The Effects of Legalizing Share Repurchases: International Evidence

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Current Literature

- Why do firms repurchase their stocks?
  - A substitute of dividend payments (Grullon and Michaely 2002)
  - A way to distribute excess cash (Jensen 1986; Dittmar 2000)
  - A signal of good future performance (Vermaelen 1981)
  - Other reasons:
    - Stabilize stock price (Hong, Wang and Yu 2008)
    - Adjust target leverage ratio (Bagwell and Shoven, 1988)
    - Avoid takeover (Bagwell, 1991)
    - Managerial opportunism (Fenn and Liang, 2001)
    - EPS manipulation (Almeida, Fos and Kronlund, 2015)
- Literature's findings are mixed.

Endogeneity Problem

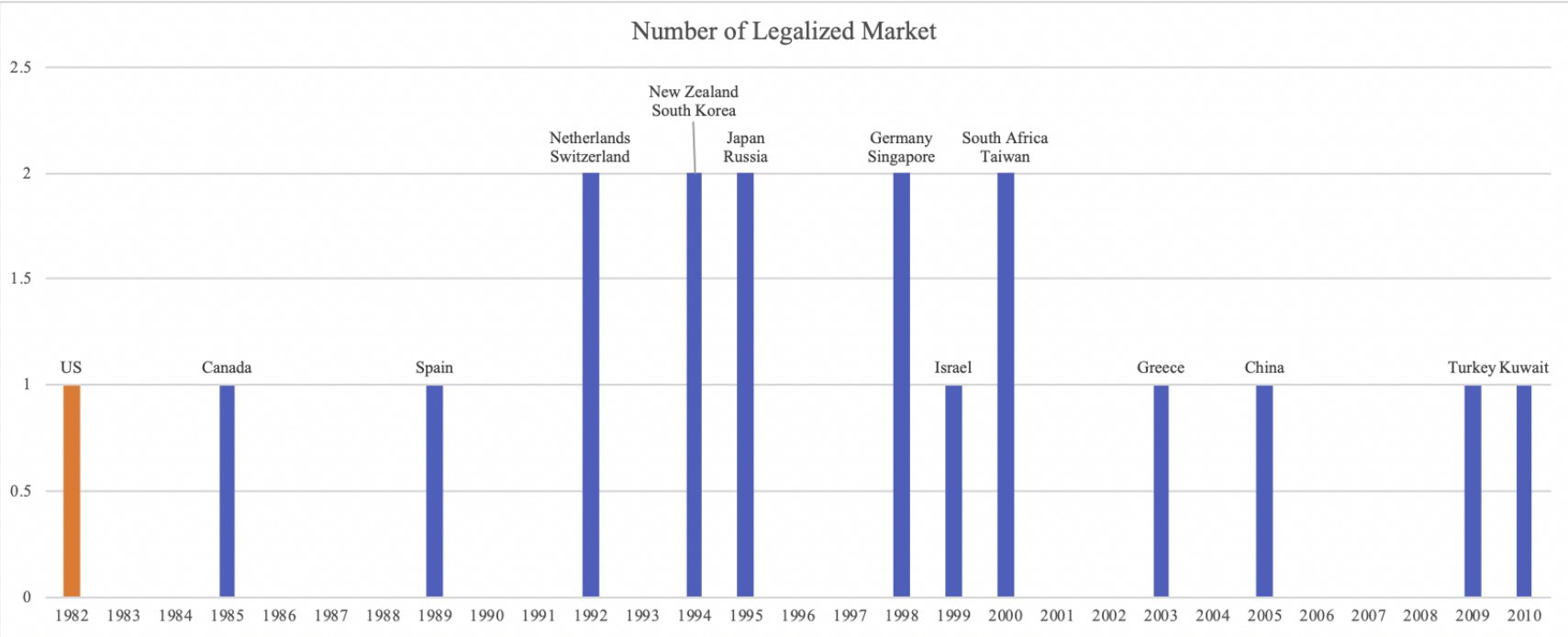
- Firms make payout and investment decisions **simultaneously**
  - All those decisions are likely to be driven by the same hidden factor, such as firm growth opportunities.
  - It's important to know the **causal effects** to infer policy implications.

Identification Strategy

- DID
  - Restrictions of repurchases were gradually removed.
  - Utilize the variation of legalization years
  - Compare firm behaviors before and after legalizations.
    - Bertrand and Mullainathan (2003): Anti-takeover laws
    - Beck, Levine and Levkov (2010): Banking legalization laws
- Exogeneity of laws
  - Weibull Model
  - Test whether variables of interest are associated with "survival status" of the time length before legalization

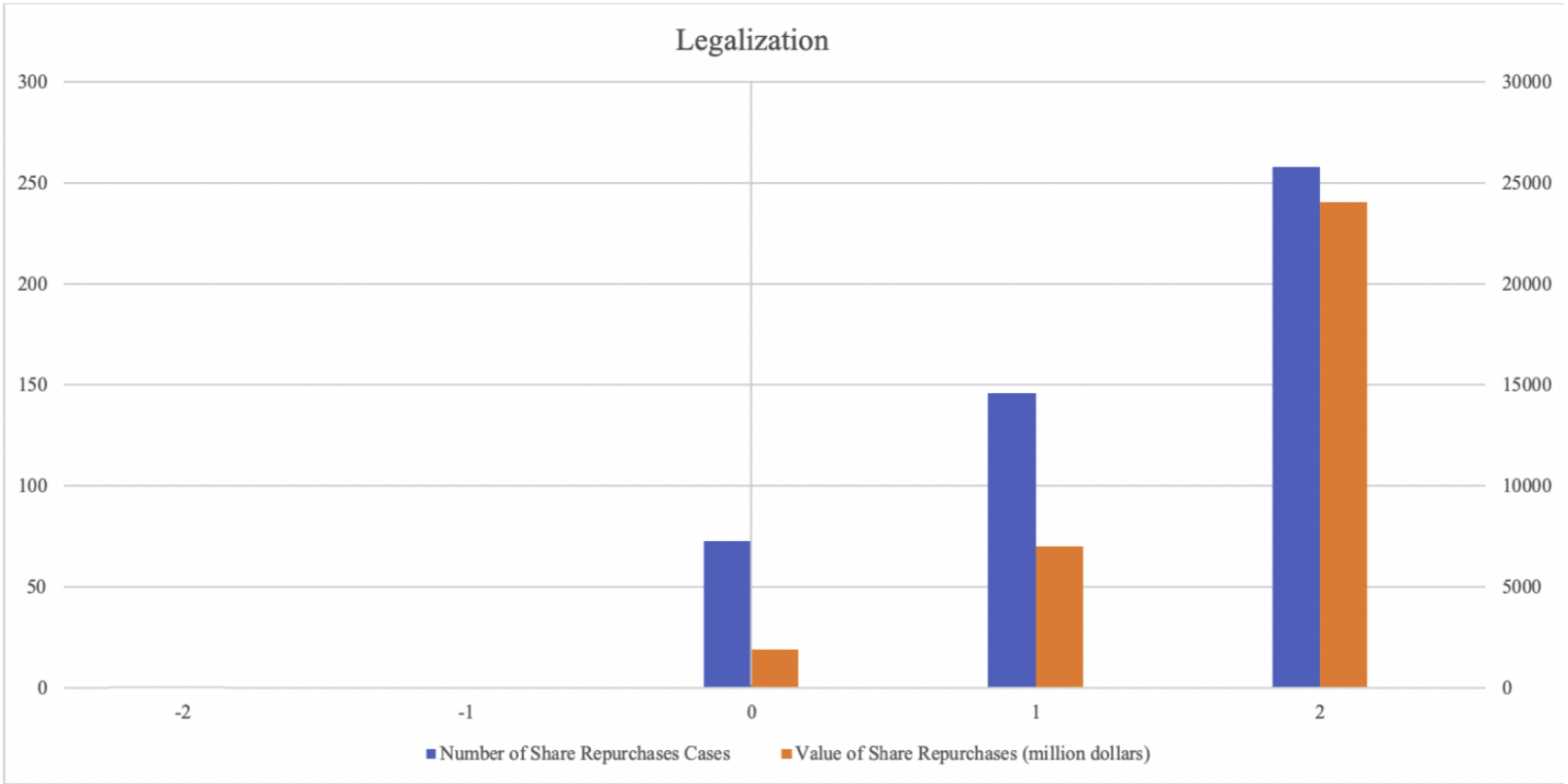
Staggered Legalization of Share Repurchases

- The restrictions were gradually removed since the 1980s
- Sample selection:
  - Market: At least 5 years data before legalization
  - Market: No self-tender cases before legalization
  - Firm: Buy back shares within 2 years after legalization



Share Repurchases around Legalization

- Sharp increase in number and value of share repurchases after legalization



Data Overview

- Datasets:
  - Thomson Reuters Worldscope
  - Thomson Reuters SDC
  - Thomson Reuters Ownership
  - World Bank WDI
- Year Coverage: 1980-2018
- Market Coverage: 17
- 15,257 firm-year observations from 967 firms

Data Construction

- Hand-collect the years of legalization for all markets with reasonably functioning stock markets
  - Academic articles
  - Industry reports
  - Government websites
  - Regulatory and legal authorities' websites
  - Stock exchanges' websites
  - Law firms
- Cross-check with the SDC repurchase cases

Summary Statistics

	Obs	Mean	Std. Dev	25%	Median	75%
Dependent Variables						
Abnormal Stock Return	13,485	17.97	54.60	-13.20	8.15	35.83
Buy-and-hold Return	13,485	19.14	54.87	-12.16	9.27	37.09
Capital Expenditure	14,593	5.35	5.71	1.23	3.78	7.49
Cash	14,060	15.17	16.08	3.93	10.19	20.68
Change in Shares Number	4,058	2.80	7.51	0.00	0.24	2.01
Change in Shares Value	4,058	1.25	5.67	0.00	0.01	0.11
Debt Issuance	14,481	1.37	10.02	-2.00	0.23	4.93
Dividend	14,784	1.89	2.60	0.15	1.01	2.49
Market Capitalization (log)	11,173	20.03	1.82	18.78	19.87	21.18
Net Assets from Acquisitions	12,359	0.86	2.91	0	0	0.02
R&D	14,352	0.99	2.42	0	0	0.68
R&D Growth	14,352	7.72	38.76	0	0	1.43
Repurchase	12,921	0.52	1.38	0	0	0.20
Tobin's Q	11,081	1.41	0.88	0.97	1.18	1.55
Total Payout	12,823	2.61	3.59	0.33	1.36	3.32
Treasury Shares Number	10,640	1.99	3.94	0	0	2.20
Treasury Shares Value	10,640	1.80	3.92	0	0	1.70
Independent Variables						
Legalization	15,257	0.77	0.42	1	1	1
Restriction	15,257	0.48	0.50	0	0	1
Net Tax Rate on Dividend	7,200	31.88	13.41	25	32	41.3
KZ Index	9,652	-1.80	4.47	-2.61	-0.26	0.86
Control Variables						
Total Assets	15,257	20.61	1.99	19.24	20.33	21.77
Net Sales	15,257	20.02	2.17	18.83	19.94	21.28
Net Income	15,257	17.23	2.00	16.01	17.16	18.45
Leverage	15,257	22.68	17.67	7.69	20.55	34.75
ROA	15,257	5.66	5.41	1.89	4.19	7.60
Sales Growth	11,621	15.59	40.60	0.22	8.63	20.71
EBIT / Sales	11,621	13.52	16.59	5.56	9.42	16.37
PPE / Sales	11,621	100.33	125.14	29.43	62.39	121.26
Quick Ratio	11,621	1.37	1.59	0.69	0.99	1.52
Market Share	11,621	16.97	25.43	1.38	5.05	19.93

Empirical Specification

- $Y_{ijt} = \beta_0 + \beta_1 \text{Legalization}_{jt} + \beta_2 X_{ijt} + FE_{ij} + FE_t + \varepsilon_{ijt}$
- Y_{ijt}:
  - Payout: repurchase, dividend, total payout
  - Financing sources: debt issuance, cash
  - Investments: CapEx, acquisition expense, R&D expense
  - Stock return: buy-and-hold return, abnormal stock return
  - Firm value: Tobin's Q, market cap (log)
- $Legalization_{jt}$: $= 1$ if year t is after legalization in country j

Payout Policies

- Repurchase ↑
- Dividend → : stickiness
- Total Payout ↑

	(1)	(2)	(3)	(4)	(5)	(6)
	Repurchase		Dividend		Total Payout	
Legalization	0.396***	0.493***	0.111	0.121	1.010***	1.226***
	(0.00)	(0.00)	(0.22)	(0.30)	(0.00)	(0.00)
Total Assets	Yes	Yes	Yes	Yes	Yes	Yes
Net Sales	Yes	Yes	Yes	Yes	Yes	Yes
Net Income	Yes	Yes	Yes	Yes	Yes	Yes
Leverage	Yes	Yes	Yes	Yes	Yes	Yes
ROA	Yes	Yes	Yes	Yes	Yes	Yes
Sales Growth		Yes		Yes		Yes
EBIT / Sales		Yes		Yes		Yes
PPE / Sales		Yes		Yes		Yes
Quick Ratio		Yes		Yes		Yes
Market Share		Yes		Yes		Yes
Constant	Yes	Yes	Yes	Yes	Yes	Yes
Firm Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Cluster at Firm Level	Yes	Yes	Yes	Yes	Yes	Yes
Observations	12,921	10,060	14,784	11,346	12,823	9,998
R-squared	0.242	0.247	0.581	0.610	0.488	0.508

Sources to Finance Share Repurchases

- Since the capital that firms use for share repurchases is not from a reduction of dividend payments, we look at:
  - External financing: Debt issuance
  - Internal financing: Cash
  - Resource reallocation: CapEx, acquisition expense, R&D expense

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Debt Issuance		Cash		Capital Expenditure		Net Assets from Acquisitions		R&D	
Legalization	-1.808***	-0.617	-2.179***	-0.958**	-1.088***	-0.847***	-0.236*	-0.249	-0.117**	-0.174**
	(0.00)	(0.13)	(0.00)	(0.05)	(0.00)	(0.00)	(0.09)	(0.18)	(0.03)	(0.02)
Total Assets	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Net Sales	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Net Income	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Leverage			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ROA	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sales Growth		Yes		Yes		Yes		Yes		Yes
EBIT / Sales		Yes		Yes		Yes		Yes		Yes
PPE / Sales		Yes		Yes		Yes		Yes		Yes
Quick Ratio		Yes		Yes		Yes		Yes		Yes
Market Share		Yes		Yes		Yes		Yes		Yes
Constant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster at Firm Level	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	14,481	11,517	14,060	11,621	14,593	11,311	12,359	9,601	14,352	11,394
R-squared	0.163	0.200	0.666	0.769	0.541	0.525	0.246	0.263	0.802	0.821

Stock Return

- Our results indicate that firms fund their share repurchases by reducing other investments and cash reserves.
- How does it affect return?

	(1)	(2)	(3)	(4)
	Buy-and-hold Return		Abnormal Stock Return	
Legalization	5.859***	7.148***	5.871***	7.154***
	(0.00)	(0.00)	(0.00)	(0.00)
Total Assets	Yes	Yes	Yes	Yes
Net Sales	Yes	Yes	Yes	Yes
Net Income	Yes	Yes	Yes	Yes
Leverage	Yes	Yes	Yes	Yes
Sales Growth		Yes		Yes
EBIT / Sales		Yes		Yes
PPE / Sales		Yes		Yes
Quick Ratio		Yes		Yes
Market Share		Yes		Yes
Constant	Yes	Yes	Yes	Yes
Firm Dummy	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes
Cluster at Firm Level	Yes	Yes	Yes	Yes
Observations	13,485	10,837	13,485	10,837
R-squared	0.219	0.240	0.218	0.239

Long-run Firm Value

- Considering that firms cut long-run investments in R&D
- What are the long-run effects on firm value?
- Tobin's Q and market cap first ↑ but later ↓

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Tobin's Q					Market Capitalization (log)				
Legalization * One Year After	0.128*					0.112***				
	(0.05)					(0.00)				
Legalization * Two Years After		0.126***					0.126***			
		(0.00)					(0.00)			
Legalization * Three Years After			-0.0555**					-0.0445*		
			(0.03)					(0.05)		
Legalization * Four Years After				-0.0519**					-0.0394*	
				(0.05)					(0.08)	
Legalization * Five Years After					-0.0634**					-0.0751***
					(0.02)					(0.00)
Legalization	-0.328***	-0.324***	-0.291***	-0.293***	-0.294***	-0.321***	-0.320***	-0.289***	-0.291***	-0.289***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Total Assets	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Net Sales	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Net Income	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Leverage	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ROA	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sales Growth	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
EBIT / Sales	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PPE / Sales	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quick Ratio	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Market Share	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster at Firm Level	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	11,081	11,081	11,081	11,081	11,081	11,173	11,173	11,173	11,173	11,173
R-squared	0.558	0.558	0.557	0.557	0.557	0.937	0.937	0.937	0.937	0.937

Beneficiary Ownership

- Stock buybacks boost stock prices at a cost of long-run valuation, insiders may be more informed and run
- Large beneficiary ownership is lower after legalization.

	(1)	(2)	(3)	(4)
	Change in Shares Number		Change in Shares Value	
Legalization	-3.916***	-3.174*	-7.631***	-4.150**
	(0.00)	(0.07)	(0.00)	(0.02)
Total Assets	Yes	Yes	Yes	Yes
Net Sales	Yes	Yes	Yes	Yes
Net Income	Yes	Yes	Yes	Yes
Leverage	Yes	Yes	Yes	Yes
ROA	Yes	Yes	Yes	Yes
Sales Growth		Yes		Yes
EBIT / Sales		Yes		Yes
PPE / Sales		Yes		Yes
Quick Ratio		Yes		Yes
Market Share		Yes		Yes
Constant	Yes	Yes	Yes	Yes
Firm Dummy	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes
Cluster at Firm Level	Yes	Yes	Yes	Yes
Observations	4,058	3,312	4,058	3,312
R-squared	0.357	0.394	0.412	0.424

Interaction Term & Robustness Check

- Cross-sectional Interaction Analyses
- Effects of legalization are
  - weaker in markets with higher **price and volume restrictions**.
  - stronger in markets with higher **dividend tax rates**.
  - weaker for **financially constrained** firms.

Is Legalization Year Predictable

- Our analyses are built on the assumption of exogenous legalization of share repurchases.
- We do not find any market-year variable powerful enough to predict the occurring year of the legalization.
  - **Weibull** hazard model.

Weibull Model

- Testing whether the variables of interest are associated with the "survival status" of the time length before legalization.
- Acharya, Baghai, and Subranmanian (2014); Gao, Hsu, Li, and Zhang (2019)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Legalization Event							
Average Tobin's Q	0.424							
	(0.46)							
Average Market Capitalization		-0.916						
		(0.55)						
Average Buy-and-hold Return			-0.00513					
			(0.51)					
Average Abnormal Stock Return				-0.00514				
				(0.55)				
Average Dividend					-0.773			
					(0.39)			
Average Cash						0.0286		
						(0.73)		
Average Capital Expenditure							-0.375	
							(0.32)	
Average R&D Expense								0.365
								(0.21)
GDP (log)	0.696*	1.157	0.760**	0.741*	0.585	0.682*	0.694**	0.665
	(0.09)	(0.18)	(0.05)	(0.05)	(0.22)	(0.06)	(0.04)	(0.10)
GDP per capita (log)	0.768*	0.873	0.394	0.430	0.556	0.748	0.290	0.603*
	(0.08)	(0.14)	(0.40)	(0.40)	(0.20)	(0.33)	(0.34)	(0.07)
GDP Growth	-0.0279	-0.0198	-0.0189	-0.0175	0.0251	0.00505	0.0379	-0.0178
	(0.87)	(0.91)	(0.90)	(0.91)	(0.86)	(0.97)	(0.77)	(0.90)
Stocks Turnover	-0.00765	-0.0135	-0.0120	-0.0104	-0.00881	-0.00437	-0.00586	-0.00721
	(0.54)	(0.44)	(0.43)	(0.56)	(0.59)	(0.77)	(0.67)	(0.56)
Stocks Traded / GDP	0.0119	0.0227	0.0251	0.0216	0.0145	0.0113	0.0256	0.0132
	(0.56)	(0.20)	(0.31)	(0.52)	(0.15)	(0.54)	(0.15)	(0.45)
Market Capitalization / GDP	0.00407	0.00727	-0.00254	-0.000877	0.00335	0.00362	-0.00576	0.00751
	(0.71)	(0.66)	(0.86)	(0.96)	(0.75)	(0.80)	(0.36)	(0.54)
Tax Revenue / GDP	0.186	0.145	0.177	0.175	0.179	0.215	0.232	0.187
	(0.21)	(0.45)	(0.25)	(0.25)	(0.31)	(0.26)	(0.23)	(0.22)
Inflation	-0.445	-0.421	-0.404	-0.409	-0.567	-0.480	-0.584	-0.495
	(0.19)	(0.28)	(0.21)	(0.19)	(0.13)	(0.22)	(0.19)	(0.20)
Constant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster at Country Level	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	138	138	134	126	139	139	139	139

Comparison with Findings of Prior Studies

Study	Variables	Results	Condition	Identification Strategy
Haw, Ho, Hu and Zhang (2011, JCF)	Firm value	Market value↑		Correlation
Banyi, Dyl and Kahle (2008, JCF)	Treasury	Value of shares of treasury stock↑ Number of shares of treasury stock↑		Correlation
Grullon and Michaely (2002, JF)	Dividend	Dividend↓		Correlation
Skinner (2008, JFE)		Dividend↓		Correlation
Grullon and Michaely (2004, JF)	Cash	Cash↓		Correlation
Chen and Wang (2012, JFE)		Cash↓ Leverage↑		Correlation
Almeida, Fos and Kronlund (2016, JFE)		Cash↓	The results hold for repurchases motivated by earnings management considerations	RDD (compare firms that "just miss" the EPS consensus forecast (the treatment group) with firms that "just beat" the consensus forecast (the control group))
Grullon and Michaely (2004, JF)	Investment (CapEx, R&D)	Capital expenditures↓ R&D expense↓		Correlation
Chen and Wang (2012, JFE)		Sum of capital expenditures and R&D expenses↓	The results hold for financially constrained firms	Correlation
Almeida, Fos and Kronlund (2016, JFE)		Employment↓ Capital expenditures↓ R&D expense↓	The results hold for repurchases motivated by earnings management considerations	RDD (compare firms that "just miss" the EPS consensus forecast (the treatment group) with firms that "just beat" the consensus forecast (the control group))
Aboody, Kasznik and Williams (2000, JAE)	M&A	Pooling-of-interests acquisitions↓		Correlation
Grullon and Michaely (2004, JF)	Performance & Profitability	Operating performance (ROA)→ Profitability→		Correlation

Comparison with Findings of Prior Studies (Cont.)

Lie (2005, JAE)	Performance & Profitability	Operating performance↑	The results hold for the firms that actually repurchase shares during the same fiscal quarter	Correlation
Gong, Louis and Sun (2008, JF)		Operating performance↑ Profitability→		Correlation
Chen and Wang (2012, JFE)		Operating performance↓	The results hold for financially constrained firms	Correlation
Comment and Jarrell (1990, JF)	Market reaction (Stock returns)	Abnormal stock returns (short-term)↑		Correlation
Ikenberry, Lakonishok and Vermaelen (1995, JFE)		Abnormal stock returns (long-term)↑		Correlation
Barth and Kasznik (1999, JAE)		Abnormal stock returns↑	The results hold for firms with more intangible assets	Correlation
Chen and Wang (2012, JFE)		Abnormal stock returns↓	The results hold for financially constrained firms	Correlation
Chen and Huang (2013, JFQA)		Less of a positive market reaction to repurchase announcements in the post-SOX period		Event study (Sarbanes-Oxley Act)
Ben-Rephael, Oded and Wohl (2014, RoF)		Abnormal stock returns↑		Correlation
Cheng, Harford, Zhang (2015, JFQA)		EPS↑ Abnormal stock returns→	The results hold for repurchasing Firms with CEO Bonus Tied to EPS	Propensity score matching
Dittmar and Field (2015, JFE)		Abnormal stock returns↑ Buy-and-hold return↑		Correlation

Conclusion

- We utilize the staggered share repurchases legalization in 17 markets to explore the causal impact of share repurchases on firm value and behaviors.
- For share-repurchasing firms:
  - Payout: Do not cut dividends
  - Source: Use internal instead of external financing
  - Reallocation: Reduce capex and R&D
  - Return: Increase stock return
  - Value: Increase short-run but reduce long-run firm value
- Some of our results from the new identification are consistent with the literature, while others differ, calling for more discussion in future research.