Internet Appendix for

"Repurchases for Price Impact: Evidence from Fragile Stocks"

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This internet appendix presents additional results to complement those presented in the main manuscript.

Part A presents additional robustness tests.

- Table IA.1 presents the robustness tests for Tables 2 and 3.
- Table IA.2 presents probit regressions to predict treatment status both before and after propensity score matching.
- Table IA.3 presents validation tests for our sample of treatment and control stocks.
- Table IA.4 presents robustness tests to assess possible biases in staggered DiD estimates.
- Table IA.5 presents complimentary evidence from another natural experiment.
- Table IA.6 examines the propensity of treated firms to execute repurchases via tender offers.
- Table IA.7 presents robustness tests for Table 6 using alternative liquidity measures.
- Table IA.8 presents additional estimates for Table 7 on short- and long-run valuation effects with interaction terms for tender offer repurchases.
- Table IA.9 presents additional tests for Table 7 using CARs on repurchase versus non-repurchase days.
- Table IA.10 presents robustness tests for Tables 5 to 9 using an alternative definition of the treatment variable.
- Table IA.11 presents robustness tests for Table 11 using an alternative measure for CEO trading decisions.

Part B presents additional tests and discussion of possible alternative interpretations and alternative empirical designs, as indicated in Section VII.B. This part includes discussion and 3 additional tables:

- Table IA.12 presents additional tests using cross-sectional differences in pre-merger ownership characteristics.
- Table IA.13 presents additional tests to address an alternative interpretation of our results based on changes in firm governance.
- Table IA.14 presents the main results using alternative empirical designs (i.e., assigning the treatment status based on realized changes in fragility rather than the original treatment variable of MSW or using an instrumental variable instead of a difference-in-difference approach).

PART A: Additional Robustness Tests

Table IA.1. Fragility Tests: Robustness

This table presents robustness tests for Table 2 and Table 3. Panel A presents the results of the relation between total volatility, illiquidity, and fragility quintiles. Panel B presents the results of the relation between repurchase, capital expenditures, and fragility quintiles. *Fragility Q5* are the fragility quintiles transformed from the continuous form of fragility computed based on the holdings of all funds in FactSet (i.e., including open-end and non-open-end funds) as in Massa, Schumacher, and Wang (2021). All regressions follow specifications in Table 2 and 3. ***/**/* indicate statistical significance at the 10% / 5% / 1% level respectively, computed from standard errors that allow for clustering at the stock level.

Panel A: Fragility quintiles, volatility and liquidity

	(1) Total Volatility	(2) Total Volatility	(3) Total Volatility	(4) Amihud	(5) Amihud	(6) Amihud	(7) Spread	(8) Spread	(9) Spread
Fragility Q5	0.0053***	0.0054***	0.0017**	-0.0362***	-0.0367***	-0.0112***	-0.0006***	-0.0005***	-0.0004***
	(6.14)	(6.95)	(2.18)	(-12.76)	(-12.95)	(-4.93)	(-8.11)	(-8.04)	(-4.81)
Firm size	-0.0255***	-0.0259***	-0.0289***	-0.1130***	-0.1148***	-0.1253***	-0.0024***	-0.0025***	-0.0026***
	(-34.92)	(-37.97)	(-12.04)	(-50.01)	(-50.08)	(-19.58)	(-44.92)	(-45.57)	(-12.78)
Log(B/M)	0.0242***	0.0029**	0.0212***	0.1183***	0.1054***	0.1115***	0.0026***	0.0020***	0.0029***
	(17.10)	(2.20)	(11.65)	(28.77)	(25.02)	(22.82)	(23.55)	(18.65)	(18.47)
Cash flow	-0.1372***	-0.1663***	-0.0815***	-0.0840***	-0.0750***	-0.2459***	-0.0046***	-0.0047***	-0.0048***
	(-20.72)	(-27.88)	(-11.47)	(-4.34)	(-3.86)	(-12.14)	(-7.47)	(-7.78)	(-6.87)
IO	-0.0782***	-0.0915***	-0.0748***	-0.2691***	-0.2712***	-0.1769***	-0.0048***	-0.0055***	-0.0007
	(-12.63)	(-15.85)	(-7.91)	(-14.04)	(-14.06)	(-7.43)	(-10.34)	(-12.09)	(-0.98)
Age	-0.0201***	-0.0190***	-0.0133***	0.0294***	0.0289***	0.0388***	0.0003***	0.0003***	0.0005**
	(-18.56)	(-19.11)	(-4.80)	(9.92)	(9.64)	(5.72)	(4.24)	(3.77)	(2.49)
Cash holdings	0.0410***	0.0230***	-0.0201***	-0.1166***	-0.1248***	-0.0976***	-0.0021***	-0.0026***	-0.0032***
	(10.48)	(6.76)	(-4.80)	(-12.05)	(-12.78)	(-9.86)	(-7.89)	(-9.76)	(-8.67)
Leverage	0.0867***	0.0756***	0.0726***	0.1192***	0.1165***	0.0827***	0.0025***	0.0025***	0.0022***
	(18.25)	(17.52)	(12.36)	(9.40)	(9.18)	(6.08)	(8.03)	(7.99)	(5.02)
Dividend	-0.4248***	-0.5696***	-0.1739***	-0.1220	-0.2161***	-0.4572***	-0.0030	-0.0085***	-0.0064**
	(-14.06)	(-21.07)	(-6.67)	(-1.63)	(-2.87)	(-5.28)	(-1.55)	(-4.42)	(-2.56)
Mom	-0.0337***	0.0208***	0.0225***	-0.0472***	-0.0443***	-0.0367***	-0.0022***	-0.0010***	-0.0006***
	(-25.67)	(17.64)	(19.02)	(-17.24)	(-14.39)	(-13.15)	(-25.34)	(-11.56)	(-6.47)
Country F.E.	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No
Industry F.E.	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No
Year F.E.	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Stock F.E.	No	No	Yes	No	No	Yes	No	No	Yes
N	61,123	61,123	61,123	61,123	61,123	61,123	61,123	61,123	61,123
adj. R^2	0.27	0.54	0.72	0.37	0.38	0.72	0.23	0.24	0.60

Panel B: Fragility quintiles, repurchase, and CAPEX

	(1) Repurchase	(2) Repurchase	(3) Repurchase	(4) CAPEX	(5) CAPEX	(6) CAPEX
Fragility Q5	-0.0016***	-0.0016***	-0.0012***	0.0036***	0.0037***	0.0015***
	(-9.51)	(-9.40)	(-6.06)	(7.85)	(8.18)	(3.29)
Firm size	0.0003	0.0003*	0.0030***	-0.0059***	-0.0055***	-0.0311***
	(1.54)	(1.82)	(5.05)	(-14.91)	(-13.92)	(-18.00)
Log(B/M)	-0.0078***	-0.0078***	-0.0052***	-0.0086***	-0.0070***	-0.0086***
	(-18.92)	(-18.13)	(-10.83)	(-12.02)	(-9.28)	(-9.27)
Cash flow	0.0345***	0.0341***	0.0164***	0.1008***	0.0972***	0.0556***
	(18.78)	(18.25)	(7.45)	(20.46)	(19.81)	(12.37)
IO	0.0267***	0.0264***	0.0126***	-0.0009	-0.0020	0.0315***
	(16.69)	(16.46)	(4.30)	(-0.27)	(-0.65)	(6.10)
Age	0.0010***	0.0010***	0.0024***	-0.0058***	-0.0058***	-0.0063***
	(4.13)	(4.09)	(3.54)	(-9.05)	(-8.88)	(-3.69)
Cash holdings	0.0002	0.0002	-0.0038***	0.0033	0.0037	0.0138***
	(0.25)	(0.20)	(-3.21)	(0.99)	(1.10)	(3.11)
Leverage	-0.0174***	-0.0174***	-0.0295***	0.0222***	0.0224***	-0.0278***
	(-16.01)	(-16.00)	(-16.77)	(8.04)	(8.12)	(-8.23)
Dividend	-0.0318***	-0.0321***	-0.0202**	-0.1572***	-0.1479***	0.0578***
	(-3.66)	(-3.66)	(-2.00)	(-10.38)	(-9.78)	(3.62)
Mom	-0.0035***	-0.0029***	-0.0012***	0.0027***	0.0063***	0.0001
	(-15.31)	(-10.99)	(-4.48)	(4.16)	(8.12)	(0.09)
Country F.E.	Yes	Yes	No	Yes	Yes	No
Industry F.E.	Yes	Yes	No	Yes	Yes	No
Year F.E.	No	Yes	Yes	No	Yes	Yes
Stock F.E.	No	No	Yes	No	No	Yes
N	61,123	61,123	61,123	61,123	61,123	61,123
adj. R^2	0.17	0.17	0.42	0.25	0.26	0.63

Table IA.2. Propensity Score Matching: Robustness

This table presents additional estimates from a Probit model that predicts treatment status based on observable characteristics both before and after propensity score matching. * / ** / *** indicate statistical significance at the 10% / 5% / 1% level respectively. Standard errors are clustered at the firm level.

	Before matching	After matching
Dependent variable	Treat = 1	Treat = 1
Firm size	0.2225***	0.0271
	(17.55)	(1.34)
Log(B/M)	-0.0259	-0.0155
	(-1.08)	(-0.39)
Cash flow	0.4717***	0.1004
	(3.13)	(0.37)
IO	1.7285***	0.1832
	(17.55)	(1.03)
Age	0.0540***	0.0112
	(2.78)	(0.34)
Cash holdings	0.5134***	-0.0072
	(6.19)	(-0.05)
Leverage	-0.2493***	-0.2337
	(-3.25)	(-1.64)
Dividend	-0.8435	-1.6310
	(-1.32)	(-1.70)
Mom	-0.0175	0.0885
	(-0.62)	(1.63)
Industry F.E.	Yes	Yes
Country F.E.	Yes	Yes
Observations	9,493	4,343
Pseudo R^2	0.190	0.032

Table IA.3. Validation Tests: Changes in Fragility, Illiquidity, and Volatility and Ownership Composition Changes Around the Mergers

This table presents the test results of changes in fragility and illiquidity around the merger events in Panel A. All variables are defined in Table 1 and all regressions follow the specifications in Equation (2) and use $\sqrt{Fragility}$, *Amihud*, *Spread*, or *Volatility* as dependent variables. Panel B presents test results of changes in ownership composition around the merger events. All regressions follow the specification in Columns 1/3/5/7 of Panel A but use ownership variables as dependent variables. *IO* is the total institutional ownership. *IO Short-term* is the ownership of funds with portfolio turnover in the top quartile. *IO Long-term* is the total institutional ownership deducting *IO Short-term*. *Average Portfolio Turnover* is the average portfolio turnover aggregated at the firm-level. ***/**/* indicate statistical significance at the 10% / 5% / 1% level respectively, computed from standard errors that allow for clustering at the stock level.

Panel A: Changes in Fragility, Illiquidity, and Volatility

Dep. Var.:	(1) $\sqrt{Fragility}$	(2) $\sqrt{Fragility}$	(3) Amihud	(4) Amihud	(5) Spread	(6) Spread	(7) Total Volatility	(8) Total Volatility
POST x Treat	-0.0231**		0.0133***		0.0008***		-0.0155**	
	(-2.02)		(2.79)		(4.82)		(-2.22)	
Before1 x Treat		-0.0027		-0.0013		-0.0002		-0.0031
		(-0.25)		(-0.17)		(-0.91)		(-0.38)
After1 x Treat		-0.0225*		0.0137***		0.0007***		-0.0162**
		(-1.67)		(2.62)		(4.58)		(-2.10)
After2 x Treat		-0.0254*		0.0117*		0.0006***		-0.0161*
		(-1.68)		(1.87)		(3.35)		(-1.65)
Before1		-0.0269		0.3316***		0.0128***		-0.0727*
		(-0.56)		(5.07)		(8.98)		(-1.91)
After1		-0.1114		0.2201***		0.0031**		0.0199
		(-1.49)		(5.18)		(2.47)		(0.43)
After2		-0.2221**		0.2391***		0.0023		-0.1470**
		(-2.43)		(5.28)		(1.60)		(-2.51)
POST	-0.1317**		0.0694		-0.0043***		0.0096	
	(-2.13)		(1.47)		(-3.17)		(0.25)	
Treat	0.0134*	0.0150	-0.0075***	-0.0068*	-0.0004***	-0.0003**	0.0157***	0.0170***
	(1.68)	(1.47)	(-2.79)	(-1.67)	(-4.21)	(-2.46)	(3.49)	(2.87)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Deal F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	17,723	17,723	17,723	17,723	17,723	17,723	17,723	17,723
adj. R^2	0.62	0.62	0.55	0.57	0.66	0.68	0.65	0.66

Panel B: Ownership Composition Changes

	(1) IO	(2) IO Short-term	(3) IO Long-term	(4) Average Portfolio Turnover
POST x treat	0.0064	-0.0036***	0.0083**	-0.0032**
	(1.27)	(-3.70)	(2.33)	(-2.15)
Treat	-0.0030	0.0036***	-0.0050*	0.0451***
	(-0.93)	(3.15)	(-1.76)	(13.87)
POST	0.0315	-0.0038	-0.0523***	0.0140
	(1.15)	(-0.64)	(-2.69)	(1.35)
Controls	Yes	Yes	Yes	Yes
Deal F.E.	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes
N	17,629	17,629	17,629	16,513
adj. R^2	0.71	0.54	0.96	0.66

Table IA.4. Robustness Test: Assessing biases in staggered difference-in-difference estimates

This table presents robustness tests to assess potential biases arising in staggered difference-in-difference estimation as highlighted in recent literature in econometrics, especially in the presence of heterogeneous treatment effects that can confound the causal interpretation of estimates in the standard two-way fixed effect specification (e.g., Callaway and Sant'Anna (2021), Sun and Abraham (2021)). We examine the main result presented in Table 5, Column 5. Column 1 repeats the specification but limits the sample to the largest asset management merger in the sample, i.e., the merger of BlackRock with BGI in 2009. This merger alone affected such a large cross-section of stocks that we can implement our tests with sufficient empirical power. Given that it is a single event, there are no confounding events from other stocks in the regression. We replicate the main positive effect on share repurchases for this single merger. Columns 2 and 3 repeat the specification of Table 5, and Column 5 but add more stringent firm × event or year × event fixed effects to create a "stacked event study design" and find our results hold. Columns 4 and 5 implement a "stacked" estimator similar to Cengiz et al. (2019) for which we create a dataset for each asset management merger in our matched sample, estimate the main specification separately "event-by-event", and then report the average difference-in-difference estimate across all those "events". Column 4 presents this estimate using the same sample as in Table 5, Column 5 while column 4 further excludes all firms that are designated as "treated" in one merger-event but as "control" in another merger-event with an overlapping event window. Again, our main effect replicates. We conclude that possible biases from heterogenous treatment effects in staggered difference-in-difference designs do not affect our main result.

	(1) Repurchase	(2) Repurchase	(3) Repurchase	(4) Repurchase	(5) Repurchase
POST x Treat	0.0052*	0.0055***	0.0055***	0.0046**	0.0076**
	(1.78)	(4.15)	(4.18)	(2.55)	(2.20)
Treat			-0.0018*		
			(-1.70)		
POST	-0.0506***	-0.0171**			
	(-3.30)	(-2.53)			
Controls	Yes	Yes	Yes	Yes	Yes
Deal F.E.	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes
Firm × Event F.E.		Yes			
Year × Event F.E.			Yes		
N	6,386	17,723	17,723	17,723	14,550
adj. R^2	0.59	0.50	0.59	0.48	0.47

Table IA.5: Complementary Evidence from the 2016 Tick Size Pilot Program

In this table, we present and discuss complementary evidence from 2016 Tick Size Pilot Program to further. Our main results in Table 5 are based on the same sample of natural experiments as in MSW but focus on how treatment status affects a different corporate outcome, particularly share repurchases. Heath et al. (2023) argue that such "reusing" of natural experiments creates a multiple testing problem. These authors recommend different cut-off values for t-statistics. Their recommended cut-off values for t-statistics at the customary 5% confidence level fall in the range of 2.5 to 3.0 when 5 to 20 alternative outcome variables have already been tested, about 3.4 when 100 alternative outcome variables have been tested, and a maximum reported cut-off value of 3.69 when 293 prior tests have used the natural experiment. Among the estimated t-statistics in Table 5, columns 1 to 5, the smallest one is a t-statistic of 3.82 (our column 4) which is well above the maximum cut-off of 3.69 reported in Heath et al. (2023), indicating that our main result is robust to a possible multiple testing bias, even when accounting for the fact that asset management mergers have been used as natural experiments in other studies, not just in MSW. Having said that and as a preview of upcoming tests in which we use some additional outcome variables in similarly structured tests (e.g., Tables 8 and 9), we find that our estimated *t*-statistics are, for the most part, at or above cut-off values if one limits the discussion to the studies that use the merger sample employed here (i.e., MSW and Luo, Manconi, and Schumacher (2023)) with a few instances where they fall slightly below. However, in a broad interpretation of Heath et al. (2023) that would include all studies in which (some) asset management mergers are used as a natural experiment (including different sample, different time periods, different geographies, etc), some of our later tests fall below the recommended cut-off. For example, we use sub-sample tests (Tables 6 and 7) that use a similar specification as Table 5 but on specific sub-samples of e.g., repurchasing firms only. We also modify our specifications, explore different dimensions of cross-sectional heterogeneity to improve testing of specific empirical predictions of our hypothesis (e.g., Tables 10 to 12) or use an alternative definition of our treatment variable (Table IA.10).

Another remedy to assess multiple testing biases from reusing natural experiments, as suggested in Heath et al. (2023), is complementary evidence from an alternative test setting. We seek to provide such evidence from another experiment that past literature has shown to affect repurchase behavior: the 2016 Tick Size Pilot Program in which the Securities and Exchange Commission (SEC) in the US randomly selected 1,200 treatment and 1,199 control stocks. For treated stocks, the program increased their tick size from 1 to 5 cents. Li, Ye, and Zheng (2023, LYZ hereafter) show that this led to a large increase in dealer competition at wider tick sizes for treated firms, which, in turn, led to a sharp reduction in repurchases. We adopt this setting and test if the reduced incentives to repurchase because of an exogenous increase in dealer competition at wider tick sizes has a stronger impact on those firms who a priori benefit less from repurchases: the more fragile firms. Fragile firms are also the ones that have less price impact power to offset the shock to dealer competition, implying that we expect the results of LYZ to be concentrated for fragile firms. We collect the same sample of treated and control stocks and perform two tests, both of which are presented in the table below. Specifically, the sample includes 595 treated and 605 control stocks designated by the tick size program following the sample selection process of Li, Ye, and Zheng (2023) and matching to our sample of US stocks. Columns 1 and 4 use the full sample of treated and control stocks, columns 2 and 5 restrict the sample to "tick-constrained" stocks whose pre-experiment tick sizes were below 5 cent and columns 3 and 6 use the remaining sample of "tick-unconstrained" stocks. The vector *Controls* includes the same control variables as in previous tests and the use of fixed effects is indicated at the bottom of the panel. Columns 4 to 6 augment the specification with a triple interaction with $\sqrt{Fragility_{2016Q2}}$ which is a measurement of each stocks fragility as in Table 2 as of June 2016, the last quarter prior to the implementation of the tick size pilot. All specifications include the same vector of firm level controls as before as well as firm and year fixed effects. * / ** / *** indicate statistical significance at the 10% / 5% / 1% level respectively, computed from standard errors that cluster at the firm level.

Our findings are as follows: In columns 1 to 3, we first replicate the main finding of LYZ: in column 1, we confirm the negative effect of the treatment status on repurchases. In columns 2 and 3, we split the sample into tick-constrained versus tick-unconstrained firms, where constrained firms are those whose tick size was below 5 cents prior to the pilot program, i.e., firms for whom the treatment status actually had an effect. As in LYZ, we find the result to be entirely concentrated in the tick-constrained sample. In columns 4 to 6 of the same table, we develop

their test along the dimension of interest of our paper and explore cross-sectional heterogeneity in the treatment response for more versus less fragile stocks. We use each stock's fragility as of 2016-Q2 (the last quarter before the start of the pilot program) in the same way as in Table 3 and augment the specification with triple interaction terms. The estimates in column 4 show that the results of LYZ are pronounced for fragile stocks – such firms reduce their repurchases by more. Columns 5 and 6 again confirm that this result is entirely concentrated in the sub-sample of tick-constrained firms. We therefore conclude that fragility impacts the incentives to initiate share repurchases in the direction we expected and in line with our working hypothesis.

Sample	(1) All Stocks	(2) Constrained	(3) Unconstrained	(4) All Stocks	(5) Constrained	(6) Unconstrained
Dep. Var.:	Repurchase	Repurchase	Repurchase	Repurchase	Repurchase	Repurchase
POST x Treat x $\sqrt{Fragility_{2016Q2}}$				-0.0114**	-0.0119**	0.0075
				(-2.00)	(-2.03)	(1.02)
POST x Treat	-0.0031***	-0.0039***	-0.0005	-0.0027***	-0.0031***	-0.0008
	(-3.51)	(-3.55)	(-0.40)	(-2.74)	(-2.72)	(-0.41)
POST x $\sqrt{Fragility_{2016Q2}}$				0.0025*	0.0027**	0.0012
				(1.91)	(2.07)	(0.23)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes
N	16,569	11,654	4,915	14,894	11,650	3,244
adj. R^2	0.44	0.44	0.44	0.44	0.44	0.46

Table IA.6. Propensity to Conduct Tender Offer Repurchases

This table examines the propensity of treated firms to execute their repurchases via tender offers. The sample includes all the share repurchase announcements from SDC Platinum matched to the difference-in-difference sample and the dependent variable $Tender\ Offer_{fdt}$ is an indicator equal if the repurchase is executed via a tender offer and 0 otherwise. All other specifications are unchanged. * / ** / *** indicate statistical significance at the 10% / 5% / 1% level respectively, computed from standard errors that cluster at the firm level.

Dep. Var.:	(1) Tender Offer	(2) Tender Offer	(3) Tender Offer	(4) Tender Offer	(5) Tender Offer
POST x Treat	0.0231*	0.0253**	0.0241**	0.0147**	0.0157**
	(1.79)	(2.26)	(2.26)	(2.16)	(2.24)
Treat	-0.0119	-0.0094	-0.0082	-0.0117**	-0.0119**
	(-1.00)	(-0.98)	(-0.91)	(-2.01)	(-2.05)
POST	-0.0182	0.0020	0.0029	0.0353	0.0189
	(-1.60)	(0.03)	(0.04)	(0.37)	(0.20)
Controls	No	Yes	Yes	Yes	Yes
Deal F.E.	No	No	No	No	Yes
Firm F.E.	No	No	No	Yes	Yes
Year F.E.	No	No	Yes	No	Yes
N	4,117	4,096	4,096	4,096	4,096
adj. R^2	0.00	0.01	0.02	0.24	0.25

Table IA.7. Liquidity Effects: Using *Turnover* or *Log(Trading Volume)*

This table presents robustness tests for Table 6 but uses *Turnover* (Panel A) or *Log(Trading Volume)* (Panel B) as alternative liquidity measures. All other specifications are unchanged.

Panel A: Turnover

	(1)	(2)	(3)	(4)	(5)
Event Window	1-month	3-month	6-month	12-month	24-month
Dep. Var.	ΔTurnover	ΔTurnover	ΔTurnover	ΔTurnover	ΔTurnover
POST x Treat	0.0000	-0.0006	-0.0005	-0.0003	0.0005
	(0.06)	(-1.34)	(-1.05)	(-0.64)	(0.70)
Treat	-0.0003	0.0005	0.0005*	0.0005	0.0001
	(-0.50)	(1.52)	(1.73)	(1.11)	(0.22)
POST	0.0018	0.0059*	0.0078**	0.0067*	0.0086*
	(0.43)	(1.73)	(2.39)	(1.79)	(1.91)
Controls	Yes	Yes	Yes	Yes	Yes
Deal F.E.	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes
N	4,089	4,089	4,073	3,982	3,281
adj. R^2	0.24	0.37	0.42	0.45	0.60

Panel B: Log(Trading Volume)

	(1)	(2)	(3)	(4)	(5)
Event Window	1-month	3-month	6-month	12-month	24-month
Dep. Var.	ΔLog(Trade Vol.)	ΔLog(Trade Vol.)	ΔLog(Trade Vol.)	ΔLog(Trade Vol.)	ΔLog(Trade Vol.)
POST x Treat	-0.0311	-0.0817**	-0.0627	-0.0402	0.0231
	(-0.69)	(-2.15)	(-1.64)	(-1.20)	(0.48)
Treat	0.0159	0.0496**	0.0445*	0.0248	0.0068
	(0.54)	(2.06)	(1.75)	(1.00)	(0.23)
POST	-0.2153	0.1507	0.2282	0.3986	0.4311
	(-0.64)	(0.61)	(1.05)	(1.58)	(1.20)
Controls	Yes	Yes	Yes	Yes	Yes
Deal F.E.	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes
N	4,089	4,089	4,073	3,982	3,281
adj. R^2	0.29	0.40	0.53	0.67	0.72

Table IA.8. Short- and Long-Run Valuation Effects – Interaction terms with *Tender Offer*

This table presents additional estimations to accompany Table 7, Panels A and B. Interaction terms with the *Tender Offer* indicator are added. All other specifications are unchanged.

Panel A: Short-Run Cumulative Abnormal Returns & Tender Offers

	(1)	(2)	(3)	(4)	(5)	(6)
Event Window	1-day	1-day	1-day	3-day	3-day	3-day
Benchm adj.	Market	Industry	DGTW	Market	Industry	DGTW
POST x Treat ×	0.0570***	0.0572***	0.0582***	0.0382*	0.0372*	0.0414**
Tender Offer	(2.88)	(3.81)	(3.10)	(1.80)	(1.90)	(1.98)
Treat × Tender	-0.0615***	-0.0593***	-0.0619***	-0.0583***	-0.0588***	-0.0599***
Offer	(-3.74)	(-4.29)	(-3.95)	(-3.01)	(-3.58)	(-3.21)
Post × Tender	-0.0331**	-0.0331**	-0.0341**	0.0139	0.0182	0.0108
Offer	(-2.24)	(-2.46)	(-2.56)	(1.02)	(1.18)	(0.82)
Tender Offer	0.0411***	0.0412***	0.0411***	0.0207	0.0130	0.0224*
	(2.91)	(3.23)	(3.09)	(1.50)	(1.15)	(1.78)
POST x Treat	0.0046*	0.0061**	0.0056**	0.0088**	0.0083**	0.0099**
	(1.68)	(2.32)	(2.03)	(2.03)	(2.06)	(2.20)
Treat	-0.0019	-0.0029*	-0.0026	-0.0045	-0.0041	-0.0062*
	(-1.00)	(-1.68)	(-1.40)	(-1.44)	(-1.44)	(-1.94)
POST	0.0070	0.0060	0.0098	0.0272	0.0289	0.0340
	(0.31)	(0.29)	(0.44)	(0.80)	(0.86)	(1.00)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Deal F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes
N	3,753	3,749	3,704	3,738	3,733	3,690
adj. R^2	0.32	0.32	0.33	0.33	0.31	0.34

Panel B: Long-Run Cumulative Abnormal Returns & Tender Offers

	(1)	(2)	(3)	(4)	(5)	(6)
Horizon	12 months	12 months	12 months	24 months	24 months	24 months
Benchm adj.	Market	Industry	DGTW	Market	Industry	DGTW
POST x Treat ×	0.3265***	0.2389**	0.3458***	0.2979**	0.1966*	0.2839**
Tender Offer	(2.97)	(2.20)	(2.65)	(2.29)	(1.87)	(2.40)
Treat × Tender	-0.0894	-0.0425	-0.0772	-0.1434	-0.0757	-0.1214
Offer	(-0.93)	(-0.50)	(-0.81)	(-1.47)	(-0.87)	(-1.32)
Post × Tender	-0.2439***	-0.1358*	-0.2909***	-0.2812***	-0.1002	-0.2602***
Offer	(-4.06)	(-1.91)	(-3.28)	(-2.97)	(-1.31)	(-2.95)
Tender Offer	0.1028*	0.0156	0.1081**	0.1709**	0.0309	0.1855***
	(1.89)	(0.30)	(2.18)	(2.24)	(0.44)	(2.67)
POST x Treat	0.0719***	0.0420*	0.0620**	0.0672*	0.0616*	0.0552
	(2.70)	(1.74)	(2.26)	(1.87)	(1.81)	(1.36)
Treat	-0.0363*	-0.0155	-0.0365*	-0.0255	-0.0188	-0.0255
	(-1.88)	(-0.89)	(-1.82)	(-0.92)	(-0.74)	(-0.83)
POST	-0.2248	-0.2135	-0.2126	-0.2446	-0.1870	-0.3313
	(-1.41)	(-1.47)	(-1.24)	(-1.09)	(-0.87)	(-1.47)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Deal F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes
N	4,043	4,043	3,970	3,909	3,909	3,807
adj. R^2	0.46	0.47	0.47	0.54	0.52	0.56

Table IA.9. Valuation Effects: Abnormal returns on Actual Repurchase vs Non-Repurchase Days

To complement the analysis of CARs around repurchase announcement dates of Table 7, we collect information on the actual repurchase days during which firms repurchase their shares. For each repurchase announcement, SDC designates time periods over which each firm performs the actual repurchases. For some firms, this may include several time windows following an announcement, sometimes with gaps in between. We take advantage of this more granular data to examine abnormal returns on actual repurchase days versus non-repurchase days. For 65% of the repurchase announcements, the actual repurchases begin with the announcement date and for another 18% of the announcements, the actual repurchases begin within 1 week of the announcement date. On average, about 80% of trading days in each repurchase program are designated as repurchase days, suggesting that the results of Table 7 are likely dominated by abnormal returns on actual repurchase days, a conjecture we now test. We compute the average daily abnormal returns on the actual repurchase days as well as on the non-repurchase days in the same manner as before. For non-repurchase days, we include a 30-day window prior to the first actual repurchase day and a 30-day window following the last actual repurchase day and also include any non-repurchase days (if any) in between. We estimate the same specification as before, separately for repurchase and non-repurchase days. The table below examines average daily abnormal returns on actual repurchase days (columns 1 to 3) versus non-repurchase days (columns 4 to 6). The sample and specification are as in Table 7 but daily abnormal returns are not computed around the repurchase announcement dates but instead on the actual time periods during which firms repurchase shares. For each repurchase announcement, we compute average daily abnormal returns on actual repurchase days and we also compute average daily abnormal returns on non-repurchase days. For non-repurchase days, we include a 30-day window before the first actual repurchase day and a 30-day window after the last repurchase day and also include non-repurchase days in between actual repurchase days (if any) as companies at times execute repurchases over several time periods with non-repurchasing windows in between. * / ** / *** indicate statistical significance at the 10% / 5% / 1% level respectively, computed from standard errors that cluster at the firm level. We find significant positive average daily abnormal returns for treated firms in the post-merger periods on repurchase days only (columns 1 to 3) but no effect during non-repurchase days (columns 4 to 6 of the same table). This substantiates our conjecture that the results in Table 7 are driven by repurchase days.

Sample	**Repurchase Days**			**Non-Repurchase Days**		
	(1)	(2)	(3)	(4)	(5)	(6)
Benchm adj.	Market	Industry	DGTW	Market	Industry	DGTW
POST x Treat	0.0009***	0.0008**	0.0009***	-0.0007	-0.0005	-0.0007
	(2.63)	(2.28)	(2.88)	(-1.61)	(-1.30)	(-1.59)
Treat	-0.0008*	-0.0006	-0.0008*	0.0007**	0.0004	0.0007**
	(-1.69)	(-1.46)	(-1.81)	(2.37)	(1.61)	(2.42)
POST	-0.0039*	-0.0029	-0.0038*	0.0022	0.0011	-0.0000
	(-1.88)	(-1.39)	(-1.84)	(0.75)	(0.45)	(-0.01)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Deal F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes
N	3,765	3,764	3,724	3,464	3,463	3,435
adj. R^2	0.16	0.15	0.16	0.33	0.31	0.34

Table IA.10. Robustness Tests: Alternative Treatment Definition

This table presents robustness tests for the main results presented in Sections IV and V (Tables 5 to 9). Stocks are now assigned to the treatment group based on the alternative treatment variable $IO\ Total_{df} = IO\ Acq_{df} + IO\ Targ_{df}$ and the control group is then re-constructed accordingly following the same procedure as in the main test. All other specifications are unchanged.

Panel A: Table 5, Panel A with alternative treatment definition

	(1) Repurchase	(2) Repurchase	(3) Repurchase	(4) Repurchase	(5) Repurchase	(6) Repurchase
POST x Treat	0.0050***	0.0043***	0.0042***	0.0046***	0.0046***	
	(3.64)	(2.85)	(2.86)	(2.93)	(3.00)	
Before1 x Treat						0.0026
						(1.31)
After1 x Treat						0.0060***
						(2.76)
After2 x Treat						0.0062***
						(2.75)
Before1						0.0182***
						(3.31)
After1						-0.0018
						(-0.19)
After2						-0.0019
						(-0.17)
POST	-0.0036***	-0.0078*	0.0046	-0.0112*	-0.0168**	
	(-3.20)	(-1.75)	(0.91)	(-1.87)	(-2.44)	
Treat	-0.0023	-0.0032**	-0.0032**	-0.0022*	-0.0028**	-0.0042**
	(-1.53)	(-2.28)	(-2.26)	(-1.88)	(-2.34)	(-2.41)
Controls	No	Yes	Yes	Yes	Yes	Yes
Deal F.E.	No	No	No	No	Yes	Yes
Firm F.E.	No	No	No	Yes	Yes	Yes
Year F.E.	No	No	Yes	No	Yes	Yes
N	20,968	19,313	19,313	19,313	19,313	19,313
adj. R^2	0.00	0.21	0.22	0.54	0.55	0.55

Panel B: Table 5, Panel B with alternative treatment definition

	(1) Dividend	(2) Dividend	(3) Dividend	(4) Dividend	(5) Dividend	(6) Dividend
POST x Treat	0.0010	0.0007	0.0007	0.0009	0.0009	
	(1.20)	(0.82)	(0.85)	(1.06)	(1.13)	
Before1 x Treat						-0.0010
						(-1.37)
After1 x Treat						-0.0001
						(-0.14)
After2 x Treat						0.0009
						(0.82)
Before1						0.0004
						(0.17)
After1						-0.0021
						(-0.36)
After2						-0.0043
						(-0.59)
POST	-0.0009	-0.0006	-0.0020	-0.0104**	-0.0042	
	(-1.18)	(-0.17)	(-0.49)	(-2.20)	(-0.76)	
Treat	-0.0011	-0.0004	-0.0004	-0.0012**	-0.0010*	-0.0005
	(-1.06)	(-0.43)	(-0.46)	(-2.05)	(-1.71)	(-0.68)
Controls	No	Yes	Yes	Yes	Yes	Yes

Deal F.E.	No	No	No	No	Yes	Yes
Firm F.E.	No	No	No	Yes	Yes	Yes
Year F.E.	No	No	Yes	No	Yes	Yes
Observations	20,968	19,313	19,313	19,313	19,313	19,313
Adjusted R^2	0.00	0.23	0.23	0.72	0.72	0.72

Panel C: Table 6, Panel A with alternative treatment definition

	(1)	(2)	(3)	(4)	(5)
Event Window	1-month	3-month	6-month	12-month	24-month
Dep. Var.	ΔAmihud	ΔAmihud	ΔAmihud	ΔAmihud	ΔAmihud
POST x Treat	-0.0000	0.0000	0.0000	0.0000	0.0000
	(-0.16)	(0.34)	(0.81)	(1.52)	(0.31)
Treat	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
	(-0.41)	(-1.15)	(-1.47)	(-1.46)	(-0.65)
POST	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
	(-0.66)	(-1.30)	(-1.10)	(-1.06)	(-1.06)
Controls	Yes	Yes	Yes	Yes	Yes
Deal F.E.	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes
N	4,258	4,252	4,242	4,136	3,426
adj. R^2	0.92	0.91	0.91	0.84	0.92

Panel D: Table 7, Panel A with alternative treatment definition

	(1)	(2)	(3)	(4)	(5)	(6)
Event Window	1-day	1-day	1-day	3-day	3-day	3-day
Benchm adj.	Market	Industry	DGTW	Market	Industry	DGTW
POST x Treat	0.0062**	0.0079***	0.0068**	0.0117***	0.0127***	0.0123***
	(2.19)	(2.89)	(2.33)	(2.70)	(3.12)	(2.75)
Treat	-0.0041*	-0.0051***	-0.0046**	-0.0051*	-0.0052*	-0.0056*
	(-1.96)	(-2.59)	(-2.03)	(-1.65)	(-1.74)	(-1.74)
POST	-0.0096	-0.0193	-0.0111	0.0307	0.0253	0.0339
	(-0.45)	(-0.91)	(-0.52)	(1.06)	(0.89)	(1.16)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Deal F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes
N	3,901	3,906	3,857	3,892	3,890	3,852
adj. R^2	0.62	0.63	0.61	0.47	0.47	0.48

Panel E: Table 7, Panel B with alternative treatment definition

	(1)	(2)	(3)	(4)	(5)	(6)
Horizon	12 months	12 months	12 months	24 months	24 months	24 months
Benchm adj.	Market	Industry	DGTW	Market	Industry	DGTW
POST x Treat	0.0462*	0.0490*	0.0425	0.0915**	0.1136***	0.0858**
	(1.77)	(1.82)	(1.55)	(2.41)	(2.83)	(2.05)
Treat	-0.0218	-0.0213	-0.0215	-0.0577*	-0.0718**	-0.0516*
	(-1.11)	(-1.07)	(-1.05)	(-1.94)	(-2.42)	(-1.66)
POST	0.0054	0.0532	-0.0139	-0.1167	0.0811	-0.1498
	(0.03)	(0.29)	(-0.07)	(-0.38)	(0.28)	(-0.46)

Controls	Yes	Yes	Yes	Yes	Yes	Yes
Deal F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes
N	4,201	4,201	4,128	4,041	4,039	3,936
adj. R^2	0.47	0.46	0.47	0.54	0.51	0.56

Panel F: Table 8 with alternative treatment definition

	(1) Equityiss	(2) Chgstdebt	(3) Chgltdebt	(4) Chglev	(5) Chgcash
POST x Treat	-0.0048**	0.0005	0.0016	-0.0000	-0.0008
	(-2.22)	(0.65)	(0.52)	(-0.02)	(-0.33)
Treat	0.0012	-0.0003	-0.0015	0.0002	0.0013
	(0.79)	(-0.46)	(-0.66)	(0.25)	(0.61)
POST	0.0172	-0.0071	-0.0246	-0.0072	0.0204
	(1.32)	(-1.57)	(-1.52)	(-1.38)	(1.35)
Controls	Yes	Yes	Yes	Yes	Yes
Deal F.E.	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes
N	19,313	19,313	19,313	19,313	19,313
adj. R^2	0.44	0.07	0.27	0.07	0.35

Panel J: Table 9 with alternative treatment definition

Dependent variable	(1) CAPEX	(2) CAPEX	(3) CAPEX	(4) CAPEX	(5) CAPEX	(6) Total Investment	(7) Total Asset Growth
POST x	-0.0034**	-0.0050**	-0.0049**	-0.0044***	-0.0043***	-0.0057***	-0.0002
Treat	(-2.48)	(-2.42)	(-2.38)	(-3.00)	(-2.95)	(-2.70)	(-0.03)
POST	-0.0052***	0.0023	0.0055	-0.0040	-0.0040	-0.0004	-0.0666
	(-4.14)	(0.31)	(0.74)	(-0.64)	(-0.57)	(-0.03)	(-1.49)
Treat	-0.0002	0.0006	0.0006	0.0023**	0.0023**	0.0019	-0.0068
	(-0.10)	(0.30)	(0.26)	(2.30)	(2.32)	(1.28)	(-1.00)
Controls	No	Yes	Yes	Yes	Yes	Yes	Yes
Deal F.E.	No	No	No	No	Yes	Yes	Yes
Firm F.E.	No	No	No	Yes	Yes	Yes	Yes
Year F.E.	No	No	Yes	No	Yes	Yes	Yes
N	20,968	19,313	19,313	19,313	19,313	19,313	19,313
adj. R^2	0.00	0.09	0.10	0.77	0.77	0.71	0.51

Table IA.11. CEO Trading Decisions

This table repeats the estimation from Table 11 but uses as the dependent variable *Option Exer*, defined as the option value exercised by CEOs in a given year divided by the total market capitalization of the firm. All other specifications are unchanged.

	(1) Option Exer	(2) Option Exer	(3) Option Exer	(4) Option Exer	(5) Option Exer
POST x Treat	0.0002	0.0004*	0.0004**	0.0004*	0.0004*
	(1.31)	(1.93)	(1.98)	(1.93)	(1.93)
Treat	-0.0002	-0.0003*	-0.0004*	-0.0002	-0.0002
	(-0.85)	(-1.79)	(-1.83)	(-1.51)	(-1.35)
POST	-0.0010***	-0.0024**	-0.0018*	-0.0022*	-0.0030**
	(-5.75)	(-2.49)	(-1.80)	(-1.79)	(-2.29)
Controls	No	Yes	Yes	Yes	Yes
Deal F.E.	No	No	No	No	Yes
Firm F.E.	No	No	No	Yes	Yes
Year F.E.	No	No	Yes	No	Yes
N	8,282	8,250	8,250	8,250	8,250
adj. R^2	0.02	0.08	0.08	0.27	0.28

PART B: Discussion and additional tests of alternative explanations and alternative econometric designs

As indicated in Section VII.B, we present additional discussion and tests to rule out 3 alternative interpretations that could drive our results and also present alternative econometric designs.

Alternative Explanation 1: Cost of Capital Changes

One alternative interpretation of our results states that the changes in corporate policies are not induced by changes in liquidity that accompany changes in fragility but instead by changes in the firm's cost of capital: lower liquidity increases the cost of capital of treated firms (e.g., Amihud and Mendelson 1986, Acharya and Pederson 2005) which leads to a reduction in investment. Indeed, MSW not only document a decline in liquidity for treated firms but also a negative valuation effect. In turn, a reduction in investment then frees up cash and as such, treated firms increase repurchases to return excess cash to shareholders.

We argue that such a cost of capital channel appears unlikely for several reasons. First, the economic magnitudes of the results in MSW do not align with the valuation effects of the share repurchases we document here. Specifically, the negative stock price effects for treated firms that MSW document around these asset management mergers amount to about 0.5% - 1% over a 2-day event window using comparable benchmark-adjusted returns as we use here (their Table 6, Panel C) with no evidence of longer-run price declines after. In contrast, the repurchase announcements we document generate about the same positive abnormal returns upon the announcement and additional 4%-7% long-run positive returns which would seem to heavily overcompensate for the increase in the cost of capital suffered by treated firms. Second, while a higher cost of capital might explain a drop in investment, it is not clear that it will lead firms to immediately return cash to shareholders via repurchases. In fact, a higher cost of capital might

lead firms to accumulate cash instead in order to avoid having to raise financing in the future at a higher cost of capital. Our results in Table 8 show that this is not the case. Third, and related to the previous point, our results in Table 10 indicate that repurchases increase more for growth firms with low book-to-market ratios. But these are firms with presumably strong growth opportunities for which we would not necessarily expect that a lack of investment opportunities motivates them to return cash to shareholders. In fact, past literature indicates that especially firms with low book-to-market ratios would prefer accumulating cash holdings (e.g., Opler et al. 1999). Fourth, the results in section VII.A indicate that regulatory price constraints mediate our main results at least for non-US firms, substantiating our price impact channel rather than a cost of capital alternative.

Alternative Explanation 2: Common Ownership Changes

Recent studies link increases in aggregate repurchases and declines in corporate investment to changes in common ownership or changes in the market power of firms (Gutierrez and Philippon 2017, Lee, Shin, and Stulz 2021). Our results are not consistent with this alternative channel because the setting of asset management mergers was shown by MSW to leave the level of institutional ownership unchanged. Furthermore, the ensuing reduction in financial fragility makes it unlikely that an increase in repurchases may be driven by increases in ownership concentration as such an increase is inconsistent with a decline in stock price fragility (Greenwood and Thesmar 2011). Nevertheless, as a further robustness check, we perform several tests to substantiate that our results are indeed driven by a channel that operates via changes in financial fragility rather than a mere change in the level of ownership.

We use the cross-sectional heterogeneity within treated firms along pre-merger ownership characteristics to demonstrate that changes in fragility are the channel through which our

argument operates, not mere changes in common ownership. We use four pre-merger ownership characteristics identified by MSW as leading to more aggressive portfolio rebalancing (and therefore stronger effects on fragility). These characteristics are described in the caption to Table IA.12 below. We then show that treated firms that score high on those characteristics more strongly increase repurchases (Table IA.12, Panel A) and reduce investment (Table IA.12, Panel B).

Alternative Explanation 3: Governance Changes

Finally, we seek to rule out one last interpretation of our results, namely that changes in repurchase behavior are not driven by changes in fragility but directly by changes in firm governance that may accompany the changes in institutional ownership composition that treated firms experience. We provide two empirical tests. First, if changes in payout are driven by changes in governance, we expect these changes to be particularly strong for firms with poor corporate governance prior to the merger events. Therefore, we define 3 different measures of firm-level governance: First, the natural logarithm of the number of block holders (defined as institutions that hold more than 5% of shares outstanding), second, the G-Index of Gompers, Ishii, and Metrick (2003), and third, the E-Index of Bebchuk et al. (2009). Then, we repeat the previous specifications with triple interaction terms for these governance measures. We present the results in Internet Appendix, Table IA.13, Panel A. In short, we find no evidence that the increase in share repurchases is particularly strong for treated firms with poor corporate governance indicators. All the triple interaction terms are statistically insignificant.

In a second test, we directly examine shareholder participation at the firms' annual meetings to examine if the change in the composition of institutional ownership results in more "voice" being exercised during – e.g., corporate voting. Crane, Michenaud, and Weston (2014) find that

changes in payout seem at least in part to be driven by changes in shareholder proposals and voting patterns. As such, we seek to test whether changes in shareholder proposals and voting patterns would lead to changes in payout. To implement this test, we bring in additional data on shareholder proposals and voting patterns from the ISS/RiskMetrics database. We match our treated and control firms to this data to construct measures of shareholder participation and voting from the records at the annual meetings of our treated and control firms. In total, we map approximately 60% of our treated and control firms to this data and we define the following new outcome variables: $\%ShareholderProposals_{ft}$, defined as the number of shareholder proposals divided by the total number of proposals up for voting at the annual meeting of firm *f* in year *t*, $Participation_{ft}$, defined as the average number of ballots cases divided by shares outstanding across all proposals voting at the annual meeting of firm *f* in year *t*, $\%AgainstMgmt_{ft}$, defined as the average vote share against management across all proposals at the annual meeting of firm *f* in year *t*, and $\%Pass_{ft}$ as the fraction of management proposals that "pass" at the annual meeting of firm *f* in year *t*. We then re-estimate equation (2) with these different outcome variables and present the results in Panel B of Table IA.13. Across all of these measures, we find no significant change in voting or shareholder participation for treated versus control firms in the post-merger periods, so we conclude that our results are unlikely driven by changes in governance that could accompany the changes in ownership structure induced by these asset management mergers.

Alternative Empirical Designs

We implement and discuss alternative empirical designs to further assess robustness of our main results. We refer to the discussion of those in the caption of Table IA.14.

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Table IA.12. Cross-sectional Heterogeneity by Pre-Merger Ownership Characteristics

This table examines changes in payout policies (Panel A) and investment (Panel B) for firms with different ownership characteristics before the mergers. MSW identify that these specific ownership characteristics lead to more aggressive portfolio rebalancing and therefore stronger reductions in fragility and liquidity. Such pre-merger ownership characteristics of treated firms include ownership by funds with open-end structures, funds with volatile and correlated flows, as well as funds with concentrated positions in a stock. Funds with these characteristics have the highest exposure to changes in financial fragility as per Greenwood and Thesmar (2011). As a result, MSW find that these funds rebalance their portfolio the most following the announcements of asset management mergers. We now test if stocks with high pre-merger ownership by funds with these same characteristics experience a stronger increase in share repurchases and a stronger decrease in capital expenditures, substantiating that our documented effects are not just driven by changes in ownership but by changes in ownership with a particular impact on financial fragility. The specification is as in Table 5, Panel A but augmented with triple interaction terms for specific ownership characteristics. Pre-merger ownership characteristics are identified in Massa, Schumacher, and Wang (2021) and include: *IO_oef* as the ownership by open-ended funds, *IO_flowvola* as the ownership of funds that are in the top quartile of three-year average monthly flow volatility, where fund flow volatility is the standard deviation of monthly flows over the past three years, *Flow correlation* as the position weighted-average flow correlation of each pair of funds that hold the stock, and *IO_excessweight* as the ownership of funds that overweight the stock relative to their benchmark, i.e., funds in the top quartile of the excess weight in the stock. All other specifications are unchanged. * / ** / *** indicate statistical significance at the 10% / 5% / 1% level, computed from standard errors clustered at the firm level.

Panel A: Repurchases

Dep. Var.:	(1) Repurchase	(2) Repurchase	(3) Repurchase	(4) Repurchase	(5) Repurchase
POST x Treat x IO_oef	0.0430***				0.0295*
	(3.36)				(1.74)
POST x Treat x IO_excessweight		0.0620***			0.0288
		(2.94)			(1.03)
POST x Treat x IO_flowvola			0.3648***		0.2453**
			(3.29)		(2.02)
POST x Treat x Flow correlation				0.0543*	0.0495
				(1.66)	(1.55)
Treat	0.0042*	0.0009	-0.0018	-0.0034**	0.0017

	(1.82)	(0.65)	(-1.22)	(-2.19)	(0.62)
POST x Treat	-0.0041*	0.0009	0.0015	0.0033*	-0.0079***
	(-1.66)	(0.54)	(0.80)	(1.70)	(-2.73)
POST	-0.0132*	-0.0142**	-0.0179***	-0.0161**	-0.0106
	(-1.90)	(-2.13)	(-2.72)	(-2.40)	(-1.54)
Dual-interactions	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes
Deal F.E.	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes
N	17,723	17,723	17,723	17,723	17,723
adj. R^2	0.58	0.58	0.58	0.58	0.59

Panel B: CAPEX

	(1) CAPEX	(2) CAPEX	(3) CAPEX	(4) CAPEX	(5) CAPEX
POST x Treat x IO_oef	-0.0265*				0.0170
	(-1.86)				(1.00)
POST x Treat x IO_excessweight		-0.0540**			-0.0858***
		(-2.23)			(-2.87)
POST x Treat x IO_flowvola			-0.4395***		-0.4176***
			(-3.13)		(-3.02)
POST x Treat x Flow correlation				0.0051	-0.0131
				(0.13)	(-0.33)
Treat	0.0043*	0.0001	-0.0009	0.0019	0.0025
	(1.69)	(0.05)	(-0.57)	(1.18)	(0.84)
POST x Treat	0.0022	0.0008	0.0014	-0.0037*	0.0041
	(0.65)	(0.33)	(0.63)	(-1.65)	(1.04)
POST	-0.0200***	-0.0138*	-0.0162**	-0.0117*	-0.0212***
	(-2.69)	(-1.95)	(-2.39)	(-1.70)	(-2.74)
Dual-interactions	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes
Deal F.E.	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes
N	17,723	17,723	17,723	17,723	17,723
adj. R^2	0.75	0.74	0.74	0.74	0.75

Table IA.13. Changes in Payout Policy, Investment Policy, and Corporate Governance

This table examines if changes in payout and investment policies are driven by governance changes. Panel A presents specifications as in Table 5 that are augmented with triple interaction terms for firm-level governance characteristics prior to the mergers. These governance characteristics include: *Logn_blckholder* is the log number of institutions that hold more than 5 percent of the total shares outstanding, *Gindex* is the governance index from Gompers, Ishii, and Metrick (2003), and *Eindex* is the entrenchment index is from Bebchuk et al. (2009). Both *Gindex* and *Eindex* are obtained from ISS/RiskMetrics. Panel B examines if changes in ownership concentration induced by the mergers impacts shareholder proposals or shareholder voting outcomes. The specifications are as in Table 5, column 5 but use different dependent variables to measure various outcomes related to management or shareholder proposals and voting behavior. These dependent variables include: *%ShareholderProposal* is the total number of shareholder proposals scaled by the total number of proposals in the given firm-year, *Participation* is the total number of ballots divided by total share outstanding, averaged across all proposals in a given firm-year, *%AgainstMgmt* is the average percentage of votes against management proposals in any firm-year, and *%Pass* is the fraction of management proposals that "Pass" in each firm-year. All other specifications are unchanged. * / ** / *** indicate statistical significance at the 10% / 5% / 1% level, computed from firm-level clustered standard errors.

Panel A: Cross-sectional Heterogeneity in Repurchases by Pre-Merger Firm Governance

	(1) Repurchase	(2) Repurchase	(3) Repurchase
POST x Treat x logn_blckholder	0.0053		
	(1.54)		
POST x Treat x Gindex		-0.0008	
		(-0.92)	
POST x Treat x Eindex			-0.0013
			(-0.69)
Treat	0.0032	-0.0075**	-0.0011
	(0.88)	(-2.00)	(-0.24)
POST x Treat	-0.0002	0.0125**	0.0122**
	(-0.07)	(2.28)	(2.02)
POST	-0.0178***	-0.0276	-0.0287*
	(-2.59)	(-1.62)	(-1.74)
Dual-interactions	Yes	Yes	Yes
Controls	Yes	Yes	Yes
Deal F.E.	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes
N	16,245	9,091	9,091
adj. R^2	0.60	0.60	0.60

Panel B: Shareholder proposals and voting outcomes

	(1) %Shareholder Proposals	(2) Participation	(3) %AgainstMgmt	(4) %Pass
POST x Treat	0.0029	-0.0033	-0.0027	-0.0069
	(0.70)	(-0.37)	(-0.80)	(-0.72)
Treat	-0.0018	0.0043	0.0002	0.0044
	(-0.57)	(0.76)	(0.08)	(0.72)
POST	-0.0323	0.0299	0.0628***	0.0821
	(-1.35)	(0.57)	(3.45)	(1.50)
Controls	Yes	Yes	Yes	Yes
Deal F.E.	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes
N	10,518	10,482	10,300	10,516
adj. R^2	0.54	0.39	0.30	0.31

Table IA.14. Alternative Empirical Designs

This table presents estimates of alternative empirical designs to substantiate that changes in repurchase and investment behavior are driven by changes in fragility from the mergers between asset management firms. Panel A repeats the main specifications of Tables 5, 8, and 9 but creates the matching sample by assigning treatment status based on the realized changes in fragility that stocks experience as a result of these mergers. The approach borrows from studies such as Fang, Tian, and Tice (2014) who investigate how changes in liquidity affect firm innovation and who assign treatment status based on changes in liquidity that are caused by decimalization on US stock exchanges rather than the decimalization experiment directly. We implement a similar approach and sort stocks into quintiles based on the realized change in fragility around the mergers. We then reconstruct the matched sample based on this alternative and repeat the main specifications. All other aspects of the sample construction are otherwise unchanged but we highlight that all estimated coefficients here are expected to have opposite signs of those reported in Tables 5, 8, and 9 because the stocks with the *highest* pre-merger ownership of buyer and target funds are expected to experience the *lowest* (i.e., most negative) change in fragility (i.e., MSW (2021) find that the mergers lead to a *reduction* in financial fragility). We find analogous results to our main results: stocks with the most negative change in realized fragility (i.e., stocks that correspond to the highest pre-merger ownership as per MSW) experience an increase in repurchases, no change in dividends, and a decline in investment. Panel B implements an instrumental variable approach in the cross-section of treated and control stocks (defined as per the original treatment definition as in the rest of the paper) but we use the treatment status in the first stage to instrument the change in fragility that stocks experience between the pre- and the post-merger periods (column 1). The remaining columns then present the second-stage IV estimates of regressions of changes in the key outcome variables on the instrumented changes in fragility around the mergers. We document that, in line with our working hypothesis, an increase in fragility has a negative effect on repurchases, no effect on dividends, and a positive effect on investment policy.

Panel A: Assigning Treatment Status based on observed change in Fragility

	(1) Repurchase	(2) Dividend	(3) CAPEX	(4) Total Investment	(5) Asset Growth	(6) Equityiss
POST x Treat	-0.0044***	0.0003	0.0048***	0.0084***	0.0166*	0.0048*
	(-3.36)	(0.36)	(2.69)	(2.75)	(1.69)	(1.80)
Treat	0.0009	-0.0006	-0.0035**	-0.0089***	-0.0126	-0.0037
	(0.54)	(-0.61)	(-2.56)	(-3.23)	(-1.23)	(-1.60)
POST	-0.0025	-0.0009	-0.0038	-0.0053	-0.0107	0.0393**
	(-0.50)	(-0.22)	(-0.48)	(-0.39)	(-0.22)	(2.08)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Deal F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes
N	22,155	22,155	22,150	22,150	22,150	22,150
adj. R^2	0.56	0.74	0.72	0.60	0.49	0.56

Panel B: Instrumental Variable Approach

Equation	(1) First Stage $\Delta\sqrt{Fragility}$	(2) Second Stage Δ Repurchase	(3) Second Stage Δ Dividend	(4) Second Stage Δ CAPEX	(5) Second Stage Δ Total Inv.	(6) Second Stage Δ Asset Growth
$\Delta\sqrt{Fragility}$ (IV)		-0.1890**	-0.0010	0.1117*	0.1599*	0.6548*
		(-2.33)	(-0.16)	(1.89)	(1.91)	(1.94)
Treat	-0.0245**					
	(-2.43)					
Δ Firm size	0.0086	0.0044	-0.0001	-0.0242***	-0.0458***	-0.1998***
	(0.46)	(1.06)	(-0.32)	(-6.28)	(-9.04)	(-8.40)
Δ Log(B/M)	0.0054	-0.0108***	-0.0007**	-0.0052**	-0.0077**	0.0026
	(0.39)	(-3.58)	(-2.35)	(-2.22)	(-2.32)	(0.18)
Δ Cashflow	0.1433*	0.0775***	0.0112***	0.0652***	0.1373***	0.7115***
	(1.75)	(3.99)	(5.04)	(3.25)	(5.08)	(6.58)
Δ IO	0.7898***	0.1357**	0.0005	-0.0778*	-0.1101*	-0.4102
	(12.66)	(2.22)	(0.10)	(-1.72)	(-1.72)	(-1.61)
Δ Age	0.0089	0.0051	0.0005	0.0012	0.0034	-0.0224
	(0.42)	(1.17)	(1.41)	(0.35)	(0.73)	(-1.12)
Δ Cash holdings	0.0307	0.0070	-0.0009	-0.0088	-0.0261	0.4521***
	(0.69)	(0.60)	(-0.90)	(-0.83)	(-1.64)	(8.68)
Δ Leverage	-0.0629	-0.0512***	-0.0037***	-0.0176*	-0.0348**	-0.0207
	(-1.10)	(-3.67)	(-3.56)	(-1.74)	(-2.56)	(-0.35)
Δ Dividend	-0.5601*	-0.1807**	0.5634***	0.0818	0.0140	-0.0227
	(-1.85)	(-2.37)	(16.64)	(1.31)	(0.15)	(-0.07)
Δ Mom	0.0177	-0.0072	-0.0001	-0.0087***	-0.0073	0.0704***
	(0.90)	(-1.64)	(-0.24)	(-2.70)	(-1.54)	(3.37)
N	4,581	4,581	4,581	4,581	4,581	4,581
adj. R^2	0.182					
F statistic	8.07					
p-value	0.005					

Additional Variable Definitions

This table includes a list of additional variables and their definitions used in this section of the Internet Appendix.

Variables	Definition
Pre-merger ownership characteristics	
IO_oef	Total ownership of open-ended funds (OEFs).
IO_flowvola	The stock ownership of funds that are in the top quartile of the fund flow volatility. Fund flow volatility is the standard deviation of the flows over the past three years.
Flow correlation	The average flow correlation of each pair of funds, weighted by the maximum market value of the position of one of two pair members.
IO_excessweight	The stock ownership of funds that are on the top quartile of the excess weight, which is computed as the difference between the portfolio weight and its corresponding benchmark weight.
Corporate governance measures	
G index	*Gindex* is the governance index as in Gompers, Ishii, and Metrick (2003) from ISS/RiskMetrics.
E index	*Eindex* is the entrenchment index as in Bebchuk et al. (2009) from ISS/RiskMetrics.
Logn_blckholder	The log number of institutions that held more than 5 percent of the total shares.
%ShareholderProposal	The percentage of the shareholder proposal, defined as the total number of shareholder proposals scaled by the total number of proposals in any firm-year.
Participation	The average participation in any firm-year, defined as the total number of ballots divided by the total share outstanding.
%AgainstMgmt	The average percentage of votes against management proposal in any firm-year.
%Pass	The fraction of management proposals that "Pass" for each firm-year. The average is taken over all proposal outcomes in a given year where a proposal outcome is equal to 1 if it "Passes" and 0 otherwise.