

Taxes, Theft, and Firm Performance

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I. Motivation

Motivation

- Taxation is a central issue of modern corporate finance
 - Graham (2003)
- However, empirical evidence on this topic is very limited
 - Tax evasion is difficult to identify and even more difficult to quantify
- Two recent empirical studies:
 - Desai, Dyck and Zingales (2007)
 - Desai and Dharmapala (2009)

My Contributions

- Novel approach to measure tax evasion and income diversion
- I find that tax avoidance activities are negatively related to firm performance
 - The reason is managerial diversion rather than tax evasion per se.
- I show that stricter tax enforcement is positively related to firm performance

Contents

- Banking Transaction Data
- Economics of Spacemen
- Measuring Income Diversion
- Income Diversion and Firm Performance
- Conclusion



II. Banking Transaction Data

Unique Dataset

- Contains 75%-80% of ALL banking transactions done by Russian companies in 2003-2004
 - 234 million transactions
 - 1.7 million firms
- Leaked from Russian Central Bank
- Matched to Russian Compustat to have detailed firm characteristics

Example of 2 Transactions

- On 01.26.2004 Gazprom paid
 - 538 million RUR (\$18 million)
 - to Trubniy Torgoviy Dom,
 - payment for pipes for YamalGazInvest
- On 07.09.2003 Rosneft paid
 - 637 RUR (\$21)
 - to Selivanovskaya Voda
 - rent payment for a water cooler.

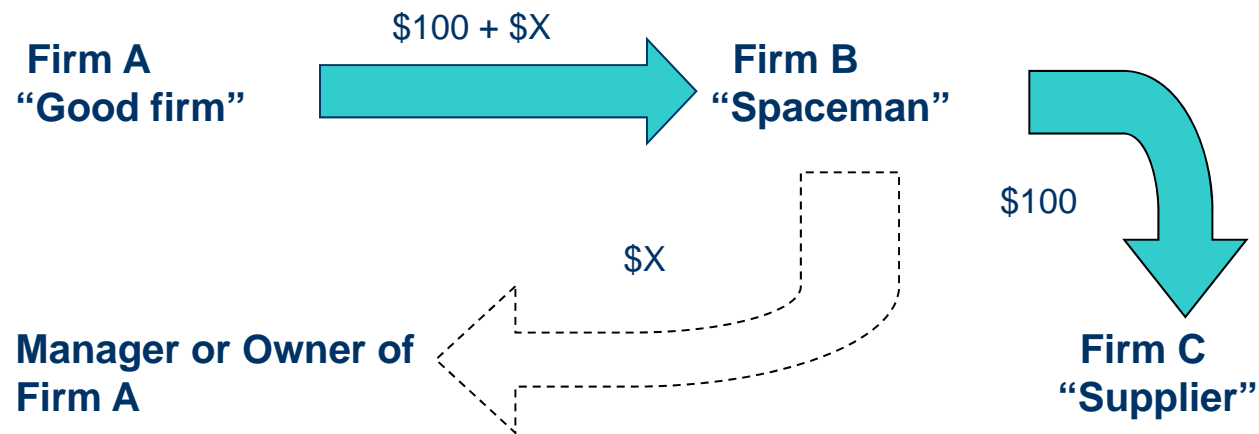


III. Economics of “Spacemen”

What Is a Spaceman?

- “Spaceman” – colloquial name for a special purpose entity created for income diversion
- Typical spaceman
 - Is registered in the names of people who lost their IDs or homeless people
 - Has an active life around 0.5 - 2 years
 - Does not pay taxes or pays nominal taxes
 - Has 1 employee (director) with no salary or which has a salary equal to minimum wage

Cash Flow Diversion Using Spacemen



- $\$X$ is diverted income
- Spaceman comes from nowhere and disappears in 1, maximum 2 years (flies back to space)
- Spacemen are specially created for income diversion and tax evasion. Typically, formal owners of spacemen are people who lost their government issued IDs

Spacemen vs. Regular Firms

Variable	Regular	Spacemen
N	100,313	42,483
Age, calendar days	588	391
N of trans per month	42	25
Funds rec. per month	\$ 121,735	\$ 472,813
Funds paid per month	\$ 129,512	\$ 168,722
Gross tax rate	13.68%	0.01%

A Spaceman

- lives 200 days less
- gets 4 times more money
- does not pay taxes

Direct Estimation of Income Diversion

- I measure diversion as a sum of net transfers to spacemen
 - 1.5 trillion rubles (\$49 billion) in 2003 and 2.2 trillion rubles (\$77 billion) in 2004
 - 11.4% of GDP in 2003 and 13.1% of GDP in 2004
 - Corresponds to tax evasion 4.7% and 5.4% of GDP

Feedback from Russian Central Bank

- I published a summary of these results on July 22, 2006
- A few days after that, I got an invitation from top executives of Russian Central Bank (Andrey Kozlov, 1VP and Victor Melnikov, VP) to meet and share my methodology
 - We did not meet because Andrey Kozlov was killed on September 13, 2006

February 21, 2007

“The volume of these (*diversion*) activities is 1.5-2 trillion rubles per year”

Sergey Ignatiev, Head of Russian Central Bank



IV. Measuring Income Diversion

Sample of Companies

- I estimate diversion for 45,429 privately held companies. A few summary statistics:

	Mean	Median	St. dev.	N of obs	N of firms
Assets, \$000's	\$ 864	\$ 71	\$ 7,636	78744	45429
Revenue, \$000's	\$ 1,425	\$ 255	\$10,648	78744	45429
Net Income, \$000's	\$ 48	\$ 2	\$ 1,556	78031	45230
Employment	\$ 78	\$ 47	\$ 419	44373	31594
N of transactions	1,075.4	590.0	1,711.5	78655	45417
N of shareholders	2.1	1.0	2.2	70040	40319
CEO not owner	0.429			70040	40319

Three Measures of Diversion

$$\textit{Shadow Payment} = \frac{\textit{Net Transfer to Spacemen}}{\textit{Payments}}$$

$$\textit{Shadow Assets} = \frac{\textit{Net Transfer to Spacemen}}{\textit{Assets}}$$

$$\textit{Shadow Revenue} = \frac{\textit{Net Transfer to Spacemen}}{\textit{Revenue}}$$

Summary Statistics of Diversion Measures

	Mean	Median	St. dev.	N of obs	N of firms
ShadowP	0.071	0.007	0.137	78535	45406
ShadowA	0.323	0.014	0.668	76928	44809
ShadowR	0.058	0.006	0.101	78103	45316
Bottom quartile (mean assets=\$47K)					
ShadowP	0.085	0.002	0.163	18316	11367
ShadowA	0.536	0.000	0.898	16962	10863
ShadowR	0.068	0.001	0.115	18209	11330
Top quartile (mean assets=\$3,048K)					
ShadowP	0.059	0.011	0.116	20493	11357
ShadowA	0.143	0.013	0.370	20491	11355
ShadowR	0.050	0.008	0.089	20344	11335

Verification of the Measures

- Measures of income diversion and taxes paid:
 - Negatively related, significant at 1% level
- Profitable and loss-making firms use spaceman's money differently
 - Profitable firms: 57% – profit hiding, 24% – under-the-table salary, 19% – black cash expenses
 - Loss-making firms: 25 % – under-the-table salary, 75% – black cash expenses
- Different relation between EBT and transfers to spacemen
 - Profitable firms: \$1 to spacemen -> -29.5¢ of EBT
 - Profitable firms: \$1 to spacemen -> +27.8¢ of EBT



V. Income Diversion and Firm Performance

Hypotheses Tested

Hypothesis 1: For privately held companies, tax evasion represents a simple transfer of value from the state to companies' owners.

Hypothesis 2: The negative effect of tax evasion on firm performance (if any) is related to managerial diversion rather than tax evasion *per se*.

Empirical Design. Hypothesis 1

- Income diversion and firm performance

$$Performance_{t,t+3}^i = \alpha + \beta Shadow_t^i + \gamma Controls_t^i + \theta_t + \varepsilon_t^i$$

Income Diversion and Performance. OLS Estimation

Dependent var:	Δ Revenue (1)	Δ Assets (2)	Δ Revenue/Assets (3)	Δ Revenue/Employee (4)
ShadowR	-.139*** (.033)	-.063** (.030)	-.187*** (.028)	-.069** (.033)
Actual EBT/Revenue	1.24*** (.03)	1.03*** (.02)	1.04*** (.03)	.92*** (.03)
Log(Assets)	.007*** (.002)	-.035*** (.002)	.059*** (.001)	.022*** (.002)
Debt/Assets	-.132*** (.015)	-.111*** (.013)	-.132*** (.013)	-.081*** (.015)
Industry, Year	Y	Y	Y	Y
R-sq	.075	.075	.114	.097
Number of obs	56,300	57,727	56,205	29,677
Number of firms	34,118	34,734	34,077	21,949

Empirical Design. IV Estimation.

- OLS estimation has several potential problems
- I apply exogenous instruments:
 - Dummies for local tax agencies
 - I exclude all firms which have different legal and physical address

Income Diversion and Performance. IV Estimation

Dependent var:	First stage			Second stage	
	ShadowR (1)	Δ Revenue (2)	Δ Assets (3)	Δ Revenue/Assets (4)	Δ Revenue/Employee (5)
ShadowR		-2.624*** (.577)	-1.617*** (.470)	-2.228*** (.493)	-1.470*** (.491)
Actual EBT/Revenue	.075*** (.006)	1.509*** (.060)	1.175*** (.048)	1.287*** (.052)	1.024*** (.049)
Log(Assets)	-.003*** (.000)	-.001 (.003)	-.037*** (.003)	.049*** (.003)	.019*** (.003)
Debt/Assets	.001 (.002)	-.134*** (.022)	-.102*** (.018)	-.147*** (.020)	-.090*** (.022)
Industry, Year	Y	Y	Y	Y	Y
Tax agency	Y				
R-sq	.042				
Number of obs	28,711	28,711	29,481	28,663	15,318
Number of firms	17,065	17,065	17,376	17,044	11,224

Empirical Design. Hypothesis 2

- Theft or Taxes?

$$\text{Shadow}_t^i = \text{Tax Evasion}_t^i, \text{ if } \text{CEO}_t^i = \text{Owner}_t^i$$

$$\text{Shadow}_t^i = \text{Tax Evasion}_t^i + \text{Managerial Diversion}_t^i, \text{ if } \text{CEO}_t^i \neq \text{Owner}_t^i$$

$$\begin{aligned} \text{Performance}_{t,t+3}^i = & \alpha + \beta_1 \text{Shadow}_t^i + \beta_2 \text{Shadow}_t^i \cdot \text{CEO not owner}_t^i + \\ & + \beta_3 \text{CEO not owner}_t^i + \gamma \text{Controls}_t^i + \theta_t + \varepsilon_t^i \end{aligned}$$

Theft or Taxes? IV Estimation

Panel B: Solely owned firms

Dependent var:	First stage		Second stage		
	ShadowR (1)	Δ Revenue (2)	Δ Assets (3)	Δ Rev/Assets (4)	Δ Rev/Employee (5)
ShadowR		-.986 (.830)	-.409 (.734)	-1.610** (.705)	-.658 (.706)
ShadowR*CEO_not_owner		-2.890*** (.808)	-2.468*** (.675)	-2.101*** (.703)	-1.363* (.749)
CEO_not_owner	-.008*** (.002)	.134*** (.051)	.142*** (.042)	.070 (.045)	.055 (.047)
Actual EBT/Rev, log(Assets), Debt/Assets, Industry, Year Tax offices	Y	Y	Y	Y	Y
R-sq	.043				
Number of obs	11,744	11,744	12,068	11,726	6,186
Number of firms	7,128	7,128	7,264	7,116	4,587
P-value ($\beta_1 + \beta_2$)=0		.000	.000	.000	.003

Empirical Design. Robustness Test

- Tax enforcement and firm performance
 - Proxy for tax enforcement is the number of persons employed by a local tax agency scaled by the number of firms that they monitor:

$$\text{Inverse Tax Enforcement}_j = \frac{\text{Number of Firms}_j}{\text{Number of Tax Employees}_j}$$

$$\text{Performance}_{t,t+3}^i = \alpha + \beta \text{Inverse Tax Enforcement}^i + \gamma \text{Controls}_t^i + \theta_t + \varepsilon_t^i$$

Tax Enforcement and Firm Performance. IV Estimation

Dependent var:	Δ Revenue (1)	Δ Assets (2)	Δ Revenue/Assets (3)	Δ Revenue/Employee (4)
Inverse tax enforcement	-.0018*** (.0004)	-.0012*** (.0003)	-.0020*** (.0003)	-.0013*** (.0004)
Actual EBT/Revenue	1.262*** (.043)	.982*** (.033)	1.086*** (.039)	.909*** (.042)
Log(Assets)	.009*** (.003)	-.032*** (.003)	.057*** (.002)	.025*** (.003)
Debt/Assets	-.173*** (.025)	-.135*** (.021)	-.178*** (.022)	-.110*** (.024)
Industry, Year	Y	Y	Y	Y
R-sq	.094	.081	.127	.114
Number of obs	21,218	21,807	21,183	11,621
Number of firms	12,543	12,777	12,529	8,479

Conclusion

- I estimate income diversion in Russia as 11.4% of GDP in 2003 and 13.1% of GDP in 2004
- An average company diverts
 - 5.8% of revenue per year
 - 32.3% of assets per year
- Income diversion and performance are negatively related: 1% of revenue transfer to spacemen ->
 - 2.6% decrease in the annual revenue growth rate
 - 1.5% annual decline in productivity measured by revenue per employee
- The main reason for that is managerial diversion, not tax evasion *per se*