Incorporation in Offshore Financial Centers: Naughty or Nice?

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The views and opinions expressed here are those of the authors and do not necessarily reflect the views of the Federal Reserve.

1. Does a firm's environment matter?

Legal, regulatory, and disclosure environment relates to firm value and quality

In particular, the choice of where to incorporate can affect other corporate decisions and, thus, affect value

- Daines (2001): US firms incorporated in Delaware have higher value and are more likely takeover targets
- Wald and Long (2007): leverage decisions of US firms depend on which US state firm incorporates in

Does a firm's environment matter?

We examine an extreme regulatory environment (Offshore Financial Centers, such as Bermuda) through the lens of incorporation

Does a firm's choice in regulatory environment benefit ordinary shareholders (increase firm value and quality)?

Related cross-listing literature:

(1) impact of legal, regulatory, and disclosure environment through a firm's listing decision

(2) cross-listing is a choice to adhere to a stronger legal and regulatory environment – we exploit the reverse case

  (1) Doidge, Karolyi, and Stulz (2004)

2. What is an Offshore Financial Center (OFC)?

IMF Definition:

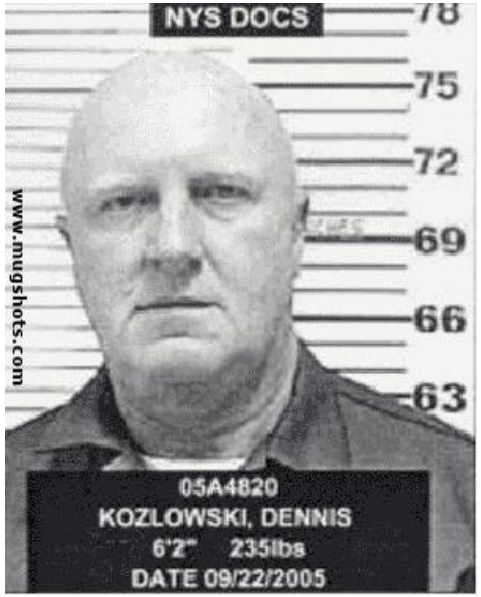
- Jurisdictions that have relatively large numbers of financial institutions engaged primarily in business with non-residents
- Financial systems with external assets and liabilities out of proportion to domestic financial intermediation designed to finance domestic economics
- Centers which provide some or all of the following services: low or zero taxation; moderate or light financial regulation; banking secrecy and anonymity

Our issue: Incorporation in OFCs

Example: the British Virgin Islands

- no disclosure requirements
- minimal numbers of directors and shareholders
- anonymity on most dimensions
- ease of transfer of corporate assets
- tax exemptions

Do minimal regulation and secrecy enable managers to steal?



CEO Dennis Kozlowski was convicted in 2005 of looting tens of millions of dollars from Bermuda-incorporated Tyco International. Extravagant home furnishings featured prominently in press coverage, in particular a $6000 shower curtain. He currently “resides” at the Mid-State Correctional Facility in upstate New York.

Negative reasons for incorporation in an OFC

- Morriss (2010): firms may choose to incorporate in OFC to more easily engage in
  - financial fraud
  - tax evasion
  - money laundering

- Ang, Jiang, and Wu (2012): listing by reverse merger, greater earnings management, and weaker corporate governance predict greater likelihood of scandal.
  - Many incorporated in OFCs.

Positive purposes of OFCs

Firms may choose to incorporate in OFC for positive purposes

Morriss (2010): OFCs

- lower the cost of insurance and employee health for US corporations
- allow many multinationals to make full use of international tax treaties
- allow firms from growth economies, eg. China, that has outpaced legal, regulatory, and disclosure practices – OFCs may provide Chinese investors with a more secure and predictable legal system.

An aside: OFCs as Tax Havens

- Hines and Rice (1994): OFC affiliates account for about 20% of all US FDI, motivated by low tax rates
- Desai, Foley, and Hines (2006): detail characteristics of multinationals that can exploit tax advantages
- Dyreng and Lindsey (2009): significant tax saving for US firms that use at least one OFC

Taxation is not the focus of our study but clearly, tax avoidance is one benefit offered by OFCs

Naughty or Nice?

Scant academic evidence on incorporation in OFCs

- OFCs are associated with poorer-quality corporate disclosure (Durnev, Li, and Magnan, 2010)
- OFCs are associated with weaker returns at merger and acquisition events (Col and Errunza, 2013)
- OFCs were heavily involved in the US securitization boom which fed the recent financial crisis (Lane and Milesi-Ferretti, 2010).

Does a firm's environment matter?

Our paper:

- do some firms choose a lax environment to benefit managers and insiders at the expense of ordinary shareholders and other stakeholders?

OR

- do firms choose to incorporate in offshore financial centers (OFCs) to take advantage of low-cost, efficient environment that enhances firm value?

Outline of our paper

How do investors value firms that incorporate in an OFC?

- Improve or weaken firm value and quality

- Firm Value (Tobin's *q*)
- Investor Valuation of Excess Cash
- Institutional Holdings

Compare OFC incorporated firms with control firms

3.1 Model

Doidge, Karolyi, and Stulz (2004)

- Model the decision to cross-list in the US, as a high regulatory, investor protection, and disclosure environment
- The firm can either stay at home or list in the US.
- Benefit of staying at home: low investor protection => easier to steal cash flow from shareholders
- Benefits of listing in US: high investor protection => facilitate capital raising and capture growth opportunities, and increase cash flow

Model

Our model differs from Doidge, Karolyi, Stulz (2004) in two important dimensions:

(1) Lower tax benefit (α) of OFC Incorporation: lower employee costs. In contrast to cross-listing, investor protection and financing growth opportunities are not the only components of OFC incorporation

(2) OFC investor protection needn't be lower than some home countries, $\rho_{home} < \rho_{ofc}$

Model

- Let ρ be investor protection. Controlling shareholders are entitled to fraction, k, of the cash flow, C, of the firm and select fraction, f, of firm cash flow to expropriate beyond kC

- Expropriation imposes cost quadratic in f and linear in ρ

- If incorporation at <u>home</u>, the firm enjoys growth opportunities, z

If incorporated at <u>home</u>, controlling shareholders receive (b > 0):

$$k^*[(C+z) - f\,(C+z) - \tfrac{1}{2}\, b\, f^2\, \rho_{home}(C+z)] + f(C+z) \qquad (1)$$

The bracket term is: firm cash flow - expropriation – cost of expropriation. f(C+z), is benefit from expropriation.

Model

- If incorporating in an OFC, the firm gains α (such as cost savings and tax benefits)

If incorporated in an OFC, controlling shareholders receive:

$$k[(C+\alpha) - f(C+\alpha) - \tfrac{1}{2}\, b\, f^2\, \rho_{ofc}(C+\alpha)] + f(C+\alpha) \qquad (2)$$

- The firm selects over f (the fraction to expropriate), so taking the first order condition wrt f:

$$f^* = (1-k)/(kb\rho)$$

Model

Maximize over f and substitute f* back in.

Gain to controlling shareholders if incorporated at home:

$$k(C+z) + \tfrac{1}{2}\,[(1-k)^2/b\rho_{home}k](C+z) \qquad (3)$$

Gain to controlling shareholders if incorporated in an OFC:

$$k(C+\alpha) + \tfrac{1}{2}\,[(1-k)^2/b\rho_{ofc}k](C+\alpha) \qquad (4)$$

Model

Let θ = parameter $(1/2)(1-k)^2/bk$.

Then controlling shareholders choose to incorporate in OFC if gain exceeds that for incorporation at home:

$$k(C+z) + (\theta/\rho_{home})(C+z) < k(C+\alpha) + (\theta/\rho_{ofc})(C+\alpha) \quad (5)$$

$$[k + (\theta/\rho_{home})](C+z) < [k+ (\theta/\rho_{ofc})](C+\alpha)$$

The left-hand side shows gain from greater growth (home) while right-hand side shows gain from greater expropriation (OFC)

Model Implications

<u>If $\rho_{home} > \rho_{ofc}$, trade-off for the firm</u>: firm can achieve faster growth by raising capital under higher legal and regulatory system, but limits the ability to expropriate minority shareholders.

Model comparative statics:

- growth opportunities (high z) discourage OFC incorporation
- cost/tax savings (high α) encourages OFC incorporation
- expropriation opportunities (that is, difference between ρ_{home} and ρ_{ofc}) encourage OFC incorporation

Model Implications

For the minority shareholder, their valuation of home incorporation:

$$(C+z)\,[1 - (\theta/\rho_{home})(1+k)/k(1-k)]$$

- If $z \geq \alpha$ and $\rho_{home} > \rho_{ofc}$ (better investor protection at home), then incorporation in OFC will always be value-destroying:

$$(C+z)\,[1 - (\theta/\rho_{home})(1+k)/k(1-k)] > (C+\alpha)\,[1 - (\theta/\rho_{ofc})(1+k)/k(1-k)]$$

- However, if $z < \alpha$, then even if $\rho_{home} > \rho_{ofc}$ (better investor protections at home)
  - OFC incorporation could be value-enhancing!!

- Depends on the relative difference between (z, α) and $(\rho_{home}, \rho_{ofc})$
  - But cashflow parameters influence valuation linearly, while investor protection difference is $1/\rho$

Testable hypotheses

Begin with a simple null:

- H0: Incorporation in an OFC is irrelevant and, after controlling for firm characteristics, there is no difference (in firm value, investor valuation of excess cash, or institutional ownership) between firms from non OFC countries that incorporate in an OFC versus firms from a non OFC country that incorporate in their own country.

- H1: Incorporation in an OFC imposes weaker legal and regulatory discipline on firms, enabling expropriation of minority of shareholders
  - Lower firm value
  - Less sensitivity of excess cash on firm value
  - Lower percentage of firm owned by institutional investors

Data: Firms and Characteristics

- All firms in Worldscope from 1981 – 2015
- Identify ADRs using adr.com, adrbnymellon.com, and Worldscope identifier
  - Country of incorporation: first two digits of the ISIN identifier (underlying firm for ADRs)
  - Country of address: "Nation" or "Country" in ADR websites and Worldscope

Firm specific characteristics

- Annual financial variables from Worldscope
- Lionshare/Factset data from WRDS on global institutional holdings

Country characteristics

- real GDP, population, stock market capitalization
- indexes of anti-director rights, judicial efficiency, expropriation risk, and accounting standards from La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998)
  - update with values for China and Russia inserted from other authors' work
- Evict: From Djankov, LaPorta, Lopez-de-Silanes, and Shleifer (2003), days to collect on a bounced check or to evict a tenant for nonpayment of rent; index covers more countries
- Disclosure Quality: From World Bank's Worldwide Governance Indicators, World Bank's "Doing Business" indicators
- Previous Version:
  - developed versus emerging status
  - Milken Institute capital access index; market liquidity
  - legal origin: English, Scandinavian, French, German, expanded with www.indexmundi.com

Overview of the data

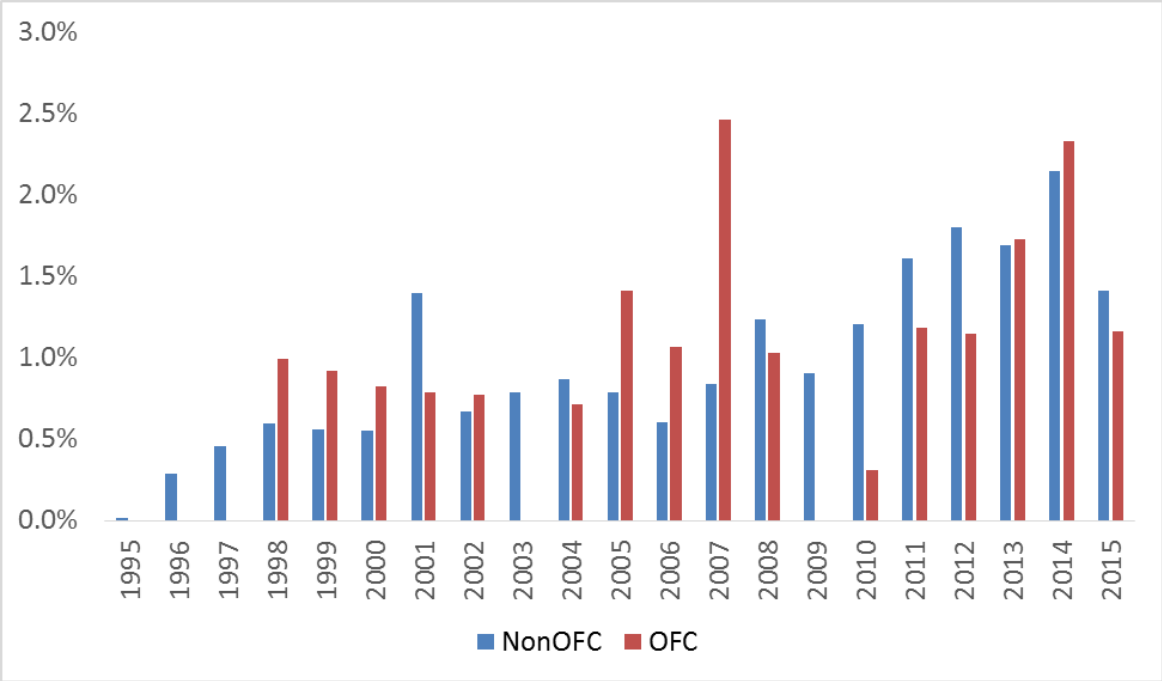
- Different OFC jurisdiction caters to specific countries
- Greek shipping companies, Marshall Islands

	County of Incorporation												
Address Country	Cayman Islands	Bermuda	British Virgin Islands	Jersey	Marshall Islands	Isle of Mann	Guernsey	Cyprus	Panama	Netherland Antilles	Bahamas	Others	Total
Hong Kong	393	406	12	0	1	0	0	0	0	0	0	0	812
China	275	49	11	3	0	0	0	0	0	0	0	1	339
United States	24	37	14	2	25	0	0	0	2	1	2	0	107
United Kingdom	3	9	11	39	2	20	14	4	0	0	0	2	104
Singapore	6	32	1	0	0	0	0	0	0	0	0	1	40
Taiwan	33	2	0	0	0	0	0	0	0	0	0	0	35
Norway	4	10	0	0	2	0	0	7	0	0	0	0	23
Greece	0	0	0	1	18	0	0	1	0	0	0	0	20
Canada	6	2	5	2	0	0	2	0	0	0	0	0	17
Others	11	18	5	7	0	2	3	4	4	4	2	2	62
Total	755	565	59	54	48	22	19	16	6	5	4	6	1559

Overview of the data

- In the figure below, we plot the percent of OFC versus non-OFC firms that were subject to SEC investigations in each year

- For some years, the percent of firms OFC firms under investigation were particularly pronounced



Overview of the data

Average Tobin's *q* by country of incorporation and country of address (both OFC sample and controls)

- Number of observations reduced: To avoid problems computing Tobin's *q*, we exclude firms with negative shareholder equity, total assets, and then winsorize the extreme 1% tails
- We also exclude firm with total assets < 100 million USD. Total assets and total sales are in USD, and adjusted by the US GDP deflator
- 1,559 OFC and 23,276 control firms

Overview of the data

- Difference in Tobin's Q tend to be negative relative to control
- OFC firms tend to have lower sales
  - Caribbean OFC firms are smaller, have higher percent of insider holdings

	Control		Country of Incorporation: Bermuda				Cayman Island				British Virgin Island				Other			
	Mean Median	Firm Years	Mean Median	Firm Years	Difference with Control		Mean Median	Firm Years	Difference with Control		Mean Median	Firm Years	Difference with Control		Mean Median	Firm Years	Difference with Control	
Tobin's Q	1.469	268042	1.145	5829	-0.324	***	1.428	4503	-0.042	***	1.277	307	-0.192	***	1.323	1302	-0.146	***
	1.195		0.962				1.097				1.053				1.106			
Sales	20.027	267335	19.315	6051	-0.712	***	19.353	4568	-0.674	***	18.954	313	-1.073	***	19.604	1266	-0.422	***
	19.860		19.274				19.254				18.786				19.419			
Assets	20.454	269355	20.191	6188	-0.263	***	20.119	4640	-0.335	***	19.719	337	-0.735	***	20.687	1335	0.233	***
	20.123		19.861				19.802				19.445				20.505			
Capex	0.064	231619	0.049	5875	-0.015	***	0.066	4545	0.001		0.068	305	0.003		0.081	1100	0.016	***
	0.041		0.024				0.038				0.037				0.043			
Insider Holding	0.348	230306	0.531	5979	0.183	***	0.550	4479	0.202	***	0.450	272	0.102	***	0.323	1198	-0.025	***
	0.328		0.593				0.580				0.472				0.296			
Sales Growth	0.134	243031	0.171	5650	0.037	***	0.208	4418	0.073	***	0.185	279	0.050	**	0.227	1094	0.093	***
	0.077		0.088				0.127				0.087				0.096			
Employees/Assets	3.53E-06	208141	1.78E-06	4632	-1.75E-06	***	1.67E-06	3994	-1.86E-06	***	4.76E-06	226	1.23E-06	***	5.87E-06	823	2.34E-06	***
	7.81E-07		4.96E-07				7.06E-07				2.37E-06				2.41E-06			

Empirical Methodology

1. Regress Tobin's *q* (or institutional holdings) on firm and home country characteristics and an OFC dummy variable:

$$q_{it} = \alpha_0 + \boldsymbol{\alpha_1} D_{ofc,it} + \beta' x_{it} + \delta' c_{it} + \varepsilon_{it} \qquad (9)$$

- $D_{ofc,it}$ = 1 if firm i is incorporated in an OFC in year t
- $\mathbf{x_{it}}$ is vector of company characteristics, dummy for ADR
- $\mathbf{c_{it}}$ is vector of country characteristics
- Year and address country FE, cluster SE by firm

2. Excess cash regression:

$$MV_{it} = \alpha_0 + \alpha_1 D_{ofc,it} + \alpha_2 XC_{it} + \boldsymbol{\alpha_3} XC_{it} * D_{ofc,it} + \beta' x_{it} + \delta' c_{it} + \varepsilon_{it} \qquad (10)$$

3. Panel OLS and Fama-MacBeth regressions, Heckman, Panel OLS with interactives, Propensity Score Matched sample, and Difference-in-Difference

Tobin's *q*

Pooled OLS regression in equation (9)

- Specification (1): constant and OFC dummy yields a negative and statistically significant coefficient of -0.195 (t-stat = -10.87)

- Adding Sales Growth and Median Industry Q and country governance variables to specification (1) suggests a significant negative coefficient on OFC dummy, (-0.245, t = -12.64).

- Specifications (3) and (4), we add proxies for Capex growth, Tax rates, Insider holdings, and Number of employees. Slope on OFC dummy remains negative.

On balance, Table 3 suggests that incorporation in an OFC detracts from firm value (H1)

Tobin's *q*

Pooled OLS regression in equation (9)

- We break out Chinese and Hong Kong firms separately, as they make up a large portion of our OFC firms:
  - Chinese OFC firms are also valued at a discount relative to their onshore domestic counter-parts.
  - In contrast, Hong Kong OFC firms have higher Tobin's Q, and significantly so, than Hong Kong non-OFC firms.
- Excluding China and Hong Kong, we find that firms that incorporate in an OFC has lower (statistically significant, t-stat = -4.08) Tobin's Q than non-OFC firms.

Pooled cross sectional time series regressions (22 July 2018)

		All Countries			China	Hong Kong	All except China and Hong Kong
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
OFC dummy	-0.195	-0.245	-0.224	-0.235	-0.819	0.111	-0.140
	-10.87	-12.64	-10.55	-9.83	-19.50	2.77	-4.08
DR dummy		0.123	0.079	0.070	-0.183	0.193	0.109
		5.58	3.36	2.85	-1.04	3.28	4.39
Anti-Director Rights		0.086	0.081	0.102			0.079
		17.38	12.93	13.78			12.31
Evict		-0.159	-0.110	-0.125			-0.118
		-15.05	-8.62	-7.99			-9.45
Disclosure quality		0.032	0.044	0.025			-0.026
		9.28	9.21	4.50			-4.23
Protect Minority Investors rank		0.007	0.006	0.006			0.000
		45.90	35.24	32.78			-0.83
Tax evasion		-0.043	-0.053	-0.077			-0.018
		-10.37	-11.41	-12.54			-3.56
Sales growth		0.292	0.281	0.305	0.248	0.113	0.283
		42.66	35.57	32.60	12.09	5.83	31.64
Industry Median q		1.375	1.373	1.249	1.774	0.728	1.304
		45.97	39.10	32.32	14.20	5.75	34.99
Percent Insider			-0.366	-0.372	-0.514	-0.365	-0.330
			-18.09	-16.93	-7.89	-3.01	-15.67
Capex/Assets			0.951	0.860	0.735	2.270	0.841
			18.05	14.48	6.24	9.58	14.15
Address Tax Rate			-0.189	-0.548			0.372
			-2.07	-5.32			3.83
Number of Employees/Assets				16918			
				14.11			
Constant	1.469	-0.427	-0.547	-0.156	-0.262	0.226	-0.139
	313.71	-5.38	-5.93	-1.45	-1.62	1.12	-1.49
Observations	262813	232358	186832	157616	21831	8603	156398
Adjusted r-squared	0.002	0.158	0.189	0.209	0.272	0.117	0.148

Fama-MacBeth regressions

- Yearly cross-sectional regressions, then compute FM standard errors.
- Broadly similar finding

		All Countries			China	Hong Kong	All except China and Hong Kong
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
OFC dummy	-0.186	-0.205	-0.159	-0.162	-0.333	0.0259	-0.101
	-6.89	-7.65	-4.95	-5.45	-2.35	0.74	-4.90
DR dummy		0.076	0.044	0.057	-0.210	0.284	0.046
		5.35	3.08	4.18	-3.29	4.99	2.73
Anti-Director Rights		0.072	0.071	0.060			0.065
		9.41	9.08	7.89			8.25
Evict		-0.058	-0.048	-0.072			-0.044
		-1.82	-1.78	-2.16			-1.75
Disclosure quality		0.013	0.019	0.017			-0.018
		1.21	1.71	1.44			-1.84
Protect Minority Investors rank		0.004	0.003	0.003			0.000
		4.41	4.33	5.16			-0.69
Tax evasion		-0.010	-0.025	-0.005			-0.004
		-1.05	-2.65	-0.36			-0.55
Sales growth		0.347	0.346	0.396	0.124	0.010	0.361
		13.77	15.87	14.83	1.71	0.16	15.30
Industry Median q		1.282	1.388	1.151	0.826	1.346	1.388
		24.23	24.31	19.28	2.02	3.87	23.09
Percent Insider			-0.217	-0.212	-0.195	-0.144	-0.204
			-6.13	-5.75	-0.92	-0.81	-6.24
Capex/Assets			0.000	0.000	0.077	0.239	-0.001
			-0.32	-0.08	1.26	9.56	-1.22
Address Tax Rate			0.051	0.160			0.246
			0.36	1.05			1.65
Number of Employees/Assets				11136			
				15.67			
Constant	1.462	-0.430	-0.453	-0.282	0.957	-0.450	-0.243
	74.97	-2.72	-2.54	-1.42	1.73	-1.24	-1.28
Observations	279,983	246,477	196,404	165,126	21,948	8,876	165,580
Adjusted r-squared	0.00218	0.134	0.15	0.158	0.104	0.0878	0.13

Excess Cash

- We repeat the pooled OLS and Fama-MacBeth regressions for excess cash specification in equation (10)
- We find:
  - Pooled OLS regressions show little evidence that investors value excess cash more for OFC firms
  - Fama-MacBeth regressions show positive and marginally statistically significant higher loading of excess cash on market value for OFC firms
  - But all firms ex. China & Hong Kong show the reverse with OFC firms having less sensitivity of excess cash on market value

	Pooled cross sectional time series regressions (23 July 2018)				Fama MacBeth regressions (3 August 2018)			
	All Countries	China	Hong Kong	All but China and Hong Kong	All Countries	China	Hong Kong	All but China and Hong Kong
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
OFC dummy	-0.2368	-0.7208	0.0031	-0.0464	-0.234	-0.540	0.005	-0.070
	-8.81	-13.64	0.08	-1.28	-11.44	-4.52	0.26	-1.93
Excess Cash	0.0411	0.0763	0.0280	0.0388	0.041	-0.021	0.021	0.041
	9.04	2.93	1.47	8.28	9.42	-0.65	1.37	8.39
OFC x Excess Cash	-0.0131	0.0035	0.0088	-0.0129	0.011	0.606	0.018	-0.088
	-0.70	0.06	0.31	-0.34	0.69	1.96	0.91	-2.35
DR dummy	0.0836	0.0187	0.1624	0.0836	-0.016	0.234	0.178	-0.026
	4.06	0.08	2.96	3.85	-1.16	1.91	11.68	-1.57
Observations	68038	4591	4629	58818	66147	4509	4420	57015
Adjusted r-squared	0.431	0.349	0.413	0.445	0.454	0.563	0.546	0.464
Fixed effects	Year, address country	Year	Year	Year, address country				
Years					23	12	20	23

Investor Holding

Pooled OLS in equation (9) with percent of firm owned by institutional investor as dependent variable

- Without any controls, institutional investors hold a lower percentage of OFC firms than of non-OFC firms. OFC slope coefficient is negative and statistically significant (-0.142, t-stat = -22.33)
- When we add country and industry controls, we show a similar result with a negative and statistically significant slope coefficient on the OFC dummy (-0.047, t-stat = 7.53)
- However, sign on the slope coefficient changes when we add in firm level controls. This suggests that institutional investors may hold a higher percentage of OFC firms than non-OFC firms.
  - The key inclusion was percent of insider holding.

Pooled cross sectional time series regressions (23 July 2018)

	All Countries				China	Hong Kong	All except China and Hong Kong
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
OFC dummy	-0.142	-0.047	0.021	0.024	0.047	0.001	0.031
	-22.33	-7.53	3.34	3.50	5.01	0.14	1.62
DR dummy		-0.007	-0.035	-0.040	0.012	0.036	-0.046
		-0.92	-4.30	-4.60	0.76	3.80	-5.63
Anti-Director Rights		0.114	0.084	0.094			0.074
		53.08	31.75	33.27			23.16
Evict		-0.160	-0.129	-0.159			-0.141
		-24.88	-18.03	-18.57			-21.93
Disclosure quality		-0.075	-0.053	-0.066			-0.121
		-57.31	-27.53	-24.67			-36.37
Protect Minority Investors rank		0.002	0.001	0.001			-0.004
		36.35	15.91	17.39			-21.16
Tax evasion		0.044	0.022	0.014			0.054
		39.38	19.74	10.21			29.61
Sales growth		0.004	0.014	0.015	0.015	-0.002	0.004
		1.71	5.88	5.58	7.55	-0.69	1.23
Industry Median q		0.253	0.265	0.215	0.087	0.005	0.251
		15.46	16.16	12.69	4.10	0.22	14.87
Percent Insider			-0.382	-0.386	-0.029	-0.166	-0.419
			-46.85	-44.71	-3.05	-7.08	-47.62
Capex/Assets			0.031	0.014	0.026	0.176	-0.063
			1.46	0.61	1.53	4.60	-2.48
Address Tax Rate			0.119	-0.038			0.331
			2.95	-0.77			5.45
Number of Employees/Assets				7352			
				14.96			
Constant	0.249	0.167	0.245	0.519	-0.081	0.106	0.781
	88.88	4.08	5.46	9.64	-3.98	3.60	16.72
Observations	121251	109864	92112	81418	9388	5037	77687
Adjusted r-squared	0.011	0.432	0.529	0.570	0.100	0.186	0.565

Propensity Score Matching Estimator

Tobin's Q

- Following Lemmon and Roberts (2010), we match firm-year observations of OFC to non-OFC, based on propensity score and same home country and year.
  - The propensity score is based a probit that predicts OFC incorporation using firm characteristics, year and country fixed effects
- We evaluate the difference in average Tobin's Q across our OFC sample, and our matched non-OFC (control) sample
- We find:
  - All firms: Tobin's Q is lower (statistically significant) for BOTH matched and unmatched sample. Unmatched difference (-0.3198, t-stat = -33.46) vs. Matched (-0.1253, t-stat = -6.77)
  - This is particularly true for China. Matched (-0.7864, t-stat = -22.51), unmatched similar.
  - Interestingly for Hong Kong, we find the opposite. Matched (0.1337, t-stat = 4.49)
  - Finally for all ex China and HK, the matched sample estimator is negative and significant. Matched (-0.1261, t-stat = -4.96)

Panel A: Probit regression with OFC dummy as dependent variable (22 July 2018)

	All Firms		China		Hong Kong		All except China and Hong Kong	
	Unmatched	Matched	Unmatched	Matched	Unmatched	Matched	Unmatched	Matched
Sales growth	0.1030	0.0201	0.0485	0.0854	0.0470	0.0211	0.1530	-0.0181
	6.13	0.59	1.42	1.43	1.46	0.45	6.31	-0.36
Sales (log)	-0.0141	-0.0458	0.0079	-0.0115	-0.0692	0.0257	-0.0281	-0.0211
	-3.11	-4.70	0.78	-0.67	-7.37	1.90	-4.45	-1.53
Capex/Assets	0.3990	0.6480	-0.1930	0.0619	1.5210	0.8840	0.4930	0.1100
	4.48	3.42	-1.13	0.21	6.53	2.35	4.08	0.45
Percent Insider	0.3920	-0.2060	1.2730	-0.0033	0.0027	-0.1020	0.1050	-0.0863
	12.67	-2.99	18.59	-0.03	0.03	-0.84	2.54	-1.00
Constant	-2.7930	0.9060	-2.0630	0.1770	0.6500	-0.5620	-2.2190	0.4530
	-11.14	1.65	-10.31	0.25	1.47	-0.72	-8.37	0.73
Observations	160,246	15,466	21,523	3,599	8,669	7,949	129,808	3,843
Pseudo r-squared	0.457	0.004	0.074	0.001	0.056	0.003	0.124	0.001

Panel B: Average Tobin's q (22 July 2018)

	All Firms		China		Hong Kong		All except China and Hong Kong	
	Unmatched	Matched	Unmatched	Matched	Unmatched	Matched	Unmatched	Matched
OFC	1.2746	1.2746	1.4023	1.4023	1.2230	1.2230	1.3093	1.3093
Observations	9939	9939	1905	1905	6076	6076	1965	1965
Non OFC	1.5944	1.3999	2.1599	2.1887	1.1257	1.0893	1.4988	1.4354
Observations	124689	5527	19618	1694	2593	1873	102443	1878
Difference	-0.3198	-0.1253	-0.7576	-0.7864	0.0973	0.1337	-0.1895	-0.1261
T-statistic	-33.46	-6.77	-29.27	-22.51	5.55	4.49	-9.78	-4.93
Total observations	134628	15466	21523	3599	8669	7949	104408	3843

Propensity Score Matching Estimator

Excess Cash

- Again, we match 1:1 firm-year observations of OFC to non-OFC based on propensity score, but then run the excess cash regression in equation (10)

- We find:
  - For all firms, there is a positive (statistically significant) valuation difference on excess cash for OFC firms, as compared with non-OFC firms. Matched with controls (0.0682, t-stat = 2.87).
  - For China and Hong Kong, positive (statistically significant) on matched sample without controls, but statistical significance disappears on matched sample with controls.
  - For firms ex China and Hong, we have positive, but statistically insignificant difference in the sensitivity of excess cash on market value.

Panel A: Probit regression with OFC dummy as dependent variable (23 July 2018)

	All firms		China		Hong Kong		All but China and Hong Kong	
	Unmatched	Matched	Unmatched	Matched	Unmatched	Matched	Unmatched	Matched
Sales growth	0.126	0.0585	0.0981	0.244	0.136	0.192	0.153	0.105
	3.82	0.87	1.21	1.41	2.33	2.14	3.13	0.87
Sales (log)	-0.0447	0.0027	-0.0539	-0.108	-0.0918	0.00764	-0.0437	0.0051
	-6.45	0.20	-2.94	-3.12	-6.93	0.43	-4.55	0.22
Capex/Assets	0.704	0.205	0.67	0.0217	0.411	0.723	0.777	0.0717
	5.59	0.74	2.07	0.04	1.46	1.87	4.88	0.18
Percent Insider	0.0006	0.3840	1.4650	-0.0523	0.2180	-0.1810	-0.0006	-0.1590
	0.40	3.57	12.65	-0.19	1.80	-1.09	-0.04	-1.04
Constant	-0.843	-0.197	-0.993	1.958	2.426	-0.171	-1.155	-0.0713
	-0.63	-0.39	-2.77	2.23	8.71	-0.32	-4.27	-0.08
Observations	53,383	6,930	4,470	1,453	4,538	4,224	44,295	1,228
Pseudo r-squared	0.493	0.003	0.235	0.011	0.030	0.004	0.107	0.001

Panel B: Pooled cross sectional time series regressions of treated and matched controls (23 July 2018)

	All firms		China		Hong Kong		All but China and Hong Kong	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
OFC dummy	-0.1440	-0.1586	-0.5358	-0.5385	0.0327	0.0162	-0.2196	-0.1483
	-5.52	-6.93	-9.26	-9.84	1.18	0.78	-4.90	-4.17
Excess Cash	0.0259	-0.0227	0.1353	0.0055	0.0593	0.0322	0.0954	0.0222
	1.08	-1.07	2.56	0.11	2.66	1.89	2.18	0.69
OFC dummy x Excess Cash	0.1181	0.0682	0.1359	0.0488	0.0570	0.0027	0.0128	0.0172
	4.38	2.87	1.99	0.78	2.21	0.13	0.24	0.42
Observations	6930	6930	1453	1453	4224	4224	1228	1228
non OFC	2,132	2,132	533	533	977	977	597	597
OFC	4,798	4,798	920	920	3,247	3,247	631	631
Adjusted r-squared	0.017	0.268	0.090	0.326	0.012	0.395	0.028	0.386

4.2 Propensity Score Matching Estimator

Investor Holdings

- For all firms:
  - On the unmatched sample, we find that institutional investors hold a lower proportion of OFC firms than non-OFC firms.
  - However, the propensity-score matched sample, the result is reversed. Institutional investors hold a higher fraction of OFC firms, than for non-OFC firms
- This is skewed by Chinese firms:
  - Both matched and unmatched sample suggest that institutional investors hold a higher fraction of OFC firms, highly significant
- Excluding China and Hong Kong:
  - Matched sample indicates that institutional investors hold a higher fraction of OFC firms, but not statistically significant

Panel A: Probit regression with OFC dummy as dependent variable (3 August 2018)

	All firms		China		Hong Kong		All except China and Hong Kong	
	Unmatched	Matched	Unmatched	Matched	Unmatched	Matched	Unmatched	Matched
Sales growth	0.157	0.0554	0.0997	0.0561	0.0838	0.0164	0.217	0.0931
	6.58	1.25	2.17	0.77	1.96	0.28	5.89	1.16
Sales (log)	-0.0161	-0.0252	0.00502	-0.00869	-0.0603	0.035	-0.0175	-0.0261
	-2.44	-2.02	0.35	-0.37	-5.04	2.11	-1.68	-1.19
Capex/Assets	0.489	0.531	-0.485	-0.0453	1.659	0.73	0.921	0.21
	3.83	2.11	-2.23	-0.13	5.26	1.66	4.90	0.51
Percent Insider	0.592	-0.211	1.298	-0.0218	-0.116	-0.138	0.388	-0.363
	-0.35	-0.17	13.52	-0.13	-0.97	-0.83	5.69	-2.49
Constant	-2.442	0.578	-1.917	0.136	1.336	-0.624	-2.296	0.627
	-12.13	1.49	-6.87	0.14	5.20	-1.74	-8.29	1.06
Observations	70,701	8,158	9,380	2,136	4,953	4,602	56,326	1,390
Pseudo r-squared	0.484	0.002	0.046	0.000	0.019	0.003	0.127	0.005

Panel B: Average institutional ownership (3 August 2018)

	All firms		China		Hong Kong		All except China and Hong Kong	
	Unmatched	Matched	Unmatched	Matched	Unmatched	Matched	Unmatched	Matched
OFC	0.1014	0.1014	0.0919	0.0919	0.0697	0.0697	0.2748	0.2748
Non-OFC	0.3200	0.0904	0.0486	0.0440	0.0703	0.0676	0.3770	0.2523
Difference	-0.2186	0.0111	0.0433	0.0479	-0.0006	0.0021	-0.1022	0.0225
t-statistic	-47.83	3.31	17.97	12.16	-0.25	0.65	-8.09	1.57
OFC observations	5312	5312	1143	1143	3465	3465	710	710
Non OFC observations	54964	2846	8237	993	1488	1137	45329	680
Total observations	60276	8158	9380	2136	4953	4602	46039	1390

4.2 Difference-in-Difference

(1) CSRC Minority Investor Protection (2004)

(2) Cayman Island Company Act (2009)

(3) China Anti-Corruption Campaign (2012)

- Findings:
  - Tobin's Q: China Anti-Corruption campaign was statistically significantly negative on Tobin's Q for Chinese OFC firms, as compared to Chinese non-OFC firms.
  - Excess Cash: Only 2004 CSRC event with controls is negative and statistically significant, but few observations.
  - Institutional Holdings: China Anti-Corruption campaign had a positive and statistically significant effect on the percentage held by institutional investors of Chinese OFCs.

	2004 CSRC minority investor protection		Cayman Islands Company Act of 2009		China Anti Corruption program 20	
Sample:	China address firms		OFC firms		China address firms	
Category:	OFC = 1		Cayman address = 1		OFC = 1	
	(1)	(2)	(3)	(4)	(7)	(8)
Dependent: Tobin's *q*						
Event x Category	-0.0235	-0.0519	-0.0427	-0.0370	-0.1469	-0.1529
	-0.08	-0.12	-0.78	-0.63	-4.06	-4.02
Event	-0.2077	-0.2136	0.0614	-0.0551	0.1504	0.0057
	-22.48	-17.09	2.29	-1.49	9.89	0.26
Category Dummy	0.6934	0.8543	0.3996	0.3286	-0.5602	-0.5022
	1.71	1.61	5.82	4.38	-11.49	-10.49
Controls	no	yes	no	yes	no	yes
Observations	2109	1773	1463	1271	4969	4536
Adjusted r-squared	0.065	0.104	0.046	0.104	0.048	0.153
Time x Category						
Dependent: Excess cash						
Event x Category x Excess Cash	-0.905	-1.110	0.060	0.119	-0.114	-0.071
	-1.39	-4.23	0.69	1.17	-1.78	-0.50
Event x Category	0.863	0.264	-0.039	-0.064	-0.173	-0.092
	2.90	1.34	-0.64	-1.06	-4.32	-0.70
Event x Excess Cash	0.030	-0.098	-0.024	-0.042	0.158	0.197
	0.32	-0.87	-0.50	-0.66	5.08	1.71
Category x Excess Cash	1.858	2.182	0.231	0.052	-0.028	-0.106
	4.81	7.74	2.45	0.53	-0.42	-0.77
Excess Cash	0.044	-0.011	0.171	0.059	0.263	-0.020
	0.53	-0.09	3.35	0.91	9.00	-0.17
Event Dummy	-0.282	-0.068	0.097	-0.138	0.173	0.104
	-2.22	-0.58	2.87	-2.38	9.05	0.83
Category Dummy	-0.395	-0.266	0.446	0.184	-0.635	-0.566
	-1.00	-1.40	5.43	2.62	-12.20	-4.14
Controls	no	yes	no	yes	no	yes
Observations	126	80	1043	787	3821	1787
Adjusted r-squared	0.36	0.56	0.11	0.42	0.11	0.38
Time x Category						

	2004 CSRC minority investor protection		Cayman Islands Company Act of 2009		China Anti Corruption program 20	
Sample:	China address firms		OFC firms		China address firms	
Category:	OFC = 1		Cayman address = 1		OFC = 1	
	(1)	(2)	(3)	(4)	(7)	(8)
Dependent: Institutional holdings						
Event x Category	-0.1390	-0.0781	0.0140	0.0070	0.0079	0.0091
	-1.35	-0.80	2.85	1.31	2.04	2.28
Event	0.2846	0.2319	0.0036	0.0073	0.0427	0.0488
	2.25	1.56	1.00	1.35	6.64	7.42
Category Dummy	-0.0074	-0.0206	-0.0229	0.0054	-0.0010	-0.0080
	-2.74	-2.44	-1.87	0.57	-0.82	-4.22
Controls	no	yes	no	yes	no	yes
Observations	342	179	1142	1003	3558	3302
Adjusted r-squared	0.31	0.34	0.00	0.52	0.06	0.12
Time x Category						

5. Summary and conclusions

Findings suggest:

- On net, negative effect on Tobin's q, but depends somewhat on home address country
- Investor valuation of excess cash for OFC vs. non-OFC is not significant. Matched sample shows investors value excess cash for OFC firms more than non-OFC firms, but largely driven by China and Hong Kong
- Investor holdings mixed.
  - Positive and significant for Chinese firms – institutional investors prefer to hold higher percent of OFC firms.
- Diff-in-Diff shows impact of corruption campaign had larger negative effect on OFC firm's Tobin's q, which could have been partly offset by institutional holders picking up larger fractions of OFC firms.

5. Summary and conclusions

Offshore Financial Centers: Naughty or Nice?

- In general, we find more evidence for naughty than nice
- But depends somewhat on both the firm and home country
  - China special case for institutional holdings
  - Hong Kong exception for firm value