

Spillover effects of offshore leaks

Miroslav Palanský

CORPTAX

 **TAX JUSTICE
NETWORK**

Charles University, Prague | Tax Justice Network

5th International Research Conference on Empirical Approaches to Anti-Money
Laundering and Financial Crime | Nassau, The Bahamas

January 18, 2024

Offshore leaks

- ▶ Panama Papers, Pandora Papers, Lux Leaks, Bahamas Leaks etc.
- ▶ Glimpses of the world of financial secrecy, some with serious consequences for involved people
- ▶ Effectively, these are (forced and selective) increases in (corporate) transparency
- ▶ Good research opportunity: unexpected, rarely systematic, frequent, heterogenous

Offshore leaks

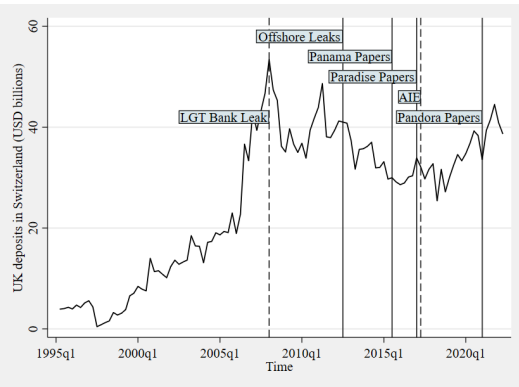
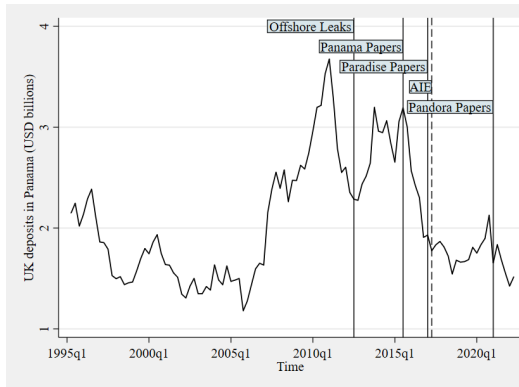
- ▶ Panama Papers, Pandora Papers, Lux Leaks, Bahamas Leaks etc.
- ▶ Glimpses of the world of financial secrecy, some with serious consequences for involved people
- ▶ Effectively, these are (forced and selective) increases in (corporate) transparency
- ▶ Good research opportunity: unexpected, rarely systematic, frequent, heterogenous

This paper

- ▶ What are the effects of these leaks on wealth stored in tax havens?
 - ▶ Leaks are relatively small in scope, but their effects can spill over to other users of offshore schemes
- ▶ How do they interact with the well-documented effect of information exchange treaties?

This paper

- ▶ What are the effects of these leaks on wealth stored in tax havens?
 - ▶ Leaks are relatively small in scope, but their effects can spill over to other users of offshore schemes
- ▶ How do they interact with the well-documented effect of information exchange treaties?



Key result

- ▶ When a country pair is mentioned 100 times in leaks, the effect is on average similar to about a quarter of the effect of implementing automatic information exchange

Wealth in tax havens

- ▶ Bank deposits and portfolio investment: together capture the bulk of foreign-owned financial wealth
- ▶ Most recent estimate of the scale: \$9.8 trillion (ECORYS, 2021; Zucman, 2013)
- ▶ Tax revenue losses: \$170 billion (Tax Justice Network, 2021)
- ▶ Distribution: some evidence from bank deposit data (Alstadsaeter et al., 2018)

Bank deposits in tax havens

- ▶ Bank deposits data from Locational Banking Statistics by the Bank for International Settlements, Table A6.2
- ▶ Until 2016, this data was only publicly reported at unilateral level, now at bilateral level and including major tax havens
- ▶ Data on bank deposits by 47 reporting countries against counterparties from over 200 countries

Deposits respond to changes in secrecy

- ▶ Event studies: information exchange decreases deposits in newly exchanging countries

$$\log(\text{deposits}_{ijt}) = \alpha + \beta * \text{Treaty}_{ijt} + \gamma_{ij} + \theta_t + \epsilon_{ijt}$$

- ▶ Information exchange upon request
 - ▶ Johannesen and Zucman (2014, AEJ:Policy)
- ▶ US Foreign Account Tax Compliance Act
 - ▶ De Simone et al. (2017, JAccRes), De Simone and Stomberg (2023, OxREP)
- ▶ OECD's Common Reporting Standard for automatic information exchange
 - ▶ Menkhoff and Miethe (2019, JPubE), Casi et al. (2020, JPubE)
- ▶ AIE is circumventable via shell corporations and other asset classes (Beer et al., 2019, IMF WP)

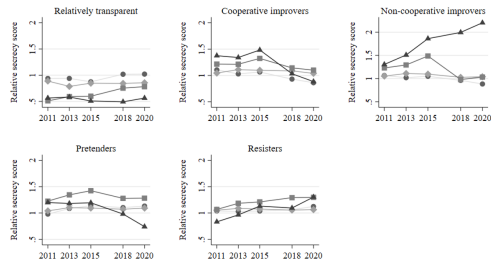
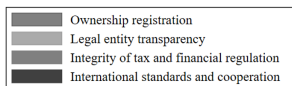
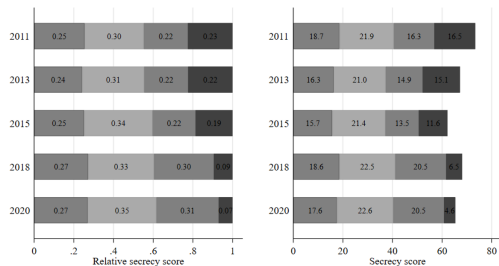
Deposits respond to changes in secrecy

- ▶ Event studies: information exchange decreases deposits in newly exchanging countries

$$\log(\text{deposits}_{ijt}) = \alpha + \beta * \text{Treaty}_{ijt} + \gamma_{ij} + \theta_t + \epsilon_{ijt}$$

- ▶ Information exchange upon request
 - ▶ Johannesen and Zucman (2014, AEJ:Policy)
- ▶ US Foreign Account Tax Compliance Act
 - ▶ De Simone et al. (2017, JAccRes), De Simone and Stomberg (2023, OxREP)
- ▶ OECD's Common Reporting Standard for automatic information exchange
 - ▶ Menkhoff and Miethe (2019, JPubE), Casi et al. (2020, JPubE)
- ▶ AIE is circumventable via shell corporations and other asset classes (Beer et al., 2019, IMF WP)

Progress on AIE, but ownership registration lagging behind



Source: Janský et al. (2023, Geoforum)

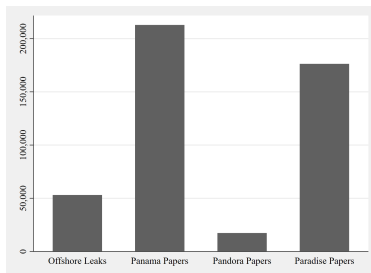
Offshore leaks

- ▶ I focus on 4 major leaks between 2013 and 2021
- ▶ Heterogeneity in which countries are included

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

Offshore leaks data

- ▶ 459,453 total relationships observed in the 4 leaks at the bilateral-source level



Effects of leaks: what we know

- ▶ Stock prices go down when firm involved (O'Donovan et al., 2019, RFStud)

$$Y_{i,t} = \alpha_i + \alpha_t + \beta_1 \text{PanamaPapersExposure}_i \cdot \text{PostLeak} + \gamma X_{i,t} + \epsilon_{i,t} \quad (1)$$

- ▶ Deposits in havens (Switzerland) decreased after leak from LGT Bank in Liechtenstein in 2008 (Johannesen and Stolper, 2021, JLE)

$$\Delta \log(\text{Deposits}_{it}) = \alpha_i + \gamma_t + \beta \text{Haven}_i \cdot \text{Leak}_t + \epsilon_{it} \quad (2)$$

Effects of leaks: what we know

- ▶ Stock prices go down when firm involved (O'Donovan et al., 2019, RFSstud)

$$Y_{i,t} = \alpha_i + \alpha_t + \beta_1 \text{PanamaPapersExposure}_i \cdot \text{PostLeak} + \gamma X_{i,t} + \epsilon_{i,t} \quad (1)$$

- ▶ Deposits in havens (Switzerland) decreased after leak from LGT Bank in Liechtenstein in 2008 (Johannesen and Stolper, 2021, JLE)

$$\Delta \log(\text{Deposits}_{it}) = \alpha_i + \gamma_t + \beta \text{Haven}_i \cdot \text{Leak}_t + \epsilon_{it} \quad (2)$$

Mechanism

- ▶ Each country pair has a certain level of financial secrecy, defined mainly by:
 - ▶ Lack of information collection (even home authority does not know)
 - ▶ Can be operationalized by Cat 1-3 of Secrecy Score from FSI
 - ▶ Lack of information exchange (home authority knows but does not share)
 - ▶ Can be operationalized by Cat 4 of Secrecy Score from FSI and actual AIE relationships
- ▶ Increased transparency influences flows via increased detection probability due to increased attention of home authorities:

$$E[U] = r_{jt} \cdot A_{it} - c(D_{ij}, I_{jt}) + \theta(S_{ijt}, \mathbf{B}_{ijt}) \cdot A_{it}(r_{jt} + \alpha_{it}) \quad (3)$$

Mechanism

- ▶ Each country pair has a certain level of financial secrecy, defined mainly by:
 - ▶ Lack of information collection (even home authority does not know)
 - ▶ Can be operationalized by Cat 1-3 of Secrecy Score from FSI
 - ▶ Lack of information exchange (home authority knows but does not share)
 - ▶ Can be operationalized by Cat 4 of Secrecy Score from FSI and actual AIE relationships
- ▶ Increased transparency influences flows via increased detection probability due to increased attention of home authorities:

$$E[U] = r_{jt} \cdot A_{it} - c(D_{ij}, I_{jt}) + \theta(S_{ijt}, \mathbf{B}_{ijt}) \cdot A_{it}(r_{jt} + \alpha_{it}) \quad (3)$$

Mechanism

- ▶ Each country pair has a certain level of financial secrecy, defined mainly by:
 - ▶ Lack of information collection (even home authority does not know)
 - ▶ Can be operationalized by Cat 1-3 of Secrecy Score from FSI
 - ▶ Lack of information exchange (home authority knows but does not share)
 - ▶ Can be operationalized by Cat 4 of Secrecy Score from FSI and actual AIE relationships
- ▶ Increased transparency influences flows via increased detection probability due to increased attention of home authorities:

$$E[U] = r_{jt} \cdot A_{it} - c(D_{ij}, I_{jt}) + \theta(S_{ijt}, \mathbf{B}_{ijt}) \cdot A_{it}(r_{jt} + \alpha_{it}) \quad (3)$$

Model I: Fixed effects

- ▶ Fixed effects model at the bilateral level:

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

- ▶ 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}
- ▶ 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 two non-havens)

Model I: Fixed effects

- ▶ Fixed effects model at the bilateral level:

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

- ▶ 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}
- ▶ 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 two non-havens)

Model I: Fixed effects

- ▶ Fixed effects model at the bilateral level:

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

- ▶ 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}
- ▶ 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 two non-havens)

Model I: Fixed effects

- ▶ Fixed effects model at the bilateral level:

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

- ▶ 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}
- ▶ 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 two non-havens)

Fixed effects model

	(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 (0.011)	0.013 (0.011)	0.013 (0.011)	-0.105*** (0.032)	-0.062 (0.052)	-0.013 (0.094)	0.014 (0.011)
Cummulative pair count		-0.007*** (0.002)	-0.007*** (0.002)	-0.026*** (0.006)	-0.020*** (0.006)	-0.001 (0.003)	-0.056 (0.104)
Cummulative pair count * Post-leak			0.002 (0.005)	0.008 (0.012)	0.004 (0.013)	0.000 (0.006)	0.025 (0.258)
Constant	17.323*** (0.004)	17.323*** (0.004)	17.323*** (0.004)	15.880*** (0.006)	15.853*** (0.011)	17.308*** (0.014)	17.986*** (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. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

▶ Different haven definitions

▶ With quadratic term

▶ Split by income level

Event-study design

Following Johannesen and Stolper (2021):

$$\Delta \log(Deposits_{it}) = \alpha_i + \beta Haven_i \cdot Leak_t + \epsilon_{it}$$

	(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** (0.004)	-0.006*** (0.001)	-0.009** (0.003)	0.002 (0.006)
Constant	0.009*** (0.000)	0.009*** (0.000)	0.009*** (0.000)	0.009*** (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. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Conclusions

- ▶ Deposits overall react strongly to leaks
 - ▶ I find an average effect of 1.7 p.p. for the most secretive jurisdictions
 - ▶ Compared to 10 p.p. found by Johannesen and Stolper (2021) for the 2008 leak
- ▶ 100 mentions of a country pair in offshore leaks has about a 25% effect of implementing AIE
- ▶ Effect is concentrated in countries that exchange information but maintain high ownership registration secrecy ('Pretenders')
- ▶ Effect is higher for (origin) non-OECD high-income countries than in OECD countries

Conclusions

- ▶ Deposits overall react strongly to leaks
 - ▶ I find an average effect of 1.7 p.p. for the most secretive jurisdictions
 - ▶ Compared to 10 p.p. found by Johannesen and Stolper (2021) for the 2008 leak
- ▶ 100 mentions of a country pair in offshore leaks has about a 25% effect of implementing AIE
- ▶ Effect is concentrated in countries that exchange information but maintain high ownership registration secrecy ('Pretenders')
- ▶ Effect is higher for (origin) non-OECD high-income countries than in OECD countries

Conclusions

- ▶ Deposits overall react strongly to leaks
 - ▶ I find an average effect of 1.7 p.p. for the most secretive jurisdictions
 - ▶ Compared to 10 p.p. found by Johannesen and Stolper (2021) for the 2008 leak
- ▶ 100 mentions of a country pair in offshore leaks has about a 25% effect of implementing AIE
- ▶ Effect is concentrated in countries that exchange information but maintain high ownership registration secrecy ('Pretenders')
- ▶ Effect is higher for (origin) non-OECD high-income countries than in OECD countries


Conclusions

- ▶ Deposits overall react strongly to leaks
 - ▶ I find an average effect of 1.7 p.p. for the most secretive jurisdictions
 - ▶ Compared to 10 p.p. found by Johannesen and Stolper (2021) for the 2008 leak
- ▶ 100 mentions of a country pair in offshore leaks has about a 25% effect of implementing AIE
- ▶ Effect is concentrated in countries that exchange information but maintain high ownership registration secrecy ('Pretenders')
- ▶ Effect is higher for (origin) non-OECD high-income countries than in OECD countries


Thank you!

Miroslav Palanský

Assistant Professor of Economics at CORPTAX, Charles University, Prague 




Head of Research at the Tax Justice Network 

miroslavpalansky.cz 




@miropalansky 

miroslav.palansky@gmail.com 




References I

-  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 pp. 36, 37).
-  Alstadsaeter, 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*, 162. DOI: 10.1016/j.jpubeco.2018.01.008 (cited on p. 8).
-  Beer, S., Coelho, M., and Leduc, S. (2019). "Hidden treasure: the impact of automatic exchange of information on cross-border tax evasion". *IMF Working Paper*, (286). Publisher: IMF Working Paper. DOI: 10.5089/9781513519975.001 (cited on pp. 10, 11).




References II

-  Casi, E., Spengel, C., and Stage, B. M. (2020). "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. 10, 11).
-  De Simone, L., Klassen, K. J., and Seidman, J. K. (2017). "Unprofitable Affiliates and Income Shifting Behavior". *The Accounting Review*, 92(3). Publisher: Allen Press. DOI: 10.2308/accr-51555 (cited on pp. 10, 11).
-  ECORYS (2021). *Monitoring the amount of wealth hidden by individuals in international financial centres and impact of recent internationally agreed standards on tax transparency on the fight against tax evasion*. Tech. rep. Brussels, Belgium: European Commission DG TAXUD (cited on p. 8).

References III

-  Janský, P., Palanský, M., and Wójcik, D. (2023). “Shallow and Uneven Progress towards Global Financial Transparency: Evidence from the Financial Secrecy Index”. *Geoforum*, 141. DOI: 10.1016/j.geoforum.2023.103728 (cited on p. 12).
-  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 pp. 15, 16, 25–29).
-  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). Publisher: American Economic Association (cited on pp. 10, 11).

References IV

-  Menkhoff, L. and Miethe, J. (2019). "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. 10, 11).
-  O'Donovan, J., Wagner, H. F., and Zeume, S. (2019). "The value of offshore secrets: Evidence from the Panama Papers". *The Review of Financial Studies*, 32(11). DOI: 10.1093/rfs/hhz017 (cited on pp. 15, 16).
-  Tax Justice Network (2021). *Corporate Tax Haven Index 2021 Methodology*. Tech. rep. London, UK: Tax Justice Network (cited on p. 8).

References V



Zucman, G. (2013). "The Missing Wealth of Nations: Are Europe and the US net Debtors or Net Creditors?". *The Quarterly Journal of Economics*, 128(3). DOI: 10.1093/qje/qjt012 (cited on p. 8).

Model ▶ Back

- ▶ People implement secretive schemes when it benefits them, given the costs of risk of detection (following classical model of tax evasion by Allingham and Sandmo (1972))

$$\text{Costs: } E(v(S_{ijt}, A_{it}, D_{ij}, I_{jt})) = c(D_{ij}, I_{jt}) + \theta(\mathbf{S}_{ijt}) \cdot A_{it}(r_{jt} + \alpha_{it}) \quad (4)$$

- ▶ An agent from country i chooses j so as to maximize her expected utility:

$$E[U] = r_{jt} \cdot A_{it} - v(S_{ijt}, A_{it}, D_{ij}, I_{jt}) \quad (5)$$

Model ▶ Back

- ▶ People implement secretive schemes when it benefits them, given the costs of risk of detection (following classical model of tax evasion by Allingham and Sandmo (1972))

$$\text{Costs: } E(v(S_{ijt}, A_{it}, D_{ij}, I_{jt})) = c(D_{ij}, I_{jt}) + \theta(\mathbf{S}_{ijt}) \cdot A_{it}(r_{jt} + \alpha_{it}) \quad (4)$$

- ▶ An agent from country i chooses j so as to maximize her expected utility:

$$E[U] = r_{jt} \cdot A_{it} - v(S_{ijt}, A_{it}, D_{ij}, I_{jt}) \quad (5)$$

Mechanisms

[▶ Back](#)

- ▶ Increased transparency influences flows via increased detection probability:

$$\theta(S_{ijt}, B_{ijt})$$

- ▶ For agents not included in the leaks directly, leaks do not change the real level of financial secrecy, but do change detection probability via increased **attention** of the home authorities (i) towards a given secrecy jurisdiction j
- ▶ B_{ijt} is high after a leak for country pairs (i, j) when these are prominently featured in the leak
- ▶ It can also stay high for some time as the authorities go through the cases

Mechanisms

[▶ Back](#)

- ▶ Increased transparency influences flows via increased detection probability:

$$\theta(S_{ijt}, B_{ijt})$$

- ▶ For agents not included in the leaks directly, leaks do not change the real level of financial secrecy, but do change detection probability via increased **attention** of the home authorities (i) towards a given secrecy jurisdiction j
- ▶ B_{ijt} is high after a leak for country pairs (i, j) when these are prominently featured in the leak
- ▶ It can also stay high for some time as the authorities go through the cases

Mechanisms

[▶ Back](#)

- ▶ Increased transparency influences flows via increased detection probability:

$$\theta(S_{ijt}, B_{ijt})$$

- ▶ For agents not included in the leaks directly, leaks do not change the real level of financial secrecy, but do change detection probability via increased **attention** of the home authorities (i) towards a given secrecy jurisdiction j
- ▶ B_{ijt} is high after a leak for country pairs (i, j) when these are prominently featured in the leak
- ▶ It can also stay high for some time as the authorities go through the cases

Fixed effects model: income levels

[▶ Back](#)

	(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*** (0.034)	-0.116*** (0.035)	-0.064 (0.063)	-0.062 (0.052)	0.000 (.)
Cummulative pair count	-0.029*** (0.006)	-0.024*** (0.007)	-0.061*** (0.015)	-0.020*** (0.006)	0.100 (0.162)
Cummulative pair count * Post-leak	0.010 (0.013)	0.008 (0.014)	0.029 (0.030)	0.005 (0.013)	0.098 (0.327)
Constant	15.900*** (0.006)	15.968*** (0.007)	16.462*** (0.013)	15.852*** (0.011)	14.643*** (0.009)
No. of Obs.	51,227	44,744	13,049	16,834	25,917

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

Fixed effects model: robustness

[▶ Back](#)

	(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*** (0.032)	-0.020 (0.029)	0.104*** (0.023)	0.135*** (0.022)
Cummulative pair count	-0.026*** (0.006)	-0.018*** (0.006)	0.016 (0.014)	0.011 (0.017)
Cummulative pair count * Post-leak	0.008 (0.012)	0.004 (0.010)	0.002 (0.032)	0.003 (0.037)
Constant	15.880*** (0.006)	16.160*** (0.005)	18.531*** (0.009)	17.099*** (0.006)
No. of Obs.	54,356	70,471	20,661	53,495

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

Fixed effects model with quadratic term ▶ Back

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	All	All	All	All	Non-haven to haven	Haven to haven	Non-haven to non-haven
AIE	0.013 (0.011)	0.013 (0.011)	0.013 (0.011)	0.014 (0.011)	-0.104*** (0.032)	-0.022 (0.095)	0.014 (0.011)
Cummulative pair count		-0.006*** (0.002)	-0.007*** (0.002)	-0.021*** (0.007)	-0.036** (0.015)	0.012 (0.013)	-0.119 (0.232)
Cummulative pair count * Post-leak			0.002 (0.005)	0.002 (0.005)	0.009 (0.012)	-0.000 (0.006)	0.016 (0.258)
Cummulative pair count squared				0.000** (0.000)	0.000 (0.000)	-0.000 (0.000)	0.039 (0.141)
Constant	17.323*** (0.004)	17.323*** (0.004)	17.323*** (0.004)	17.324*** (0.004)	15.881*** (0.006)	17.305*** (0.014)	17.986*** (0.005)
Within R-Squared	0	0	0	0	0	0	0
No. of Obs.	149,624	149,624	149,624	149,624	54,356	8,736	73,621

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

