

Equity-based compensation and the timing of share repurchases: the role of the corporate calendar

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- Mechanism
 - Share repurchases temporarily drive up the stock price
 - CEOs cash out their equity-based compensation at a premium
 - Destruction of long-term shareholder value

Literature

- Existing research tends to support this concern
 - Firms are more likely to repurchase shares when their CEOs sell equity (Moore, 2023)
 - ... or when their CEOs' equity vests, at the expense of long-term shareholder value (Edmans, Fang, and Huang, 2021)
 - Repurchases most likely in quarters with net insider selling (Bonaimé and Ryngaert, 2013)
 - CEOs sell more shares shortly after repurchase program announcements (Jackson Jr, 2019; Edmans, Fang, and Huang, 2021)

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- On the other hand,
 - A large literature suggests that share repurchases are timed “well” (Peyer and Vermaelen, 2009; Dittmar and Field, 2015)
 - ... and improve liquidity and price efficiency (Hillert, Maug, and Obernberger 2016; Busch and Obernberger, 2017)

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- How do these results fit together?

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Our Paper

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 - Similar to the timing of executive compensation and of insider trading
- Main results:
 - The link between share repurchases and equity-based compensation can be fully explained by the corporate calendar
 - The corporate calendar is of first-order importance for the timing of share repurchases
 - Ignoring the corporate calendar might cause omitted variable problems in related studies

Data and Sample

Data and Sample

- SEC EDGAR: detailed data on repurchase activities, extracted from 10-K and 10-Q filings
- Equilar: the granting dates, sizes, and vesting dates of equity awards
- Thomson Reuters: insider trading

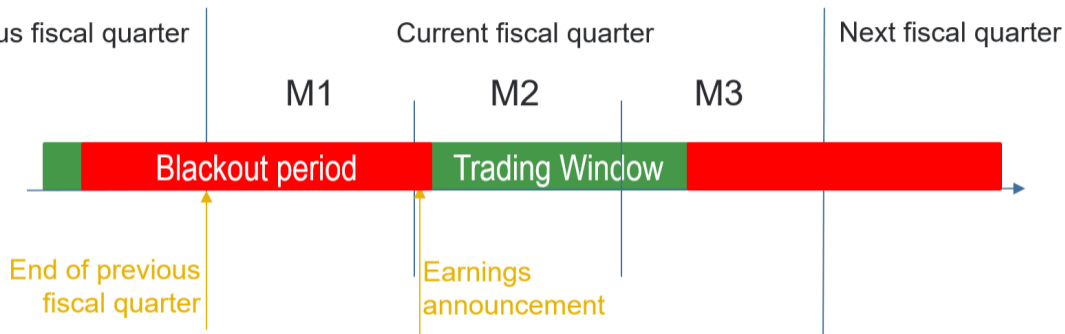
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- SEC EDGAR: detailed data on repurchase activities, extracted from 10-K and 10-Q filings
- Equilar: the granting dates, sizes, and vesting dates of equity awards
- Thomson Reuters: insider trading
- Sample: a firm-month level panel data set that covers
 - 2,377 repurchasing firms for the period 2006-2019
 - 6,303 repurchase programs, 59,082 firm-months with open market repurchases
 - 251,646 firm-months

Corporate Calendar

and Its Role in the Timing of Equity-Based Compensation and Share Repurchases

Corporate Calendar



- Blackout period: on average, 20 days before the end of the fiscal quarter until three days after the earnings announcement (Guay, Kim, and Tsui, 2023)

The Timing of Equity Compensation and Share Repurchases (1/2)

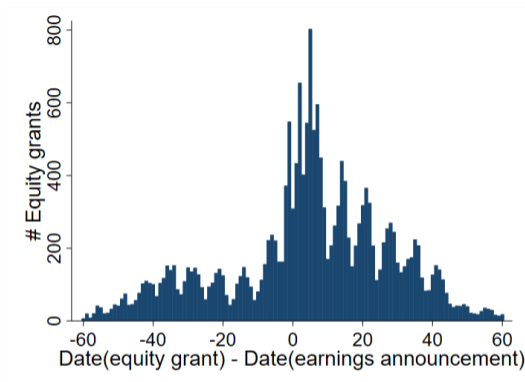


Figure: Equity grants and EAs

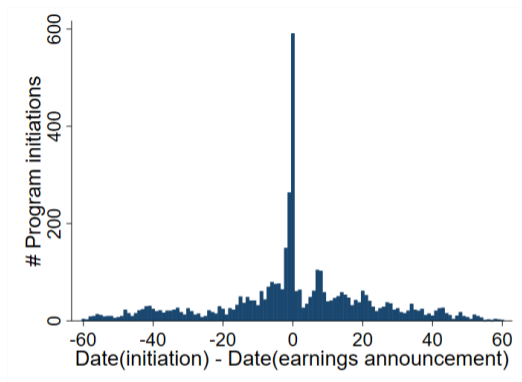
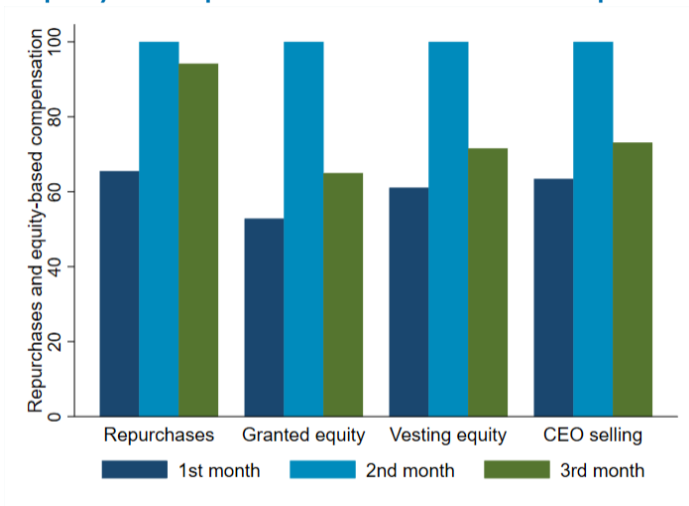


Figure: Repurchase initiations and EAs

- Both equity grants and repurchase initiations cluster around earnings announcements

The Timing of Equity Compensation and Share Repurchases (2/2)



- Share repurchases, equity granting, equity vesting, and CEO selling all peak in the second month of fiscal quarters

The Relation Between Equity-Based Compensation and Share Repurchases

CEO's Vesting Equity and Share Repurchases

	(1)	(2)
Dependent variable =	Repurchase intensity	
Vesting equity	0.0046*** (3.07)	0.0002 (0.10)
Blackout ratio		-0.2059*** (-18.71)
Standard controls	Yes	Yes
Year-month FE & Firm FE	Yes	Yes
Fiscal month FE	No	Yes
Obs	251,646	251,646

- Share repurchases are positively correlated with the CEO's vesting equity (before controlling for the corporate calendar)

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- Share repurchases are positively correlated with the CEO's vesting equity (before controlling for the corporate calendar)
- This correlation disappears once controlling for the corporate calendar

CEO's Equity Sales and Share Repurchases

	(1)	(2)
Dependent variable =	Repurchase intensity	
CEO selling	-0.0011*** (-3.00)	-0.0016*** (-4.60)
Blackout ratio		-0.2072*** (-19.01)
Standard controls	Yes	Yes
Year-month FE & Firm FE	Yes	Yes
Fiscal month FE	No	Yes
Obs	251,646	251,646

- Firms repurchase fewer shares when their CEOs sell more
- The trading of the firm and of the CEO is consistent

Repurchase Program Announcements and CEO's Equity Sales

	(1)	(2)	(3)	(4)
Events	Observations	CEO sales over		(3) – (2)
		[-10, 0)	(0, +10]	
Repurchase announcement	4,379	0.0038	0.0076	0.0038*** (4.56)
Repurchase ann. no blackout	444	0.0061	0.0053	-0.0008 (28.52)

- CEOs sell more shares shortly after repurchase program announcements (before taking the corporate calendar into account)
- The period before repurchase program announcements is largely a blackout period

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- CEOs sell more shares shortly after repurchase program announcements (before taking the corporate calendar into account)
- The period before repurchase program announcements is largely a blackout period
- No abnormal CEO sales around repurchase program announcements with no blackout days in the [-10, +10] window

CEO Trading and Repurchase Program Initiation

	(1)	(2)
Dependent variable =	Indicator of repurchase initiation	
CEO selling	0.0002 (1.62)	0.0001 (0.81)
CEO buying	0.1309*** (3.94)	0.1187*** (3.58)
Blackout ratio		-0.0341*** (-10.07)
Standard controls	Yes	Yes
Year-month FE & Firm FE	Yes	Yes
Fiscal month FE	No	Yes
Obs	251,646	251,646

- Repurchase programs are more likely when CEOs buy more stocks
- The trading of the firm and of the CEO is consistent

Shareholder Value Implication

Do CEOs sacrifice long-term shareholder value for the sake of boosting their equity-based compensation?

The Price Impact of Share Repurchases

	(1)	(2)	(3)	(4)	(5)	(6)
	Calendar-time portfolio abnormal return					
Event window:	[0, 0]	[1, 1]	[2, 3]	[4, 6]	[7, 12]	[1, 12]
All repurchase months (N=59,082)	0.0006 (0.73)	0.0032*** (3.76)	0.0032*** (3.87)	0.0025*** (3.05)	0.0021** (2.35)	0.0025*** (2.86)
Repurchases & vesting months (N=9,009)	0.0018 (1.31)	0.0013 (1.03)	0.0040*** (3.52)	0.0021** (2.09)	0.0027*** (2.97)	0.0029*** (3.45)
Repurchases & CEO selling months (N=5,869)	0.0092*** (3.72)	0.0029 (0.72)	0.0018 (1.42)	0.0017 (1.57)	0.0015 (1.40)	0.0020** (2.58)

- Repurchases are generally followed by positive abnormal returns with NO reversals

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- Repurchases are generally followed by positive abnormal returns with NO reversals
- Same for repurchases with simultaneous vesting or CEO selling
- Inconsistent with the notion that CEOs use repurchases to inflate the stock price temporarily at the expense of long-term shareholder value

Conclusion

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- The corporate calendar-view provides a new perspective on a topical debate
 - Repurchases coincide with equity-based compensation, but not causally related
 - The trading of the firm and the CEO is actually consistent
 - Positive impact on long-run shareholder value

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- Our study shows the importance of the corporate calendar for the timing of share repurchases
 - Repurchases much more affected by regulatory and institutional constraints than previously perceived in the literature
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 - The trading of the firm and the CEO is actually consistent
 - Positive impact on long-run shareholder value
- Our study shows the importance of the corporate calendar for the timing of share repurchases
 - Repurchases much more affected by regulatory and institutional constraints than previously perceived in the literature
 - Future research should take it into account to avoid potential omitted variable problems
- Implications for regulation
 - Further restrictions may hinder firms from repurchasing efficiently
 - Negative impact on payout policy and market efficiency

Appendix

CEO's Vesting Equity and Share Repurchases (lagged blackout ratio)

	(1)	(2)
Dependent variable =	Repurchase intensity	
Vesting equity	0.0046*** (3.07)	0.0012 (0.77)
Blackout ratio _{t-36}		-0.1436*** (-12.59)
Standard controls	Yes	Yes
Year-month FE & Firm FE	Yes	Yes
Fiscal month FE	No	Yes
Obs	251,646	197,318

- Blackout ratio_{t-36} is the blackout ratio of a given firm in the same fiscal month three years earlier
- The correlation between vesting equity and repurchases disappears once controlling for the corporate calendar

CEO's Vesting Equity and Share Repurchases (yearly level)

	(1)	(2)
Dependent variable =	Repurchase intensity	
Vesting equity	0.0003 (0.31)	0.0002 (0.21)
Blackout ratio		-0.2802*** (-5.16)
Standard controls	Yes	Yes
Year FE & Firm FE	Yes	Yes
Obs	21,105	21,105

- No correlation between vesting equity and share repurchases on the yearly level

Vesting Equity and Share Repurchases (standard deviations reported)

	(1)	(2)
Dependent variable =	repurchase intensity	
Vesting equity	0.0046*** (0.0015)	0.0002 (0.0015)
Blackout ratio		-0.2059*** (0.0110)
Standard controls	Yes	Yes
Year-month FE & Firm FE	Yes	Yes
Fiscal month FE	No	Yes
Obs	251,646	251,646

- The correlation between vesting equity and repurchases disappears once controlling for the corporate calendar
- No evidence for multicollinearity

Granted Equity and Share Repurchases

	(1)	(2)
Dependent variable =	Repurchase intensity	
Granted equity	0.0037*** (2.96)	0.0003 (0.23)
Blackout ratio		-0.2058*** (-18.74)
Standard controls	Yes	Yes
Year-month FE & Firm FE	Yes	Yes
Fiscal month FE	No	Yes
Obs	251,646	251,646

- Granted equity is positively associated with share repurchases
- The correlation disappears once controlling for the corporate calendar

Share Repurchase Data (1/2)

- SEC EDGAR Database
 - Download all 10-K and 10-Q filings between 2004-2019 for firms on the NYSE, AMEX, and NASDAQ
 - Parse and extract the repurchase table, text, and footnotes
 - Textual analysis to find announcement dates, program sizes, and relevant remarks
 - Main advantages: our data is on a monthly level and contains detailed information on the start, size, and type of repurchase programs

Share Repurchase Data (2/2)

- Filing example

Item 2 — Unregistered Sales of Equity Securities and Use of Proceeds (Dollars in thousands, except per share data)

(c) The following table provides information about purchases we made during the quarter ended August 31, 2010 of equity securities that are registered by us pursuant to Section 12 of the Exchange Act:

Period	Total Number of Shares Purchased (1)	Average Price Paid per Share (1)	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs (2)	Approximate Dollar Value of Shares that May Yet Be Purchased Under the Plans or Programs (2)
6/1/2010 – 6/30/2010	—	\$ —	—	\$ 19,725
7/1/2010 – 7/31/2010	61,416	\$ 16.97	—	\$ 19,795
8/1/2010 – 8/31/2010	151,215	\$ 16.93	150,000	\$ 15,795
Total	212,631	\$ 16.94	150,000	

(1) These amounts include share repurchases pursuant to the Company's stock repurchase plan, shares transferred to us from employees in satisfaction of minimum tax withholding obligations associated with the vesting of restricted stock, the impact of net share settlements on bond hedge and warrants associated with convertible bond repurchases and shares surrendered by employees in payment of the exercise price of stock options.

(2) The Company's common stock repurchase plan was approved by our Board of Directors on June 20, 2006. As of August 31, 2010, 1,028,300 of the original 1,500,000 shares are still available for repurchase.

Decomposition of Insider Trading

- Thomson Reuters Insiders Data Feed Manual:

Relationship Code Summary

The relationship codes in the table below should be prioritized in terms of RELATION1 - RELATION4 according to the following hierarchy:

Level 1 (highest): CB, CEO, CO, GC, P

Level 2: AC, AF, CC, CFO, CI, CT, D, DO, EC, FC, GP, H, M, MC, MD, O, OB, OD, OP, OS, OT, OX, S, SC, TR, VC

Level 3: AV, C, EVP, OE, GM, LP, SVP, T, VP

Level 4: AI, B, BC, BT, CP, DS, F, FO, IA, R, SH, UT, VT, X

Classification	Code	Description
Directors	CB	Chairman of the Board
	D	Director
	DO	Director and Beneficial Owner of more than 10% of a Class of Security
	H	Officer, Director and Beneficial Owner
	OD	Officer and Director
	VC	Vice Chairman
Committees	AC	Member of the Advisory Committee
	CC	Member of the Compensation Committee
	EC	Member of the Executive Committee
	FC	Member of the Finance Committee

Replication of Edmans et al. (2021), Table 3, and Extensions (1/2)

Panel A: CEO equity vesting and abnormal returns in repurchasing months

Dependent variable: BHAR over	[-2, -2]	[-1, -1]	[0, 0]	[1,12]	[13, 24]	[25, 36]	[37, 48]
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Vesting equity in billions	0.4037 (1.39)	0.5455* (1.66)	0.2247 (0.71)	-3.2163*** (-3.09)	-2.6456*** (-2.60)	-2.9848*** (-2.88)	-2.4973** (-2.26)
Observations	58,620	58,883	59,082	50,439	49,743	49,031	48,477
R^2	0.0279	0.0268	0.0273	0.0250	0.0271	0.0299	0.0317

Panel B: CEO equity vesting and abnormal returns in non-repurchasing months

Dependent variable: BHAR over	[-2, -2]	[-1, -1]	[0, 0]	[1,12]	[13, 24]	[25, 36]	[37, 48]
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Vesting equity in billions	1.2314*** (3.98)	0.6651** (2.20)	-0.5074* (-1.72)	-11.7224*** (-7.46)	-11.3492*** (-7.05)	-10.7387*** (-6.74)	-10.1994*** (-6.40)
Observations	189,301	190,900	192,564	163,231	161,171	159,140	156,973
R^2	0.0394	0.0395	0.0396	0.0598	0.0598	0.0597	0.0600

- Panel A replicates Table 3, interpreted as “*vesting equity reduces long-run returns*”
- Panel B: The return pattern is even more pronounced in non-repurchasing months

Replication of Edmans et al. (2021), Table 3, and Extensions (2/2)

Panel C: CEO equity vesting dummy and abnormal returns in repurchasing months

Dependent variable: BHAR over	[-2, -2]	[-1, -1]	[0, 0]	[1,12]	[13, 24]	[25, 36]	[37, 48]
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Vesting dummy	0.0008 (0.75)	-0.0002 (-0.16)	0.0030*** (2.70)	0.0022 (0.61)	0.0048 (1.27)	0.0023 (0.59)	0.0023 (0.54)
Observations	58,620	58,883	59,082	50,439	49,743	49,031	48,477
R^2	0.0279	0.0267	0.0274	0.0249	0.0270	0.0298	0.0317

Panel D: CEO equity vesting number and abnormal returns in repurchasing months

Dependent variable: BHAR over	[-2, -2]	[-1, -1]	[0, 0]	[1,12]	[13, 24]	[25, 36]	[37, 48]
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Vesting number	0.0030 (0.70)	-0.0006 (-0.15)	0.0104** (2.06)	0.0425*** (2.69)	0.0395*** (2.60)	0.0387** (2.49)	0.0336* (1.96)
Observations	10,455	10,498	10,522	9,208	9,111	9,014	8,969
R^2	0.0427	0.0459	0.0446	0.0641	0.0672	0.0610	0.0566

- Panel C: The return pattern disappears if measuring vesting equity by a dummy
- Panel D: The return pattern reverses if measuring vesting equity by numbers

The Price Impact of Open Market Share Repurchases

	(1)	(2)	(3)	(4)	(5)	(6)
	calendar-time portfolio abnormal return					
Event window:	[0, 0]	[1, 1]	[2, 3]	[4, 6]	[7, 12]	[1, 12]
All repurchase programs (N=59,082)	0.0006 (0.73)	0.0032*** (3.76)	0.0032*** (3.87)	0.0025*** (3.05)	0.0021** (2.35)	0.0025*** (2.86)
Programs with simultaneous vesting (N=9,009)	0.0018 (1.31)	0.0013 (1.03)	0.0040*** (3.52)	0.0021** (2.09)	0.0027*** (2.97)	0.0029*** (3.45)
Programs with simultaneous CEO sales (N=5,869)	0.0092*** (3.72)	0.0029 (0.72)	0.0018 (1.42)	0.0017 (1.57)	0.0015 (1.40)	0.0020** (2.58)
CEO sales in general (N=20,321)	0.0140*** (10.50)	-0.0011 (-0.92)	-0.0009 (-0.87)	-0.0009 (-0.92)	0.0006 (0.73)	0.0002 (0.34)

- Repurchases are generally followed by positive abnormal returns
- Repurchases with simultaneous vesting are followed by positive abnormal returns
- Repurchases with simultaneous CEO sales are followed by non-negative abnormal returns

Long-Term Return After Repurchase Program Initiation

	(1)	(2)	(3)	(4)	(5)	(6)
	calendar-time portfolio abnormal return					
Event window:	[0, 0]	[1, 12]	[13, 24]	[25, 36]	[37, 48]	[1, 48]
All repurchase programs (N=6,303)	0.0106*** (5.49)	0.0029*** (2.99)	0.0025*** (2.66)	0.0016* (1.78)	0.0019 (1.63)	0.0022** (2.36)
Programs with simultaneous vesting (N=1,196)	0.0172*** (4.34)	0.0034*** (3.03)	0.0023 (1.61)	0.0002 (0.09)	0.0011 (0.54)	0.0018* (1.91)
Programs with CEO sales in 12 months (N=2,343)	0.0166*** (7.66)	0.0064*** (6.27)	0.0018** (2.09)	0.0024** (2.36)	0.0020 (1.50)	0.0033*** (3.69)

- Repurchase programs are generally followed by positive long-term abnormal returns
- Repurchase programs that start in equity vesting months also create long-term value
- Repurchase programs followed by CEO sales also create long-term value