

Why Do Firms Evade Taxes? The Role of Information
Sharing and Financial Sector Outreach
The Journal of Finance

Thorsten Beck
Chen Lin
Yue Ma

Motivation

- Financial deepening is pro-growth
 - This literature is based on macro indicators and aggregate data
- Using a large sample of firm-level survey data on more than 64,000 firms across 102 countries over the period 2002 to 2010, this paper assesses the relationship between financial outreach and incidence and extent of tax evasion
 - Specific dimensions of financial depth (branch penetration and credit information sharing)
 - Outcome variable on micro-level: tax evasion

Why is this important?

- Recent interest in financial system development influencing public policy space
 - Tax evasion important constraint for fiscal policy space
 - Examples in recent European debt crisis
- Tax evasion has repercussions for information asymmetries, corporate governance and agency problems among a firm's stakeholders
 - Tax evasion creates opacity that increase agency problems among firm's stakeholder
 - Unlike large literature on tax avoidance and management-shareholder conflicts, we focus on tax evasion and borrower-lender relationship

Possible channels of how branch penetration and credit information sharing influences corporate tax evasion

- Higher probability of access to credit increases opportunity costs of tax evasion
 - Lower financing obstacles in countries with higher branch penetration (Beck et al., 2007) and credit information sharing (Brown et al., 2009)
- Access to credit decreases the benefits of tax evasion:
 - Lower incentives to cook the books as they are easier to detect in countries with better credit information sharing and closer proximity of banks to clients
 - Countervailing effect: collateral becomes less important as financial systems deepen

Data and methodology

Firm-level data

- WB-IFC Enterprise Survey Data for 102 countries, between 2002 and 2010
- Sample size per country bt. 250 and 1,500 enterprises of different sizes, industries, locations, ownership etc.
- Simple random or random stratified sampling
- Questions on obstacles, financing, firm characteristics
- Advantages of firm-level data:
 - Direct micro-evidence on corporate tax evasion, not available from aggregate data
 - Exploit within-country variation in tax evasion
 - Control for composition of corporate sectors

How to measure tax evasion?

- “Recognizing the difficulties many enterprises face in fully complying with taxes and regulations, what percentage of total sales would you estimate the typical establishment in your area of activity reports for tax purposes?”
 - Tax evasion ratio: 1 – percentage of taxes paid
 - Tax evasion dummy: one if tax evasion ratio greater than zero
- Indirect question to elicit more honest response, but could introduce measurement error
 - Responses stable over time (corr. 64% with WBES)
 - 65% correlation with informal economy share, >60% with tax evasion index from WCR
 - We gauge robustness with industry-level regressions

Firm-level control variables

- Location (small town, medium-sized city, capital)
- Size (small, medium, large; employment)
- Ownership (foreign-owned)
- Exporter
- Age
- Firm audited or not

How to gauge the banking system?

- Private Credit to GDP - financial depth
- Bank concentration (3-bank ratio)
- Credit information sharing
 - Depth: extent of info, borrower pop., sources etc.
 - Coverage relative to population
 - Dummy for existence (separate for public and private registries)
- Banking sector penetration
 - Branches per capita
 - Branches per km²

Country controls

- GDP per capita
- Control of corruption, Rule of Law, Government effectiveness, Crime
- Tax rate and taxation burden
- Additional controls:
 - Creditor rights, # legal procedures, voice & accountability, political stability, quality & regulation, rule of law, # registration procedures, expropriation risk

The empirical model

$$T_{ij} = \alpha F_i + \beta C_i + \gamma B_j + \varepsilon_{ij}$$

$$T_{ij} = \alpha F_i + \beta C_i + \gamma B_j + \delta F_i * \text{Size}_j + \varepsilon_{ij}$$

$$T_{ij} = \alpha F_i + \beta C_i + \gamma B_j + \delta F_i * \text{Location}_j + \varepsilon_{ij}$$

$$T_{ij} = \alpha F_i + \beta C_i + \gamma B_j + \delta F_i * \text{Industry char}_j + \varepsilon_{ij}$$

- Probit and Tobit
- Include year and industry dummies
- Clustered on country-level

Samples

- Pooled data for 102 countries (157 surveys), >60,000 firms, 2002 to 2010
- Pooled sample with sampling weights for 44 countries, with >24,000 firms, 2004 to 2010
- Panel data set for 42 countries (85 surveys) with >7,000 observations, 2002 to 2010

Basic results: Information sharing, financial outreach, and tax evasion

	Panel A: Probit regressions			Panel B: Tobit regressions		
Depth of credit information	-0.078***	-0.072***	-0.076***	-0.059***	-0.059***	-0.058***
Demo branch	-0.073***	-0.067***	-0.064***	-0.053***	-0.052***	-0.051***
<i>Firm-level controls</i>	X	X	X	X	X	X
<i>Country level controls related to tax system</i>		X	X		X	X
<i>Other country level controls</i>			X			X
Observations	64,438	64,438	64,438	64,438	64,438	64,438
Countries	102	102	102	102	102	102
Pseudo R ²	0.132	0.140	0.145	0.153	0.162	0.179

Economic effect

- One SD in credit information sharing: 16.6% drop in the likelihood of corporate tax evasion and a 12.6% drop in the tax evasion ratio
- One SD in demographic branch penetration: a reduction in the incidence of tax evasion of 12.3% and a reduction of the tax evasion ratio of 9%.

Instrumental variable regressions

- Concerns of omitted variable bias
- Focus on variables that are exogenous to corporate tax evasion but (as suggested by literature) influence branch expansion and decision to establish/improve credit registries
- average tenure of bank supervisors, number of bank supervisors, supervisory independence from both banks and politicians, supervisory power, NPL ratio, policy contagion: share of countries in each region with a credit registry, bank ownership

First-stage regressions

	Panel A: Without sampling weights		Panel B: With sampling weights	
	Depth of credit information	Demo branch	Depth of credit information	Demo branch
	Proportion of other countries in the same region that have credit registries	3.762**	0.529**	3.644***
Bank supervisor tenure (years)	0.064*	0.063**	0.033	0.032**
Log of # of bank supervisors	0.253	0.053	0.137***	0.087
Independence of supervisory authority - overall	0.107*	0.083**	0.328**	0.143
Official supervisory power	0.067**	0.029	0.073***	0.011
Non-performing loan	2.942**	0.232	2.345**	0.591
Foreign bank ownership	0.839**	0.418**	0.817**	0.423***
Private bank ownership	0.860**	0.503*	0.843**	0.580**
Observations	57,094	57,094	21,541	21,541
Countries	83	83	34	34
F-test of IVs	25.675	11.907	32.444	15.720
Adjusted R ²	0.115	0.136	0.118	0.107

Second stage regressions

	Panel A: Without sampling weights			Panel B: With sampling weights		
Depth of credit information	-0.091***	-0.089***	-0.081***	-0.109***	-0.107***	-0.103***
Demo branch	-0.067***	-0.063***	-0.061***	-0.071***	-0.069***	-0.069***
<i>Firm level controls</i>	X	X	X	X	X	X
<i>Country controls related to tax system</i>		X	X		X	X
<i>Other country level controls</i>			X			X
Observations	57,094	57,094	57,094	21,541	21,541	21,541
Countries	83	83	83	34	34	34
Hansen's over-identification test (p-value)	0.289	0.319	0.307	0.224	0.229	0.280
Pseudo R ²	0.176	0.183	0.188	0.168	0.176	0.184

Further robustness tests

- Drop Islamic countries
- Control for informal financing
- Control for potential interplay between mafia, government's provision of public good and tax evasion
- Consider large and small firms separately
- Drop countries with WB/IMF programs
- Control for financial liberalization
- Control for other dimensions of institutional framework
- Use alternative indicators of branch penetration and information sharing

Firm location and tax evasion

Dependent variable: extent of tax evasion

	Tobit		IV Tobit		Country x year fixed-effects	
Depth of credit information	-0.060***	-0.058***	-0.074***	-0.076***		
Demo branch	-0.061***	-0.059***	-0.068**	-0.063***		
Small city x Depth of credit information	-0.026***	-0.022**	-0.029***	-0.026***	-0.020**	-0.018***
Capital city x Depth of credit information	0.022**	0.019**	0.025**	0.022**	0.015**	0.016*
Small city x Demo branch		-0.033***		-0.032**		-0.026**
Capital city x Demo branch		0.012**		0.014*		0.012**

Economic effect

- One SD in credit information sharing reduces tax evasion by
 - Small town: 18.3%
 - Capital city: 8.1%
- One SD in demographic branch penetration reduces tax evasion by
 - Small town: 15.5%
 - Capital city: 7.9%

Firm size and tax evasion

Dependent variable: extent of tax evasion

	Tobit		IV Tobit		Country x year fixed-effects	
Depth of credit information	-0.058***	-0.055***	-0.075***	-0.079***		
Demo branch	-0.068***	-0.070***	-0.071**	-0.072***		
Small firm x Depth of credit information	-0.021**	-0.029**	-0.022**	-0.024**	-0.016**	-0.018**
Big firm x Depth of credit information	0.027**	0.023*	0.012*	0.013*	0.018*	0.024**
Small firm x Demo branch		-0.014**		-0.011**		-0.012**
Big firm x Demo branch		0.016**		0.019*		0.016**

Economic effect

- One SD in credit information sharing reduces tax evasion by
 - Small firm: 16.9%
 - Large firm: 6.6%
- One SD in demographic branch penetration reduces tax evasion by
 - Small firm: 14.2%
 - Large firm: 9.1%

Industry characteristics and tax evasion

- Financial dependence (EFD): fraction of capital expenditure not financed with internal funds
- Growth opportunities at industry-level (GEO1): US industry growth, 1990-99 (Fisman and Love)
- Growth opportunities at country-level(GEO2): based on Bekaert et al. (2007), P-E ratios for industries outside the respective country, averaged with weights from industry composition of respective country

Industry characteristics and tax evasion

	Tobit			IV Tobit			Country x year fixed-effects
Depth of credit information	-0.036***	-0.047**	-0.049***	-0.057***	-0.055**	-0.064***	
Demo branch	-0.055***	-0.067***	-0.064**	-0.076**	-0.078***	-0.073***	
EFD x Depth of credit information	-0.010***			-0.016***			-0.009**
EFD x Demo branch	-0.013**			-0.018***			-0.011**
GO1 x Depth of credit information		-0.005**			-0.006*		-0.003**
GO1 x Demo branch		-0.007**			-0.009**		-0.007*
GO2 x Depth of credit information			-0.021*			-0.024**	-0.014***
GO2 x Demo branch			-0.035**			-0.026**	-0.015***

Panel regressions

- 42 countries, 85 surveys, 3800 firms asked twice
- 15 countries with changes in credit information sharing and branch penetration
- Panel allows us to control for firm-fixed effects

Panel regressions with firm-fixed effects (1)

	OLS with firm effects				IV with firm effects			
Depth of credit information	-0.034***	-0.037***	-0.027**	-0.042**	-0.044***	-0.046***	-0.038**	-0.037***
<i>Firm location effects</i>								
Small city x Depth of credit information	-0.015**	-0.018***	-0.013**	-0.020**	-0.024**	-0.026**	-0.030**	-0.021**
Capital city x Depth of credit information	0.009	0.012**	0.013*	0.026*	0.016**	0.010	0.021**	0.035**
<i>Firm size effects</i>								
Small firm x Depth of credit information	-0.026**	-0.032**	-0.019*	-0.014	-0.020**	-0.023*	-0.036**	-0.034**
Big firm x Depth of credit information	0.017	0.018	0.024**	0.029**	0.022*	0.021**	0.021	0.035
<i>Industry characteristics</i>								
EFD x Depth of credit information	-0.015***				-0.012***			
GO1 x Depth of credit information	-0.001*				-0.003**			
GO2 x Depth of credit information					-			
	-0.009***				-0.016***			
					0.014*** -0.019***			

Panel regressions with firm-fixed effects (2)

	OLS with firm effects				IV with firm effects			
Depth of credit information	-0.021***	-0.027***	-0.033***	-0.034**	-0.052***	-0.047**	-0.031**	-0.026**
Demo branch	-0.065***	-0.060**	-0.061**	-0.074***	-0.096**	-0.073***	-0.077**	-0.078**
<i>Firm location effects</i>								
Small city x Demo branch	-0.013***	-0.015***	-0.017***	-0.027***	-0.046**	-0.023***	-0.022***	-0.034**
Capital city x Demo branch	0.012*	0.022*	0.016*	0.024**	0.024**	0.040*	0.039**	0.039**
<i>Firm size effects</i>								
Small firm x Demo branch	-0.013**	-0.015**	-0.019**	-0.024***	-0.036**	-0.023**	-0.023**	-0.020**
Big firm x Demo branch	0.029*	0.027	0.026	0.020**	0.049**	0.035	0.053*	0.045*
<i>Financial characteristics</i>								
EFD x Demo branch	-0.017**				-0.023**			
GO1 x Demo branch		-0.003*				-0.007**		
GO2 x Demo branch			-0.018**	-0.020***			-0.050**	-0.034***

Why do we care?

Tax evasion and expected sales growth

Tax evasion ratio	-0.731**	-0.756**	-1.058***
Government ownership dummy		4.109	-1.852
Foreign firm dummy		1.125	2.783*
Exporter dummy		2.826	4.284**
Government subsidy dummy		-4.925***	-3.461*
No. of competitors		3.293**	-0.76
Constant	26.684** *	21.437***	27.732***
Industry fixed effects	no	yes	yes
Country fixed effects	no	no	yes
Observations	6194	4147	4147
Countries	80	57	57
Adjusted R ²	0.001	0.007	0.061

Conclusions

- Tax evasion varies negatively with
 - Branch penetration
 - Credit information sharing
- Effect stronger for
 - Small firms
 - More remote firms
 - More financially dependent firms and firms with higher growth opportunities