritrea	21	.	.	115	38
Ethiopia	1,491	5,618	3,371	25,835	2,583
Fiji	239	270	166	2,748	275
Gabon	0	382	0	3,140	314
Gambia, The	72	134	127	898	90

Georgia	1,566	1,227	1,190	14,945	1,495
Ghana	37	721	659	4,013	401
Grenada	54	59	89	544	54
Guatemala	1,526	1,990	2,672	21,793	2,179
Guinea	633	413	446	3,258	326
Guinea-Bissau	193	68	19	620	62
Guyana	226	579	318	2,847	285
Haiti	95	61	512	1,299	130
Honduras	4,787	4,761	5,579	46,935	4,694
Hungary	2,593	5,510	7,193	57,062	5,706
India	34,513	70,337	83,014	510,286	51,029
Indonesia	18,354	14,646	14,633	180,710	18,071
Iran, Islamic Republic of	15,173	3,247	0	64,223	6,422
Iraq	3,660	21,115	15,994	105,005	10,501
Jamaica	273	348	308	6,358	636
Jordan	918	1,632	3,359	15,223	1,522
Kazakhstan	20,794	11,236	24,529	167,401	16,740
Kenya	258	0	255	829	83
Kiribati	3	5	19	50	5
Kosovo, Republic of	0	0	0	0	0
Kuwait	5,116	0	4,508	28,471	2,847
Kyrgyz Republic	476	150	0	1,010	101
Lao People's Democratic Republic	930	478	1,584	6,638	664
Lebanon	6,605	149	0	19,915	1,991
Lesotho	420	294	255	3,409	341
Liberia	1,905	560	547	9,659	966
Libya	0	2,137	3,008	11,833	1,183
Macedonia, FYR	597	459	235	5,162	516
Madagascar	179	246	184	5,072	507

Malawi	442	766	824	6,496	650
Malaysia	36,525	62,154	48,251	418,542	41,854
Maldives	49	62	345	1,089	109
Mali	187	945	800	4,688	469
Mauritania	0	0	292	400	67
Mauritius	462	719	891	6,093	609
Mexico	46,443	67,450	77,583	528,439	52,844
Moldova	855	784	1,007	9,079	908
Mongolia	212	0	125	1,478	148
Montenegro	380	0	0	2,566	257
Morocco	4,126	3,493	3,934	41,015	4,102
Mozambique	103	640	260	2,426	243
Myanmar	336	2,132	0	6,840	684
Namibia	1,610	1,673	1,264	13,924	1,392
Nepal	544	1,521	0	5,674	567
Nicaragua	2,552	2,870	4,846	30,273	3,027
Niger	102	561	143	1,572	157
Nigeria	19,335	19,376	26,735	178,040	17,804
Oman	4,236	2,759	8,209	43,850	4,385
Pakistan	0	729	529	1,917	192
Panama	1,918	2,622	2,604	21,038	2,104
Papua New Guinea	34	471	474	4,724	472
Paraguay	2,461	2,653	4,116	37,501	3,750
Peru	2,474	4,722	7,013	42,838	4,284
Philippines	7,910	8,874	7,938	90,250	9,025
Poland	3,876	13,503	16,793	90,017	9,002
Qatar	2,814	5,719	5,005	47,129	4,713
Romania	5,284	1,958	3,613	34,866	3,487
Russian Federation	81,237	136,622	120,331	1,049,772	104,977

Rwanda	177	430	1,039	3,589	359
Samoa	144	129	149	1,454	145
Sao Tome and Principe	10	10	31	178	18
Saudi Arabia	1,032	2,830	6,938	28,766	2,877
Senegal	693	588	1,029	8,034	803
Serbia, Republic of	3,156	3,005	2,910	40,830	4,083
Seychelles	0	107	0	458	46
Sierra Leone	861	1,915	413	5,580	558
Solomon Islands	136	157	167	1,369	137
Somalia	.	.	0	0	0
South Africa	27,292	24,613	17,421	209,219	20,922
Sri Lanka	1,890	2,634	1,753	19,967	1,997
St. Kitts and Nevis	7	26	0	53	5
St. Lucia	0	0	23	121	12
St. Vincent and the Grenadines	0	0	0	53	5
Sudan	2,177	1,410	531	13,115	1,311
Suriname	764	947	882	7,598	760
Swaziland	1,364	394	295	5,817	582
Syrian Arab Republic	1,255	2,008	10,642	47,667	4,767
Tajikistan	337	0	0	934	93
Tanzania	58	1,355	323	4,820	482
Thailand	10,348	24,100	32,971	191,768	19,177
Timor-Leste, Dem. Rep. of	9	0	43	188	23
Togo	2,883	1,173	1,479	22,293	2,229
Tonga	9	48	0	169	17
Trinidad and Tobago	2,728	3,382	6,449	36,663	3,666
Tunisia	1,676	1,726	1,993	16,842	1,684
Turkey	17,237	13,365	26,487	154,500	15,450
Turkmenistan	0	.	.	178	36

Uganda	701	1,143	363	7,149	715
Ukraine	7,175	13,843	13,911	116,762	11,676
United Arab Emirates	0	0	0	0	0
Uruguay	768	2,081	1,515	9,558	956
Uzbekistan	.	.	.	.	.
Vanuatu	286	171	203	2,247	225
Venezuela, Republica Bolivariana de	18,349	7,863	9,162	123,936	12,394
Vietnam	5,473	8,358	17,837	92,935	9,293
Yemen, Republic of	458	0	125	3,068	307
Zambia	3,355	2,683	3,709	28,853	2,885
Zimbabwe	97	0	0	2,763	276
Sub-Saharan Africa	77,012	78,038	74,593	674,977	67,498
Asia	236,485	381,729	481,988	3,048,278	304,828
Developing Europe	190,551	221,845	250,437	1,998,870	199,887
MENA+AP	57,426	52,992	70,266	556,496	55,650
Western Hemisphere	137,672	172,027	212,846	1,569,299	156,930
All Developing Countries	**699,145**	**906,631**	**1,090,130**	**7,847,921**	**784,792**

Note: A "." indicates missing data.
Source: GFI Estimates 2004-2013

Appendix 5

Average of annual unrecorded outflows as percentage of GDP 2004-2013

Table 19: Annual unrecorded outflows as percentage of GDP

Country	Percentage
Aruba	403.9453
Liberia	82.38327
Togo	73.49564
Vanuatu	37.33025
Djibouti	36.70992
Nicaragua	36.46676
Costa Rica	35.60041
Brunei Darussalam	35.51125
Honduras	33.47054
Samoa	23.14951
Azerbaijan	22.26475
The Bahamas	22.26158
Paraguay	21.68803
Suriname	21.30273
Sierra Leone	21.21983
Solomon Islands	20.65842
Equatorial Guinea	19.12594
Malaysia	18.91291
Lesotho	18.44592
Belarus	17.78758
Swaziland	17.57551
Trinidad and Tobago	17.16383
Moldova	17.13383
Zambia	16.93513
Syria	16.15768
Malawi	16.03819
Congo - Brazzaville	14.92444
Cambodia	14.83101

Namibia	14.23651
Guyana	13.97246
Georgia	13.45489
Kazakhstan	12.81425
Armenia	11.68288
Botswana	11.41011
Laos	11.28437
Chad	11.25156
The Gambia	10.97195
Serbia	10.58853
Comoros	10.57522
CÃ´te dâ€™Ivoire	10.19038
Ethiopia	9.62232
Belize	9.57997
Sao Tome and Principe	9.13866
Vietnam	9.07136
Oman	8.53247
Panama	8.46772
El Salvador	8.45355
Ukraine	8.45176
Iraq	8.342
Fiji	8.32776
Guinea-Bissau	7.7852
Russian Federation	7.47062
Rwanda	7.39477
Guinea	7.28261
Grenada	7.22316
Montenegro	7.03271
Thailand	6.98393
Jordan	6.85912
Mauritius	6.81016
Senegal	6.7021
South Africa	6.54269
Madagascar	6.38938
Lebanon	6.1775
Croatia	6.09665
Macedonia	5.92028
Nigeria	5.66308
Guatemala	5.65123
Mali	5.63675

Bulgaria	5.52462
Maldives	5.51958
Venezuela	5.46566
Bangladesh	5.25404
Papua New Guinea	5.22502
Philippines	5.14496
Burkina Faso	5.13768
Mexico	5.12331
Morocco	4.96045
Jamaica	4.94111
Burundi	4.89778
Tonga	4.78401
Sri Lanka	4.70886
Seychelles	4.48805
Hungary	4.44724
Nepal	4.2559
Qatar	4.21402
Tunisia	4.1336
Ecuador	4.11428
Uganda	4.06318
India	3.75333
Kiribati	3.5202
Bolivia	3.49411
Cameroon	3.35794
Bahrain	3.34821
Peru	3.32366
Dominican Republic	3.08969
Niger	3.05832
Zimbabwe	3.0536
Indonesia	2.97598
Uruguay	2.92424
Chile	2.8771
Cabo Verde	2.77843
China	2.71382
Barbados	2.65483
Sudan	2.62556
Bhutan	2.45612
Benin	2.42153
Turkey	2.37237
Kuwait	2.31615

Egypt	2.28217
Gabon	2.27949
Mozambique	2.2408
Romania	2.22472
Kyrgyzstan	2.19235
Mongolia	2.16117
Haiti	2.09245
Poland	2.08328
Libya	1.93901
Myanmar	1.916
Argentina	1.90141
Tajikistan	1.89559
Iran	1.77878
Tanzania	1.75011
Ghana	1.36541
Brazil	1.32925
Yemen	1.16754
Congo - Kinshasa	1.16303
Albania	1.11965
Afghanistan	1.08417
Mauritania	1.06974
St. Lucia	1.04357
Algeria	0.99926
Central African Republic	0.91812
St. Vincent and the Grenadines	0.82242
St. Kitts and Nevis	0.78042
Eritrea	0.59582
Colombia	0.59384
Saudi Arabia	0.57504
Angola	0.52314
Timor-Leste	0.50898
Antigua and Barbuda	0.42035
Dominica	0.37524
Kenya	0.23196
Bosnia and Herzegovina	0.12794
Pakistan	0.11248
Turkmenistan	0.07177
Kosovo	0
United Arab Emirates	0
Somalia	

Uzbekistan

Source: Own calculation from GFI, IMF data

Appendix 6

Table 20 Regional Distribution Table

Developed		Africa		East Asia	South & Cen. Asia	Middle East	Europe	North America	Sou Am
Austria	Turkey	Algeria	Libya	China	Sri Lanka	Syria	Albania	Aruba	Arg
Belgium	UK	Angola	Madagascar	Mongolia	Bangladesh	Lebanon	Belarus	Costa Rica	Bol
Canada	US	Benin	Malawi	North Korea	India	Palestine	Bosnia	Cuba	Bra
Denmark	Australia	Botswana	Mali	Hong Kong	Afghanistan	Jordan	Bulgaria	Curaçao	Col
France	Finland	Burkina Faso	Mauritania	Taiwan	Pakistan	Iraq	Croatia	Dominica	Ecu
Germany	Japan	Burundi	Mauritius	Brunei	Bhutan	Iran	Cyprus	Dom. Rep.	Gu
Greece	New Zealand	Cameroon	Morocco	Cambodia	Nepal	Kuwait	Kosovo	El Salvador	Par
Iceland	Chile	Cape Verde	Mozambique	Indonesia	Maldives	Qatar	Latvia	Guatemala	Per
Italy	Czech Rep.	CAR	Namibia	Laos	Tajikistan	Saudi Ara.	Lithuania	Haiti	Sur
Netherlands	Estonia	Chad	Niger	Malaysia	Uzbekistan	UAE	Macedonia	Honduras	Uru
Norway	Hungary	Comoros	Nigeria	Myanmar	Kazakhstan	Oman	Moldova	Jamaica	Ven
Portugal	Poland	Rep. Congo	Rwanda	Philippines	Turkmenistan	Yemen	Montenegro	Martinique	
Spain	Slovakia	DRC	São Tomé	Singapore	Kyrgyzstan		Romania	Mexico	
Sweden	South Korea	Côte d'Ivoire	Senegal	Thailand	Georgia		Russia	Montserrat	
	Israel	Djibouti	Seychelles	Timor Lest	Armenia		San Marino	Nicaragua	

	Slovenia	Egypt	Sierra Leone	Vietnam	Azerbaijan	Serbia	Panama
		Eq. Guinea	Somalia			Ukraine	Trinidad
		Eritrea	South Africa				
		Ethiopia	South Sudan				
		Gabon	Sudan				
		The Gambia	Swaziland				
		Ghana	Tanzania				
		Guinea	Togo				
		Guinea Bis.	Tunisia				
		Kenya	Uganda				
		Lesotho	Zambia				
		Liberia	Zimbabwe				

Table 21. List of countries by unrecorded capital outflows (Top 50)

Extreme Capital Flight (Top 10)	Large Capital Flight (11-30)	Medium Capital Flight (31 – 50)
China	Kazakhstan	Oman
Russian	Turkey	Peru
Mexico	Venezuela	Morocco
India	Ukraine	Serbia
Malaysia	Costa Rica	Egypt
Brazil	Iraq	Paraguay
South Africa	Azerbaijan	Trinidad and Tobago
Thailand	Vietnam	Romania
Indonesia	Philippines	Nicaragua
Nigeria	Poland	Zambia
	Belarus	Saudi Arabia
	Aruba	Kuwait
	Argentina	Ecuador
	Iran	Ethiopia
	Hungary	Bulgaria
	Bangladesh	Cote d'Ivoire
	Brunei Darussalam	Togo
	Syria	Guatemala
	Qatar	Equatorial Guinea
	Honduras	Sri Lanka

Table 22 List of countries by unrecorded capital outflows (GDP %)

GDP Above 10%	GDP 5%-10%	GDP 2%-5%	GDP Below 2%
Aruba	Ethiopia	Morocco	Libya
Liberia	Sao Tome and Principe	Jamaica	Myanmar
Togo	Vietnam	Burundi	Argentina
Vanuatu	Oman	Tonga	Tajikistan
Djibouti	Panama	Sri Lanka	Iran
Nicaragua	El Salvador	Hungary	Tanzania
Costa Rica	Ukraine	Nepal	Ghana
Brunei Darussalam	Iraq	Qatar	Brazil
Honduras	Fiji	Tunisia	Yemen
Samoa	Guinea-Bissau	Ecuador	Congo - Kinshasa
Azerbaijan	Russian Federation	Uganda	Albania
Paraguay	Rwanda	India	Afghanistan
Suriname	Guinea	Kiribati	Mauritania
Sierra Leone	Montenegro	Bolivia	Algeria
Solomon Islands	Thailand	Cameroon	Central African Republic
Equatorial Guinea	Jordan	Peru	Eritrea
Malaysia	Mauritius	Dominican Republic	Colombia
Lesotho	Senegal	Niger	Saudi Arabia
Belarus	South Africa	Zimbabwe	Angola
Swaziland	Madagascar	Indonesia	Timor-Leste
Trinidad and Tobago	Lebanon	Uruguay	Dominica
Moldova	Croatia	Cabo Verde	Kenya
Zambia	Macedonia	China	Bosnia and Herzegovina
Syria	Nigeria	Sudan	Pakistan
Malawi	Guatemala	Bhutan	Turkmenistan
Congo - Brazzaville	Mali	Benin	
Cambodia	Bulgaria	Turkey	

Namibia	Maldives	Kuwait
Guyana	Venezuela	Egypt
Georgia	Bangladesh	Gabon
Kazakhstan	Papua New Guinea	Mozambique
Armenia	Philippines	Romania
Botswana	Burkina Faso	Kyrgyzstan
Laos	Mexico	Mongolia
Chad		Haiti
The Gambia		
Serbia		
Comoros		
Côte d'Ivoire		