Spillover effects of offshore leaks

Miroslav Palanský*

September 2023, preliminary incomplete draft

Abstract

Leaks of confidential documents from companies that facilitate the creation of secretive corporate structures in offshore jurisdictions have become a major source of information about the world of financial secrecy, with far-reaching consequences for the individuals involved. In this paper I look at the effects of the leaks on individuals not directly involved in the leaks, but using schemes and tax havens exposed by the leaks. I use the leaks in a fixed-effects model at the bilateral level to assess their impact on cross-border bank deposits and portfolio investment. I find that offshore leaks negatively influence the use of the implicated offshore jurisdictions: the more pronounced is the presence of a given offshore jurisdiction in an offshore leak, the higher is the effect on inward cross-border financial flows to that jurisdiction. I find a higher negative effect of leaks on financial flows from less-developed countries, in which control mechanisms are weaker, and thereby the costs of setting up a simple offshore structure are lower (via lower detection probabilities).

Keywords — offshore leaks; financial transparency; secrecy jurisdictions; tax havens; offshore financial centers

JEL — F36, F65, G28, H26, H87

*Institute of Economic Studies, Faculty of Social Sciences, Charles University, Prague, Czechia; Tax Justice Network, London, United Kingdom. E-mail: miroslav.palansky@fsv.cuni.cz. This research has been supported by the Czech Science Foundation (CORPTAX, 21-05547M) and has received funding from the European Union's Horizon 2020 research and innovation program under the Marie Skłodowska-Curie grant agreement No 870245. I am grateful to Wojciech Kopczuk, Petr Janský, and seminar participants at the EU Tax Observatory for useful comments and discussions.

1 Introduction

Financial wealth hidden in opaque corporate structures in offshore jurisdictions has been estimated to amount to more than 11% of the world GDP in 2015 (Alstadsæter et al., 2018). Secrecy jurisdictions such as Switzerland, Hong Kong, or the Cayman Islands have provided ample opportunities for setting up such structures for decades, costing governments around the world staggering amounts of forgone tax revenue from the untaxed returns on these hidden assets Tax Justice Network (2021). Tackling financial secrecy—or, in other words, improving financial transparency—in secrecy jurisdictions has thus risen high on the agendas of governments and international organisations, resulting in some promising recent progress. For example, information exchange (including with most secrecy jurisdictions) has been widely adopted throughout the developed world in the past years, albeit with somewhat mixed evidence on its effectiveness (Casi et al., 2020a; Johannesen, 2014; Menkhoff and Miethe, 2019a).

When confidential documents are leaked from offshore service provider companies—such as the Panama Papers leak from the former Panamanian law firm and corporate service provider Mossack Fonseca—we learn about practices of companies, as well as individuals, that were deliberately hidden from the public (and sometimes even government authorities) prior to the leak. This increase in transparency relates to only a subset of companies that are included in the leaks, and thus provides an exogenous source of variation across companies: the companies included in the leaks are not systematically different from other, similar companies, whose documents did not end up in the leaks. In addition, the leaks may have spillover effects on agents who are not directly implicated in the leaks, but who are using the same secrecy jurisdictions and the same offshore schemes as those highlighted by the leaks.

In this paper I hypothesize that offshore leaks negatively influence the use of the implicated strategies and offshore jurisdictions: the more pronounced the presence of a given offshore jurisdiction in an offshore leak, the higher I expect the effect to be on cross-border bank deposits stored in that jurisdiction. The data on cross-border bank deposits come from the Locational Banking Statistics of the Bank for International Settlements

which only recently started to publish such bilateral data for many of the most secretive jurisdictions of the world. I also investigate whether the effect is driven by one important feature of this data: that it is reported at the immediate ownership level (rather than ultimate). The hypothesized effect of this feature is that we observe a higher negative effect of leaks on financial flows from less-developed countries, in which control mechanisms are weaker, and thereby the costs of setting up a simple offshore structure are lower (via lower detection probabilities). Consistent with this hypothesis, there is some evidence that corporate structures that originate in more developed countries tend to be more complex (Fernando and Antoine, 2022). In this paper, I directly test this hypothesis using the leaks data.

My main result is that when a country pair is mentioned 100 times in offshore leaks, the effect is similar in size to about a quarter of the effect of implementing an automatic information exchange treaty between the two jurisdictions, which has previously been estimated by Casi et al. (2020b) and others to be around 10% (a result which I replicate in this paper). I document the robustness of this result to other definitions of offshore financial centers. I then divide the analysis into income groups to which origin countries belong and i find that the bulk of the effects is driven by high-income OECD countries.

The rest of the paper is organized as follows: Section 2 provides a literature review on offshore financial secrecy and the effects of offshore leaks. Section 3 describes the data and the empirical approach. Section 4 presents the results. Section 5 discusses the implications of the findings for policy and future research. Finally, Section 6 concludes the paper.

2 Empirical strategy

In this section I describe the theoretical framework that I use to embed the effect of offshore leaks in the decision-making process of agents that seek secretive corporate structures, but face a cost of a risk of detection (that would lead to a penalty). I then propose a series of hypotheses that stem from the theoretical framework and aim to shed light on the different aspects of the overarching research question of this paper: what are the ef-

fects of offshore leaks on bank deposits in the implicated offshore financial centers? At the end of this section I describe the fixed-effects model which operationalizes the framework and tests the hypotheses.

I follow the classical model of tax evasion by Allingham and Sandmo (1972) in which people implement secretive schemes when it benefits them, taking into account the costs of risk of detection and the size of the underlying penalty. Following Janský et al. (2022), let us assume an agent from country i (who I will denote agent i) who wishes to hide their financial wealth from domestic authorities by using an opaque corporate scheme that uses the financial secrecy provided by secrecy jurisdiction j. Hiding this wealth brings the agent a certain benefit, which can either be a related tax on the returns from investing this money that would be due in the agent's home country but is evaded, or it can be escaping criminal prosecution in case the assets have an illicit origin. I denote this benefit r_t. The agent selects a secrecy jurisdiction $j \in (1, ..., J)$ which offers, at time t, a set of secrecy opportunities S_{jt}. There is a positive (expected) cost associated with using secrecy jurisdiction j at time t:

$$E(v(S_{jt}, D_{ij}, I_{jt}, A_{it})) = c(D_{ij}, I_{jt}) + \theta(S_{jt}, B_{ijt}) \cdot (r_{jt} + \alpha_{it}) \tag{1}$$

where c is the cost of setting up and maintaining an offshore structure in jurisdiction j and depends on (geographical and cultural) distance D_{ij} between jurisdictions i and j and country characteristics I_{jt} of secrecy jurisdiction j at time t.

I denote θ the probability of the agent's identity to be revealed, which depends on two variables. The first is the secrecy level S_{jt} of jurisdiction j at time t. I operationalize this variable in the empirical part of this paper by the introduction of automatic information exchange. The second is the level of attention B_{ijt} that the authorities in country i are paying at time t to schemes implemented between countries i and j. In case the scheme is revealed by the authorities, the agent will lose her benefit r_{jt} and will have to pay an additional penalty α.

Crucially for the empirical part of this paper, I assume that after an offshore leak, B_{ijt} increases proportionally to the number of mentions of country pair i and j in the

leak, and thereby affects θ not only for agents that are directly involved in the leaks, but also all other agents that have implemented similar schemes. This assumption underlies the mechanism through which I hypothesize that offshore leaks affect all bank deposits whose beneficial ownership is deliberately hidden: since costs of hiding wealth in offshore financial centers increase while benefits remain the same, agents for which costs newly exceed benefits will decide to terminate or restructure the used scheme, decreasing the amount of bank deposits between countries i and j as reported in the official statistics.

My main hypothesis is thus that bank deposits owned by residents of country i in country j will decrease proportionally to the number of times that this country pair has been involved in the leaks. The principal idea of this research question is illustrated by Figure 1. There was a large decrease in UK deposits in Panama following the publication of the Panama Papers which included many mentions of schemes that involved these two jurisdictions. In contrast, there is virtually no effect of the Panama Papers observable in the right-hand part of Figure 1 which shows UK deposits in Switzerland.

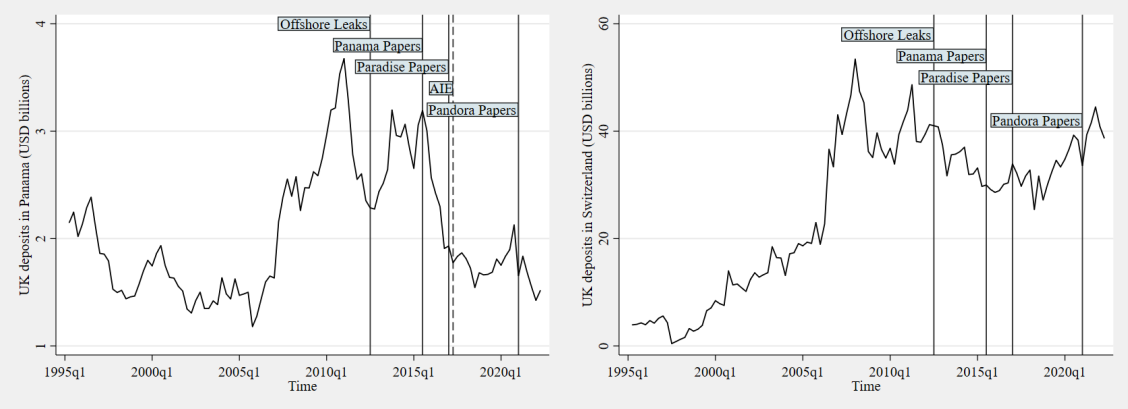

Figure 1: Development of bank deposits held by residents of the United Kingdom in the banks in Panama (left-hand side) and Switzerland (right-hand side)

I further hypothesize that B_{ijt} will increase for a certain period of time before decreasing again. For example, after an offshore leak that heavily featured opaque corporate schemes implemented by German residents in the Bahamas, the German authorities will investigate such schemes with a priority only for some time. I hypothesize, however, that the effect of leaks on bank deposits does not go both ways and that in this sense, the reputation of schemes involved in leaks is destroyed for a much longer time.

To test these hypotheses, I implement a fixed-effects model at the bilateral country level:

$$log(Dep_{ijt}) = \alpha + \beta * AIE_{ijt} + \gamma * CummPC_{ijt} + \delta * CummPC_{ijt} * PostLeak + \eta * X_{ijt} + \epsilon \quad (2)$$

where Dep_{ijt} are bank deposits held by residents of country i in country j at time t. I define 'Cummulative pair count' ($CummPC_{ijt}$) as the number of appearances of a given country pair i, j in leaks up to time t. I interact $CummPC_{ijt}$ with $PostLeak$ to capture any immediate effect of increased B_{ijt}. X_{ijt} is a vector of control variables. As mentioned above, I operationalize S_{ijt} via a binary indicator for automatic information exchange and via splitting the sample based on overall secrecy levels (obtaining also a placebo test for the cases of two non-secretive jurisdictions).

I then turn to investigating the nature of the measured effects of leaks on bank deposits in offshore financial centers by implementing a number of additional tests. First, I investigate how the results are affected by alternative definitions of offshore financial centers. I hypothesize that measures of substantive financial secrecy (i.e. those that focus on regulations that enable anonymous asset ownership by non-residents) are those that matter for the location of bank deposits with unknown owners (as opposed to measures of international cooperation or corporate tax havenry). Second, I split the sample by the income level of the origin country to shed more light on how agents from different countries react to offshore leaks. Specifically, I hypothesize that in higher-income countries, the capacity of the authorities to increase their attention to offshore schemes that are heavily involved in the leaks is higher than in lower-income countries, and the effect of leaks is therefore stronger in higher-income countries.

3 Data

I use four main types of data. The first are data on cross-border bank deposits, for which data are publicly available from the Locational Banking Statistics (LBS) by the Bank for International Settlements (BIS). In its Table A6.2, the LBS provide a bilateral breakdown

of bank deposits held in a given country's banks by residents of other countries in each quarter. For some country pairs, this data is available since 1980. We can thus see, for example, the amount of deposits held by Italian residents in the banks that operate in the Bahamas. A breakdown is also available for inter-bank deposits and other deposits, which include those held by households as well as companies (presumably, both can be used for tax evasion purposes).

The data is reported at the immediate ownership basis, which is a significant drawback of this data with important implications for the interpretation of this paper's results: the most secretive schemes are likely to use multiple jurisdictions in a chain that ensures additional levels of secrecy, and any effect of leaks or policies that is observable in the reported data can thus be considered a lower-bound estimate of the actual effect.

Since the first publication of the data at the bilateral level in 2016, extensive literature has used it as the primary source of data to study cross-border tax evasion (Ahrens and Bothner, 2020; Andersen, Johannesen, Lassen, et al., 2017; Andersen, Johannesen, and Rijkers, 2022; Casi et al., 2020b; Menkhoff and Miethe, 2019b).

The second major source of data for this paper's analysis is the Offshore Leaks Database published by the International Consortium of Investigative Journalists (ICIJ). The database covers four major leaks of confidential documents from offshore law firms and corporate service providers. I provide an overview of these leaks in Table 1. There is substantial heterogeneity in the scale, scope, and focus of the individual leaks, which is partly illustrated by the cumulative number of bilateral country relationships mentioned in the four leaks, as displayed in Figure 2. There is a total of 459,453 relationships mentioned in the four leaks (at the bilateral-source level). A breakdown of this total is available in Figure 3. For the purposes of this analysis, some data cleaning was necessary, most of which involved correcting spelling errors in country identifiers and other variables.

The third source of data is information on when countries started to exchange information under the Common Reporting Standard (CRS) of the OECD. Automatic information exchange (AIE) under this scheme is now widespread: as of October 2022, over 4900 bilateral exchange relationships had been activated, involving more than 110 jurisdictions. AIE has been shown in recent literature to have had a significant negative impact on bank

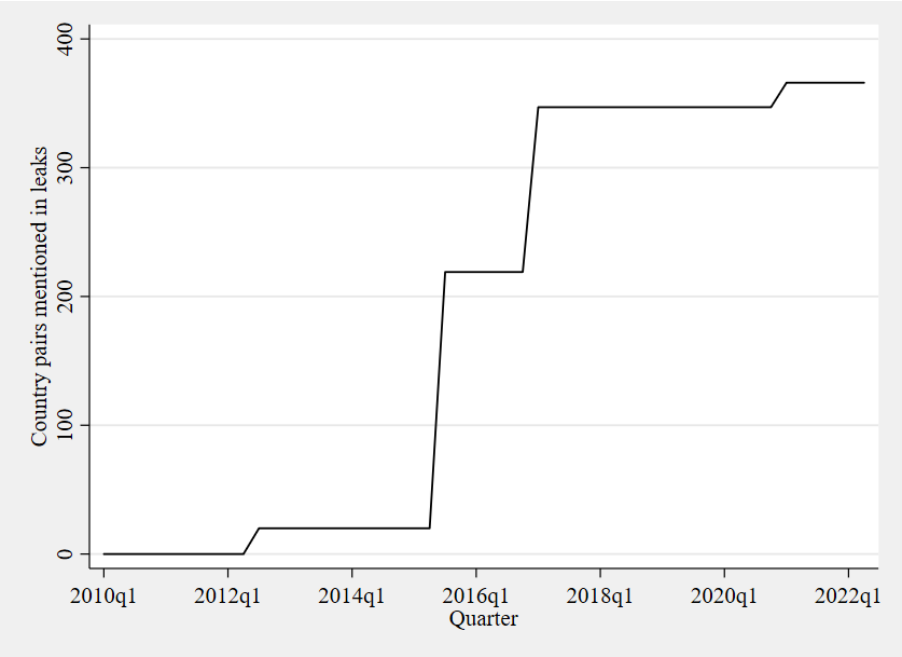

Figure 2: Cumulative number of bilateral country relationships mentioned in the four studied offshore leaks

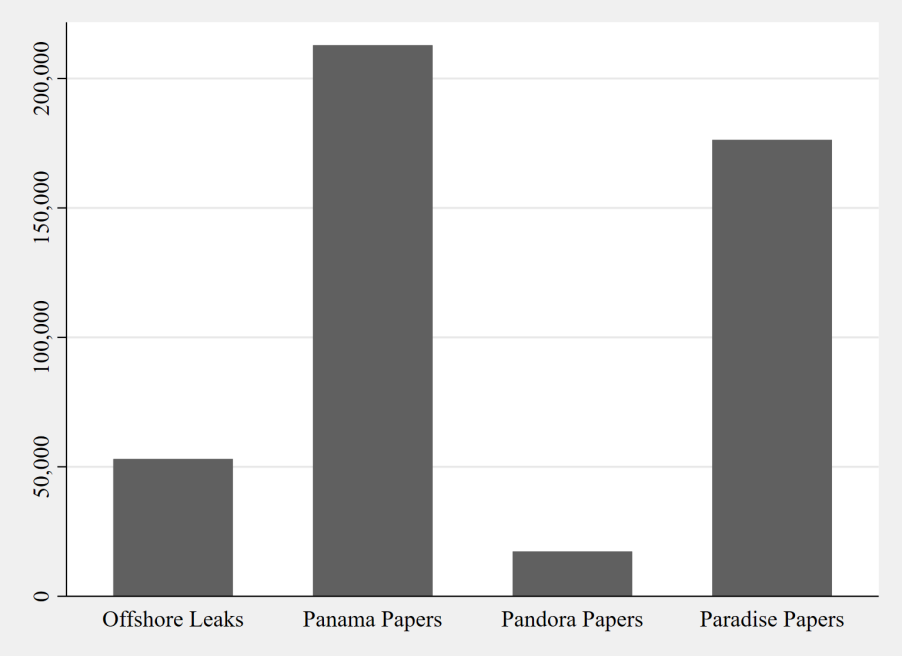

Figure 3: Number of (non-unique) bilateral country relationships mentioned in the four studied offshore leaks

Leak	Date of release	Scope	Origin
Offshore Leaks	April 2, 2013	2 million documents on 130,000 accounts	Jersey, Bahamas
Panama Papers	April 3, 2016	11.5 million documents on 215,000 entities	Panama
Paradise Papers	November 5, 2017	13.4 million documents on 120,000 people	Bermuda and others
Pandora Papers	October 3, 2021	11.9 million documents on 29,000 accounts	Panama, Switzerland, UAE and others

Table 1: Overview of the four studied offshore leaks

deposits stored in tax havens (Ahrens and Bothner, 2020; Casi et al., 2020b; Menkhoff and Miethe, 2019b). One of the contributions of this paper is to assess the impact of offshore leaks that took place around the introduction of AIE in most highly secretive jurisdictions.

Lastly, the fourth type of data are control variables. I use data on geographical distance between capital cities and on cultural distance (which I proxy by a dummy variable indicating common language) which I source from the CEPII dataset (Mayer and Zignago, 2011). Last, to control for time-varying country characteristics, I use data on population from the World Bank, data on GDP from the World Bank, the United Nations and the CIA, and data on institutional quality from the World Governance Indicators.

4 Results

I present the main results in Table 2. In columns (1)-(3) I use the full sample, including both havens and non-havens as both origins and destinations of cross-border bank deposits. I find a small, negative and statistically significant effect. A more nuanced analysis is presented in columns (4)-(7). In column (4) I focus on deposits that originate in non-havens and are stored in secrecy jurisdictions (defined as countries that score over 65 on the average of the first three categories of the Secrecy Scores in the Financial Secrecy Index 2022). I very closely replicate the result of Casi et al. (2020b) by estimating the effect of automatic information exchange (AIE) on bank deposits at 10.5%. In my main result of interest, I find the effect of being mentioned in the leaks 100 times to be equal to roughly one quarter of the effect of AIE. Both coefficients are statistically significant at the one-percent level.

Column (5) limits the model's sample to only lower-income countries as bank deposit origins. The effect of AIE disappears for these countries, while the effect of leaks remains at around 2%. One potential explanation for the null effect of AIE on bank deposits from lower-income countries is that agents from lower-income countries are less fearful of audits from the side of their home authorities even after AIE is in place.

Columns (6) and (7) serve as placebo tests to my main results. As expected, I do not find any significant effect of offshore leaks on bank deposits between both havens and havens as well as non-havens and non-havens.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	All	All	All	Non-haven to haven	Non-haven to haven non-High income	Haven to haven	Non-haven to non-haven
AIE	0.013	0.013	0.013	-0.105***	-0.062	-0.013	0.014
	(0.011)	(0.011)	(0.011)	(0.032)	(0.052)	(0.094)	(0.011)
Cummulative pair count		-0.007***	-0.007***	-0.026***	-0.020***	-0.001	-0.056
		(0.002)	(0.002)	(0.006)	(0.006)	(0.003)	(0.104)
Cummulative pair count * Post-leak			0.002	0.008	0.004	0.000	0.025
			(0.005)	(0.012)	(0.013)	(0.006)	(0.258)
Constant	17.323***	17.323***	17.323***	15.880***	15.853***	17.308***	17.986***
	(0.004)	(0.004)	(0.004)	(0.006)	(0.011)	(0.014)	(0.005)
No. of Obs.	149,624	149,624	149,624	54,356	16,834	8,736	73,621

Note: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.10.

Table 2: Results of the fixed effects model

In Table 3 I run a series of robustness checks. Column (1) is my main results which is copied from Column (4) of Table 2. In columns (2)-(4) I use different definitions of offshore financial centres: respectively, these are countries with secrecy scores in FSI 2022 of over 65, countries on the list of tax havens by Johannesen and Zucman (2014), and countries with a haven score of over 70 in the Corporate Tax Haven Index 2021. I do not observe the effect of leaks on bank deposits in the corporate tax havens identified by the lists used in Columns (3) and (4).

In Table 4 I split the sample of origin countries into income groups to compare the differential impact that leaks could have on investors across countries. I observe the strongest effect for high-income non-OECD countries, although AIE does not seem to play a large role in the locational decision of agents that seek financial secrecy. The overall effect of AIE seems to be driven by OECD countries as origin countries, which are also most able to use the data that they receive from the exchanges to criminally

	(1) Secrecy score Cat 1 - 3 in FSI 2022 over 65	(2) Secrecy score in FSI 2022 over 65	(3) Tax haven list Johannesen & Zucman (2014)	(4) Haven score in CTHI 2021 over 70
AIE	-0.105***	-0.020	0.104***	0.135***
	(0.032)	(0.029)	(0.023)	(0.022)
Cummulative pair count	-0.026***	-0.018***	0.016	0.011
	(0.006)	(0.006)	(0.014)	(0.017)
Cummulative pair count * Post-leak	0.008	0.004	0.002	0.003
	(0.012)	(0.010)	(0.032)	(0.037)
Constant	15.880***	16.160***	18.531***	17.099***
	(0.006)	(0.005)	(0.009)	(0.006)
No. of Obs.	54,356	70,471	20,661	53,495

Note: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.10.

Table 3: Robustness checks on the definitions of offshore financial centers

prosecute tax evaders. There seems to be little effect for lower-income countries.

	(1) Non-haven to haven, high income	(2) Non-haven to haven, high income OECD	(3) Non-haven to haven, high income non-OECD	(4) Non-haven to haven, upper-middle income	(5) Non-haven to haven, low and lower-middle income
AIE	-0.134***	-0.116***	-0.064	-0.062	0.000
	(0.034)	(0.035)	(0.063)	(0.052)	(.)
Cummulative pair count	-0.029***	-0.024***	-0.061***	-0.020***	0.100
	(0.006)	(0.007)	(0.015)	(0.006)	(0.162)
Cummulative pair count * Post-leak	0.010	0.008	0.029	0.005	0.098
	(0.013)	(0.014)	(0.030)	(0.013)	(0.327)
Constant	15.900***	15.968***	16.462***	15.852***	14.643***
	(0.006)	(0.007)	(0.013)	(0.011)	(0.009)
No. of Obs.	51,227	44,744	13,049	16,834	25,917

Note: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.10.

Table 4: Robustness checks on the income group of origin countries

Lastly, I replicate the unilateral analysis by Johannesen and Stolper (2021) and present the results in Table 5. I find a statistically significant negative effect of the leaks, although somewhat smaller (at 1.7%) than Johannesen and Stolper (2021)'s result of 4.6%. One plausible explanation of the smaller effect that I find here is that new leaks decline in their ability to persuade agents to relocate their assets.

	(1) Haven: Secrecy score Cat 1 - 3 in FSI 2022 over 65	(2) Haven: Secrecy score in FSI 2022 over 65	(3) Haven: Tax haven list Johannesen & Zucman (2014)	(4) Haven: Haven score in CTHI 2021 over 70
Haven * PostLeak	-0.017**	-0.006***	-0.009**	0.002
	(0.004)	(0.001)	(0.003)	(0.006)
Constant	0.009***	0.009***	0.009***	0.009***
	(0.000)	(0.000)	(0.000)	(0.000)
Income group controls	Yes	Yes	Yes	Yes
No. of Obs.	141,402	141,402	141,402	141,402

Note: Standard errors clustered at the income-group level in parentheses. *** p<0.01, ** p<0.05, * p<0.10.

Table 5: Results of the unilateral analysis following Johannesen and Stolper (2021)

References

Ahrens, L. and Bothner, F. (2020). "The big bang: Tax evasion after automatic exchange of information under FATCA and CRS". *New Political Economy*, 25(6). Publisher: Taylor & Francis (cited on pp. 7, 9).

Allingham, M. G. and Sandmo, A. (1972). "Income tax evasion: A theoretical analysis". *Journal of Public Economics*, 1(3-4). tex.publisher: North-Holland (cited on p. 4).

Alstadsæter, A., Johannesen, N., and Zucman, G. (2018). "Who owns the wealth in tax havens? Macro evidence and implications for global inequality". *Journal of Public Economics*. In Honor of Sir Tony Atkinson (1944-2017), 162. DOI: 10.1016/j.jpubeco.2018.01.008 (cited on p. 2).

Andersen, J. J., Johannesen, N., Lassen, D. D., and Paltseva, E. (2017). "Petro rents, political institutions, and hidden wealth: Evidence from offshore bank accounts". *Journal of the European Economic Association*, 15(4) (cited on p. 7).

Andersen, J. J., Johannesen, N., and Rijkers, B. (2022). "Elite capture of foreign aid: Evidence from offshore bank accounts". *Journal of Political Economy*, 130(2). Publisher: The University of Chicago Press Chicago, IL (cited on p. 7).

Casi, E., Spengel, C., and Stage, B. M. (2020a). "Cross-border tax evasion after the common reporting standard: Game over?" *Journal of Public Economics*, 190. Publisher: Elsevier. DOI: 10.1016/j.jpubeco.2020.104240 (cited on p. 2).

Casi, E., Spengel, C., and Stage, B. M. (2020b). "Cross-border tax evasion after the common reporting standard: Game over?" *Journal of Public Economics*, 190. Publisher: Elsevier. DOI: 10.1016/j.jpubeco.2020.104240 (cited on pp. 3, 7, 9).

Fernando, G. A. and Antoine, M. (2022). "The network structure of global tax evasion evidence from the Panama papers". *Journal of Economic Behavior & Organization*, 197. DOI: 10.1016/j.jebo.2022.03.024 (cited on p. 3).

Janský, P., Palanská, T., and Palanský, M. (2022). "Hide-seek-hide? The effects of financial secrecy on cross-border financial assets". *World Institute for Development Economic Research (UNU-WIDER)* (cited on p. 4).

Johannesen, N. (2014). "Tax evasion and Swiss bank deposits". *Journal of Public Economics*, 111. tex.publisher: Elsevier (cited on p. 2).

Johannesen, N. and Stolper, T. B. (2021). "The deterrence effect of whistleblowing". *The Journal of Law and Economics*, 64(4). Publisher: The University of Chicago Press Chicago, IL (cited on p. 11).

Johannesen, N. and Zucman, G. (2014). "The End of Bank Secrecy? An Evaluation of the G20 Tax Haven Crackdown". *American Economic Journal: Economic Policy*, 6(1). DOI: 10.1257/pol.6.1.65 (cited on p. 10).

Mayer, T. and Zignago, S. (2011). *Notes on CEPII's distances measures: The GeoDist database*. Working papers 2011-25. CEPII (cited on p. 9).

Menkhoff, L. and Miethe, J. (2019a). "Tax evasion in new disguise? Examining tax havens' international bank deposits". *Journal of Public Economics*, 176. tex.publisher: Elsevier. DOI: 10.1016/j.jpubeco.2019.06.003 (cited on p. 2).

— (2019b). "Tax evasion in new disguise? Examining tax havens' international bank deposits". *Journal of Public Economics*, 176. tex.publisher: Elsevier. DOI: 10.1016/j.jpubeco.2019.06.003 (cited on pp. 7, 9).

Tax Justice Network (2021). *The State of Tax Justice 2021*. London, UK: Tax Justice Network (cited on p. 2).