Did dividend tax policy changes increase Chinese financial market stability?

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Outline

Background

- Stock Market: U.S. v.s. China
- Institution Investors v.s. Individual Investors
- Individual investors contributed to almost 60% of the trading volumes in 2005 (short-term, education level)
- $\rightarrow$ Financial turbulence; harm firms' growth(turnover rates in the U.S. around 100%, China around 300-400%)
- Government tries to encourage long-term investment, increase financial market stability

Background - Policy Changes

- Before 2005, dividend tax rate fixed at 20%
- June 13, 2005, the Ministry of Finance and State Administration of Taxation jointly issued a document (*Caishui 2005 No.102*) to lower the dividend tax rate from 20% to 10% for all investors
- In November 2012, another joint document (*Caishui 2012 No. 85*) was released, changing the single tax rate to differentiated rates system starting in 2013 Payout Method

Background - Tax Rates with Policy Changes

Dividend tax rates change with China policies' variation:

	Before 2005	After 2005 No.102	After 2012 No.85
1mon	20%	10%	20%
1mon to 1yr	20%	10%	10%
1 yr	20%	10%	5%

Related Literature: Research in the U.S.

- Dividend tax has been well studied in the United States
- 'Old View': Dividend tax reduce net return/investment; dividend tax↓, save and invest↑, spur business activities
  Poterba and Summers (1985), Poterba (2004)
- 'New View': Dividend tax is irrelevant with either firms' decisions or future profitability, dividend payments not changed
  Auerbach (1979), Auerbach and Hassett (2003)
- Taxation is one of the most prevalent market frictions in financial markets. It affects investors' decisions and valuation of assets
  Dai e al. (2008), Zhang et al. (2008), Hanlon and Heitzman (2010)
- Dividend tax reduces the equities' value; tax-cut leads to the increase of firms' value
  Miller and Scholes(1978), Poterba and Summers(1984), Auerbach and Hassett (2005,2006)

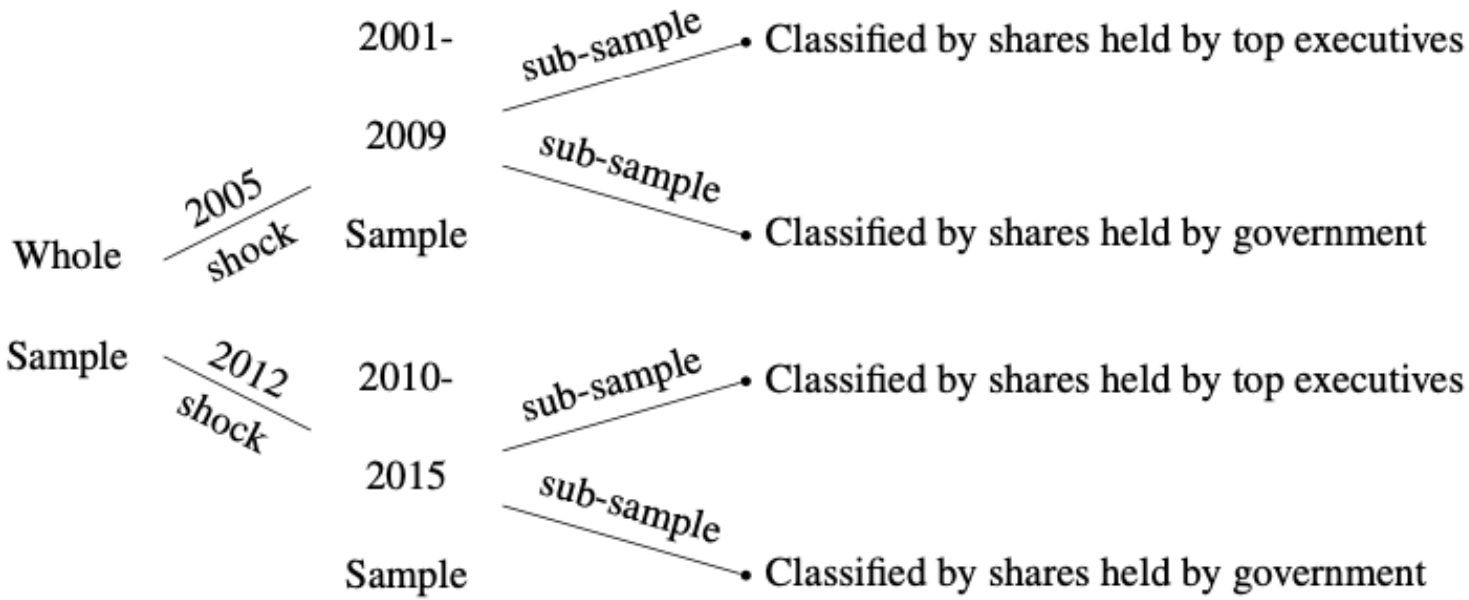
Research in China

- Wang and Guo (2011) (logit model)(05' reform), Yang and Liu (2015) (tobit model)(12' reform): Firms with higher portions of investment fund shares/no investment restriction distribute more cash dividend
- Yang and Yuan (2013)(05' reform), Ruan and Zhai (2015)(12' reform): After reform, fluctuation of stock prices increased, trading behaviors increased around firms' ex-dividend day
- Dividend distribution did not increase the value of firms
  Chen and Yao(2000), Yu and Cheng(2001), He and Chen(2002), Xiong and Hu(2003) (05' reform)

Data

- Main data source : China Stock Market and Accounting Research (CSMAR), Consolidated Financial Statements
- China Economic Policy Uncertainty Index (Huang et al. (2018))
- Whole sample time ranges from 2001 to 2015
  - Phrase I: 2005 policy change (2001 to 2009)
  - Phrase II: 2012 policy change (2010 to 2015)
- 20,315 obs; Mean trading volumes 142 million (yearly);
  Mean Turnover Rate 335% (yearly)

Sampling


Whole Sample
2005 shock
2012 shock
2001-2009
2010-2015
Sample
Sample
sub-sample
sub-sample
sub-sample
sub-sample
Classified by shares held by top executives
Classified by shares held by government
Classified by shares held by top executives
Classified by shares held by government

Dividend Tax and Trading Volumes/Turnover Rates

Methodology - Baseline DID

- Diff-in-Diff method is utilized to analyze
  $y_{it} = \beta_0 + \beta_1 I_{policy_t} + \beta_2 I_{dividend_i} + \beta_3 I_{policy_t} \times I_{dividend_i} + X_{it}^{'}\delta + \mu_{\mathbf{i}} + \kappa_{\mathbf{t}} + \epsilon_{\mathbf{it}}$
- y_{it}: Trading Volumes, Turnover Rate, Return Rate;
- I_{policy_t}: Time dummy; $I_{dividend_i}$: Treatment Effect Dummy
- $X_{it}^{'}$ nests all the controls: Market Cap, Assets, Debt, Financial Leverage, Tobin's Q, Price earning ratio and China Economic Policy Uncertainty Index[Huang et al. 2018]/ Political Uncertainty Index [Baker et al. (2016)]
- Further split the sample by share percentage held by top executives and state

Endogeneity

- Policy change is nationwide
- Comparing to a natural experiment, the treatment and control groups are not fully randomized
- Firms' self characteristics can affect decisions even behaviors were tax driven
- Hurt the accuracy of the estimations

Endogeneity - Solutions

- Matching Methods (1:1, kNN, Radius, Kernel/Local Linear, Mahalanobis) matching methods
- DID w/ matched group (Heckman (1997,1998))
- Shrink the sample to 1year after policy change
- Eliminating firms that started to distribute 1 year before policy change; might have inside information on dividend tax change

Baseline DID - 2005 Policy Change

	Trading Volumes	Turnover Rates	Return Rates
I_{policy}	3.130***	101.722***	0.670***
	(3.06)	(5.40)	(3.82)
$I_{dividend}$	3.098***	326.038***	-2.810***
	(3.29)	(10.15)	(-17.10)
$I_{policy} * I_{dividend}$	-0.117**	-18.881**	0.084
	(-2.36)	(-2.29)	(1.04)

2005 Policy Change, Executive/Government Share

- Coefficients for Interaction Term ($I_{polic} * I_{dividend}$)

More Ex Holding	Trading Volumes	Turnover Rates	Return Rates
	-0.115**	-20.022*	0.056
	(-2.60)	(-1.85)	(0.57)
Less Ex Holding			
	-0.133	-18.345	-0.250
	(-0.37)	(-0.80)	(-1.33)
More State Holding			
	-0.093*	-5.614*	0.017
	(-1.95)	(-1.87)	(0.19)
Less State Holding			
	-0.179	-9.934	-0.111
	(-1.53)	(-0.52)	(-1.07)

Characteristics Comparison (Before Matching)

	Comparison		
Firms' Characteristics	T	C	%bias
MktCap	21.86	21.7	6.4
Assets	21.55	21.41	10.9
Cash	19.58	19.4	12.0
FinLev	1.38	1.96	-2.3
Tobin's Q	1.85	2.43	-8.2
P/E	48.74	63.8	-9.7

The standardized % bias is the % difference of the sample means in the treated and non-treated saples as a percentage of the square root of the average of the sample variances in the treated and non-treated groups (Rosenbaum and Rubin, 1985).

Characteristics Comparison (After Matching)

	One-to-One			k-Nearest			Radius		
Firms' Characteristics	T	C	%bias	T	C	%bias	T	C	%bias
MktCap	22.13	22.21	-6.6	22.13	22.18	-3.8	22.13	22.05	7.0
Assets	21.83	21.92	-6.8	21.83	21.88	-4.0	21.83	21.70	10.4
Cash	19.77	19.91	-11.0	19.77	19.891	-9.1	19.77	19.66	8.4
FinLev	1.457	1.45	0	1.457	1.4303	0.1	1.457	2.57	-4.5
Tobin's Q	1.618	1.63	-0.3	1.618	1.625	-0.1	1.618	2.22	-8.5
P/E	48.9	50.15	-0.8	48.90	51.79	-1.9	48.90	58.95	-6.5
	Kernel			Local linear			Mahalanobis		
Firms' Characteristics	T	C	%bias	T	C	%bias	T	C	%bias
MktCap	22.13	22.1	3.2	22.13	22.23	-8.1	22.13	22.13	0.0
Assets	21.83	21.79	3.4	21.8	21.92	-6.6	21.83	21.83	0.2
Cash	19.77	19.73	2.8	19.7	19.82	-3.8	19.77	19.77	-0.2
FinLev	1.457	1.63	-0.7	1.45	1.45	0	1.45	1.314	0.6
Tobin's Q	1.618	1.66	-0.7	1.61	1.63	-0.2	1.618	1.678	-0.8
P/E	48.90	52.17	-2.1	48.901	53.62	-3.0	48.90	46.98	1.2

matching methods

Matching Results - 2005 Policy Change

- Coefficients for Interaction Term ($I_{polic} * I_{dividend}$)

Method	Trading Volumes	Turnover Rates	Return Rates
Without Matching	-0.117**	-18.881**	0.084
	(-2.36)	(-2.29)	(1.04)
One-to-One	-0.132*	-39.050**	-0.405***
	(-2.32)	(-3.28)	(-7.44)
Mahalanobis	-0.204*	-36.166	-0.252**
	(-2.01)	(-1.58)	(-2.55)

Consistent results/ Negative returns

2005 Policy Change

- Coefficients for Interaction Term ($I_{polic} * I_{dividend}$)

	Trading Volumes	Turnover Rates	Return Rates
Keep 1 yr post	-0.117*	-38.762***	-0.431***
	(-1.77)	(-3.69)	(-6.32)
Eliminate 1 yr before	-0.117 *	-19.468**	-0.055
	(-1.98)	(-2.31)	(-0.67)

2012 Policy Change

- Coefficients for Interaction Term ($I_{polic} * I_{dividend}$)

	Trading Volumes	Turnover Rates	Return Rates
Full Sample	0.098	52.246	-0.032
	(0.61)	(0.61)	(-0.85)
More Ex	0.095	134.601	0.032
	(0.11)	(0.74)	(0.43)
More State	0.141	113.52	0.007
	(0.06)	(1.38)	(0.18)

Summary of Finding

- The dividend tax cut in 2005 lowered the turnover rates/trading volumes by 18% and nearly 12% respectively; the differentiated tax system in 2012 had opposite results;
- The findings in these essays generally support the "Old View" of dividend taxation in the literature that dividend tax reduces the net return of investments and reduce the supply of savings; Dividend tax cut leads to the increase of saving, investment, firms' value and profitability.

Background - Payout Methods in China

There are mainly three ways that a firm distributes dividends to its shareholders:

- Cash dividend: money paid to stockholders
- Bonus share: A dividend payment made in the form of additional share
- Gift dividend: Using capital reserves in the firm to distribute

In this research, I focus on cash dividend distributions. Background

Heterogeneity analysis: What kind of firms distributes

- Shares held by top executives: tax-incentive
- State controlled firms: reaction follow policy change
- Cutoff: Median Percentage

Beta Plotting

By Ex holdings

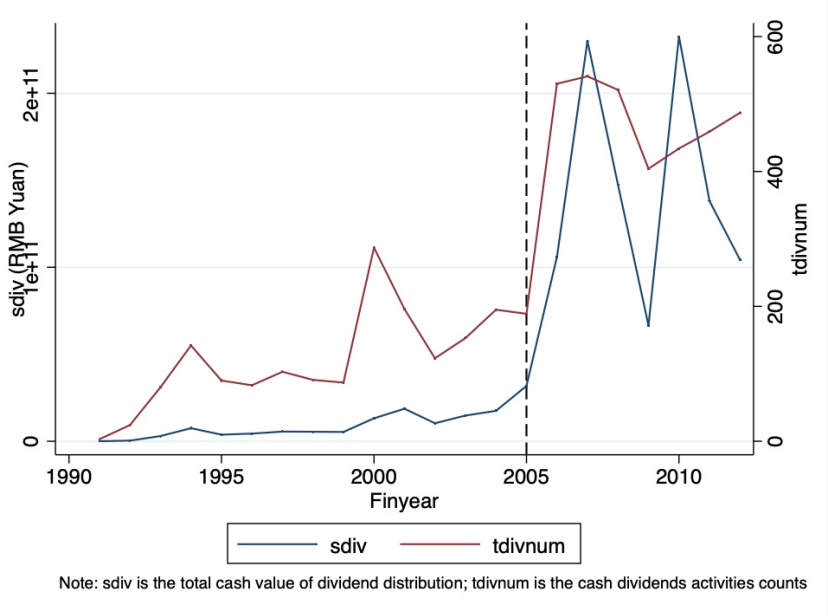


Figure: Higher

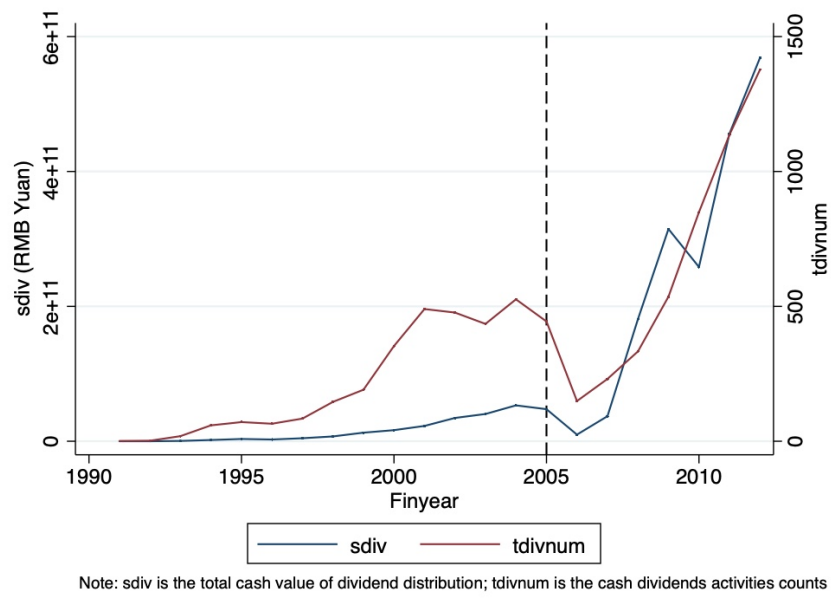


Figure: Lower

Share percentage held by top executives ↑, cash amount distributed and distribution activities ↑ Beta Plotting

By State holdings

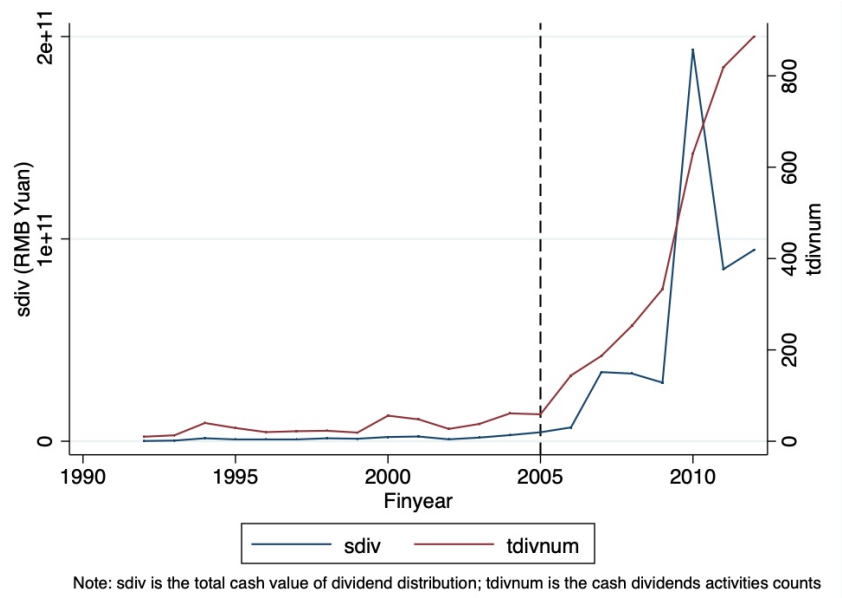


Figure: Higher

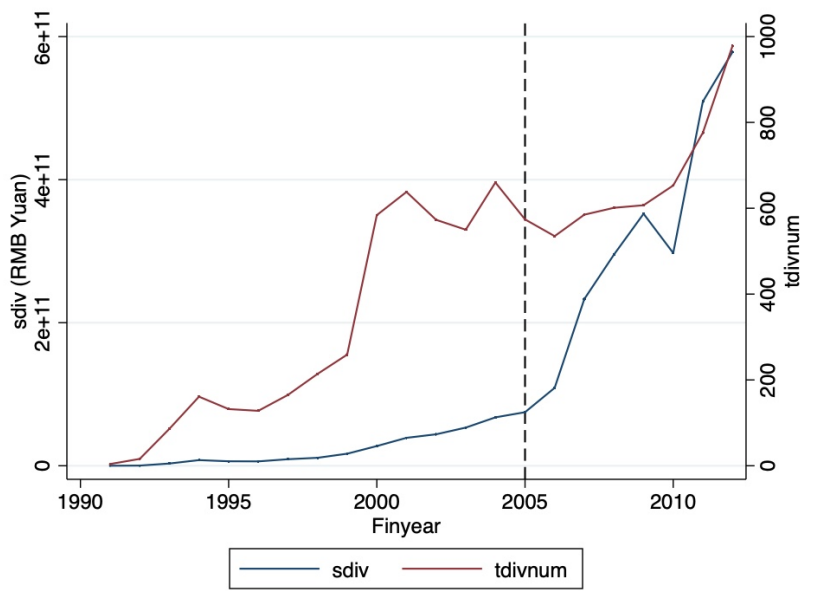


Figure: Lower

Share percentage held by state ↑, cash amount distributed and distribution activities ↑ Beta Plotting

Propensity Score Matching