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Effect of Enhanced Financial Transparency on Foreign Aid Captured by Elites

Master's thesis

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Declaration of Authorship

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Prague, May 2, 2023

Jan Žalman

Abstract

This thesis estimates the capture of foreign aid in developing countries, where elites divert the aid intended for economic growth and poverty reduction to offshore bank deposits in tax havens. Using publicly available data, we analyze the relationship between aid disbursements and offshore deposits and find that while the aid capture persists since 1990, the enhanced financial transparency has had a diminishing impact. We also investigate the role of portfolio investment and corruption, emphasizing the importance of addressing these issues to ensure effective aid redistribution. Our findings suggest that the increased financial transparency demanded by international organizations and individual countries have positively impacted the capture of aid in tax havens.

Abstrakt

Tato práce se zabývá odhadem úniků rozvojové zahraniční pomoci v zemích, kde vládnoucí elity odklánějí pomoc určenou pro hospodářský růst a snižování chudoby na zahraniční bankovní účty v daňových rájích. S využitím veřejně dostupných dat analyzujeme vztah mezi výplatami rozvojové pomoci a zahraničními bankovními vklady a ukazujeme, že zatímco úniky přetrvávají od roku 1990, zvýšená finanční transparentnost měla pozitivní vliv. Zároveň zkoumáme roli portfoliových investic a korupce v zachycení rozvojové pomoci a zdůrazňujeme důležitost řešení těchto problémů pro zajištění účinné redistribuce. Naše zjištění naznačují, že zvýšená finanční transparentnost požadovaná mezinárodními organizacemi a jednotlivými zeměmi pozitivně ovlivnila zachycení pomoci v daňových rájích.

Klasifikace JEL	F35, O19
Klíčová slova	úniky rozvojové pomoci, offshorové bankovní vklady, rozvojová pomoc, finanční transparentnost, daňové ráje
Název práce	Vliv zvýšené finanční transparentnosti na úniky zahraniční rozvojové pomoci

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Acronyms

BEPS	Base Erosion and Profit Shifting
BIS	Bank for International Settlements
CCE	Control of Corruption Estimate
CPIS	Coordinated Portfolio Investment Survey
CRED	Centre for Research on the Epidemiology of Disasters
GDP	Gross Domestic Product
IBRD	International Bank for Reconstruction and Development
ICIJ	International Consortium of Investigative Journalists
IDA	International Development Association
IMF	International Monetary Fund
ODA	Official Development Assistance
OECD	Organisation for Economic Co-operation and Development
PRIO	Peace Research Institute Oslo
SDDS	Special Data Dissemination Standard
UN	United Nations
WGI	Worldwide Governance Indicators

Master's Thesis Proposal

Author	Bc. Jan Žalman
Supervisor	PhDr. Miroslav Palanský M.A., Ph.D.
Proposed topic	Effect of Enhanced Financial Transparency on Foreign Aid Captured by Elites

Motivation As the foreign aid is often controversial and remains criticized for its insufficient contribution to economic growth and poverty reduction, ensuring its correct redistribution is utterly fundamental. The fact that a considerable number of countries receiving the foreign aid face high levels of corruption causes fears that the donated aid does not end up at its intended destination. Instead, the aid flows are being captured by the ruling politicians.

The aid diversion had been studied by Andersen et al. (2022). The authors combine quarterly information on aid disbursements from the World Bank and foreign deposits from the Bank for International Settlements (BIS). Their results are consistent with the claim that the fraction of aid disbursements is detained by the ruling elites and transferred to the havens. The baseline model of the study estimates that the aid leakage rate is around 7.5% in 22 highly aid dependent countries. The sample period is 1990-2010 and the study itself is going to be the core bibliography of my thesis.

Since 2009, tax havens around the globe had been demanded by international organization such as OECD and individual countries such as the United States to enhance its financial transparency (Johannesen and Zucman 2014). Therefore, I am going to conduct the baseline model used by Andersen et al. (2022) with minor changes to determine the effect of enhanced financial transparency on foreign aid disbursements in sample period 2009-2020.

Hypotheses

Hypothesis #1: Enhanced financial transparency demanded by international organizations and largest world economies redistributing the foreign aid has an improving effect on its capture by elites.

Hypothesis #2:The leakage rate of aid flows is higher in the countries with elevated level of corruption.

Methodology   Concerning the existing foreign aid capture literature in the first part of the thesis, I will conduct high-powered test of the effects of financial transparency on aid diversion, exploiting the country-level information exchange (Andersen et al. 2022). The main parameter of the baseline model is going to express the percentage change in haven deposits linked with a foreign aid equivalent to 1% of GDP. The measure indicates the change in haven deposits predicted by variables such as the country's average rate in haven deposits, local shocks to income and shocks to haven deposits. To eliminate redundant cross-border money flows, I am also going to estimate the growth rate of deposits in non havens. Additionally, I am going to extend the data sample by portfolio investment on the side of the outcome variable and some other relevant development resources on the side of the aid variable.

However, there is a challenge to the identification in the baseline model: the potential endogeneity of aid. For example, the macroeconomic shocks (such as financial crisis) may cause a significant capital transfers and a surge in foreign aid resulting into false positive correlation between aid disbursements and foreign deposits. To address the endogeneity threat, I will follow the methods of Andersen et al. (2022). The authors exploit the high-frequency nature of the data sample and test for preexisting differential trends in haven deposits by adding leading values of aid disbursements to the estimating equation. Nonzero coefficients on the leading disbursements may suggest of endogeneity.

Expected Contribution   Estimating the leakage rate of aid disbursements in sample period 2009-2018 may reveal whether the demanded enhanced financial transparency had an intended effect of decreasing the foreign aid flows captured by the ruling elites. The most expected contribution of my work will be a contribution in the form of a comparison of two time periods, which will reveal the effect of increased financial transparency on the leakage of development aid to tax havens and data expansion on both sides of the model. Intuitively, I expect that the leakage rate 7.5% inducted by Andersen et al. (2022) is going to decrease.

Outline

1. Introduction

2. Methodology

3. Data

   (a) Cross-Border Bank Deposits

    (b) Foreign Aid

    (c) Portfolio Investment

    (d) Tax havens linked to aid-dependent countries

    (e) Other variables

4. Results

Core bibliography

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Chapter 1

Introduction

As foreign aid is often controversial and remains criticized for its insufficient contribution to economic growth and poverty reduction, it is fundamental to ensure its correct allocation. The fact that a considerable number of countries receiving foreign aid face high levels of corruption causes fears that the donated aid does not end up at its intended destination. Instead, the aid flows are being captured by the ruling politicians.

The objective of this thesis is to empirically analyze the capture of foreign aid by change of foreign bank deposits in tax havens. Building on a paper by Andersen et al. (2022), we first replicate their findings with a publicly available data set on an extended sample period to study whether the change in bank deposits in tax havens is associated with disbursed aid.

After we provide an outline of theoretical concepts and a relevant body of literature, we analyze the relationship between the change in foreign bank deposits linked to aid disbursements. We find that the effect of aid capture is present in the 1990-2018 time period. Nevertheless, since 2009, international organizations such as Organisation for Economic Co-operation and Development (OECD) and individual countries such as the United States have demanded tax havens around the globe to enhance their financial transparency (Johannesen and Zucman 2014).

Our results suggest that the global initiation to the end of bank secrecy has had a positive impact inducing that the effect of aid capture begins to diminish after the year 2008, coinciding with the initial release of customer information from tax havens (Johannesen and Stolper 2021).

As the majority of the countries receiving foreign aid often face high levels of corruption (Alesina and Weder 2002), we find that aid capture may have

been more widespread in aid-dependent countries that have weak governance. Additionally, we analyze the relationship between portfolio investment of aid-dependent countries and the aid they receive, finding no significant effect.

The primary challenge to identifying causality between change in haven bank deposits and received aid is the risk of endogeneity concerning foreign aid. We address these endogeneity concerns by conducting heterogeneity analysis to check the robustness of our results. A sensitivity analysis of each classified tax haven reveals that Switzerland is the most significant among other offshore financial centers. Furthermore, we carry out tests where we remove observations with certain events that may affect our estimates.

Our thesis contributes to the understanding of aid effectiveness by developing several empirical hypotheses to test the effect of enhanced financial transparency on the capture of aid. Our findings have important implications for the efficient allocation of foreign aid particularly in aid-dependent countries with a high degree of corruption.

The remainder of this thesis is structured as follows. Chapter 2 summarizes the previous literature that is relevant to the main subject of our research, i.e., the efficiency of foreign aid, corruption, and illicit financial flows. In Chapter 4, we describe the empirical methodology used to detect the presence of aid capture in the sample of aid-dependent countries. Chapter 3 describes the data sources we used to conduct our empirical analysis. Chapter 5 interprets the results of the baseline model. In Section 5.6, we discuss the limitations and provide further research suggestions. The overall conclusion is presented in Chapter 6.

Chapter 2

Literature review

In this section, our goal is to present a detailed overview of the literature that is relevant to the main subject of our research. To achieve this, we divide the related studies into three chapters aligning with our thesis's core concepts. First, we provide a general review of two contrary positions on the efficiency of foreign aid, as it has been an ongoing dilemma for decades. Second, as corruption is an integral aspect of both aid inflows and capital outflows, we examine the relevant papers that address the intersection between corruption, aid, and capital flight. Third, we explore relevant literature that pertains to different forms of tax evasion, given that our thesis examines how aid fractions are shifted to tax havens.

2.1 Foreign Aid

The distribution of foreign aid is often a source of contention and has faced criticism for its limited impact on economic growth and poverty reduction. A significant body of literature deals with the issue of inefficient aid redistribution. The argument that aid buys growth is not well-supported by theory or evidence. Easterly (2007) describes how the development assistance in a form of foreign aid turned out to be a mistake. Additionally, Easterly (2003) shows that foreign aid promotes economic growth in countries with good policies is not consistently supported by empirical evidence or alternative definitions of key variables. This paper also points out that aid agencies face inadequate incentives to deliver results and conduct rigorous evaluations. Therefore, the author suggests that aid should aim for more modest goals and focus on assisting some of the people some of the time, rather than trying to promote

society-wide transformation. Similarly, Chong et al. (2009) examines the effect of foreign aid on income inequality and poverty reduction. In their paper, they find weak evidence that foreign aid is advantageous for the improvement of income distribution when the quality of institutions is considered. Even though their results are not robust, they are consistent with empirical research on aid (in)effectiveness in achieving economic growth or promoting democratic institutions. Boone (1996) finds that foreign aid is ineffective, as the Sub-Saharan African region, despite being the largest recipient of foreign aid in the world, remains the poorest with low Human Development Index and Gross National Income per capita.

Yet the scientists cannot find a consensus on the impact of aid. Werker et al. (2009) analyzed the impact of foreign aid by examining its short-term effect on aggregate demand, national accounts, and balance of payments. They discovered that foreign aid has a positive impact on most components of Gross Domestic Product (GDP), however, most of the aid is consumed in the form of imported non-capital goods. Dalgaard et al. (2004) examines the impact of foreign aid on economic growth and productivity in recipient countries. The authors found that while aid may have positive effects in the long term, there also appear challenges in ensuring that is used effectively and efficiently. Temple and Van de Sijpe (2017) presented a new approach, called the 'supply-push' instrument, for studying the impact of foreign aid, by examining its effect on macroeconomic ratios, particularly the ratios of consumption, imports, exports to GDP, and investment. Some scholars argue that aid flows play a focal role in promoting development in the poorest countries.

In a seminal contribution of how aid is spent and reduces poverty, Collier and Dollar (2002) derive poverty-efficient allocation of aid and compare it with actual aid allocations suggesting that the aid allocation of its maximum effect on poverty depends on the quality of policies together with level of poverty. They conclude that the actual allocation of aid is radically different from the poverty-efficient allocation. Sachs (2005) suggests that simultaneous trade and investments in and aid to poor countries lead to their socio-economic development, in addition to technology and energy support. Wright and Winters (2010) reviews the literature on foreign aid and economic growth in recipient countries. The authors provide new evidence suggesting that since 1990, aid donors reward political contestation but not political inclusiveness. They also discuss challenges in analyzing cross-national data on the aid/growth relationship and argue that politics can be viewed as both an exogenous constraint

that conditions the causal process linking aid to growth and an endogenous factor that is affected by foreign aid and impacts economic growth.

Many studies also emphasize the fact that the effectiveness of foreign aid depends focally on the quality of institutions and policies of the receiving countries. Burnside and Dollar (2000) find that aid has a positive impact on the growth of developing countries with good fiscal, monetary, and trade policies. Alternatively, the effect is low in the presence of poor policies. Dollar and Levin (2006) examine the selectivity of foreign aid in relation to the quality of institutions, specifically democracy and property rights/rule of law, and how this has evolved over time. The authors find that multilateral aid is more selective than bilateral aid in targeting countries with good rule of law, and that "selectivity" is a new phenomenon. During 1984-89, both bilateral and multilateral aid had significant negative relationships with the rule of law; by 2000-03, this had shifted to a significant positive relationship for multilateral aid and a positive but statistically insignificant relationship for bilateral aid. Qian (2015) discusses the role of foreign aid in improving population well-being and facilitating economic and institutional development in poor countries. The author argues that the empirical evidence on the benefits of foreign aid is mixed and controversial. Descriptive statistics show that foreign aid to very poor countries accounts for very little of total global aid, and foreign aid is often determined by the objectives of donor countries rather than the needs of recipient countries. The author also points out the measurement and identification problems in the empirical evidence on the impact of aggregate foreign aid, which partly result from the heterogeneous nature of aid. The article discusses recent studies that use natural and randomized experiments to examine the narrowed definitions of aid on more disaggregated outcomes.

In conclusion, the distribution of foreign aid remains a contentious issue in the existing literature, with papers presenting both positive and negative impacts. The effectiveness of aid depends profoundly on the quality of policies and institutions of the recipient countries, with good policies resulting positively on economic growth and poverty reduction. On the other hand, ineffective policies may result in aid having a limited impact or even being counterproductive. Overall, more research is still needed to understand the complexities of foreign aid as its impact still remains a puzzle.

2.2   Corruption

A certain number of skeptics often express concern that aid flows may be captured by political and economic elites. Alesina and Weder (2002) find that according to the selected measures of corruption, more corrupt governments tend to receive a larger amount of aid. The authors document that there is a lack of evidence of less corrupt countries receive more foreign aid. This conclusion would resonate with the game-theoretic rent-seeking model provided by Svensson (2000) who studies a relationship between corruption, rent-seeking activities, and concessional assistance. Subsequently, there is no evidence that the donors thoroughly allocate aid to less corrupted countries.

A different approach is used by Larraín and Tavares (2004). They ask whether aid flows increase the corruption level of the recipient country by using data on a cross-section of developing countries and instrumenting for total aid inflows. With statistically and economically significant results that are robust to the use of different control, the authors find that foreign aid decreases corruption. Bjørnskov (2010) suggests that aid may be more effective in developing countries rather relatively democratic than corrupted and authoritarian. Additionally, with the expansion of economists' ability to measure corruption, Olken and Pande (2012) find evidence that corruption responds to standard economic incentive theory but also that the effects of anticorruption policies often attenuate as officials find alternate strategies to pursue rents.

Researchers also study how the aid may impact the political regime of the receiving country. For example, Knack (2004) provides a multivariate analysis of the impact of aid on democratization in a large sample of receiving countries in the 1975-2000 period. He finds no evidence that aid promotes democracy. By contrast, Kosack (2003) consider aid effectiveness by its ability to improve quality of life. He suggests that when combined with efforts to encourage democratization, aid would be more effective. Wright and Winters (2010) investigates the effectiveness of foreign aid conditional on progress toward democracy. The study shows that the promise of higher aid if the country democratizes only incentivizes democratization for political leaders who expect to remain in office after democratization. Their findings suggests that dictators with large distributional coalitions, who have a good chance of winning fair elections, tend to respond to aid by democratizing, while aid helps dictators with the smallest distributional coalitions hang on to power. The study presents a model that shows a dictator's decision calculus, given different a priori support coalitions

and varying degrees of aid conditionality, and tests the model implications with data from 190 authoritarian regimes in 101 countries from 1960 to 2002.

Alternatively, Tingley (2010) studies what are the domestic sources of support for foreign aid. Specifically, how does the donor's domestic political and economic environment influence the "aid effort". The results suggest that models exclusively emphasizing donor economic and international interests as determinants of donor aid policy may be misspecified. Knack and Rahman (2007) examines the impact of donor fragmentation on the quality of government bureaucracy in aid-recipient nations. The study employs a formal model to predict that the number of administrators hired by a donor to manage its projects would decline as the donor's share of other projects in the country increases and as the donor's concern for the success of other donors' projects increases. The study conducts cross-country empirical tests using an index of bureaucratic quality and finds that the model's predictions are consistent with the results.

Sandholtz and Gray (2003) argue that greater international integration results in lower levels of corruption, defined as the misuse of public office for private gain. The authors propose that international factors impact a country's corruption levels through economic incentives and normative pressures. Economic incentives alter the costs and benefits of engaging in corrupt acts, while normative pressures delegitimize and stigmatize corruption. The authors test the hypothesis that the more a country is integrated into international networks of exchange, communication, and organization, the lower its level of corruption is likely to be, and their analysis of data from around 150 countries strongly confirms this expectation. Challenging the mainstream approach to aid development, Asongu (2012) presents data from 52 African countries from 1996-2010, providing robust evidence of a positive correlation between aid and corruption, while simultaneously mitigating the control of corruption in the African continent. Hence, a greater focus on specific regional factors may positively impact the aid-corruption nexus. These results have important policy implications, Okada and Samreth (2012) suggest contrary effect for developing countries in Africa.

With present unpredictability of aid, corruption in developing countries incentivize political leaders to engage in rent-seeking activities (Kangoye 2013). Using data from 67 countries between 1984-2004, the paper shows that higher aid unpredictability is associated with more corruption, while aid dependency is generally associated with less corruption. These findings highlight the importance of aid predictability in promoting good governance. Charron (2011)

tests the effectiveness of the "anti-corruption movement" initiated by major international organizations since the 1990s in reducing corruption. Using panel data from 1986 to 2006, the study finds that from 1997 onwards, multilateral aid is strongly and robustly associated with lower corruption levels, while bilateral aid is insignificant. In contrast, an increase in any Official Development Assistance (ODA) prior to 1997 is associated with higher levels of corruption or has no impact at all. The study demonstrates that when disaggregating the time periods, there are sensitive temporal effects of ODA's effect on corruption, which previous studies have overlooked. Overall, the findings provide initial evidence of the effectiveness of the international organization anti-corruption movement in the developing world.

Additionally, the relationship between corruption and capital flight is documented by Le and Rishi (2006), as corruption contributes to poor governance and increases the risk of domestic investment, which can lead to capital flight. Their analysis indicates that corruption has a positive and significant impact on capital flight, concluding that combating corruption through good governance is crucial for countries seeking to address capital outflows.

To conclude, the results of literature dealing with the relationship between foreign aid and corruption are ambiguous. While some papers indicate that more corrupt governments tend to receive larger amounts of aid, others suggest that aid can decrease corruption levels in recipient countries. Subsequently, it follows that states with high levels of corruption may experience a propensity towards capital flight, which is one of the core topic of this thesis.

2.3   Illicit Financial Flows

From the late 1990s, the OECD had been pushing for tax havens to engage in information exchange with other nations through bilateral tax agreements. Nonetheless, most tax havens refrained from signing such treaties until 2008. During the financial crisis, G20 countries initiated bilateral treaties signed by tax havens compelling them to provide for the exchange of increased bank information (Johannesen and Zucman 2014). This global initiative act was celebrated by the policymakers as the end of bank secrecy. By the end of 2009, tax havens had signed over 300 treaties in response, marking the largest coordinated effort against tax evasion ever undertaken. Johannesen (2014) made the first attempt to assess how the bank deposits in tax havens were affected by the treaties. Their findings suggest that rather than repatriating funds, the

tax evasion shifted to havens not covered by a treaty with their home country resulting in the relocation of the bank deposits at the benefit of the least compliant havens.

The offshore tax haven affiliates of American corporations make up over a quarter of US foreign investment and nearly a third of US firms' foreign profits. Hines and Rice (1994) examine the origins and consequences of this tax haven activity for both the US and foreign governments. By analyzing the behavior of US companies in 1982, the study suggests that American firms report exceptionally high-profit rates on both their tangible and intangible investments in tax havens. Based on this, the optimal tax rate that maximizes revenue for a typical tax haven is estimated to be around 6%. While the revenue implications for the US are complicated, the paper suggests that tax havens may ultimately help the US government tax the foreign earnings of American firms. Additionally, Zucman (2013) shows the underestimation of the net foreign asset position of wealthy countries by official statistics. The inaccuracy lies in the failure of capturing most of the assets of households held in offshore tax havens. Using a unique Swiss data set and the information on systematic anomalies in portfolio investment positions of the countries, he finds that the assets held by households in tax havens make up to approximately 8% of the global financial wealth.

In additional contribution, Fisman and Wei (2004) assess the impact of tax rates on tax evasion by analyzing the relationship between the tariff schedule and the "evasion gap" in China, which is the discrepancy between China's reported imports from Hong Kong and Hong Kong's reported exports to China at the product level. The findings indicate that a one-percentage-point increase in tax rates is linked to a 3% increase in evasion. The study also notes that the evasion gap is inversely related to tax rates on related products, implying that evasion occurs through the misclassification of imports from higher-taxed categories to lower-taxed ones and undervaluing imports.

Addison et al. (2018) provide an overview of the factors and challenges involved in tax system evolution and emphasize their relevance to achieving Sustainable Development Goals. The paper highlights the role of natural resources, political economy, social structure, and history in shaping tax policies. The importance of fiscal policy in development efforts requires unprecedented state revenue mobilization capacity. In the previous work of Andersen et al. (2017), the authors dealt with rent-seeking by politicians. They show that part of petroleum rents is shifted to bank accounts in tax havens, especially when

local political institutions are weak. An implied leakage rate of 15% suggests that windfall gains of petroleum-producing countries with authoritarian rulers are shifted to secret accounts. Marion and Muehlegger (2008) investigates tax evasion in the diesel fuel market, which involves using untaxed diesel fuel for on-road purposes, despite being taxed. The authors examine the effects of a federal regulatory change in October 1993, whereby red dye was added to untaxed diesel fuel at the point of distribution, significantly reducing enforcement costs. The results show that diesel fuel sales increased by 26% following the regulatory change, while sales of untaxed substitutes, such as heating oil, fell by a similar amount. States with higher tax rates and audit costs experienced a more significant effect on sales. Additionally, the study finds that prior to the regulatory change, a significant portion of heating oil sales was illegitimate. The findings suggest that innovation in new evasion techniques occurred after the regulatory change. Lastly, the authors estimate that the elasticity of tax revenues with respect to tax rates was 0.60 before the regulatory change, but would have been 0.85 without evasion.

Johannesen and Stolper (2021) document that the first leak of customer information from a tax-haven bank caused a sudden flight of deposits from tax havens and a sharp decrease in the market value of banks known to be assisting with tax evasion. The loss of market value was the largest for the banks most strongly involved in tax evasion. Subsequent leaks had qualitatively similar although smaller effects. Our findings suggest that whistleblowing in tax-haven banks deters offshore tax evaders by increasing the perceived risk of committing and assisting with tax evasion. A global audit study and field experiment by Allred et al. (2017) study whether firms comply with international laws prohibiting anonymous incorporation. The paper involved requesting anonymous incorporation and providing references to international law, the threat of penalties, norms of appropriate behavior, or a placebo. The findings reveal that a significant number of firms in OECD countries were found to be less compliant than those in developing countries or tax havens. Nevertheless, firms in tax havens exhibited greater compliance, responding to experimental interventions involving international law. Bustos et al. (2019) examine the difficulties encountered when attempting to tax multinational corporations. The study draws on new data from Chile to demonstrate that although multinational corporations contribute significantly to the country's GDP, they report lower profits and effective tax rates than domestic firms. The research also highlights a 2011 Chilean tax reform that followed OECD guidelines to enforce the arm's length

principle and assesses its potential impact on tax collection and welfare.

In conclusion, the literature reviewed underscores the important implication for the broader issue of illicit financial flows, which includes not only tax evasion but also corruption and other forms of illegal capital flight. These illicit flows undermine the ability of governments to mobilize domestic resources and achieve sustainable development, particularly in low-income countries, which are most vulnerable to the effects of global tax evasion and other forms of illicit financial activity.

Chapter 3

Data

In this section, we describe the data sources used to conduct the analysis. We use several data sets. First, we use data on cross-border bank deposits from the Locational Banking Statistics of the Bank for International Settlements (BIS). Second, we merge data on foreign aid from a project-level database of aid disbursement from the World Bank through its two foremost institutions, the International Development Association (IDA) and the International Bank for Reconstruction and Development (IBRD). Third, we use data set on offshore incorporation from the leaked files published by the International Consortium of Investigative Journalists (ICIJ). Fourth, we gather data on portfolio investment from Coordinated Portfolio Investment Survey (CPIS) conducted by International Monetary Fund (IMF). Finally, we provide a list of databases used to collect information about additional variables included in our analysis.

3.1 Cross-Border Bank Deposits

We use the publicly available data on foreign bank deposits from the BIS. This data set contains quarterly information on the value of bank deposits in all significant financial centers (including a number of important havens) at the bilateral level – for example, the value of bank deposits held in Belgian banks owned by residents of Burundi. The data set covers information on bank deposits in 49 financial centers owned by approximately 200 countries.

We chose to use the BIS data set because it is a well-established database frequently used by central banks and macroeconomists to measure net wealth positions. Additionally, the BIS data has been used in previous studies to investigate offshore tax evasion, making it a suitable choice for our research question

(Menkhoff and Miethe 2019; Johannesen and Zucman 2014; Johannesen 2014). Furthermore, the data covers the vast majority of the world's cross-border bank deposits, making it a comprehensive source of information for our analysis (Bank for International Settlements 2020).

The BIS data assigns deposits to countries on the basis of immediate ownership rather than beneficial ownership. Hence, if a Burundian firm has a subsidiary in Bermuda, which holds a Luxembourgian bank account, the account is assigned to Bermuda in the BIS statistics (Andersen et al. 2022).

To identify tax havens, we follow the classification proposed by Andersen et al. (2017), which is based on institutional characteristics that make these financial centers attractive destinations for illicit funds, such as bank secrecy rules and legal provisions that enable investors to protect their assets by nominally transferring ownership to a third party while retaining ultimate control. Based on the availability of public data, we classify 7 financial centers as tax havens and the remaining 11 as non-havens.

The variable $Haven_{it}$ is defined as bank deposits owned by country i in the 7 tax havens in quarter t. Similarly, we define $Nonhaven_{it}$ as deposits of one of the other financial centers considered as nonhavens. We use the sectoral breakdown in the BIS statistics to exclude interbank and deposits held by central banks. Since the BIS statistics do not provide information about the ultimate owner of deposits, it is necessary to not include offshore intermediaries accounts, which may negatively impact the estimates. Descriptive statistics for haven and non haven bank deposits for our main sample are presented in Table 3.1. The value of cross-border bank deposits held by countries included in our main sample over the time period 1990-2018 is reported in Figure 3.1.

The data on cross-border bank deposits used by Andersen et al. (2022) are confidential. While the use of confidential data may provide more accurate and comprehensive information on cross-border bank deposits in havens, the use of confidential data in the original paper may introduce a potential limitation as it restricts us to replicate and verify the finding in all respects. We discuss the possibilities of further research with obtaining the confidential data set in Section 5.6.

3.2   Foreign Aid

We obtained data on foreign aid and aid disbursements from the World Bank through its two foremost institutions, IDA and IBRD. Data from the World

Bank Project Database provides information on the approval date, commitment amount, sector, and instrument type for each project.

The data set from IDA and IBRD include information on aid disbursements. Ultimately, the data from the World Bank Project Database aggregate aid disbursements by characteristics of development programs, such as evaluation outcome, sector, instrument type, and theme of the aid flow. This data allows for creating variables to test whether the link between aid disbursements and money flows to tax havens differs systematically based on the development program characteristics. Figure 3.1 presents the amount of aid disbursed to recipient countries included in our main sample for the 1990-2018 time period.

In our main sample, we include 22 countries that, on average, received annual disbursements from the World Bank equivalent to at least 2% of their GDP during the period between 1990 and 2010. For simplicity, we use the identical sample as Andersen et al. (2022). We do so because the country selection based on the methodology used by authors reports the vastly different selection of countries. If we use the same criterion, that being the countries' receipted disbursed aid at least 2% fraction of its GDP, we would assign only 4 countries to the sample. Table 3.1 provides descriptive statistics on received aid from 1990 to 2018.

We recognize the potential endogeneity of aid disbursements to current economic shocks. To address this issue, we adopt the approach used by Kraay (2012; 2014) and develop an instrument that uses the lag between aid commitments and disbursements. Typically, after approval of a World Bank project, aid disbursements are spread over multiple quarters at different stages of the project. Despite some variability in the actual disbursement schedule, the amount of disbursed aid in a given quarter is largely influenced by project approvals made in previous quarters, thus creating exogenous variation in disbursements. Additionally, external factors such as natural disasters, wars, and civil conflicts may still impact the actual disbursement amount, and could potentially introduce endogeneity.

3.3   Offshore Corporations

Following Andersen et al. (2022), we include information on offshore incorporations from publicly leaked files by the ICIJ into our data set. The available leaks comprise information about the Panama Papers, Offshore Leaks, the Paradise Papers, and the Bahamas Leaks. Data provides information on

Figure 3.1: Cross-Border Bank Deposits And Received Aid ($ in Millions).
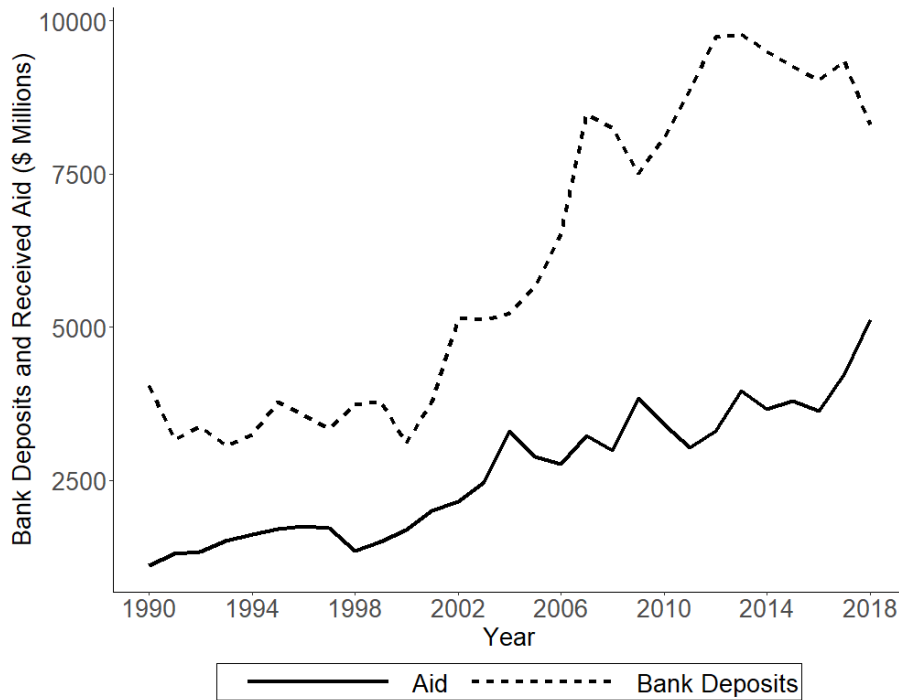
four distinct offshore corporations headquartered in Panama, the British Virgin Islands, and Bermuda. Simultaneously, it comprises records from corporate registries in Aruba, Barbados, the Bahamas, Nevis, Malta, the Cook Islands, and Samoa. Despite the dissimilarities across the leaked files, it provides general information about the corporations (e.g., name, date of closure, date of incorporation) and about its shareholders, director, and beneficiaries.

Based on the data, we construct a variable $Corporations_{it}$ capturing the number of active offshore incorporations with links (officer in the country) to country i in quarter t. By the officer we mean the different staff across the corporations such as directors or shareholders. Each offshore incorporation can have multiple officers in multiple countries. When constructing $Corporations_{it}$, we accumulate the number of incorporations as far back as the leaked records go. The number of active offshore corporations with links to our main sample countries is reported in Table 3.1.

The relevance of offshore corporations in the context of low-income countries is particularly important. In these countries, the use of offshore corporations may contribute to the outflow of financial resources that could otherwise be used for development purposes. This can occur through illicit financial flows,

where resources are moved out of the country and hidden in offshore corporations, resulting in lost revenue for the country. Additionally, the use of offshore corporations can create a perception of corruption and erode public trust in institutions, further impeding development efforts. Understanding the relationship between foreign aid and offshore corporations can help policymakers in low-income countries design effective strategies to prevent the outflow of resources and promote sustainable development.

However, offshore corporations data faces several limitations. First, the number of leaks covers only for a small subset of the offshore corporate service providers and corporate registers in the world. Thus, the sample constitutes a rather partial representative picture of the offshore world. Second, since the leaked files comprise no information about the assets and activities of the offshore corporations, cross-country differences must be interpreted prudently. Despite the journalists being able to tie some of the leaks to illicit financial flows, it does not imply that it applies to all. Therefore, one country's offshore corporation may be more represented in the leaks than another's.

The number of offshore corporations revealed in the leaks varies significantly across the countries in the main sample. As shown in Table 3.1, there is a considerable variation in the number of offshore corporations by country, ranging from countries that were not involved in the leaks such as Eritrea, Guinea-Bissau, and Sao Tome and Principe; to high of 348 in Ghana. The countries with the largest number of offshore corporations tend to be the most populous.

It is important to note that the number of offshore corporations in the leaks is not necessarily an indicator of illicit activity or corruption, but rather reflects the extent to which a country's citizens and companies have used offshore financial centers to manage their wealth or conduct business (Organization for Economic Cooperation and Development 2017). Nevertheless, the significant variation in the number of offshore corporations across countries underscores the need for greater transparency and accountability in global financial systems, particularly with respect to the role of tax havens in facilitating elite capture of foreign aid.

3.4   Portfolio Investment

Data for portfolio investment was obtained from CPIS - a global survey conducted by the IMF that collects information on cross-border holdings of portfolio assets. The survey aims to provide a comprehensive and consistent picture of

the international allocation of portfolio investments, such as stocks, bonds, and money market instruments, by both resident and non-resident investors.

The CPIS covers all countries that participate in the IMF's Special Data Dissemination Standard (SDDS), which includes most of the world's major economies. The survey collects data on both the market value and the book value of portfolio assets, as well as information on the sectoral distribution of investment, the currency composition of investments, and the counterpart country of investment.

We extract the dataset to obtain investments made by our main sample countries to the classified tax havens (counterpart country of investment). We subsequently define a variable $log(PI)$ to study the relationship with associated aid disbursements to country i in year t. Descriptive statistics on portfolio investment are presented in Table 3.1.

CPIS allows for analysis of the relationship between aid disbursements and portfolio investment by both resident and non-resident investors. This is particularly relevant for understanding the potential impact of aid on capital flows and investment patterns in our main sample countries. By examining the counterpart country of investment in the CPIS dataset, it is possible to identify the portfolio investments made by the main sample countries to tax havens. This may provide insights into the extent to which the selected developing countries are involved in offshore financial activities and may be affected by the negative consequences of tax evasion and capital flight.

3.5   Corruption

We obtained the data on corruption from the Worldwide Governance Indicators (WGI), which is a research project conducted by the World Bank. The WGI aims to provide objective measures of governance quality in countries around the world and is based on the perceptions of experts, academics, and public sector officials. One of the indicators provided by WGI is the CCE, which measures the extent to which corruption is effectively controlled in a country. It assesses both the frequency and the extent of corruption in the public sector, as well as the effectiveness of anti-corruption efforts and institutions.

CCE estimate is based on a scale from -2.5 to 2.5, with higher scores indicating better control of corruption. Countries with high scores are seen as having a strong rule of law, effective public institutions, and a culture of transparency and accountability. Conversely, countries with low scores are seen as having

weak institutions, a lack of transparency, and a high degree of corruption. Table 3.1 presents descriptive statistics of CCE for our main sample.

We are aware of certain limitations and criticism of the WGI data and the CCE measure. For example, Rose-Ackerman (1999), Kaufmann and Vicente (2011), and Kaufmann (2005) argue that the WGI data relies on the subjective perceptions of governance and corruption, which may not accurately capture the true level of corruption in a given country. Furthermore, the WGI data relies on expert assessments and survey responses, which may not be representative of the population as a whole.

Despite the limitations and criticism, WGI data and CCE still remains widely used and respected source of information on corruption and governance quality. While the subjective nature of the data means that it may not always accurately capture the true level of corruption in a given country, it provides a consistent and comprehensive measure of corruption across a large number of countries, allowing e.g. for cross-country comparisons over time.

3.6 Other Variables

We collect data on events that could lead to simultaneous changes in aid disbursements and cross-border capital flows from several data sources. First, we obtain data on wars from the Peace Research Institute Oslo (PRIO) Armed Conflict Dataset. PRIO provides a comprehensive and widely used data set that contains information on armed conflicts and political violence worldwide. The data set covers the period from 1946 to the present and includes information on both international and internal armed conflicts. It provides detailed information on the characteristics of conflicts, including the number of conflict-related deaths, the location of the conflict, the parties involved, and the duration of the conflict.

Second, we use data on coups from Powell and Thyne (2011). Their paper discusses the lack of comprehensive data set on coups, despite the occurrence of dozens of coups in the last decades. The authors present new data set on coups from 1950 to 2010 and explain their theoretical definition and coding procedures. They examine general trends in the data across time and space and argue that scholars studying civil wars, regime stability, and democratization could benefit from paying closer attention to coups.

Third, data on natural disasters were collected from the International Disaster Database, also known as EM-DAT, which is an initiative of the Centre

Table 3.1: Descriptive Statistics (1990-2018).

	Haven Deposits ($ in Millions)	Non Haven Deposits ($ in Millions)	Received Aid ($ in Millions)	Offshore Corporations (2018)	Portfolio Investment in Havens ($ in Millions)	CCE (Averaged)	GDP Growth rate %(Averaged)
Afghanistan	2,285	4,889	3,098	6	290	-1.53	10.9
Armenia	6,515	2,230	2,153	186	10,465	-0.56	10.1
Burkina Faso	5,352	10,993	3,979	17	144	-0.24	6.5
Burundi	11,278	1,871	1,586	1	4,255	-1.17	4.1
Eritrea	1,332	962	509	0	5	-0.47	10.4
Ethiopia	11,728	12,847	15,585	7	6,693	-0.62	8.2
Ghana	14,102	73,803	8,112	348	62,963	-0.12	11
Guinea-Bissau	2,504	911	404	0	2	-1.21	7.6
Guyana	2,544	11,257	361	14	271	-0.51	9
Kyrgyz Republic	1,776	1,156	1,247	53	3,183	-1.01	6.6
Madagascar	21,446	29,422	3,854	59	29	-0.40	6.6
Malawi	5,119	8,507	3,557	51	242	-0.58	7.9
Mali	4,470	16,350	3,031	20	434	-0.59	7.5
Mauritania	4,044	28,613	1,040	122	1,345	-0.52	5.6
Mozambique	6,648	16,154	5,868	63	2,448	-0.58	7.6
Niger	2,751	7,994	2,624	30	259	-0.75	5.5
Rwanda	15,174	4,252	3,270	2	2,268	-0.07	8.6
Sao Tome and Principe	482	183	132	0	38	-0.05	10.9
Sierra Leone	4,389	8,648	1,197	19	170	-0.83	8
Tanzania	22,475	42,111	10,074	118	5,495	-0.64	10.4
Uganda	9,356	18,479	6,886	53	3,801	-0.92	7.7
Zambia	20,140	34,146	3,489	53	16,362	-0.62	9
Sample Mean	**7,995**	**15,263**	**3,730**	**58**	**5,507**	**-0.64**	**8.2**

Note: This table provides summary statistics of 22 countries included in the main sample. Columns 1 and 2 show cross-border bank deposits held both in havens and non havens, respectively. Column 3 shows the total amount of received aid from the World Bank in 1990-2018. Column 4 shows the amount of involvement of the main sample countries in leaked files in 2018. Column 5 shows the total amount of portfolio investment from the main sample countries into classified tax havens. Column 6 shows the average CCE of main sample countries in 1990-2018. Column 7 shows annual growth rates in GDP.

for Research on the Epidemiology of Disasters (CRED) based at the Université Catholique de Louvain in Brussels, Belgium. The database contains essential information on natural, technological, and conflict-related disasters from 1900 to the present day. It is considered to be the most comprehensive global database on disasters, with over 24,000 events documented. The data is compiled from a range of sources, including United Nations (UN) agencies, national disaster offices, and non-governmental organizations. The database includes information on the type of disaster, location, date, number of deaths and injuries, and economic damages. Researchers, policymakers, and practitioners use the database to analyze trends, evaluate disaster risk reduction policies, and support disaster response and preparedness efforts.

Lastly, we obtain data on financial crises from Laeven and Valencia (2013). Their paper presents a comprehensive database of systemic banking crises that occurred during 1970-2011. It proposes a methodology to date banking crises based on policy indices and examines the robustness of this approach. The paper also presents information on the costs and policy responses associated with banking crises. The database on banking crisis episodes is further complemented with dates for sovereign debt and currency crises during the same period. The paper contrasts output losses across different crises and finds that sovereign debt crises tend to be more costly than banking crises, and these in turn tend to be more costly than currency crises. The data also point to significant differences in policy responses between advanced and emerging economies. From obtained data, we construct variables that help us to deal with endogeneity and conduct robustness checks (Section 5.5). Table 3.2 presents the descriptive statistics for these variables.

Table 3.2: Macroeconomic Shocks (1990-2018).

Country	Wars (1)	Coups (2)	Natural Disasters ('000 $) (3)	Financial Crises (4)
Afghanistan	112	2	2,083,480	0
Armenia	0	0	805,812	8
Burkina Faso	0	3	724,704	8
Burundi	48	7	52,000	4
Eritrea	8	0	5,165	1
Ethiopia	44	0	5,735,600	4
Ghana	0	0	182,000	16
Guinea-Bissau	4	7	0	12
Guyana, Fed. Sts.	0	0	2,711,200	12
Kyrgyz Republic	0	0	388,040	8
Madagascar	0	3	5,145,524	19
Malawi	0	0	1,799,156	12
Mali	12	4	0	8
Mauritania	0	4	0	7
Mozambique	16	0	3,180,600	18
Niger	8	3	1,036,156	8
Rwanda	36	1	36	4
Sao Tome and Principe	0	2	0	16
Sierra Leone	36	6	0	16
Tanzania	0	0	1,847,160	19
Uganda	52	1	303,084	12
Zambia	0	2	82,800	24
Sample Mean	17	2	1,185,569	11

Note: This table shows summary statistics of macroeconomic shocks occurring in our main sample countries. In columns 1, 2, and 4, each variable is binary, thus each unit equals to one quarter. Column 3 shows the total amount of the financial value of the damage caused by the occurrence of a natural disaster.

Chapter 4

Methodology

In this section, we introduce the developed baseline model to examine changes in cross-border bank deposits of recipient countries associated with aid disbursement. By doing so, we measure (approximately) how much foreign aid is redirected toward tax havens in order to benefit ruling elites. In order to identify causality, we rely on a model that controls for GDP growth, including country and time-fixed effects. Furthermore, we adjust the baseline model to study the relationship between portfolio investment and received aid. The last part of this section addresses the endogeneity of aid and concerns about the potential limitations of the baseline model.

4.1   Baseline Model

In order to quantify the extent to which the amount of foreign aid is shifted to tax havens in the interest of ruling elites, we employ a high-powered test that examines changes in cross-border bank deposits of recipient countries associated with aid disbursement. To conduct this analysis, we adopt the baseline model developed by Andersen et al. (2022):

$$\Delta log(Haven_{it}) = \beta Aid + \gamma X_{it} + \mu_i + \tau_t + \epsilon, \qquad (4.1)$$

where $\Delta log(Haven_{it})$ expresses the growth rate of bank deposits in havens owned by country i in quarter t, Aid_{it} measures the extent of disbursed aid to country i in quarter t as a share of GDP, X_{it} represents vector of control variables (such as GDP growth), and μ_i and τ_i express country and time fixed effects. Adopted empirical method allows us to estimate the relationship be-

tween inflows of aid to recipient countries (right-hand side) and change in bank deposits in tax havens (left-hand side).

The main parameter of interest of the baseline model is β, expressing the percentage change in cross-border bank deposits held in tax havens associated with aid disbursements received by the countries in our main sample. β is measured relative to the counterfactual change in foreign deposits held in havens predicted by the other variables that are included in the model: the country's long-run average growth rate in foreign deposits held in havens (captured by country fixed effects), global shocks to haven deposits (captured by the time fixed effects), and local shocks to income (captured by the control for GDP growth). As the country fixed effects are present, β is identified exclusively from within-country variation.

The inclusion of GDP growth as a control variable is necessary to account for potential confounding factors that could affect the relationship between aid and tax haven deposits. For example, changes in a country's GDP growth rate could impact the amount of foreign aid it receives as well as the amount of money flowing into tax havens. By including this control variable in the model, we are able to isolate the effect of aid on tax haven deposits.

In order to differentiate between cross-border capital movements driven by secrecy and asset protection versus those motivated by other factors, we follow Andersen et al. (2022) to employ a model that uses the growth rate of deposits in non-tax-haven jurisdictions, referred to as $\Delta log(Nonhaven)$, as the dependent variable. By comparing the estimated coefficients on aid in the two regressions, we can more formally test for differences in growth rates of deposits in tax havens and non havens that are induced by aid disbursements. Furthermore, we use the differential growth rate, $\Delta log(Haven) - \Delta log(Nonhaven)$, directly as the dependent variable to identify the impact of aid on tax haven deposits while controlling for any shocks to cross-border flows that are shared between tax haven and non haven accounts.

A significant feature of the baseline model is the application of a log transformation to foreign deposits, which accounts for the statistical assumption that disturbances to foreign deposits are (roughly) proportional to the stock of deposits. This assumption is grounded in sound economic principles. First, in the absence of withdrawals and new deposits, compound interest, accruing at a uniform rate, mechanically generates exponential growth of account balances. Second, numerous theoretical models suggest that variations in deposits in response to fluctuations in the economic environment, such as business cycles

and policy interventions, are proportional to the stock of deposits. An identical approach of estimating the change in foreign deposits in log levels was applied by Alworth (1992), Huizinga and Nicodème (2004), Johannesen and Zucman (2014), Johannesen (2014), and Menkhoff and Miethe (2019).

We are aware that the baseline model has potential limitations. For example, other factors may affect the relationship between aid and tax haven deposits that are not considered in the model. The introduction of GDP as a scaling factor on both sides of the estimation causes a mechanical correlation. Furthermore, the model makes certain assumptions about the characteristics of bank deposits in tax havens, which may not be generally applicable.

4.2   Offshore Leaks

To further explore the effect of enhanced financial transparency on the capture of aid, we examine the impact of leaked files by ICIJ with information on offshore corporations. Additionally, The first initial release of customer information from tax havens in 2008 on the outflow of foreign bank deposits and the market value of banks to be known for assisting in tax evasion activities (Johannesen and Stolper 2021)

Hence, we use an alternative specification of our baseline model and run the regression with $log(Corporations_{it})$ as a dependent variable. Such adjustment of the model allows us to reveal whether there appears correlation between received aid and involvement in the offshore leaks.

We are aware that the use of offshore corporations may necessarily imply illicit activity. Many countries may use offshore financial centers for legitimate purposes such as asset protection or international trade. Therefore, we focus mainly on the relationship between received aid and involvement in the offshore leaks, rather than assuming that any involvement in offshore corporations is inherently illegal or suspicious. Examining this relationship allows us to better understand how enhanced financial transparency may affect the actions of aid recipients and their use of offshore financial instruments.

4.3   Adjusted Model: Portfolio Investment

To investigate another cause of foreign aid capture, we utilize data from CPIS. Specifically, we construct a panel dataset of annual CPIS data for our main

sample of recipient countries over the time period 1996-2018. We adjust our baseline model to explore the relationship between received aid and various measures of cross-border investment activity from our main sample countries to selected tax havens. The adjusted model takes the following form:

$$log(PI_{it}) = \beta log(Aid_{it}) + \gamma X_{it} + \mu_i + \tau_t + \epsilon_{it}, \qquad (4.2)$$

where $log(PI_{it})$ denotes the natural logarithm of the PI variable for country i in year t. Uniformly to the baseline model, $log(Aid_{it})$ measures the logarithmized amount of aid disbursed to country i in year t. as a share of GDP, X_{it} is a vector of control variables, μ_i and τ_t denote country and year fixed effects, and ϵ_{it} is the error term.

Our main parameter of interest is β, which measures the responsiveness of the PI measure to changes in aid disbursements. A positive and statistically significant estimate of β would suggest that aid disbursements are associated with an increase in cross-border investment activity in country i, while a negative estimate would suggest the opposite.

Country and year fixed effects are included in the model to control for unobserved differences between countries and over time that may affect both aid disbursements and cross-border investment. By including fixed effects, the analysis is able to isolate the effect of aid on cross-border investment within each country over time. This is important because it allows the analysis to focus on the relationship of interest while controlling for other factors that may affect the outcome. The GDP growth is included as a control variable to control for local shocks to income.

For estimating the effect of foreign aid on portfolio investments, several adjustments to our baseline model need to be made and several concerns to be considered. Since portfolio investment data is generally not available on quarterly basis, we have to transform our data set to annual frequency. Thus, for the purposes of the estimation, we aggregate the aid disbursement data to obtain annual values. Implementing annual data for portfolio investments may provide a more accurate representation of captured foreign aid. Although, this merely depends on the nature of the research interest.

The indication of causality would certainly be improved by utilizing as much detailed data as possible. More granular data may be more informative than aggregated data and hence allows for more precise analysis. On the other hand, annual data may often be appropriate for investigating long-term trends on

macro-level phenomena. In these cases, aggregated data may provide a better overview of the structural changes and patterns.

An additional consideration pertains to the data cyclicality, as temporal fluctuations of aid disbursements may not be observable in annual data. Such cyclicality, if present, may have implications on the estimated effects of foreign aid on haven portfolio assets. For example, if aid is disbursed regularly in a specific quarter, it could lead to biased or inconsistent results of estimation using an annual frequency of data as it does not account for such cyclicality.

4.4 Corruption

With corruption being a significant factor among the potential mechanism that may affect our results, we further explore the relationship between aid disbursements and corruption levels in our main sample countries. To achieve that, we use the baseline model to generate predicted values and compare them with CCE scores for each country. To show the underlying role of corruption, we use a scatter plot with averaged predicted values and averaged CCE by each country in our main sample.

This allows us to indicate whether the aid capture may have had a stronger presence in developing countries that have weak governance, despite their greater need for foreign aid (Alesina and Weder 2002). Such a pattern may create a cycle of aid dependence combined with poor development and at the same time support the hypothesis that large amounts of aid may increase corruption and undermine institutions in recipient countries (Knack 2001; Djankov et al. 2008).

4.5 Endogeneity of Aid

The primary challenge to identifying causality in the baseline model is the risk of endogeneity concerning aid. This means that external factors like financial crises or famine could cause both a surge in foreign aid and capital flight, leading to a false positive correlation between aid disbursements and foreign deposits. On the other hand, politicians engaging in opportunistic behavior could also result in capital flight and a reduction in foreign aid, giving the impression of a false negative correlation between aid and haven deposits.

Addressing endogeneity is a critical challenge in identifying causality in the

baseline model, but there are several methods and strategies that can be used to overcome this issue and enhance the validity of the results. To tackle the possible endogeneity of aid, we initially adopt a method used by Andersen et al. (2022), where we calculate the quarterly shifts in foreign deposits over a period of two years encompassing aid disbursements. Hence, we augment the baseline model by including four instances of aid variable leading and lagging by four quarters each (Section 5.4).

To mitigate the additional sources of endogeneity, we use robustness checks to test the sensitivity of the results to different specifications of the model (Section 5.5) and alternative methods of estimation. First, we conduct a sensitivity analysis of each tax haven to prevent an excessive dependence on a single assumption of the use of a particular tax haven. Second, to ensure the reliability of the link between aid disbursements and haven deposits, we carry out tests with the exclusion of observations that could affect our estimates, such as wars, coups, natural disasters, and financial crises. By doing so, we provide greater confidence in the causal interpretation of the estimated coefficients and improve the overall reliability of our findings.

Chapter 5

Results

In this section, we present the results of the estimation of models introduced in Section 3. We divide this chapter into several parts. First, we present our main results that are composed from replication of Andersen et al. (2022) and our extended analysis. Second, we present estimates obtained from an adjusted model that captures the relationship between portfolio investment and received aid. Third, we discuss the role of corruption underlying our main results. We provide a graphical representation by predicting values from the baseline model and comparing them with CCE for each country. Lastly, building on Andersen et al. (2022), we address the endogeneity issue and check the robustness of our results.

5.1   Main Results

We present the main results from the baseline model in Table 5.1. In columns 1, 2, and 3, we show estimates obtained by replication of Andersen et al. (2022). We find that an aid disbursement in a quarter induces a statistically significant increase in haven deposits of around 2.3%. On the other hand, in column 2, it is shown that non haven deposits experience a statistically insignificant decrease of around 1.5%. Based on the two previous results, the final outcome can be deduced intuitively: an aid disbursement leads to a differential rise of approximately 3% in haven deposits, in addition to the increase in non haven deposits indicated in column 3. The outcomes are comparable to those reported in the original paper, albeit less significant in magnitude. As shown in columns 4 and 6, the extension of the sample period shows that the effect still persists for haven deposits in 1990-2018.

Table 5.1: Main Results.

	1990-2010			1990-2018		
	Haven (1)	Nonhaven (2)	Difference (3)	Haven (4)	Nonhaven (5)	Difference (6)
Aid Disbursement	2.274*	−1.413	2.970*	2.332**	-1.800	3.529*
	(0.925)	(1.047)	(1.403)	(1.024)	(1.199)	(1.456)
GDP Growth (%)	1.930e-12	1.848e-11	-1.369e-11	5.423e-13	1.012e-11	-8.854e-12
	(2.628e-11)	(2.945e-11)	(3.942e-11)	(1.317e-11)	(1.864e-11)	(2.262e-11)
Observations	1,669	1,645	1,641	2,345	2,319	2,315
R^2	.053	.017	.001	.48	.019	.012
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Note: This table shows the main results for our main sample in 1990-2010 and 1990-2018, respectively. In columns 1 and 4, the dependent variable is the percentage change in foreign deposits held in havens. In columns 2 and 5, the percentage change in non havens. In columns 3 and 6, it is the percentage change difference between haven and non haven deposits. "Aid Disbursement" is quarterly disbursement from the World Bank. "GDP" is the quarterly percentage change in GDP. Standard errors are shown in parentheses.

Furthermore, our analysis delves deeper into the correlation between alterations in foreign bank deposits and aid disbursement. We find that the overall effect is strongly affected by the year 2008, as shown in Table 5.2. Column 1 presents a significant and robust estimate for the change in haven deposits associated with an aid disbursement in 2008-2018. Nevertheless, Column 4 shows that the observed effect loses statistical significance upon the exclusion of the year 2008 from the regression.

Table 5.2: Main Results: Cont'd.

	2008-2018			2009-2018		
	Haven (1)	Nonhaven (2)	Difference (3)	Haven (4)	Nonhaven (5)	Difference (6)
Aid Disbursement	6.923**	0.999	3.158	2.703	2.216	1.567
	(2.171)	(0.204)	(1.513)	(2.280)	(5.102)	(5.502)
GDP Growth (%)	-1.035e-12	5.699e-12	-6.410e-12	-2.670e-12	4.616e-12	-6.845e-12
	(1.408e-11)	(2.866e-11)	(3.119e-11)	(1.364e-11)	(3.002e-11)	(3.238e-11)
Observations	940	933	933	852	847	847
R^2	.007	.017	.004	.010	.016	.016
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Note: This table shows the main results for our main sample in 2008-2018 and 2009-2018, respectively. In columns 1 and 4, the dependent variable is the percentage change in foreign deposits held in havens. In columns 2 and 5, the percentage change in non havens. In columns 3 and 6, it is the percentage change difference between haven and non haven deposits. "Aid Disbursement" is quarterly disbursement from the World Bank. "GDP" is the quarterly percentage change in GDP. Standard errors shown are in parentheses.

We introduce two hypotheses that may serve as a possible explanation for the disappearance of the estimated effect of aid capture after 2008. First, during this time frame, global tax havens were being urged by various international organizations, including the OECD, and individual countries like the United States (Alstadsæter et al. 2018), to increase their financial transparency. The G20 nations compelled tax havens to enter into bilateral agreements that mandated the exchange of banking information. Figure 5.1 presents the impact of the agreements on the countries in our main sample.

Figure 5.1: Haven and Non Haven Bank Deposits ($ in Millions).
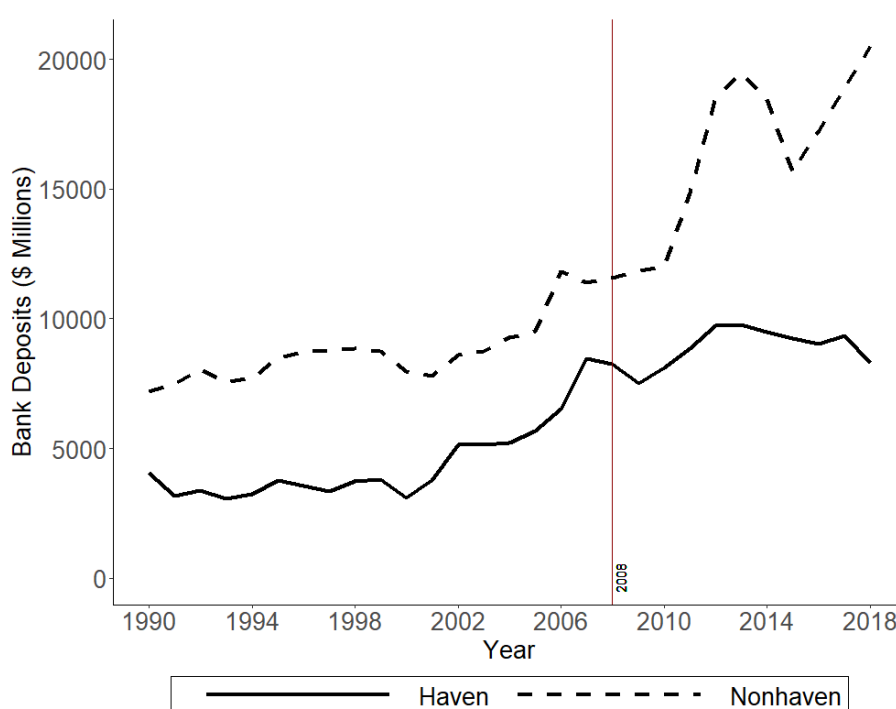
The financial crisis initiated rich countries to make fighting against tax evasion a top priority. Putting pressure on tax havens, G20 countries urged them to sign information exchange treaties under the threat of economic sanctions. By the end of 2009, more than 300 treaties had been signed (Johannesen and Zucman 2014).

Once the effort to curb the use of the offshore account to end bank secrecy in introduced, the amount of cross-border bank deposits assigned to non havens has registered gradually increased. To the contrary, the number of bank deposits transferred to havens remained stable and eventually started to decline towards the end of our sample period. To present a complete picture, it is necessary

to emphasize that this process occurred in the context of escalating levels of development aid (as shown in Figure 3.1).

Second, there was a significant change in the trend of cross-border bank deposits assigned to havens and non havens (as shown in Figure 5.1). This is consistent with our estimates in Table 5.1 and 5.2, as the first leak exposing tax evasion was published in 2008. Prior to the leak, offshore tax evasion had not been exposed in leaks, and offshore account owners and bankers may not have considered the risk of exposure (Johannesen and Stolper 2021). Specifically, authors find that data leaks in tax havens result in a decrease in customer bank deposits by approximately 4.6%.

One possible explanation is that the initial release of customer information from tax havens in 2008 led to a sudden outflow of deposits and a marked decline in the market value of banks that facilitated tax evasion. The decline in market value was particularly acute for banks with greater involvement in tax evasion activities. The release of customer information from tax havens in 2008 through the ICIJ may have led to an increased public awareness of the risks associated with offshore bank accounts. This awareness could have deterred individuals and corporations from using offshore accounts for tax evasion and other illicit activities.

The ICIJ leaks provided unprecedented access to previously confidential information on offshore accounts and exposed the practices of many individuals and corporations using tax havens to evade taxes or launder money. The revelations created a media sensation and attracted the attention of politicians, regulatory authorities, and the general public, increasing the pressure to crack down on offshore tax evasion and other forms of financial crime.

As a result of this increased scrutiny, offshore account holders and bankers may have become more aware of the risks associated with such activities, and the likelihood of getting caught. This could have led to a reduction in the use of offshore accounts for tax evasion and other illicit activities, as individuals and corporations sought to avoid the risks of exposure and legal consequences. We find these explanations valid as a vast majority of our main sample has been involved in the original and subsequent leaks.

To provide another possible explanation, we further validate our findings by using an alternative specification of our baseline model and run the regression with $log(Corporations_{it})$ as a dependent variable. The results are presented in Table 5.3.

These results suggest that there was a positive and statistically significant

Table 5.3: Offshore Corporations.

	1990-2010 (1)	2009-2019 (2)	1990-2018 (3)
Aid Disbursement	5.698**	5.988	7.853***
	(2.104)	(3.993)	(2.085)
GDP Growth (%)	1.768e-13	7.285e-12	6.290e-13
	(6.896e-13)	(5.267e-12)	(7.157e-13)
Observations	1,096	707	1,648
R^2	0.890	0.951	0.891
Country fixed effects	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes

Note: This table shows results when we use $log(Corporations_{it})$ as a dependent variable in our baseline model. Columns 1 and 2 show the estimates of the regression for 1990-2010 and 2009-2018, respectively. "GDP" is the quarterly percentage change in GDP. Standard errors are shown in parentheses.

relationship between aid disbursement and offshore corporations in 1990-2010. On the other hand, the estimate for 2009-2019 induces no statistically significant effect of link between the variables. It is important to note, however, that the use of offshore corporations is not necessarily an indicator of illicit activity or corruption.

Based on our findings, we present several policy implications that could be considered. First, the results suggest that aid disbursements lead to an increase in haven deposits, indicating that some of the funds may be diverted to tax havens. Policymakers should consider monitoring the use of aid funds more closely and implementing measures to ensure that aid is directed toward its intended purpose.

Second, the findings show that the effect of aid on haven deposits is largely influenced by the year 2008, which coincides with a period of increased international pressure on tax havens to improve financial transparency. Policymakers should continue to advocate for greater transparency in the global financial system and work towards closing existing loopholes that allow individuals and companies to evade taxes.

Third, the results indicate that bilateral agreements mandating the exchange of banking information can have a significant impact on haven deposits. Policymakers should prioritize entering into such agreements with tax havens to improve financial transparency and reduce the flow of illicit funds.

Lastly, our analysis highlights the importance of international cooperation

in addressing tax evasion and promoting financial transparency. Policymakers should continue to work towards greater collaboration between countries, and support initiatives such as the OECD's Base Erosion and Profit Shifting (BEPS) project, which aims to combat tax avoidance by multinational companies.

5.2 Portfolio Investment Results

Figure 5.2 suggests that there may be a positive relationship between the portfolio investment and disbursed aid. However, when including the control variable (GDP growth) and country and time fixed effects in our regression analysis, we observe a negative and statistically insignificant estimate for the relationship between these two variables, as presented in Table 5.4. These results indicate that the relationship may be confounded by these additional factors.

Figure 5.2: Portfolio Investment and Disbursed Aid - Scatter Plot.
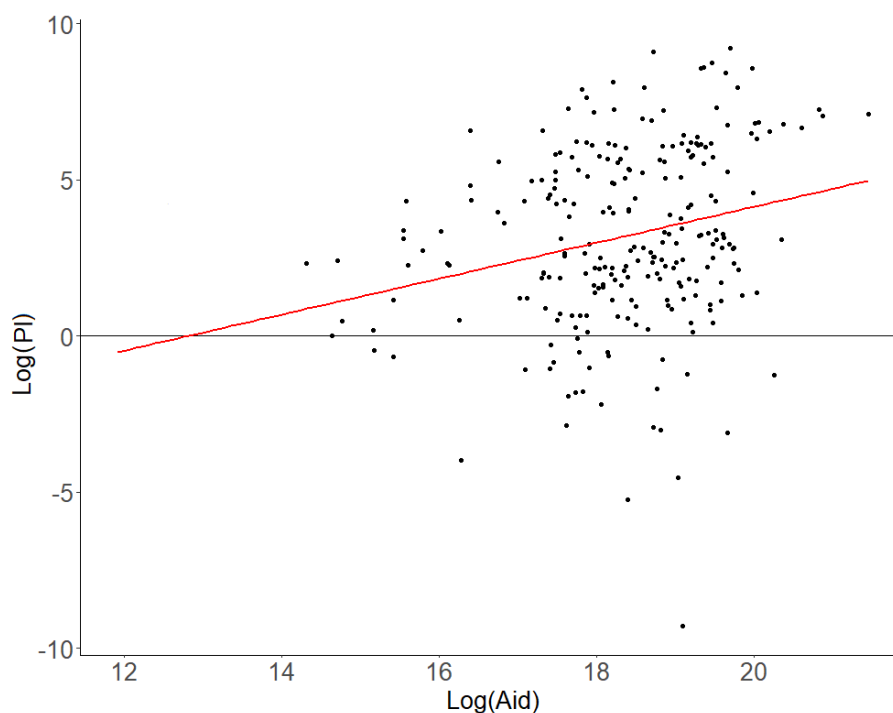
In Table 5.4, we present a result of the regression performed to study the relationship between portfolio investment and aid disbursements. They suggest that there is no significant effect of received aid affecting the investment flowing from recipient countries into tax havens. These results are partially supported by a relatively high value of R-squared.

Table 5.4: Portfolio Investment Results.

	1996-2018 (1)	1996-2010 (2)	2009-2018 (3)
Aid Disbursement	-0.203	-0.105	-0.350
	(0.263)	(0.566e)	(0.235)
GDP Growth (%)	-6.214e-12	-3.523e-11	-6.448e-12
	(1.556e-11)	(4.491e-11)	(1.135e-11)
Observations	247	114	155
R^2	.587	.308	.745
Country fixed effects	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes

Note: This table shows results when we use $log(PI_{it})$ as a dependent variable in adjusted model (Section 4.3). Columns 1, 2, and 3 show the estimates of the regression for 1996-2018, 1996-2010, and 2009-2018, respectively. "Aid Disbursement" is logarithmized quarterly disbursement from the World Bank. "GDP" is the quarterly percentage change in GDP. Standard errors are shown in parentheses.

These findings have several policy implications. First, the lack of a significant relationship between aid and portfolio investment in tax havens suggests that simply increasing aid disbursements to recipient countries may not necessarily lead to increased investment in these offshore financial centers. Policymakers who seek to promote investment in recipient countries may need to consider other measures, such as improving the business environment or providing investment incentives, in addition to providing aid.

Second, the results suggest that GDP growth and country-specific characteristics play an important role in determining the relationship between portfolio investment and aid. Researchers and policymakers should therefore be mindful of these factors when designing policies to attract investment to their countries.

Third, the negative relationship between portfolio investment and aid when controlling for GDP growth and country-specific characteristics may imply that investment in tax havens by recipient countries may not necessarily be a desirable outcome. Policymakers may need to consider the potential negative consequences of such investments, such as reduced tax revenue and increased economic inequality.

Overall, the results from the analysis suggest that the relationship between portfolio investment and disbursed aid is complex and influenced by other factors, such as GDP growth and country-specific characteristics. Our findings indicate that, unlike bank deposits, extending portfolio investment in tax havens

may not be influenced by the received aid. These results underscore the need for further research to better understand the nature of these relationships and their implications.

5.3 Role of Corruption

Given that corruption is a significant factor among the potential mechanism that explains our baseline result, we provide a further analysis that is consistent with the obtained estimates. To explore how our main findings relate to corruption levels in the countries included in our sample, we generate predicted values using our baseline model and compare them with CCE for each country. To keep the visualization of the relationship legible, we averaged the predicted values and the CCE by each country in our main sample. Figure 5.3 illustrates the correlation between predicted aid capture and CCE in the examined periods.

Figure 5.3: Predicted Aid Capture and CCE (averaged by country) in 1990-2010.
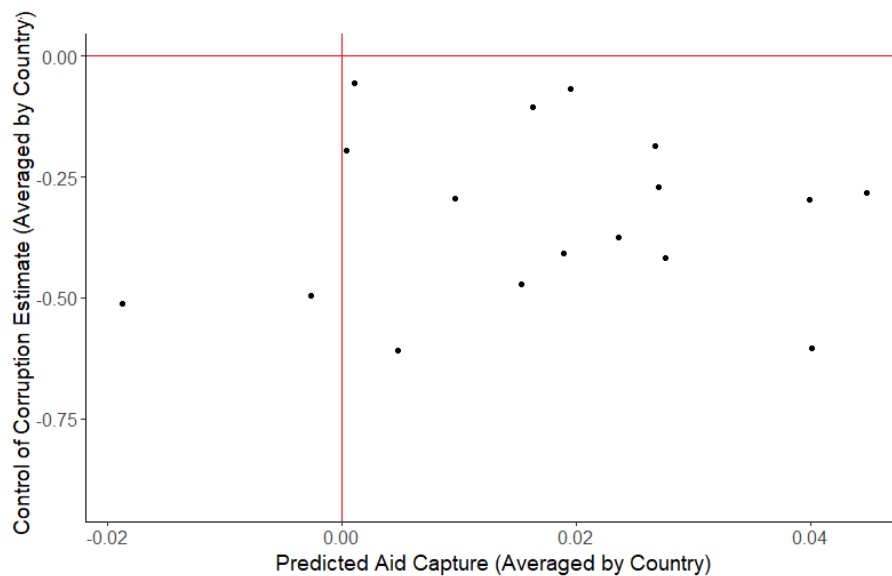
We plot the predicted values of aid capture averaged by country in the 1990-2010 time period (Figure 5.3). As you can see, they are mostly positive, while all observed countries are reported to have negative CCE, which indicates the perception that public power is being used for personal gain. However, for the period of 2009-2018, we observe that the averaged predicted values are distributed more evenly around zero (Figure 5.4), suggesting a weaker correla-

tion between aid and corruption. Figure 5.5 is the combination of Figure 5.3 and Figure 5.4, showing the transition from the 1990-2010 time period to the 2009-2018 time period.

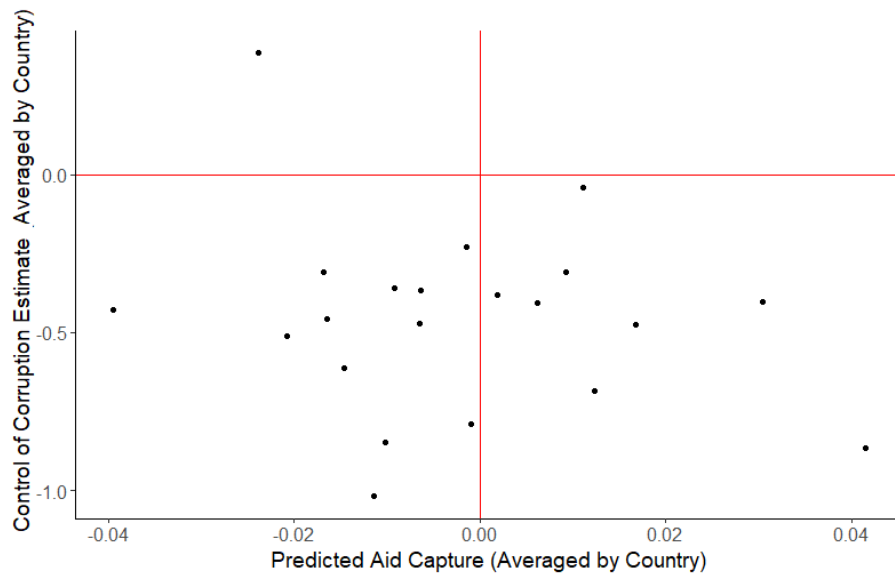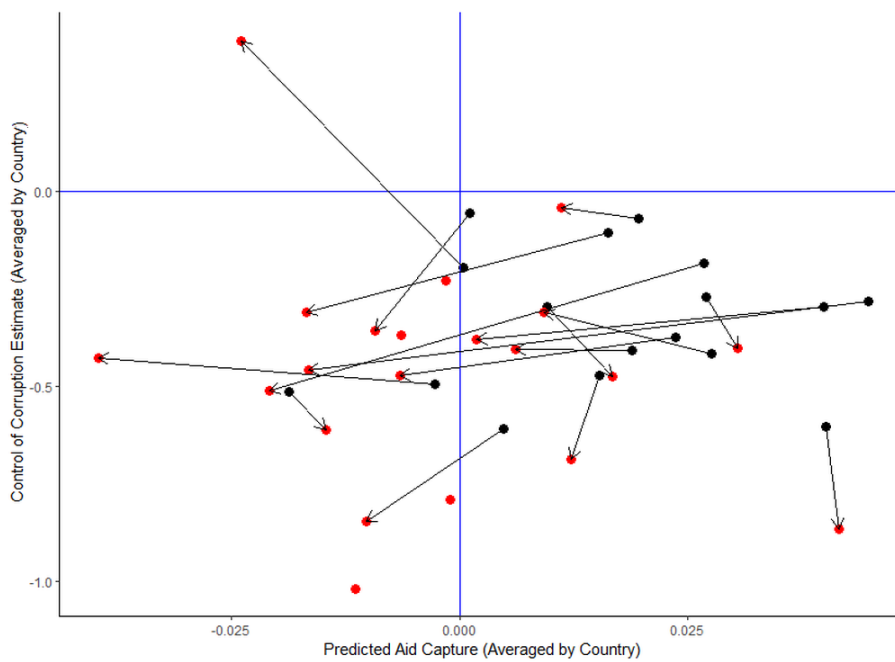Figure 5.4: Predicted Aid Capture and CCE (averaged by country) in 2009-2018.

Figure 5.5: Transition of Predicted Aid Capture and CCE (averaged by country).

Within our sample of recipient countries, these results support the idea that the presence of captured aid can be linked to countries that exhibit a negative CCE, and hence relatively high corruption levels when the capture of aid is present. However, this link disappears after 2008 when the effect of aid capture diminishes.

We indicate that aid capture may have been more widespread in developing countries that have weak governance, despite being the ones that require development aid the most (Alesina and Weder 2002). This connection could be explained by the fact that the combination of poor development and bad governance attracts foreign aid. However, it also supports the argument that excessively high levels of receipted aid may encourage corruption and undermine institutions (Knack 2001; Djankov et al. 2008).

Following the previous two sections, we suggest several policy implications based on our findings. First, addressing corruption should be a priority in aid-recipient countries, as we highlight the strong relationship between aid capture and corruption levels in recipient countries. Therefore, measures to address corruption in these countries should be given greater priority in order to ensure that aid is used for its intended purpose and to maximize its impact on development. Second, there may have been instances of aid capture, where funds intended for development were diverted for personal gain. Therefore, greater transparency and accountability measures are necessary for the allocation and implementation of aid to prevent such occurrences.

Third, weak governance and institutional capacity may contribute to aid capture. Therefore, aid programs should focus on building the capacity of institutions and promoting good governance practices in recipient countries. Lastly, excessively high levels of aid may encourage corruption and undermine institutions. Therefore, aid flows should be carefully monitored and calibrated to ensure that they do not lead to negative unintended consequences.

5.4 Endogeneity Issues

To address the potential endogeneity of aid, we initially adopt a strategy that involves analyzing quarterly changes in foreign deposits within a 2-year time frame surrounding aid disbursements by adding four leads and four lags of the aid variable (Andersen et al. 2022). The authors prove that there is a significant increase in haven deposits during the quarter when aid is disbursed,

as evidenced by a point estimate that is similar to the baseline estimate. We run all the related regressions on the sample period 1990-2018.

Table 5.5 presents the findings regarding the changes in haven deposits with our data set. The results appear to be inconclusive, as we observe an association between aid disbursements and an increase in haven deposits not precisely during the quarter of disbursement, but also three quarters afterward. This suggests an unusually large net flow to tax havens during the disbursement quarter, which may be subsequently linked to the aid disbursement after additional three quarters. These results yield a concern that if haven deposits will be increasing after the disbursement quarter, it is challenging to establish a causal relationship between aid disbursements and haven deposits.

Table 5.5: Lags and Leads: Havens.

	Estimate	Std. Error	t-statistic	p-value
Aid Disbursement (lag 4)	0.742	0.950	0.780	0.435
Aid Disbursement (lag 3)	-0.510	0.957	-0.532	0.595
Aid Disbursement (lag 2)	0.976	0.958	1.019	0.309
Aid Disbursement (lag 1)	0.124	0.969	1.277	0.202
Aid Disbursement	1.726 .	0.981	1.759	0.079
Aid Disbursement (lead 1)	-0.596	0.976	-0.611	0.541
Aid Disbursement (lead 2)	-0.383	0.963	-0.397	0.691
Aid Disbursement (lead 3)	2.069*	0.966	2.142	0.032
Aid Disbursement (lead 4)	0.330	0.966	0.342	0.733
GDP (% growth)	1.623e-12	2.684e-11	0.060	0.952
Observations	1,661			
R^2	.054			
Country fixed effects	Yes			
Time fixed effects	Yes			

Note: This table shows the results of the augmented baseline model with four leads and lags of the disbursement of the aid variable. The dependent variable is the percentage change in foreign deposits held in havens. "Aid Disbursement" is quarterly disbursement from the World Bank. "GDP" is the quarterly percentage change in GDP.

As shown in Table 5.6, there are no significant changes in non haven deposits associated with aid, neither during the disbursement quarter nor in the four quarters preceding or following. This pattern leads to the intuitive observation inferred from our regression (Table 5.1, columns 4, 5, and 6) that there is a considerable surge in haven deposits compared to non haven deposits. Similarly, the dynamic results for the differences between haven and non haven deposits

yields similar results, as shown in Table 5.8. Again, the estimates presented are relatively intuitive based on the main regression analysis.

Table 5.6: Lags and Leads: Nonhavens.

	Estimate	Std. Error	t-statistic	p-value
Aid Disbursement (lag 4)	-0.656	1.064	-0.617	0.538
Aid Disbursement (lag 3)	-1.669	1.062	-1.571	0.116
Aid Disbursement (lag 2)	1.410	1.064	1.325	0.186
Aid Disbursement (lag 1)	-0.518	1.088	-0.477	0.634
Aid Disbursement	-1.346	1.103	-1.220	0.223
Aid Disbursement (lead 1)	0.706	1.089	0.648	0.517
Aid Disbursement (lead 2)	0.505	1.077	0.469	0.639
Aid Disbursement (lead 3)	0.032	1.076	0.030	0.976
Aid Disbursement (lead 4)	1.570	1.083	1.449	0.147
GDP (% growth)	1.336e-11	2.771e-11	0.482	0.630
Observations	1,637			
R^2	.023			
Country fixed effects	Yes			
Time fixed effects	Yes			

Note: This table shows the results of the augmented baseline model with four leads and lags of the disbursement of the aid variable. The dependent variable is the percentage change in foreign deposits held in non havens. "Aid Disbursement" is quarterly disbursement from the World Bank. "GDP" is the quarterly percentage change in GDP.

5.5   Heterogeneity Analysis

5.5.1   Tax Havens Sensitivity Analysis

In order to ensure the reliability of our findings and avoid excessive reliance on a singular assumption - such as the use of a particular tax haven - we perform a sensitivity analysis encompassing the various tax havens included in our study. Such tests are typically employed in papers that address money transfers to tax havens (Johannesen and Zucman 2014; Dharmapala 2014).

In our main sample of 22 aid-dependent countries, the average of total foreign deposits recorded in these countries is approximately $15 550 million in the 1990-2018 time period. The deposits are assigned to seven tax havens, namely Switzerland, Liechtenstein, Luxembourg, Belgium, Jersey, Guernsey, and the Isle of Man, while roughly 60% can be attributed to 11 non haven financial centers. Among the mentioned tax havens, Switzerland is the most

Table 5.7: Lags and Leads: Difference.

	Estimate	Std. Error	t-statistic	p-value
Aid Disbursement (lag 4)	1.081	1.425	0.758	0.448
Aid Disbursement (lag 3)	0.821	1.424	0.576	0.565
Aid Disbursement (lag 2)	-0.627	1.427	-0.440	0.660
Aid Disbursement (lag 1)	1.259	1.459	0.863	0.388
Aid Disbursement	2.250	1.478	1.522	0.128
Aid Disbursement (lead 1)	-0.798	1.459	-0.547	0.585
Aid Disbursement (lead 2)	-0.874	1.444	-0.605	0.545
Aid Disbursement (lead 3)	2.160	1.453	1.487	0.137
Aid Disbursement (lead 4)	-0.939	1.452	-0.647	0.518
GDP (% growth)	2.557e-12	3.712e-11	0.069	0.945
Observations	1,633			
R^2	.013			
Country fixed effects	Yes			
Time fixed effects	Yes			

Note: This table shows the results of the augmented baseline model with four leads and lags of the disbursement of the aid variable. The dependent variable is the percentage change difference between haven and non haven deposits. "Aid Disbursement" is quarterly disbursement from the World Bank. "GDP" is the quarterly percentage change in GDP.

significant with $2 630 million deposits on average held by countries in our main samples held in Swiss bank accounts. Figure 5.6 reports the share of most significant tax havens exploited by the countries of our main sample.

Table 5.8 presents the relevance of individual banking centers used in the regression. The results show that the overall increase in tax havens associated with aid disbursements is primarily due to accounts in Switzerland, as shown in column 1. By contrary, responses in Luxembourg, Belgium, and Jersey (combined with Guernsey and the Isle of Man) show statistically insignificant changes, as shown in columns 2, 3, and 4. These findings are consistent with the hypothesis that the increase in tax haven deposits following aid disbursements signifies a diversion to concealed private accounts. Over the 1990-2018, Switzerland was one of the largest tax havens globally, with some of the most stringent bank secrecy and a share of approximately 40% of the private wealth management market (Zucman 2013).

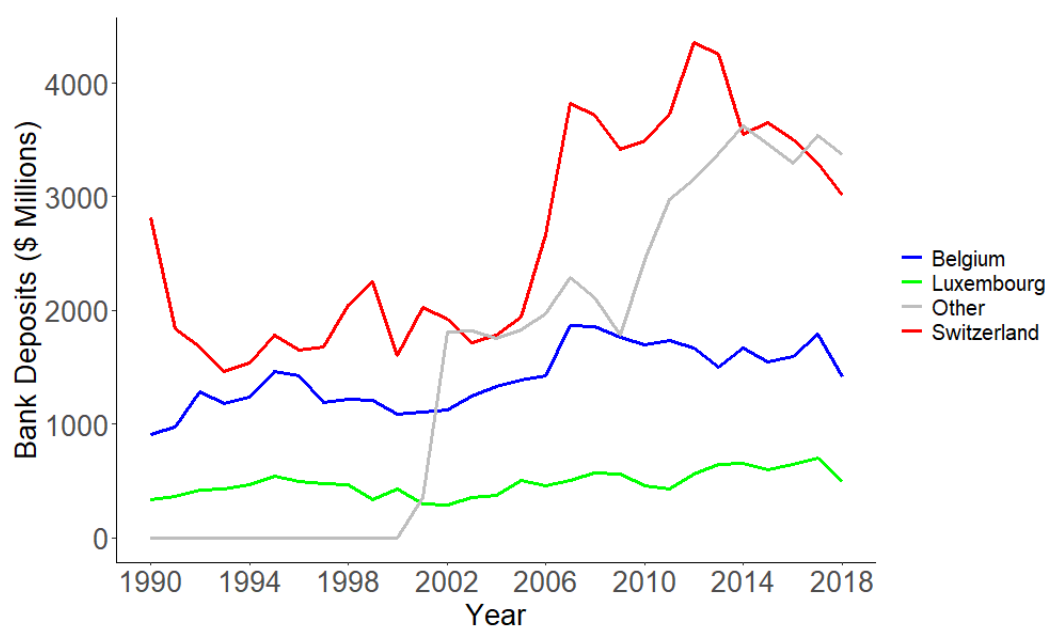Figure 5.6: Cross-Border Bank Deposits in Individual Havens ($ in Millions).

Table 5.8: Individual Havens.

	Switzerland (1)	Belgium (2)	Luxembourg (3)	Others (4)
Aid Disbursement	2.446*	-1.277	3.067	-2.247
	(1.037)	(1.293)	(2.440)	(2.376)
GDP Growth (%)	-8.617e-13	-6.117e-12	-9.267e-13	-5.440e-12
	(1.619e-11)	(1.631e-11)	(2.740e-11)	(2.137e-11)
Observations	1,630	1,371	1,092	600
R^2	.025	0.012	.006	.003
Country fixed effects	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes

Note: This table shows the results of the sensitivity analysis of each haven. This specification is equivalent to Table 5.1 with each column showing the estimates if only one of the havens is included in the regression. "GDP" is the quarterly percentage change in GDP. Standard errors are shown in parentheses.

5.5.2 Macroeconomic Shocks

We carried out various tests to ensure the reliability of the relationship between aid disbursements and haven deposits analyzed on publicly available data. We remove observations where certain events like wars, coups, natural disasters,

and financial crises may affect our estimates. The results are presented in Table 5.9.

Table 5.9: Macroeconomic Shocks

	No War (1)	No Coup (2)	No Disaster (3)	No Financial Crisis (4)
Aid Disbursement	7.239*	2.375**	-2.835	-2.222
	(3.210)	(0.932)	(6.374)	(5.030)
GDP Growth (%)	3.988e-11	-1.184e-12	-3.200e-10	-2.689e-11
	(6.849e-11)	(1.321e-11)	(2.740e-11)	(9.146e-11)
Observations	1,761	1,672	1,810	1,811
R^2	.123	.049	.321	-.171
Country fixed effects	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes

Note: This table shows the results of robustness checks. Each column shows the estimates of the regression equivalent to Table 5.1 which each column showing the results if the macroeconomic shock does not occur. The dependent variable is the percentage change in foreign deposits held in non havens. "Aid Disbursement" is quarterly disbursement from the World Bank."GDP" is the quarterly percentage change in GDP. Standard errors are shown in parentheses.

As the majority of the main sample countries are often hit by these shocks, each of the restrictions we apply substantially reduces the sample size. Nevertheless, the coefficient on aid disbursements remains statistically significant when there is no occurrence of war or coup in the recipient country. On the other hand, for periods of financial crisis or natural disasters, the statistical significance of the estimate does not persist.

Variables constructed from the public data report show only partial robustness compared to confidential data used by Andersen et al. (2022). There are several reasons why this might be the case. First, the confidential data include broader data on cross-border bank deposits which is central to our analysis. Greater data coverage may provide a more complex and thorough analysis of the relationship between aid disbursements and change in cross-border bank deposits. Second, the confidential data may be of better quality as it could have undergone more rigorous quality control and cleaning procedures, making it more reliable and accurate. The next chapter provides further elaboration on this issue.

5.6   Limitations and Further Research Suggestions

The availability and quality of data might significantly affect the accuracy of our findings. In the context of this thesis, the replication method with the use of publicly available data found a similar effect as the original study where the authors used confidential and thus more comprehensive data, albeit weaker. The compliance of our results obtained from a publicly available data set to the data set utilized by Andersen et al. (2022) is of marginal significance, as we were able to obtain to some extent similar results to conduct extended analysis.

While the use of confidential data may provide more accurate and comprehensive information that might not be available through public data sources, the use of confidential data in the original paper may introduce another potential limitation as it restricts the ability of other scholars to completely replicate and verify the findings, which might lead to potentially biased results.

If we were able to obtain the confidential data set for further research, it would allow us for more complex analysis as we would have more opportunities to conduct more precise and rigorous tests that would consider other factors and variables that may impact the change of cross-border bank deposits in offshore financial centers, providing insights into the underlying economic and financial dynamics at play.

We do not explicitly explore the impact of aid capture on development outcomes. While we suggest that aid capture may undermine the effectiveness of foreign aid in promoting development, we do not investigate the specific mechanisms or consequences of this phenomenon. Future research could explore the impact of aid capture on development outcomes, such as whether it leads to a reduction in public investment, increased income inequality, or other negative consequences. Such research could provide insights into the ways in which aid capture may impact the ability of aid to achieve its intended goals and promote sustainable development.

Our thesis underscores the need for better governance and institutional reforms to address aid capture, a phenomenon that undermines the effectiveness of foreign aid in promoting development. While we suggest several potential policy solutions, including improved transparency, accountability, and civil society engagement, further research is needed to explore the feasibility and effectiveness of these interventions. For instance, future research could investigate the use of conditionality clauses in aid agreements as a means of incentivizing recipient governments to implement anti-corruption measures. Additionally, fur-

ther research could examine the role of civil society organizations in promoting transparency and accountability, and explore strategies for strengthening their capacity and effectiveness in combating corruption. Such research could inform the development of evidence-based policy solutions that can help to mitigate the negative effects of aid capture and promote sustainable development.

Chapter 6

Conclusion

This thesis contributes to the ongoing debate regarding the effectiveness of foreign aid in promoting economic growth and poverty reduction by examining the issue of aid capture. Our analysis shows that a significant proportion of foreign aid intended for aid-dependent countries ends up in offshore accounts, often benefiting the economic elite rather than the intended beneficiaries.

Our results suggest that the effect of aid capture was present in the period from 1990 to 2008, but disappeared after 2008, coinciding with the initial release of customer information from tax havens. The significance of this is of great importance as it is not presented in the paper we replicate in this thesis. Hence, we believe our thesis constitutes a substantial contribution to the study of aid diversion and may serve as a catalyst for further research.

Additionally, our analysis found no significant effect between the portfolio investment of aid-dependent countries and the aid they receive. The enhanced financial transparency demanded by international organizations such as the OECD and individual countries such as the United States since 2009 appears to have positively impacted the capture of foreign aid. Furthermore, we analyzed the relationship between portfolio investment of aid-dependent countries and the aid they receive, finding no significant effect.

Our discussion also highlights the role of corruption in the capture of foreign aid. The prevalence of corruption in many countries receiving foreign aid raises concerns about whether the intended beneficiaries are actually receiving the aid. Instead, there are fears that ruling politicians may be capturing the aid flow. We show that the presence of captured aid can be linked to countries that exhibit a negative CCE, and hence relatively high corruption levels when the capture of aid is present. However, this link disappears after 2008 when the

effect of aid capture diminishes.

Our thesis is limited by the macro-level deposit data used, which does not allow for the identification of those who store wealth in tax havens during periods of large aid disbursements. Nevertheless, our findings suggest that the increased financial transparency demanded by international organizations and individual countries has positively impacted the capture of aid in tax havens.

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