Internet Appendix for

"CEO Preferences and Acquisitions"

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This appendix contains extensions and robustness checks to the analyses in the paper "CEO Preferences and Acquisitions". Section I provides additional analyses of the relationship between target CEO age and bid frequencies. Section II further examines the effect of corporate governance on the relationship between CEO age and bid frequencies. Section III provides evidence that the increased takeover activity at retirement age is not explained by changes in CEOs' monetary benefits from selling their firms. Section IV shows additional analyses of the effect of target CEO age on the adoption of takeover defenses.

I. Bid Frequencies and Bid Completion

Section III.A in the paper examines the effect of retirement-age CEOs on the probability of receiving an ultimately completed takeover bid. Table IA.1 in this appendix examines separately the probability of receiving a takeover bid (whether completed or not), and the likelihood that a bid, once made, is successful. The results show that, outside of the 1997-99 merger wave, the likelihood of a firm receiving a bid is positively and significantly associated with retirement age. In column 1 of Table IA.1, retirement age has a t-statistic of 3.38, and the likelihood of a bid increases from 6.2% for the median (54-58) age group to 8.0% for the retirement age group. In addition, the presence of a retirement-age CEO is also associated with a higher probability that a takeover bid results in a completed merger. Based on column 3, the likelihood of bid completion increases from 76% for bids with a median-age CEO to 82% for bids with a retirement-age CEO (t=1.92). This implies a 24% lower probability of bid failure for retirement-age CEOs compared to CEOs in the 54-58 age group. These results further support the existence of a retirement-age effect in acquisitions: acquirers are more likely to approach targets led by retirement-age CEOs, and bids for targets with retirement-age CEOs are more likely to succeed.

II. Corporate Governance and the Retirement-Age Effect

Section III.B in the paper shows that the effect of retirement-age CEOs on acquisition activity is weaker for target firms with better governance. The corporate governance characteristics used are stock ownership by the CEO, by blockholders, and by directors, board size, board independence, and an indicator for CEOs who are also chairmen of the board. Each governance measure is orthogonalized with respect to firm and CEO characteristics to create the residual (or "abnormal") governance characteristic. These governance measures are then combined into an index of governance quality, *GOVQ*. To construct the index, each of the residual governance measures is sorted into tertiles, with higher values indicating better governance, and the tertile ranks (0-2) are added up. The resulting index is again orthogonalized with respect to firm and CEO characteristics, and the residual index is used to explain acquisition behavior.

Table 4 in the paper estimates the likelihood that a firm becomes the target of an ultimately successful takeover bid in a given fiscal year as a function of the retirement-age indicator, the governance quality index *GOVQ*, its interaction with retirement age, and additional control variables. As predicted, the interaction effect of *GOVQ* with retirement age is negative and highly significant, and the coefficient on *GOVQ* itself is positive and significant. Tables IA.2 and IA.3 in this appendix show that these results are robust to alternative specifications. Table IA.2 includes an indicator for CEOs older than retirement age and interacts this indicator with *GOVQ*. In this specification, the coefficient on *GOVQ* itself, which now measures the effect of better governance for CEOs below retirement age, remains highly significant (t=3.64). Hence, as predicted, better governance is associated with more sales by CEOs younger than retirement age, and with a smaller increase in sales at retirement age.

Table IA.3 separates the GOVQ index into its six components and includes each of the six governance measures separately in a takeover bid regression. Three out of the six components – those measuring CEO-chairman separation, small boards, and block ownership – have significantly negative interaction coefficients with the retirement-age indicator, suggesting that better governance dampens the increase in acquisitions at retirement age. The results are similar when all components are included in the same regression (see Table 4 in the paper).

III. CEO Wealth Changes

Section IV.A.4 in the paper explores whether changes in CEOs' monetary benefits of selling the firm might be responsible for the increased takeover activity at retirement age. To estimate the effect of being acquired on target CEO wealth, we follow Cotter and Zenner (CZ, 1994) and assume that the wealth effect (WE) consists of:

$$WE = Golden\ parachute\ payments - PV(lost\ compensation)$$
$$+ Gain\ from\ equity\ ownership$$

Golden parachutes are set to three times the level of base salary and bonus (Hartzell, Ofek, and Yermack (2004)).[2] The present value of lost compensation is calculated under the assumption that the CEO would have continued in office until age 65 without the takeover and would have received his current compensation each year, with a real discount rate of 3%.[3]

$$PV(lost\ compensation) = \sum_{t=1}^{Years\ to\ retirement} \frac{Current\ compensation}{1.03^t}$$

Following CZ, *Years to retirement* is set to (65 – current age), but is restricted to be between 3 and 15. *Current compensation* includes salary and bonus (to match CZ), or alternatively, salary and bonus plus stock and option grants. The *gain from equity ownership* is computed assuming a hypothetical 35% takeover premium, which is close to the median takeover premium in our sample.

Because the necessary information on CEO compensation and stock and option holdings is not available for our sample, we run a flexible prediction model based on firm and CEO characteristics for these variables using ExecuComp data, and then impute their values for our sample. The model allows each element of CEO compensation and equity ownership to vary flexibly with age, and to exhibit a retirement-age effect.[4] Table IA.4 shows descriptive statistics for the estimated wealth effects and their individual components for the full CEO panel and for sub-samples based on CEO age. The table shows separate estimates for the cases in which

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[2] Section 280G of the Internal Revenue Code limits corporate income tax deductions for golden parachute payments to three times the level of base salary and bonus.
[3] The 3% discount rate can be interpreted as the difference between the CEO's risk-adjusted discount rate and the expected growth rate of compensation.
[4] Specifically, we run five separate regressions for stock ownership, option ownership, stock grants, option grants, and salary and bonus. The explanatory variables are CEO age, age squared, the retirement-age dummy, CEO tenure, a founder dummy, log(MVEQ), B/M, firm age, past stock returns, PPE/total assets, R&D/total assets, sales growth, leverage, ROA, and year dummies.

PV(lost compensation) excludes or includes stock and option grants. The estimates without equity grants match the methodology in CZ, and the magnitudes are similar to those reported in their paper.

Table IA.5 regresses the probability of receiving a successful takeover bid on CEO age, the usual controls, and includes the estimated wealth effects as additional control variable. To account for the considerable skewness of the wealth effects, we include their percentile ranks instead of the actual values in the regressions. The regressions in columns 2 and 4 control separately for CEO stock ownership as a fraction of shares outstanding (again imputed using ExecuComp data). Ownership could affect acquisition frequencies independently of the wealth effects, and this specification attempts to separate the two factors.

Table IA.5 shows that the effect of retirement age on acquisitions is robust to controlling for wealth effects. The coefficient on the retirement-age indicator remains large and statistically significant, with t-statistics from 2.88 to 3.30. The marginal effects are similar to the ones in Table 3 in the paper and imply increases in the odds of an acquisition of 28 to 36% for retirement-age CEOs.

These results suggest that retirement-age CEOs' greater willingness to sell is not explained by their smaller monetary losses (or larger gains) from acquisitions alone. This is perhaps not surprising given that the main drivers of the wealth effects – stock and option holdings and the loss of future compensation – change gradually with CEO age, while takeover frequencies change abruptly when CEOs reach retirement age. A more promising explanation might be that target CEOs receive substantial non-monetary benefits of control and status, and that they are unwilling to give up these benefits before their planned retirement.

IV. Retirement Age and the Adoption of Takeover Defenses

Section V in the paper explores the relation between CEO age and the adoption of takeover defenses. The data on takeover defenses is from the Investor Responsibility Research Center (IRRC). The dataset contains information on 24 governance provisions that, to varying degrees, make it more difficult to take over a firm. The data are available for eight cross-sections of large U.S. firms from 1990 to 2006. Gompers, Ishii, and Metrick (2003) summarize information from all 24 provisions by combining them into a single governance index (G-index). The index increases by one for every provision that increases takeover defenses or decreases shareholder rights. Bebchuk, Cohen, and Ferrell (2009) propose a modified

entrenchment index (E-Index) of six out of the 24 provisions that, based on their evidence, are the more powerful deterrents. These provisions are poison pills, classified boards, golden parachutes, supermajority requirements, limits to amend corporate bylaws, and limits to amend corporate charters.

Combining the IRRC data with the CEO panel yields a sample of 8,963 firm-years with available levels and 6,822 firm-years with available changes of the IRRC indicators. The changes are computed relative to the most recent year in which data is available.[5] Table IA.6 in this appendix shows that the average levels of the E- and the G-index are 2.1 and 9.0, respectively, which is similar to prior studies. The G-index increased in 26% and decreased in 10% of the 6,822 firm years. The corresponding numbers are 15% and 6% for the E-index. The most frequent changes are due to adoptions of golden parachutes (9% of firm-years) and poison pills (5% of firm-years).

The analysis in the paper uses an ordered logit model to relate changes in the E-index to CEO age. The dependent variable equals one, zero, or minus one for an increase, no change, or a decrease in the index, respectively. The relation between the retirement-age indicator and takeover defense adoptions is negative in all regressions and is statistically significant when the sample is limited to more likely takeover targets. Likely takeover targets are identified as firms that have already been targeted, either recently (in the current or any of the prior three years) or in the more distant past (in years t-6 to t-3 relative to the current year).

Table IA.7 in this appendix analyses each provision of the E-index separately and also relates the broader G-index to CEO age (only regressions with firms targeted several years ago are reported). The effects of retirement age are negative for all components of the E-index but are mostly not statistically significant. Retirement age is also negatively but insignificantly related to changes in the G-index, consistent with the E-index containing the more powerful defense provisions. Table IA.8 shows that the negative association between defense adoptions and retirement age is stronger for adoptions in year t-1 than for adoptions in year t (with age measured in year t). The contemporaneous relation between retirement age and adoptions is stronger in Table IA.9 in which retirement age is defined as 63-65 (rather than 64-66). These

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[5] For example, the change in 1995 is measured relative to 1993 (the closest prior year with available data), and the change is set to missing in 1994. This approach is consistent with prior studies that use the IRRC database. As a robustness test, we re-run the tests using alternative assumptions with similar results. Specifically, in the example above, we either record the change in 1994 and set the change in 1995 to missing, or we assume that no change occurs in 1994 and record a change in 1995.

results suggest a decline in the incentives to adopt takeover defenses that occurs one to two years before CEOs reach age 65.

Table IA.1: Logit models of bid frequencies and bid completions. The sample in columns 1 & 2 consists of 56,183 firm years from 1989 to 2007. The dependent variable (*BID*) equals one for the 3,911 firm years in which the firm receives a takeover bid, with both completed and not completed bids included. In columns 3 & 4, the sample consists of the 3,911 firm years in which a bid was received. The dependent variable (*COMPLETED*) equals one for the 2,966 bids that are ultimately completed. Completed bids are identified using the SDC variable "Status". *RET_AGE* is set to one if CEO age is from 64 to 66. Wave is a dummy variable for 1997-1999. All other control variables are defined in Table 1 in the paper. All regressions include year dummies. Standard errors are clustered by firm and year in columns 1 & 2 and by year in columns 3 & 4. T-statistics are in parentheses. Implied probabilities are computed at the means of the control variables and after setting the merger wave indicator and the age dummy variables (other than *RET_AGE*) to zero.

	Sample: Full panel Dep. variable=*BID*		Sample: Firm years with *BID*=1 Dep. variable=*COMPLETED*	
AGE ≥ 67	0.06		-0.08	
	(0.63)		(-0.44)	
RET_AGE (64-66)	**0.27**	**0.20**	**0.36**	**0.33**
	(3.38)	**(2.31)**	**(1.92)**	**(1.78)**
AGE 59-63	0.12		-0.03	
	(2.49)		(-0.21)	
AGE ≤ 53	-0.10		-0.11	
	(-2.57)		(-0.96)	
RET_AGE*Wave	-0.41	-0.41	-0.22	-0.23
	(-2.15)	(-2.16)	(-0.74)	(-0.77)
CEO age		0.02		0.09
		(1.04)		(2.46)
CEO age squared		0.00		0.00
		(-0.69)		(-2.07)
Tenure	-0.03	-0.03	-0.02	-0.02
	(-7.86)	(-7.78)	(-1.74)	(-1.96)
New CEO	0.20	0.19	0.02	0.04
	(3.51)	(3.53)	(0.21)	(0.39)
Founder	0.13	0.13	-0.04	-0.02
	(2.57)	(2.53)	(-0.24)	(-0.16)
Past return	-0.03	-0.03	0.01	0.01
	(-5.75)	(-5.72)	(1.62)	(1.64)
B/M	0.08	0.08	-0.40	-0.41
	(1.72)	(1.71)	(-4.56)	(-4.75)
Log(MVEQ)	-0.03	-0.03	-0.01	-0.01
	(-1.30)	(-1.31)	(-0.22)	(-0.29)
ROA	-0.04	-0.04	0.26	0.22
	(-0.24)	(-0.25)	(1.04)	(0.83)
Firm age	-0.02	-0.02	-0.02	-0.03
	(-9.76)	(-9.87)	(-6.99)	(-7.61)
Wave	0.34	0.33	2.33	2.32
	(9.86)	(9.71)	(21.32)	(21.80)
Intercept	-2.14	-3.05	-0.19	-3.02
	(-25.30)	(-4.68)	(-0.63)	(-3.08)
N non-event	52,272	52,272	945	945
N event	3,911	3,911	2,966	2,966
Prob. at RET_AGE=0	0.062	0.060	0.761	0.749
Prob. at RET_AGE=1	0.080	0.073	0.819	0.805

Table IA.2: The retirement-age effect and corporate governance: robustness. The sample consists of 22,532 firm-years from 1992 to 2006. The logit models estimate the probability of a firm receiving a successful bid for at least 50% of its shares outstanding. *RET_AGE* is set to one if CEO age is from 64 to 66. *GOVQ* is an index of governance quality, with higher values indicating better governance. The index is constructed from six governance measures. The governance measures are described in Table 1 and the construction of the index in Table 4 in the paper. All other control variables are defined in Table 1. Wave is an indicator for the 1997-1999 merger wave. Standard errors are clustered by firm and year.

AGE ≥ 67	0.07	0.05	0.16	0.14
	(0.54)	(0.35)	(0.70)	(0.57)
AGE ≥ 67*GOVQ		0.08		0.08
		(1.37)		(1.36)
RET_AGE	**0.40**	**0.40**	**0.37**	**0.36**
	(2.75)	**(2.74)**	**(2.08)**	**(2.07)**
RET_AGE*GOVQ	**-0.18**	**-0.17**	**-0.18**	**-0.17**
	(-2.66)	**(-2.56)**	**(-2.63)**	**(-2.54)**
RET_AGE*Wave	-0.43	-0.43	-0.43	-0.43
	(-1.42)	(-1.42)	(-1.43)	(-1.43)
CEO age			0.12	0.12
			(2.12)	(2.11)
CEO age squared			0.00	0.00
			(-1.86)	(-1.84)
GOVQ	**0.07**	**0.07**	**0.07**	**0.06**
	(4.27)	**(3.72)**	**(4.17)**	**(3.64)**
Tenure	-0.04	-0.04	-0.04	-0.04
	(-4.61)	(-4.59)	(-4.73)	(-4.71)
New CEO	0.10	0.10	0.11	0.11
	(1.14)	(1.14)	(1.33)	(1.33)
Founder	0.13	0.13	0.14	0.13
	(1.31)	(1.29)	(1.38)	(1.35)
Past return	-0.02	-0.02	-0.02	-0.02
	(-1.99)	(-1.99)	(-1.94)	(-1.94)
B/M	-0.04	-0.04	-0.05	-0.05
	(-0.58)	(-0.60)	(-0.72)	(-0.75)
Log(MVEQ)	-0.07	-0.07	-0.07	-0.07
	(-3.66)	(-3.65)	(-3.89)	(-3.88)
ROA	0.34	0.34	0.33	0.32
	(2.15)	(2.14)	(2.03)	(2.03)
Firm age	-0.02	-0.02	-0.02	-0.02
	(-5.84)	(-5.85)	(-6.17)	(-6.18)
Wave	-0.32	-0.32	-0.31	-0.31
	(-2.24)	(-2.24)	(-2.20)	(-2.19)
Intercept	-1.49	-1.49	-4.78	-4.78
	(-8.08)	(-8.07)	(-3.36)	(-3.34)
N non-event	21,424	21,424	21,424	21,424
N event	1,108	1,108	1,108	1,108

Table IA.3: The retirement-age effect and corporate governance: robustness. The sample consists of 22,532 firm-years from 1992 to 2006. The logit models estimate the probability of a firm receiving a successful bid for at least 50% of its shares outstanding. *RET_AGE* is set to one if CEO age is from 64 to 66. The governance measures (*GOV*) are ranks from 0 to 2 with higher values indicating better governance. Each variable ranks residuals from a regression of the raw governance measure on the following firm and CEO characteristics: Log(MVEQ), B/M, Firm age, Past return, PPE/Total assets, R&D/Total asset (missing R&D is set to zero), Sales growth, ROA, Leverage, Tenure, Founder, CEO age, 2-digit SIC industry dummies, and year dummies. The raw governance measures and all other control variables are defined in Table 1. Wave is an indicator for the 1997-1999 merger wave. Standard errors are clustered by firm and year.

	Governance measure (GOV) set to:					
	Block own	CEO own	Director own	Separation	Independence	Small board
RET_AGE	0.60	0.41	0.28	0.65	0.22	0.56
	(3.56)	(2.23)	(1.36)	(3.10)	(1.30)	(3.40)
RET_AGE*GOV	-0.28	-0.10	0.04	-0.33	0.09	-0.25
	(-2.01)	(-0.80)	(0.19)	(-1.98)	(0.60)	(-2.05)
GOV	0.15	-0.02	-0.04	0.07	0.10	0.10
	(4.04)	(-0.45)	(-0.87)	(1.88)	(3.51)	(3.26)
RET_AGE*Wave	-0.44	-0.45	-0.44	-0.44	-0.45	-0.43
	(-1.67)	(-1.68)	(-1.65)	(-1.62)	(-1.67)	(-1.58)
CEO age	0.10	0.09	0.10	0.09	0.09	0.10
	(2.36)	(2.34)	(2.38)	(2.27)	(2.14)	(2.37)
CEO age squared	0.00	0.00	0.00	0.00	0.00	0.00
	(-2.09)	(-2.06)	(-2.10)	(-2.01)	(-1.87)	(-2.10)
Tenure	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04
	(-4.77)	(-4.73)	(-4.90)	(-4.77)	(-4.75)	(-4.79)
New CEO	0.13	0.12	0.12	0.11	0.14	0.13
	(1.29)	(1.24)	(1.23)	(1.14)	(1.39)	(1.30)
Founder	0.15	0.14	0.14	0.14	0.15	0.14
	(1.75)	(1.69)	(1.70)	(1.69)	(1.72)	(1.72)
Past return	-0.02	-0.02	-0.02	-0.02	-0.02	-0.01
	(-1.80)	(-1.79)	(-1.77)	(-1.76)	(-1.77)	(-1.74)
B/M	-0.05	-0.05	-0.04	-0.05	-0.05	-0.05
	(-0.63)	(-0.61)	(-0.57)	(-0.61)	(-0.64)	(-0.68)
Log(MVEQ)	-0.07	-0.07	-0.07	-0.07	-0.07	-0.08
	(-2.19)	(-2.14)	(-2.07)	(-2.28)	(-2.21)	(-2.24)
ROA	0.31	0.30	0.28	0.31	0.32	0.31
	(1.66)	(1.55)	(1.52)	(1.66)	(1.67)	(1.67)
Firm age	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
	(-6.28)	(-6.41)	(-6.24)	(-6.67)	(-6.73)	(-6.50)
Wave	-0.31	-0.31	-0.31	-0.31	-0.31	-0.31
	(-5.70)	(-5.75)	(-5.59)	(-5.61)	(-5.70)	(-5.52)
Intercept	-4.51	-4.28	-4.35	-4.32	-4.19	-4.44
	(-3.99)	(-3.76)	(-3.78)	(-3.73)	(-3.66)	(-3.85)
N non-event	21,424	21,424	21,424	21,424	21,424	21,424
N event	1,108	1,108	1,108	1,108	1,108	1,108

Table IA.4: Descriptive statistics for the estimated effect of a potential acquisition on target CEO wealth. All values are in thousands. The sample consists of 54,724 firm years. The sample is smaller than in Table 3 in the paper because of missing imputed compensation or ownership data. The change in target CEO wealth due to an acquisition is estimated as the gain from stock and option ownership plus the value of golden parachutes minus the present value of lost future compensation. See the text of the appendix for more details. Lost future compensation is calculated either excluding or including future stock and option grants. The top panel shows the mean and median wealth effect estimates for the whole sample, the bottom panel shows the mean and the median estimates for five CEO age groups. The averages of the wealth effect components do not sum up to the average wealth effect because of winsorization at the 1% level.

	PV(lost compensation) = PV(lost salary & bonus)		PV(lost compensation) = PV(lost salary & bonus + lost stock & option grants)	
	Mean	Median	Mean	Median
Wealth effects for the whole sample				
Gain from equity ownership	11,817	2,947	11,817	2,947
Golden parachute	1,758	1,026	1,758	1,026
PV(Lost compensation)	4,372	2,161	15,841	4,303
Wealth effect	6,106	710	-5,367	145
Wealth effects by CEO age				
≤53	1,792	350	-14,423	-3,115
53-58	4,426	473	-6,396	-478
59-63	12,260	2,282	6,746	1,005
64-66	16,728	3,676	13,491	3,029
≥67	17,063	3,517	14,282	3,066

Table IA.5: Logit models of bid frequencies with wealth effect estimates as control. The sample consists of 54,724 firm years from 1989 to 2007. The models estimate the probability of a firm receiving a successful bid for at least 50% of its shares outstanding. *RET_AGE* is set to one if CEO age is from 64 to 66. Wave is an indicator for 1997-1999. The effect of a potential acquisition on CEO wealth is estimated as the gain from stock and option ownership plus the value of golden parachutes minus the present value of lost future compensation. The Wealth Effect included below is the percentile rank of the dollar wealth effect. Lost compensation is calculated either excluding (columns 1 and 2) or including (columns 3 and 4) future stock and option grants. CEO Ownership is the estimated percentage stock ownership by the CEO. All other variables are defined as in Table 1 in the paper. Standard errors are clustered by firm and year. T-statistics are in parentheses. Implied probabilities are computed at the means of the control variables and with the merger wave indicator set to zero.

	PV(lost compensation) = PV(lost salary & bonus)		PV(lost compensation) = PV(lost salary & bonus + lost stock & option grants)	
RET_AGE (64-66)	**0.24**	**0.26**	**0.26**	**0.28**
	(2.88)	**(3.01)**	**(3.20)**	**(3.30)**
RET_AGE*Wave	-0.38	-0.38	-0.38	-0.38
	(-1.98)	(-2.05)	(-2.00)	(-2.05)
CEO age	-0.07	0.07	-0.06	0.07
	(-1.20)	(2.41)	(-0.96)	(2.45)
CEO age squared	0.00	0.00	0.00	0.00
	(1.47)	(-1.93)	(1.27)	(-1.85)
Wealth effect	0.00	0.00	0.00	0.00
	(0.18)	(-0.37)	(-1.54)	(-2.40)
CEO ownership	-13.31		-11.87	
	(-3.31)		(-2.69)	
Tenure	0.00	-0.03	0.00	-0.03
	(-0.03)	(-6.73)	(-0.21)	(-6.76)
New CEO	0.10	0.09	0.09	0.09
	(1.42)	(1.29)	(1.35)	(1.27)
Founder	0.15	0.02	0.14	0.03
	(1.83)	(0.38)	(1.69)	(0.44)
Past return	-0.02	-0.02	-0.02	-0.02
	(-3.25)	(-4.46)	(-3.50)	(-4.76)
B/M	-0.03	0.01	-0.03	0.00
	(-0.54)	(0.12)	(-0.64)	(-0.04)
Log(MVEQ)	-0.10	-0.04	-0.10	-0.05
	(-3.40)	(-1.71)	(-3.37)	(-2.51)
ROA	0.62	0.16	0.59	0.17
	(2.69)	(0.92)	(2.52)	(1.09)
Firm age	-0.02	-0.02	-0.02	-0.02
	(-10.50)	(-12.27)	(-10.08)	(-11.58)
Wave	1.20	1.23	1.19	1.22
	(25.82)	(26.82)	(24.88)	(25.39)
Intercept	-1.18	-5.31	-1.48	-5.19
	(-0.73)	(-7.11)	(-0.88)	(-7.17)
N non-event	52,052	52,052	52,052	52,052
N event	2,672	2,672	2,672	2,672
Prob. at RET_AGE=0	0.039	0.034	0.032	0.033
Prob. at RET_AGE=1	0.050	0.044	0.042	0.045

Table IA.6: Descriptive statistics for the takeover defense measures. The takeover defenses described below are collected by the Investors Research Responsibility Center (IRRC) from 1990 to 2006 and are described in Gompers, Ishii, and Metrick (GIM, 2003). The variables are available for 1990, 1993, 1995, 1998, 2000, 2002, 2004, and 2006. The table shows descriptive statistics for the merged CEO-IRRC sample. The full sample consists of 8,963 firm-years with available levels and 6,822 firm-years with available changes of the takeover defenses. Changes are measured relative to the last year with available data. For example, if an indicator increases in 1995 relative to 1993, an increase is recorded in 1995, and the change is set to missing for 1994. The G-index is the Gompers, Ishii, and Metrick (2003) governance index constructed using 24 anti-takeover provisions. The index increases by one for every provision that increases defenses or reduces shareholder rights. The E-index is the Bebchuk, Cohen, and Ferrell (2009) entrenchment index constructed from the six provisions shown in the table. Classified boards are boards divided into classes that serve overlapping terms, so that only part of the board can be replaced in any year. Poison pills (shareholder rights plans) give shareholders other than the bidder the right to purchase additional shares at a discount, thus diluting the bidder's stake. Limits to amendments are the sum of two provisions measuring limitations to shareholders' ability to amend corporate charters or bylaws. Supermajority is a provision requiring more than a majority vote to approve a merger. Golden parachutes provide management with additional compensation in case of a job separation following a takeover.

	Levels			Changes (Fractions)		
	Mean	Median	Std.	Increases	No Change	Decreases
G-index	9.00	9.00	2.71	0.26	0.64	0.10
E-index	2.12	2.00	1.31	0.15	0.79	0.06
Classified board	0.58	1.00	0.49	0.01	0.98	0.01
Poison pill	0.56	1.00	0.50	0.05	0.93	0.02
Limits to amendments	0.20	0.00	0.44	0.01	0.97	0.02
Supermajority	0.17	0.00	0.37	0.01	0.98	0.01
Golden parachute	0.61	1.00	0.49	0.09	0.89	0.02

Table IA.7: Ordered logit models of changes in takeover defenses: G-index and components of the E-index. The dependent variable is an indicator for a change in a component of the firm's E-index (columns 1-5) or for a change in the firm's G-index (column 6). CEO age is measured in year t and the index changes are measured in years t and t-1. Specifically, the dependent variable is set to 1, 0, or -1 if an increase, no change, or decrease is observed in year t or year t-1, in each case relative to the prior year with available data. The sample consists of firms that have received a bid in the four years ending in year t-3 (bids for any amount of equity are counted). Turnover is an indicator equal to one if year t is followed by a CEO turnover. The other control variables are measured in year t-2 and are described in Table 2 in the paper. The components of the E-index are described in Table IA.6. Standard errors are clustered by firm.

	Poison Pill	Classified Boards	Limits to Amend-ments	Super-majority	Golden Parachutes	G-index
AGE ≥ 67	-0.08	-0.80	-1.13	-0.19	-0.16	-0.23
	(-0.21)	(-1.33)	(-1.97)	(-0.33)	(-0.33)	(-0.74)
RET_AGE (64-66)	**-0.35**	**-0.11**	**-0.94**	**-0.90**	**-0.43**	**-0.34**
	(-0.77)	**(-0.20)**	**(-1.69)**	**(-0.92)**	**(-1.05)**	**(-1.21)**
AGE 59-63	0.18	-0.82	-1.23	-0.50	-0.19	-0.02
	(0.61)	(-1.91)	(-2.23)	(-0.70)	(-0.86)	(-0.12)
AGE ≤ 53	-0.05	-1.04	-0.91	-0.94	-0.09	-0.12
	(-0.19)	(-2.37)	(-2.49)	(-2.46)	(-0.47)	(-0.75)
Turnover	0.03	0.08	-0.07	0.20	-0.10	-0.13
	(0.13)	(0.23)	(-0.21)	(0.49)	(-0.50)	(-0.92)
Tenure	0.02	0.02	0.00	0.02	0.00	0.00
	(1.05)	(0.72)	(-0.00)	(0.68)	(0.27)	(0.14)
Founder	-0.28	0.35	0.83	-0.68	-0.22	-0.21
	(-0.77)	(0.72)	(1.51)	(-0.80)	(-0.59)	(-0.79)
Past return	0.01	-0.02	-0.03	0.03	0.01	-0.01
	(0.36)	(-0.46)	(-0.65)	(0.79)	(0.46)	(-0.61)
Lag(Index)	-0.55	-0.73	-0.14	-0.43	-0.46	-0.33
	(-7.10)	(-6.06)	(-1.41)	(-3.12)	(-7.59)	(-6.70)
B/M	-0.03	-0.48	-0.02	-0.25	0.41	-0.15
	(-0.13)	(-1.21)	(-0.06)	(-0.99)	(2.51)	(-1.05)
Log(MVEQ)	-0.15	-0.21	0.00	-0.05	0.07	-0.10
	(-1.99)	(-1.31)	(-0.00)	(-0.30)	(1.23)	(-2.05)
ROA	-1.00	-0.87	3.73	-0.18	-0.25	0.34
	(-1.24)	(-0.52)	(4.20)	(-0.15)	(-0.34)	(0.56)
Firm age	-0.02	-0.01	0.00	-0.01	-0.02	-0.02
	(-3.08)	(-0.80)	(0.27)	(-0.70)	(-2.57)	(-4.40)
N Increase	139	31	47	22	179	489
N No change	1,444	1,583	1,586	1,604	1,396	976
N Decrease	63	32	13	20	71	181
P(Incr.) RET_AGE=0	0.063	0.019	0.048	0.018	0.102	0.299
P(Incr.) RET_AGE=1	0.045	0.017	0.019	0.007	0.069	0.232

Table IA.8: Ordered logit models of changes in takeover defenses: changes in year t-1 or year t. The dependent variable is an indicator for a change in the firm's E-index: the indicator is equal to -1 for a decrease, 0 for no change, and +1 for an increase in the index. CEO age is measured in year t and the index change is measured in year t-1 (columns 1 and 2) or year t (columns 3 and 4). The sample consists of firms that have received a bid over the four year period ending in year t-3 (bids for any amount of equity are counted). Turnover is an indicator equal to one if year t is followed by a CEO turnover. The other control variables are measured in year t-2 and are described in Table 2 in the paper. Standard errors are clustered by firm.

	Index change in year t-1		Index change in year t	
AGE ≥ 67	-0.75		-0.14	
	(-1.95)		(-0.37)	
RET_AGE (64-66)	**-1.13**	**-0.88**	**-0.50**	**-0.35**
	(-3.17)	**(-2.53)**	**(-1.42)**	**(-1.06)**
AGE 59-63	-0.13		-0.36	
	(-0.58)		(-1.50)	
AGE ≤ 53	-0.42		-0.21	
	(-2.03)		(-1.08)	
CEO age		0.30		0.22
		(3.26)		(2.61)
CEO age squared		0.00		0.00
		(-3.20)		(-2.50)
Turnover	0.52	0.50	0.01	-0.02
	(1.70)	(1.62)	(0.05)	(-0.09)
Tenure	0.01	0.02	0.02	0.02
	(0.71)	(0.93)	(1.39)	(1.36)
Founder	-0.21	-0.32	-0.41	-0.46
	(-0.63)	(-0.95)	(-1.28)	(-1.46)
Past return	0.02	0.02	-0.03	-0.03
	(1.11)	(1.04)	(-1.37)	(-1.24)
Lag(Index)	-0.49	-0.50	-0.50	-0.51
	(-8.49)	(-8.75)	(-8.81)	(-8.96)
B/M	0.06	0.07	0.37	0.36
	(0.32)	(0.36)	(2.35)	(2.24)
Log(MVEQ)	-0.03	-0.04	0.00	-0.01
	(-0.55)	(-0.60)	(-0.05)	(-0.20)
ROA	-0.49	-0.41	0.93	0.82
	(-0.66)	(-0.55)	(1.21)	(1.08)
Firm age	-0.02	-0.02	-0.02	-0.02
	(-2.75)	(-2.83)	(-3.55)	(-3.73)
N Increase	157	157	161	161
N No change	568	568	610	610
N Decrease	72	72	78	78
P(Incr.) RET_AGE=0	0.217	0.176	0.192	0.165
P(Incr.) RET_AGE=1	0.082	0.081	0.126	0.122

Table IA.9: Ordered logit models of changes in takeover defenses: retirement age defined as 63 to 65. The dependent variable is an indicator for a change in the firm's E-index: the indicator is equal to -1 for a decrease, 0 for no change, and +1 for an increase in the index. CEO age is measured in year t and the index change is measured in year t-1 (columns 1 and 2) or year t (columns 3 and 4). *RET_AGE* is set to one if CEO age is from 63 to 65. The sample consists of firms that have received a bid over the four year period ending in year t-3 (bids for any amount of equity are counted). Turnover is an indicator equal to one if year t is followed by a CEO turnover. The other control variables are measured in year t-2 and are described in Table 2 in the paper. Standard errors are clustered by firm.

	Index change in year t-1		Index change in year t	
AGE ≥ 66	-0.58		-0.22	
	(-1.74)		(-0.61)	
RET_AGE (63-65)	**-0.86**	**-0.75**	**-0.95**	**-0.81**
	(-2.34)	**(-2.10)**	**(-2.97)**	**(-2.67)**
AGE 58-62	-0.07		-0.28	
	(-0.33)		(-1.25)	
AGE ≤ 52	-0.20		-0.50	
	(-0.99)		(-2.55)	
CEO age		0.32		0.23
		(3.41)		(2.83)
CEO age squared		0.00		0.00
		(-3.36)		(-2.67)
Turnover	0.52	0.47	0.05	0.04
	(1.70)	(1.54)	(0.24)	(0.19)
Tenure	0.01	0.01	0.02	0.02
	(0.78)	(0.85)	(1.39)	(1.50)
Founder	-0.19	-0.28	-0.43	-0.50
	(-0.55)	(-0.82)	(-1.37)	(-1.55)
Past return	0.02	0.02	-0.03	-0.03
	(1.13)	(1.12)	(-1.29)	(-1.14)
Lag(Index)	-0.49	-0.50	-0.50	-0.51
	(-8.61)	(-8.73)	(-8.77)	(-8.94)
B/M	0.07	0.04	0.36	0.37
	(0.34)	(0.19)	(2.27)	(2.31)
Log(MVEQ)	-0.03	-0.04	-0.01	-0.01
	(-0.49)	(-0.63)	(-0.12)	(-0.20)
ROA	-0.43	-0.37	0.83	0.82
	(-0.57)	(-0.49)	(1.10)	(1.08)
Firm age	-0.02	-0.02	-0.02	-0.02
	(-2.67)	(-2.89)	(-3.77)	(-3.79)
N Increase	157	157	161	161
N No change	568	568	610	610
N Decrease	72	72	78	78
P(Incr.) RET_AGE=0	0.201	0.176	0.212	0.169
P(Incr.) RET_AGE=1	0.096	0.092	0.094	0.083