

Last revision: January 2011

## SHARE REPURCHASES, EQUITY ISSUANCES, AND THE OPTIMAL DESIGN OF EXECUTIVE PAY

Jesse M. Fried\*

### Abstract

*This paper identifies a cost to public investors to tying executive pay to the stock price, even the long-term stock price. In particular, such an arrangement incentivizes executives to engage in share repurchases and equity issuances that reduce what I call “aggregate shareholder value:” the amount of value flowing to all the firm’s shareholders over time. The paper also puts forward a mechanism that ties executive pay to aggregate shareholder value and thereby eliminates the identified distortions.*

*Key words: executive compensation, executive pay, equity-based compensation, restricted shares, options, shares, stock, repurchases, buybacks, open market repurchases, repurchase tender offers, secondary offerings, seasoned equity offerings, equity issuances, agency costs; overvalued equity.*

JEL Codes: G32, G34, G35, G38, K22, M52

\* Professor of Law, Harvard Law School. For financial support, I am grateful to the John M. Olin Center for Law, Economics, and Business and the Harvard Law School Program on Corporate Governance. Elaine Choi, Shawn Grover, Matt Hutchins, Audrey Lee, and Katherine Petti provided valuable research assistance. For helpful conversations and comments, I would like to thank Joe Bachelder, Lucian Bebchuk, Allen Ferrell, Victor Fleischer, Rob Jackson, Ira Kay, James Kim, Reinier Kraakman, Mark Ramseyer, Guhan Subramanian, Fred Tung, participants at the 2010 ALEA Meeting and the Harvard Law and Economics seminar and, especially, Louis Kaplow and Steve Shavell.

## I. Introduction

Public company executives in the U.S. receive most of their pay in the form of equity compensation – restricted stock, stock options, and other incentives whose payoff increases with the share price. Among the 200 largest U.S. firms in 2009, on average two-thirds of CEO compensation came in the form of restricted stock and stock option grants.<sup>1</sup> Equity-based compensation is increasingly common in other countries as well.<sup>2</sup>

The purpose of equity compensation is to better align executives' interests with those of the firm's shareholders.<sup>3</sup> Tying executives' payoffs more closely to the stock price is supposed to give executives stronger incentives to generate value for shareholders. Not surprisingly, the use of equity-based pay has long been encouraged by investors, regulators, and academics.<sup>4</sup>

Most compensation arrangements tie executive pay to the *short-term* stock price.<sup>5</sup> Over the last decade, there has been growing recognition that tying pay to the short-term stock price encourages executives to focus on short-term results,

---

<sup>1</sup> See Equilar, *2009 CEO Benefits and Perquisites Reports* (July 2009).

<sup>2</sup> See Brian R. Cheffins and Randall S. Thomas, *The Globalization (Americanization?) of Executive Pay*, 1 BERKELEY BUS. L.J. 233, 246 (2004) (describing the increasing use of equity-based pay in Europe and Asia).

<sup>3</sup> See Michael C. Jensen & Kevin J. Murphy, *CEO Incentives--It's Not How Much You Pay, But How*, 68 HARV. BUS. REV. 3, 138-149 (May-June 1990).

<sup>4</sup> See, e.g., Jensen and Murphy, *supra* note x, at 139, 141 (urging boards to use more stock options to better tie equity pay to performance); Jeffrey N. Gordon, 'Say on Pay': *Cautionary Notes on the U.K. Experience and the Case for Shareholder Opt-In*, 46 HARV. J. LEGIS. 323, 348 (2010) (explaining that the widespread embrace of stock options in the 1990s resulted in part from institutional investor pressure on firms).

<sup>5</sup> See Lucian Bebchuk and Jesse Fried, *Pay Without Performance: The Unfulfilled Promise of Executive Compensation* (HARVARD UNIVERSITY PRESS, 2004), Chapter 14, hereinafter Bebchuk and Fried, *Pay Without Performance*.

even at the expense of long-term value.<sup>6</sup> But the problems associated with tying pay to the short-term stock price has not diminished enthusiasm for the use of equity compensation itself; rather, it has simply led to proposals to tie equity payoffs to the long-term stock price.<sup>7</sup>

This paper identifies a different and more subtle economic problem with equity pay – a problem that arises whether an executive is free to sell stock in the short-term or must hold the stock for the long-term. In particular, the paper shows that tying payoffs to either the short-term or long-term stock price fails to align executives’ interests with the maximization of what I have called “aggregate shareholder value:” the amount of value flowing to all the firm’s shareholders over time.<sup>8</sup> Indeed, I show that tying executives’

---

<sup>6</sup> See, e.g., Bebchuk and Fried, *Pay Without Performance*, *supra* note x, chapter 14 (analyzing problems resulting from the broad freedom of executives to unload equity incentives in the short-run).

<sup>7</sup> See, e.g., Bebchuk and Fried, *Pay Without Performance*, *supra* note x, chapter 14 (suggesting that executives be required to hold stock for the long term); Lucian A. Bebchuk and Jesse M. Fried, *Paying for Long-Term Performance*, 158 U. PENN. L. REV. 1915 (2010) (putting forward more detailed recommendations for long-term holding requirements and explaining that executives should be allowed to unwind only a small fraction of their equity each year and that these limits should not terminate when the executive retires or shortly thereafter); Sanjai Bhagat & Roberta Romano, *Reforming Executive Compensation: Focusing and Committing to the Long-Term*, 26\_Yale J. Reg. 359 (2009) (suggesting that executives be paid only with restricted stock and restricted stock options and that such equity cannot be unwound until after retirement).

<sup>8</sup> See Jesse M. Fried, *Informed Trading and False Signaling with Open Market Repurchases*, 93 CAL. L. REV. 1232, 1331 (2005)(using the term “aggregate shareholder value” to describe the amount of value flowing to all the firm’s shareholders over time). Aggregate shareholder value is the net cash flow to all of the firm’s shareholders over time, where net cash flow is the cash received by shareholders from the firm via dividends and share repurchases less any cash paid by shareholders to the firm for their shares. I use the term “aggregate shareholder value” rather than “shareholder value” because “shareholder value” may be confused with “current shareholder value:” the value flowing to the firm’s current shareholders.

payoffs to the future stock price can encourage executives to take steps that destroy aggregate shareholder value.

The paper identifies and analyzes two distortions caused by tying executives' payoffs to the future stock price, even the long-term stock price. First, when the current stock price is below its actual value, executives whose pay is tied to the future stock price are rewarded for diverting cash from productive investments in the firm to fund bargain-price share repurchases. Second, when the current stock price is higher than its actual value, executives are rewarded for issuing new shares even if the cash or other assets received in exchange cannot be used productively by the firm. Such economically undesirable transactions - which I call "costly contractions" and "costly expansions" respectively -- can boost the future stock price and executives' payouts even as they destroy aggregate shareholder value.

The reason why tying executive pay to the future stock price leads to these distortions is straightforward. Tying pay to the future stock price, whether in the short-term or the long-term, aligns the executives' interests with only one group of shareholders, whom I call "non-trading shareholders": investors who neither sell any of their shares nor buy any additional shares until the executive cashes out her equity. It fails to align executives' interests with two other groups of shareholders: (1) "redeeming shareholders," investors who sell shares to the firm before the executive cashes out his equity, and (2) "investing shareholders," investors who buy (additional) shares from the firm before the executive's cash-out date. Instead, tying an executive's pay to the stock price rewards executives for transferring value to non-trading shareholders from redeeming shareholders (by buying the latter's shares at a low price) and investing shareholders (by selling them shares at an inflated price), even if aggregate shareholder value - the amount of value flowing to all three groups of shareholders - is thereby reduced.<sup>9</sup>

---

<sup>9</sup> Tying pay to the future stock price also fails to tie an executives' payoffs to the value flowing to two other groups of shareholders: (1) shareholders who sell their shares in the market before the executive's cash-out date and (2) the investors who buy these selling shareholders' stock.

I also put forward a mechanism that would perfectly tie executive pay to aggregate shareholder value: the “constant-share” approach to equity pay. Under this approach, executives would be required to adjust their equity holdings in the firm whenever the firm purchases or sells its own shares to keep their percentage ownership constant through the transaction. Thus, executives would be required to sell some of their shares whenever the firm repurchases its own stock, and buy additional shares when the firm issues new equity.

In essence, the constant-share approach requires executives to participate equally as both redeeming shareholders and non-trading shareholders when the firm repurchases shares, and as both investing and non-trading shareholders when the firm issues shares. The constant-share approach thus ties executives’ payoffs to the value flowing to all the firm’s shareholders and rewards them for engaging in repurchases and equity issuances if and only if these transactions increase aggregate shareholder value.<sup>10</sup>

I would like to be clear about the normative assumptions underlying this paper’s analysis. Consistent with standard and widely used notions of efficiency that underlie most of the economically-oriented scholarship on corporate governance, I assume that executive compensation

---

But the cash that changes hands when investors buy and sell a firm’s shares to each other in the secondary market does not affect aggregate shareholder value, the total amount of value flowing to shareholders over time. Rather, trading in the secondary market merely redistributes value among different shareholders. Thus, these shareholders’ returns can be ignored when analyzing the extent to which equity pay ties executives’ payoffs to aggregate shareholder value.

<sup>10</sup> In this paper, I abstract from the question of how much (and what elements of) shareholder value should be paid to executives. That is, I do not consider here how much equity executives should receive, whether it should take the form of stock or options, or the extent to which the payoffs from these instruments should be designed to filter out changes in the stock price that are due to market-wide or industry-wide fluctuations. My focus is on ensuring that, whatever equity incentives are used, the payoffs are primarily based on aggregate shareholder value – the amount of cash flowing to all shareholders over time -- rather than the payoffs to a particular subset of shareholders.

arrangements should reward executives for generating –not destroying – economic (or social) value.<sup>11</sup> Indeed, executive compensation arrangements should encourage executives to maximize value even if not all of the firm’s current shareholders are best served by such an arrangement.<sup>12</sup>

I acknowledge that others may have a different view as to the proper purpose of executive compensation arrangements and corporate governance more generally. Many readers may believe that firms should be governed solely to maximize the value flowing to the firm’s current shareholders, regardless of the economic consequences. Thus, for example, managers of a firm in which all of the firm’s current shareholders are short-term shareholders should seek to maximize the short-term stock price even if this reduces the long-term economic value of the firm. Future shareholders are hurt, but they are “outsiders” whose interests do not count as much as the firm’s current shareholders.

But even readers who firmly believe that that firms should be run solely to maximize current shareholder value may find this paper of interest. The problem of costly contraction – using bargain-price repurchases to distribute cash that generates more social value in the firm – involves the transfer of value from (current) redeeming shareholders to (current) non-trading shareholders in a way that reduces the joint value flowing to these two groups of shareholders – that is, current shareholder value. Application of the constant-share

---

<sup>11</sup> For purposes of this paper, I assume that the firm’s current and future shareholders are the only residual claimants to the firm’s cash flow. Thus, maximizing aggregating shareholder value is equivalent to maximizing the firm’s economic or social value. (I will thus use the terms “aggregate shareholder value” and “social value” interchangeably). This assumption, made purely for expositional convenience, does not affect the paper’s analysis about the distortions caused by tying executives’ payoffs to the stock price or the desirability of the constant-share proposal this paper puts forward.

<sup>12</sup> See Michael Jensen, *Agency Costs of Overvalued Equity*, 34 FIN. MAN. 1, 16 (2005) (arguing that future shareholders count as much as current shareholders).

approach solely in the context of repurchases would eliminate this distortion and increase current-shareholder value.

I would also like to note at the outset two substantial hurdles to convincing boards to implement the constant-share approach. First, the constant-share approach will make it more difficult for executives to personally benefit from using inside information to indirectly buy undervalued stock through bargain-price repurchases. It will also make it harder for executives to indirectly sell stock to public shareholders at a high price. Thus, executives can be expected to resist adoption of the constant-share approach, and many directors will lack the incentive to overcome this resistance.

Second, the constant-share approach may lead to a lower stock price by discouraging executives from engaging in certain bargain-price repurchases and inflated-price equity issuances. A lower stock price, in turn, may increase the likelihood of a takeover attempt or proxy fight that threatens directors' positions. Thus, even if executives were agnostic about the constant-share approach, directors themselves may be opposed to adopting it.<sup>13</sup>

While these two obstacles may not be completely insurmountable, they are substantial and worth acknowledging. Aligning executive pay with aggregate shareholder value will not be easy, and I do not expect to see the constant-share approach adopted anytime soon. My objectives in this project are thus (at this stage) much more modest: (1) to demonstrate that, just as there is an economic cost associated with tying executive pay to the short-term stock price, there is an economic cost associated with tying executive

---

<sup>13</sup> Moreover, if directors did adopt the constant-share approach could choose to subtly undermine it. For example, it could promise to boost the amount of an executive's pay for conducting a repurchase or equity issuance that reduces aggregate shareholder value but which the board favors. Indeed, there is evidence that boards boost the compensation of acquiring-firm CEOs who engage in acquisitions that hurt their own shareholders. See Jarrad Harford and Kai Li, *Decoupling CEO Wealth and Firm Performance: The Case of Acquiring CEOs*, 62 J. FIN. 917, 919 (2007). The executive would then obviously have an incentive to conduct such transactions. If adopted, the constant-share approach can only ensure that the executive's existing equity does not inadvertently create an incentive to engage in value-reducing repurchases and share issuances.

pay to the long-term stock price, at least for the typical company that repurchases and issues shares; (2) to show conceptually how compensation arrangements could be structured to better tie executive pay to the value generated by a firm for its shareholders over time.

The remainder of the paper is organized as follows. Part II explains why equity pay gives executives an incentive to engage in excessive repurchases. It begins by showing that tying executive pay to the future stock price rewards executives for engaging in repurchases when the stock price is low. It next explains how repurchases can reduce aggregate shareholder value by distributing cash that should be invested in the firm's own projects. It concludes by demonstrating that executives holding stock are currently rewarded for conducting bargain-price repurchases even when they destroy social value.

Part III explains how equity pay gives executives an incentive to engage in excessive equity issuances. It starts by showing that tying executive pay to the stock price rewards executives for issuing equity when it is overpriced. It then demonstrates that the investments financed by such equity issuances can reduce social value. It concludes by showing that executives are rewarded for inflated-price equity issuances even if the investments financed thereby destroy social value.

Part IV introduces the constant-share approach to equity pay, under which executives must maintain their proportional ownership as the firm transacts in its own stock. Such an approach, it shows, eliminates the incentive to engage in costly contraction and costly expansion created by tying executives' payoffs to the future stock price. A conclusion follows.

## II. EQUITY PAY AND COSTLY CONTRACTION

In this Part, I explain why tying executive payoffs to the stock price, even the long-term stock price, can reward executives for engaging in repurchases that reduce social value. Section A briefly discusses the growing use of repurchases as a means to distribute cash to shareholders. Section B shows that executives holding stock in the firm have a strong incentive to undertake repurchases when the firm's stock price is low, and summarizes the considerable evidence that executives frequently conduct such bargain-price repurchases. Section C explains how repurchases can reduce social value by diverting cash from valuable firm projects. Section D demonstrates that executives holding stock in the firm are rewarded for engaging in such value-wasting repurchases when the stock price is sufficiently low.

### *A. Widespread Use of Repurchases*

Publicly traded U.S. firms annually generate hundreds of billions of dollars in earnings.<sup>14</sup> Each year, executives must decide how much of their firms' retained earnings should be distributed to shareholders rather than reinvested in the firm. Executives must also decide the form that such distribution should take: dividends, repurchases, or a combination of both.

Share repurchases have become increasingly common and are now considered the dominant form of cash payout.<sup>15</sup> Over 90% of U.S. public firms that distribute cash engage in

---

<sup>14</sup> See Gustavo Grullon & Roni Michaely, *Dividends, Share Repurchases, and the Substitution Hypothesis*, 57 J. FIN. 1649, 1655 (2002).

<sup>15</sup> See Douglas J. Skinner, *The Evolving Relationship Between Earnings, Dividends, and Stock Repurchases*, 87 J. FIN. ECON. 582, 582 (2008).

repurchases.<sup>16</sup> In 2007, S&P 500 firms distributed almost \$600 billion through repurchases.<sup>17</sup>

A repurchase will typically take one of two forms: (1) an open market repurchase (OMR) -- in which the firm buys its own stock on the market through a broker;<sup>18</sup> or (2) a repurchase tender offer (RTO), in which the firm offers to buy back its own stock directly from shareholders, usually at a premium over the market price.<sup>19</sup> Because over 90% of repurchases take the form of OMRs,<sup>20</sup> my analysis focuses primarily on OMRs.<sup>21</sup>

Economists believe that the growing use of repurchases rather than dividends is likely the result of the widespread use

---

<sup>16</sup> See Skinner, *supra* note x, at 590. See also Gustavo Grullon & David L. Ikenberry, *What do We Know about Stock Repurchases?*, 13 J. APPLIED CORP. FIN. 31, 33-34 (2000).

<sup>17</sup> See Standard & Poor's Press Release, "S&P 500 Buybacks Set Record of \$589 Billion in 2007," at [www2.standardandpoors.com/.../040708\\_SP500\\_BUYBACK\\_PR.pd](http://www2.standardandpoors.com/.../040708_SP500_BUYBACK_PR.pd) See also Paul A. Griffin and Ning Zhu, *Accounting Rules? Stock Buybacks and Stock Options: Additional Evidence* (working paper, December 15, 2008), at 1 (reporting \$1 trillion of repurchases market-wide in 2007).

<sup>18</sup> See Jesse M. Fried, *Informed Trading and False Signaling with Open Market Repurchases*, 93 CAL. L. REV. 1232, xx (2005) (describing OMRs).

<sup>19</sup> See Jesse M. Fried, *Insider Signaling and Insider Trading with Repurchase Tender Offers*, 67 U. CHI. L. REV. 421 (2000).

<sup>20</sup> See Grullon & Ikenberry, *supra* note X, at 33-34 (reporting that between 1980 and 1999, open-market programs comprised about 92% of the total share repurchase announcements and 91% of the total value of all repurchase announcements); Monica L. Banyl et al, *Errors in Estimating Share Repurchases*, 14 J. CORP. FIN. 460, 460 (2008) (finding that 84% of the 15,496 share repurchases announced in the Securities Data Company's database between 1985 and 2004 were open market purchases).

<sup>21</sup> However, for purposes of this paper, the mechanism by which firms repurchase stock is irrelevant. Regardless of the mechanism used, executives are rewarded for engaging in costly repurchases when their pay is tied to the future stock price.

of stock options to compensate executives.<sup>22</sup> Stock options provide a payoff equal to the difference between the (usually fixed) exercise price and the exercise-date stock price. A dividend reduces firm assets without affecting the number of shares. As a result, a dividend reduces per share value and the share price, thereby diminishing the value of an executive's stock options.<sup>23</sup>

A repurchase in contrast, does not reduce per share value because it decreases firm assets and the number of shares outstanding commensurately. Executives compensated with stock options are thus biased in favor of repurchases.<sup>24</sup> Not surprisingly, executives with larger option packages tend to

---

<sup>22</sup> See, e.g., George Fenn & Nellie Liang, *Corporate Payout Policy and Managerial Stock Incentives*, 60 J. FIN. ECON. 45 (2001) (xxxx). Repurchases may offer shareholders a number of possible advantages over dividends. In many cases, they are a more tax efficient mechanism than dividends for distributing cash. Repurchases (unlike dividends) also may enable firms to acquire shares for increasingly popular stock option plans or provide liquidity to a firm's selling shareholders. See Fried, *Informed Trading*, *supra* note x, at 1336-1340 (describing the possible advantages of repurchases over dividends and explaining why many of them are likely to be quite modest).

<sup>23</sup> One could preserve the value of an executive's stock option following a dividend by reducing the exercise price by the amount of the dividend. However, for various reasons such dividend adjustments are uncommon. See Jeffrey R. Brown, Nellie Liang, and Scott Weisbrenner, *Executive Financial Incentives and Payout Policy: Firm Responses to the 2003 Dividend Tax Cut*, 62 J. FIN. 1935, 1936 (2007). Thus dividends typically reduce the value of an executive's stock options.

<sup>24</sup> Executives paid with restricted stock will also have an incentive to repurchase shares rather than issue dividends if they are not entitled to receive the value of any dividends paid while the restricted stock is vesting. However, most executives compensated with restricted stock appear to be entitled to receive dividends while the stock is still vesting. See Phyllis Plitch, *Moving the Market: Executives Find Restricted Stock Pays Dividends From the Get-Go*, WALL STREET JOURNAL, 28 Feb 2005, C3 (reporting an estimate that 90% of U.S. publicly traded companies award dividends on unvested restricted stock).

pay lower dividends and distribute more cash through share repurchases.<sup>25</sup>

However, as I explain below, even absent this stock-option bias executives will often have an incentive to prefer repurchases over dividends. In particular, any executive whose payoff is tied to the future stock price will get a larger payoff by having the firm engage in a bargain-price repurchase than by having the firm issue a dividend.

### *B. Using Repurchases to Buy Low*

Executives holding stock have a strong incentive to repurchase stock when the price is low. Indeed, there is substantial evidence that executives frequently engage in bargain-price repurchases. I also explain why bargain pricing persists even after firms announce that they plan to repurchase their own shares.

#### *1. Executives' Payoffs*

As I have shown elsewhere, a repurchase is economically equivalent to the following two-step transaction.<sup>26</sup> First, redeeming (selling) shareholders sell their shares to non-trading (continuing) shareholders directly at the repurchase price. Second, the firm issues a dividend to non-trading shareholders equal to the dollar amount of the repurchase. Thus, a low-price repurchases transfers value from redeeming shareholders to continuing shareholders, including executives holding equity.<sup>27</sup>

---

<sup>25</sup> See George Fenn & Nellie Liang, *Corporate Payout Policy and Managerial Stock Incentives*, 60 J. FIN. ECON. 45 (2001) (xxxx).

<sup>26</sup> See Fried, *Informed Trading*, *supra* note x, at 1344-46 .

<sup>27</sup> When a firm buys stock at a low price, the precise distributional effects depend on whether the redeeming shareholders would have otherwise sold their shares to new investors for the same price. If so, the redeeming shareholder cannot be said to "lose" any value as a result of the bargain-price repurchase. Instead, the repurchase deprives would-be new investors of a gain. For simplicity, however, I will assume that it is the redeeming shareholders that lose money as the result of the bargain-price

A simple example can be used to illustrate how a bargain-price repurchase transfers value to executives holding equity in the firm. Consider ABC Corporation (“ABC”) that has two shares outstanding and is liquidated at Liquidation Date.<sup>28</sup> One share is held by its CEO (“CEO”). The other share is held by public shareholders. Consider two scenarios:

*No-Transaction Scenario:* Suppose that if ABC does not repurchase any of its equity (or make any other distribution) prior to Liquidation Date, it will distribute \$20 to the holders of its two shares at Liquidation Date. The no-transaction value of each of ABC’s two shares at Liquidation Date is thus \$10.

*Repurchase Scenario.* Now suppose that ABC can conduct a repurchase before Liquidation Date when the stock trades at \$8 (\$2 less than its actual value of \$10), buying back public shareholders’ single share at that price. Assume that the \$8 spent on the repurchase reduces ABC’s Liquidation-Date value from \$20 to \$12. At Liquidation Date, the value of ABC’s remaining share (held by CEO) is thus \$12.

It should be easy to see that the bargain-price repurchase boosts CEO’s payout without increasing social value –the value flowing to ABC’s shareholders over time. In both the No-Transaction and Repurchase Scenarios, ABC’s social value is \$20.<sup>29</sup> But CEO’s payout in the No-Transaction Scenario is only \$10, while in the Repurchase Scenario it is \$12. The results are summarized in a table below.

---

repurchase. This assumption, made purely for expositional convenience, does not affect any of the paper’s analysis.

<sup>28</sup> I assume that ABC does not issue any dividends (or sell any equity) before Liquidation Date.

<sup>29</sup> In the No-Transaction Scenario, all \$20 flows to shareholders at Liquidation Date. In the Repurchase Scenario, \$8 flows to shareholders during the repurchase and \$12 flows to shareholders at the Liquidation Date (for a total of \$20). Obviously, I am ignoring the time value of money (or alternatively, assuming it is zero). This assumption, made purely for convenience, does not affect the analysis.

**Table 1. Rewards for Bargain-Price Repurchase**

	Social Value	CEO Payoff
No Repurchase	\$20	\$10
Repurchase	\$20	\$12

*2. Evidence of Bargain Repurchases*

Having seen that executives holding equity have an incentive to conduct bargain repurchases, I now turn to the considerable empirical evidence that they do so. This evidence includes (a) executives' own statements and behavior and (b) stock price movements following repurchase announcements.

*a. Executives' Own Statements and Behavior*

Executives freely admit that they frequently use repurchases to buy stock when it is cheap. According to the authors of a major 2005 survey of financial executives regarding their firms' payout policies, "the most popular response for all repurchase questions on the entire survey is that firms repurchase when their stock is a good value, relative to its true value: 86.4% of all firms agree or strongly agree with this supposition."<sup>30</sup> According to the survey's organizers, "executives tell us that they accelerate (or initiate) share repurchases when their stock price is low."<sup>31</sup>

---

<sup>30</sup> Alon Brav, Campbell R. Harvey, John R. Graham, John R. & Roni Michaely, *Payout Policy in the 21st Century*, 77 J. FIN. ECON. 483, 514 (2005).

<sup>31</sup> *Id.* at 514. Earlier studies yielded similar responses. When asked in a 1988 survey what was the most important circumstance precipitating a repurchase, 66% of the surveyed executives responded "low stock price," six times as many as the next most popular answer, "need for treasury stock." George P. Tsetsekos et al., *A Survey of Stock Repurchase Motivations and Practices of Major U.S. Corporations*, 7 J. APPLIED BUS. RES. 15, 17-18, tbl.2 (1991).

Empirical studies confirm that executives' desire to buy stock at a low price is linked to their equity ownership. One study finds that abnormal returns following repurchase announcement, which are associated with pre-repurchase underpricing, are positively correlated with pre-buyback executive stock ownership.<sup>32</sup> Another found that relatively infrequent repurchase announcers—those more likely to be engaged in bargain repurchasing than repurchasing to acquire stock for employee option programs—also tend to have higher levels of executive ownership.<sup>33</sup> Both of these studies indicate that executives are more likely to engage in bargain-price repurchases when they hold more equity.

Moreover, executives actively manipulate earnings to drive the stock price down around repurchases and thereby increase the amount of value transferred to themselves and other shareholders.<sup>34</sup> Such earnings manipulation is more aggressive when the CEO's equity ownership is higher, providing additional evidence that executives conduct repurchases to boost the value of their equity.<sup>35</sup>

One might wonder why the insider trading laws do not prevent executives from engaging in such indirect insider trading. But, as I have explained elsewhere, there are substantial limits on insider trading law's ability to deter corporations from using inside information to trade in their own stock.<sup>36</sup> Executives are thus left with considerable ability

---

<sup>32</sup> See Raad & Wu, *supra* note x, at 57 (1995) (finding that abnormal returns following repurchase announcements, which are associated with pre-repurchase underpricing, are positively correlated with pre-buyback executive stock ownership).

<sup>33</sup> See Murali Jagannathan & Clifford Stephens, *Motives for Multiple Open-Market Repurchase Programs*, 32 FIN. MGMT. 71, 71-72 (2003).

<sup>34</sup> See Guojin Gong, Louis Henock, and Amy Sun, *Earnings Management and Firm Performance Following Open-Market Repurchases*, 63 J. FIN. 947 (2008) (reporting that firms adjust accruals to decrease their reported earnings before stock repurchases).

<sup>35</sup> Id.

<sup>36</sup> See Fried, *Informed Trading*, *supra* note x, at \_\_\_\_ Indeed, it is not completely clear under current law whether it is ever illegal for a

to use the corporation for indirect insider trading when the stock price is low.

*b. Post-Announcement Stock Returns*

Stock price movements following repurchase announcements also suggest that inside information drives many repurchases. If executives use repurchases to buy stock at a low price, then the stock prices of firms announcing repurchases should, on average, subsequently outperform those of firms not announcing repurchases. Indeed, stock prices of firms announcing repurchasing increase faster than stock prices of similar firms not announcing repurchases. One study found that shares of firms announcing repurchases earn abnormal returns of 6.7% in the first year following the announcement and 23.6% over the subsequent four years.<sup>37</sup>

Post-announcement returns are even higher in those firms that actually repurchase shares after making a repurchase announcement.<sup>38</sup> Focusing on “value firms” (firms with a high book-to-market ratio) that had announced repurchases, one

---

corporation to buy its own stock in the public markets on inside information. See Mark Loewenstein and William K.S. Wang, *The Corporation as Insider Trader*, 30 DELAWARE JOURNAL OF CORPORATE LAW, 45, 70-72 (2005)(noting that the SEC takes the position that an issuer trading on material inside information would violate Rule 10b-5, but that this position has not been endorsed by any court)

<sup>37</sup> See Konan Chan et al., *Economic Sources of Gains in Stock Repurchases*, 39 J. FIN. QUANT. ANALYSIS 461 (2004). See also Urs Peyer and Theo Vermaelen, *The Nature and Persistence of Buyback Anomalies*, 22 REV. FIN. STUD. 1693, 1701 (2009) (finding, in large sample of firms announcing OMRs, a 24.25% cumulative market-adjusted return over 48 months following OMR announcements).

<sup>38</sup> After making a repurchase announcement, which is not binding, executives can choose how much (if any) equity to actually repurchase. See Fried, *Informed Trading*, *supra* note x, at 1335 (explaining that firms announcing authorization of open market repurchases, the most common form of repurchases, are not required to indicate the number of shares they intend to repurchase or commit to repurchasing any shares).

study found that among the firms in which managers subsequently repurchased more than 4% of the firm's shares in the year following the repurchase announcement, four-year post-announcement abnormal returns were 57%, compared to 0% for firms that did not subsequently repurchase any shares.<sup>39</sup> These post-announcement returns provide further strong evidence (along with executives own statements and their behavior) that executives often use repurchases to indirectly buy underpriced stock.

### 3. *Why Bargain Pricing Persists After Repurchase Announcements*

Because executives often use repurchases to buy stock at a low price, a repurchase announcement will tend to signal that the value of the stock is higher than the current market price.<sup>40</sup> This signal, in turn, can be expected to boost the stock price, reducing the amount of underpricing and the executives' ability to profit from a bargain-price repurchase. Indeed, if a repurchase announcement clearly signaled a certain amount of

---

<sup>39</sup> See Konan Chan et al., *Do Managers Time the Market? Evidence from Open-Market Share Repurchases*, 31 J. BANK. FIN. 2673, 2688 (2007). Other studies indicating that executives in the U.S. and elsewhere tend to repurchase stock when it is underpriced include Clifford P. Stephens & Michael S. Weisbach, *Actual Share Reacquisitions in Open Market Repurchase Programs*, 53 J. FIN. 313 (1998) (finding that executives are more likely to follow up a repurchase program announcement with actual repurchases if the stock subsequently performs poorly); Paul Brockman & Dennis Y. Chung, *Managerial Timing and Corporate Liquidity: Evidence from Actual Share Repurchases*, 61 J. FIN. ECON. 417, 418 (2001) (reporting that executives of firms on the Hong Kong Stock Exchange use inside information to repurchase stock at a low price).

<sup>40</sup> A stock's value depends on the expected value of its future cash flows, which in turn is a function of the amount and timing of those cash flows as well as the interest rate appropriate for discounting the cash flows. The higher the volatility, the higher the discount rate. Thus, managers can reap profits by trading based on private information about the amount, timing, or volatility of future cash flows. Indeed, there is substantial evidence that repurchasing firms have much lower future volatility than the market had assumed. See Gustavo Grullon & Roni Michaely, *The Information Content of Share Repurchase Programs*, 59 J. FIN. 651, 678 (2004).

underpricing, the announcement should – in an efficient market -- immediately eliminate the underpricing.

However, investors do not appear to immediately impart the information contained in repurchase announcements into the stock price, just as they do not immediately impart other types of information into the stock price.<sup>41</sup> Their failure to do so has contributed to the development of the well-established and well-documented phenomenon of investor “underreaction.”<sup>42</sup> In short, markets are not as efficient as some commentators might believe.

Moreover, even if markets were perfectly efficient, bargain pricing would still persist after repurchase announcements. The reason is that investors would understand that boards may announce a buyback even when the stock is not underpriced. For example, as I have explained elsewhere, executives might announce a repurchase program that they have no plan to actually conduct simply to boost the stock price so they can unload their own shares at a higher price.<sup>43</sup> Indeed, a recent paper finds evidence of what I have called “false signaling.”<sup>44</sup> Because repurchase announcements

---

<sup>41</sup> See, David Ikenberry et al., *Market Underreaction to Open Market Share Repurchases*, 39 J. FIN. ECON. 181, 190 (1995).

<sup>42</sup> See, e.g., Ikenberry et al., *supra* note x, at 190; Harrison Hong & Jeremy C. Stein, *A Unified Theory of Underreaction, Momentum Trading, and Overreaction in Asset Markets*, 54 J. FIN. 2143 (1999).

<sup>43</sup> See Jesse M. Fried, *Open Market Repurchases: Signaling or Managerial Opportunism?*, 2 THEORETICAL INQUIRIES IN LAW 865, 879-81 (2001) (explaining that executives can use repurchase announcements to boost the stock price before selling their shares); Fried, *Informed Trading*, *supra* note x, at 1351-56 (further developing the argument that executives can use repurchase announcements for false signaling and providing anecdotal accounts of such false signaling). Alternatively, firms may announce a repurchase because they need to repurchase shares for employee stock option programs.

<sup>44</sup> See Konan Chan, David L. Ikenberry, Imoo Lee, and Yanzhi Wang, *Share Repurchases: a Potential Tool to Mislead Investors*, 16 J. CORP. FIN. 137 (2010) (finding evidence consistent with executives of poorly performing firms making share repurchase announcements without an intention to repurchase shares).

are made for reasons other than bargain repurchases, repurchase announcement would never unambiguously signal that the stock is underpriced.<sup>45</sup> Thus, even in a perfectly efficient market, any adjustment to the stock price would not close the underpricing gap.

Because of the underreaction problem and the fact that some repurchases announcements are not driven by the desire to buy stock at a low price, the market response to repurchase announcements is, on average, rather muted. Repurchase announcements are associated with short-term abnormal price increases averaging 3% to 4% in the 1980s<sup>46</sup> and approximately 2% in the 1990s.<sup>47</sup> The more muted the market's response to a repurchase announcement, the more profits executives can make repurchasing underpriced stock.

### *C. The Possibility of Costly Repurchases*

We have just seen that executives holding equity have incentives to engage in bargain repurchases, even if those repurchases do not increase social value. In addition, there is considerable evidence that executives do engage in such bargain repurchases. I will now explain how repurchases (whether or not they are bargain-priced) can reduce social value.

#### *1. How Repurchases Can Reduce Social Value*

---

<sup>45</sup> Because of the problem of false signaling, I have suggested that firms be required to disclose not only their intention to repurchase shares but also the exact details of any buy orders given to brokers shortly before the orders are made. See Fried, *Informed Trading*, *supra* note x, at \_\_\_\_.

<sup>46</sup> See Ikenberry et al., *Market Underreaction*, *supra* note x, at 190 (reporting that the average market reaction to OMR announcements for all of the OMRs announced between January 1980 and December 1990 by firms listed on the ASE, NYSE, and NASDAQ was 3.54%).

<sup>47</sup> See Peyer and Vermaelen, *supra* note x, at 1697 (finding that, in a sample of OMR announcements from 1991-2001, there were average abnormal stock price reactions of 2.39% in the three days around the announcement).

A repurchase can reduce social value by distributing cash that from a social perspective could generate higher returns if invested in the firm's own projects. Suppose, for example, that \$100 left in the firm would generate a return of 15% (\$15). Suppose that if instead the \$100 was distributed to shareholders, the shareholders receiving the cash could generate returns of only 10% (\$10). Distributing the \$100 through a repurchase would thus destroy \$5 of social value.

In fact, there is evidence consistent with repurchases diverting cash that would otherwise be used in the firm. A recent study finds that repurchases, especially those that appear driven by executive stock ownership, have a significantly negative effect on a firm's short-term investments and R&D.<sup>48</sup> The study found that, everything else equal, doubling repurchases led to an 8% reduction in R&D expenditures. An earlier study came to similar conclusions – that repurchases led to firms diverting cash from potentially productive investments.<sup>49</sup>

To be sure, these two studies do not establish that most or even many repurchases destroy social value. But they do provide evidence that repurchases can divert cash from productive activities inside the firm, increasing the likelihood that some repurchases distribute to cash to shareholders that would generate more social value inside the firm.

## 2. Constraints on Firm Borrowing

One might wonder why a firm that has a valuable project and whose stock trades at a low price can't have its

---

<sup>48</sup> See Alok Bhargava, *Executive Compensation, Share Repurchases, and Investment Expenditures: Econometric Evidence from US. Firms* (working paper, 2010).

<sup>49</sup> See Daniel Bens et al, *Real Investment Implications of Employee Stock Option Exercises*, 40 J. ACCT. RESEARCH 359, 359 (2002) (finding some evidence that firms repurchasing shares to satisfy option exercises exhibit subsequent poor performance because the repurchases divert cash from productive investments).

cake and eat it too. Indeed, in a world of perfect capital markets, there would be no need to sacrifice desirable firms projects to fund a bargain-price repurchase. Firms could easily find the cash both to buy their stock at a low price and to invest in their high-value projects.

Consider the example above, where shareholders can earn 10% on the cash they receive from the corporation and a 15% project is sacrificed to fund a \$100 repurchase. In a world of perfect capital markets, the corporations should be able to obtain financing for any project with a positive net present value. Thus, a firm's ability to invest in desirable projects would not depend on having cash on hand. A firm could both repurchase \$100 worth of shares and invest \$100 in the desirable project simply by borrowing another \$100 for the project.

However, there are a number of reasons why a firm may not borrow enough money to fully fund the desirable project. First, information asymmetry may prevent a firm from borrowing money on cost-effective terms. While the firm's executives may know that the firm's prospects are good, outside lenders asked to provide capital may lack sufficient information to reach the same conclusion. Outside lenders may thus demand terms that make the financing of the desirable project too costly, leading executives to forego the project.<sup>50</sup>

Second, even if a firm could borrow on reasonable terms from a lender, the borrowing may not be permitted by the firm's existing arrangements. For example, loan covenants with existing lenders might bar the firm from borrowing additional funds. Covenants are inevitably both underinclusive and overinclusive: they fail to prevent some value-decreasing activities and unfortunately prevent some value-increasing activities.<sup>51</sup> In this case, a loan covenant would be over-

---

<sup>50</sup> See generally Stewart Myers & Nicholas S. Majluf, *Corporate Financing and Investment Decisions when Firms have Information that Investors Do Not Have*, 13 J. FIN. ECON. 187 (1984).

<sup>51</sup> See Lucian A. Bebchuk and Jesse M. Fried, *The Uneasy Case for the Priority of Secured Claims in Bankruptcy*, 105 YALE L.J. 857, 879 (1996); Marcel Kahan and David Yermack, *Investment Opportunities and the Design of Debt Securities*, 14 J. L. ECON. ORG. 136 (1998).

inclusive: it would prevent the firm from financing a desirable project with additional debt.<sup>52</sup>

Third, executives who are risk-averse may wish to avoid the additional discipline imposed by more debt. Even if credit could be obtained on reasonable terms and the firm's existing arrangements would permit such a borrowing, the executives might personally be better off foregoing the valuable project than having the firm take on more debt. For any or all three of these reasons, there may be a tradeoff between a firm's ability to repurchase its shares and its ability to fund productive activities inside the firm.

#### *D. Rewards for Costly Contraction*

We have seen that executives holding stock can profit from bargain-price repurchases and that repurchases can reduce social value. I will now show that executives holding stock can be rewarded for engaging in value-wasting repurchases. I will then explain that other components of executives' pay packages fail to mitigate this distortion.

##### *1. Equity Pay and Costly Repurchases*

To see why price-based payoffs rewards executives for costly contraction, let us return to the example of ABC Corporation ("ABC") introduced in Section B. As before, ABC has two shares outstanding and is liquidated at Liquidation Date.<sup>53</sup> One share is held by its CEO ("CEO").

---

<sup>52</sup> In principle, these covenants preventing a value-increasing investment could be renegotiated, with the resulting surplus shared between the lender and the borrower. But such renegotiation is often difficult or costly, particularly when the borrower must simultaneously renegotiate with multiple creditors to obtain the modifications needed to facilitate the new investment.

<sup>53</sup> I assume that ABC does not issue any dividends (or sell any equity) before Liquidation Date.

The other share is held by public shareholders. Consider two scenarios:

*No-Transaction Scenario:* Suppose that if ABC does not repurchase any of its equity (or make any other distribution) prior to Liquidation Date, it will distribute \$20 to the holders of its two shares at Liquidation Date. The no-transaction value of each of ABC's two shares at Liquidation Date is thus \$10.

*Costly Repurchase Scenario.* Now suppose that ABC can conduct a repurchase before Liquidation Date when the stock trades at \$8 (\$2 less than its actual value of \$10), buying back public shareholders' single share at that price. Assume that the \$8 spent on the repurchase reduces ABC's Liquidation-Date value by \$9, from \$20 to \$11, because ABC must give up a valuable project. At Liquidation Date, the value of ABC's remaining share (held by CEO) is thus \$11.

It should be easy to see that the costly bargain-price repurchase boosts CEO's payout even though it reduces social value. In the No-Transaction Scenario, ABC's social value is \$20; in the Costly Repurchase Scenario, ABC's social value is \$19.<sup>54</sup> But CEO's payout in the Costly Repurchase Scenario is \$11, \$1 more than in the No-Transaction Scenario. The effect of the repurchase on shareholder value and CEO's payoff can be summarized in the following table:

**Table 2. Rewards for Costly Repurchase**

	Social Value	CEO Payoff
No Repurchase	\$20	\$10
Repurchase	\$19	\$11

---

<sup>54</sup> In the No-Transaction Scenario, all \$20 flows to shareholders at Liquidation Date. In the Repurchase Scenario, \$8 flows to shareholders during the repurchase and \$11 flows to shareholders at the Liquidation Date (for a total of \$19). I continue to ignore the time value of money (or alternatively, assume it is zero).

As one can see, an executive holding equity can be rewarded for repurchasing shares even when the transaction destroys social value. The problem is that equity aligns CEO's interests with non-trading shareholders but not with redeeming shareholders. Thus, CEO has an incentive to take steps that transfer value from redeeming shareholders to non-trading shareholders even when those steps destroy social value.

## 2. Do Other Pay Components Mitigate?

We just saw that an executive holding equity can be rewarded for engaging in a repurchase that reduces social value. But, executives are typically free to sell much of their equity in the short-term.<sup>55</sup> One might think that having stock that could be sold in the short-term would tie the executive's payout to that of short-term shareholders, including redeeming shareholders, those who sell stock back to the corporation when the firm conducts a repurchase.

However, the fact that executives *can* sell stock in the short term does not mean that they *will* sell stock in the short term. When executives know that the stock is underpriced and conduct a repurchase in order to indirectly buy stock at a low price, they can be expected to hold onto their personal shares until the stock price rises. In fact, there is evidence that executives buy additional shares for their personal accounts before and during bargain repurchases.<sup>56</sup> Thus, other components of executives' compensation arrangements will not mitigate executives' financial incentives to engage in costly repurchases.<sup>57</sup>

---

<sup>55</sup> See Bebchuk and Fried (2004), *supra* note x, at 174-179.

<sup>56</sup> See Elias Raad and H.K. Wu, *Insider Trading Effect on Stock Returns Around Open-Market Stock Repurchase Announcements: An Empirical Study*, 18 J. FIN. RES. 45, 57 (1995).

<sup>57</sup> Executives' preference for presiding over a larger firm may somewhat reduce their incentive to engage in costly repurchases.

### III. EQUITY PAY AND COSTLY EXPANSION

Part II demonstrated that executives holding equity (even for the long-term) are rewarded for inefficiently contracting the firm's operations when the firm's stock price is low. This Part shows that such executives are rewarded for inefficiently expanding the firm's operations when the firm's stock price is high. In particular, such executives benefit from having the firm sell additional equity at inflated prices, even when the cash raised by such issuances will be invested in ways that reduce social value.

Section A discusses the widespread use of equity issuances by firms. Section B explains that executives holding equity in their firms benefit when the firms sell overpriced stock. It also provides evidence that such inflated-price issuances are common. Section C explains why equity issuances can reduce social value. Section D then shows that executives can benefit even if inflated-price share issuances lead to a reduction in social value.

#### A. *The Use of Share Issuances*

After undergoing an IPO, a publicly-traded firm usually continues to issue shares throughout its life.<sup>58</sup> Such issuances typically serve one of three purposes. First, stock is issued to employees as part of their compensation packages.<sup>59</sup> Second, stock issuances are used to raise cash for operations and

---

<sup>58</sup> See Eugene F. Fama and Kenneth R. French, *Financing Decisions: Who Issues Stock?*, J. FIN. ECON. (2005) (reporting that 86% of the firms in their sample issued stock between 1992-2003).

<sup>59</sup> Most publicly traded companies issue shares to give executives and lower level employees either restricted stock or stock options as part of their compensation packages. Among the largest 200 firms in 2007, the range of shares allocated to equity compensation plans ranged from .02% of outstanding shares to 62.6% of outstanding shares, with the median around 10.5%. See Pearl Meyer's 2008 Equity Stake Study, at 2.

strategic investments or to pay down debt.<sup>60</sup> Third, in the context of corporate acquisitions, stock is often issued to target shareholders as consideration for their shares in the target and their claims on the target company's assets.

Although equity issuances have different purposes, all have the same economic consequence: they directly or indirectly move cash or other assets into the firm.<sup>61</sup> Equity issuances thus have the opposite effect of repurchases. While repurchases remove value from the firm and put it in the hands of shareholders, equity issuances take value from shareholders and put it into the firm's hands.

### *B. Using Share Issuances to Sell High*

Executives holding stock have a strong incentive to issue shares when the stock price is high. There is substantial evidence that executives frequently engage in inflated-price issuances.

#### *1. Executives' Payoffs*

An equity issuance has analogous distributional effects to a share repurchase. As we saw in Part II, a share repurchase transfers value from redeeming shareholders to non-trading shareholders when the stock price is low. Similarly, a stock issuance transfers value from investing shareholders to non-trading shareholders when the stock price is high.

---

<sup>60</sup> These cash-raising issuances may take the form of seasoned equity offerings, private placements, convertible debt, warrants, or rights issues. See Fama and French, *supra* note x, at \_\_\_\_.

<sup>61</sup> The issuance of equity for compensation indirectly moves cash into the firm. The firm gives equity to executives and other employees, who eventually sell the equity for cash on the open market to investors. This practice has the same economic effect as a transaction in which the investors buy stock from the firm for cash, and the firm then uses the cash to compensate executives and other employees. The issuance of stock to raise cash to pay down debt also indirectly shifts cash into the firm by reducing future interest payments.

Like a share repurchase, an equity issuance is economically equivalent to a two part-transaction that involves investing shareholders trading directly with non-trading shareholders. In particular, a stock issuance is economically equivalent to: (1) the firm issuing shares pro rata to non-trading and investing shareholders for the issuance price; and (2) non-trading shareholders selling their portion of the issued shares to the investing shareholders for the issuance price. Thus, an equity offering transfers value from investing shareholders to non-trading shareholders (including executives holding stock) when the sale price exceeds the value of the stock.

To illustrate the incentive of executives holding stock to conduct inflated-price offerings, consider again ABC Corporation. As before, it has two shares outstanding, one held by CEO and one held by public shareholders, and is liquidated at Liquidation Date.<sup>62</sup> One share is held by its CEO (“CEO”). The other share is held by public shareholders. Consider two scenarios:

*No-Transaction Scenario:* Suppose that if ABC does not sell any of its equity prior to Liquidation Date, it will distribute \$20 to the holders of its two shares at Liquidation Date. The no-transaction value of each of ABC’s two shares at Liquidation Date is thus \$10.

*Equity Issuance Scenario.* Now suppose that ABC can conduct an equity issuance before Liquidation Date when the stock trades at \$13 (\$3 more than its actual value of \$10), selling a third share at that price. Assume that the \$13 received by ABC increases ABC’s Liquidation-Date value from \$20 to \$33. At Liquidation Date, the value of each of ABC’s three shares (including that held by CEO) is thus \$11.

It should be easy to see that the inflated price issuance boosts CEO’s payout without increasing social value –the value

---

<sup>62</sup> I assume that ABC does not issue any dividends (or repurchase any equity) before Liquidation Date.

flowing to ABC's shareholders over time. In both the No-Transaction Scenario and Repurchase Scenario, ABC's social value is \$20.<sup>63</sup> But CEO's payout in the No-Transaction Scenario is only \$10, while in the Equity Issuance Scenario it is \$11.

**Table 3. Rewards for Inflated-Price Issuance**

	Social Value	CEO Payoff
No Equity Issuance	\$20	\$10
Equity Issuance	\$20	\$11

## 2. Evidence of Inflated-Price Issuances

There is considerable evidence that firms tend to conduct seasoned equity offerings ("SEOs") – transactions in which cash is raised from new and existing shareholders -- when the stock is overpriced. For example, one well-known study found that firms undertaking SEOs systematically underperform benchmark stocks over a five-year post-offering period.<sup>64</sup> This pattern of underperformance indicates that the

---

<sup>63</sup> In the No-Transaction Scenario, all \$20 flows to shareholders at Liquidation Date. In the Equity Issuance Scenario, \$13 flows from shareholders during the equity issuance and \$33 flows back to shareholders at the Liquidation Date (for a net amount of \$20). Obviously, I am ignoring the time value of money (or alternatively, assuming it is zero). This assumption, made purely for convenience, does not affect the analysis.

<sup>64</sup> See T. Loughran and J. Ritter, *The New Issues Puzzle*, 50 J. FIN. 1, (1995) (examining thousands of IPOs and SEOs between 1970-1990). See also Jeffrey Pontiff and Artemiza Woodgate, *Share Issuance and Cross-sectional Returns*, 63 J. FIN. 921, 943-44 (2008) (finding evidence of post-SEO stock underperformance in a more recent sample of U.S. SEOs). For evidence that SEOs are used in other countries to sell stock at an inflated price, see Brian J. Henderson, Narasimhan Jegadeesh, and Michael S. Weisbach, *World markets for raising new capital*, 82 J. FIN. ECON. 63, 66 (2006)(reporting that stock market returns are abnormally low following periods of high equity issues).

shares sold were on average overvalued at the time of the SEO.<sup>65</sup>

When a firm's shares are overpriced, it is also more likely to acquire other companies and use its shares as consideration in the merger.<sup>66</sup> There is evidence that such acquisitions boost the long-term stock price of the acquiring firms (relative to the no-acquisition scenario).<sup>67</sup> To the extent executives of these firms hold equity that they cannot cash out, they will benefit from using overvalued stock to acquire target assets at a discount.<sup>68</sup>

---

<sup>65</sup> The failure of investors to immediately impart all of the information signaled by these transactions into the stock price is another example of investor underreaction discussed earlier. See, e.g., Loughran and Ritter (1995), *supra* note x; at \_\_\_; Hong & Stein, *supra* note x, at \_\_\_\_.

<sup>66</sup> See, e.g., Ming Dong, David Hirshleifer, S. Richardson, and S.H. Teoh, *Does Investor Misvaluation Drive the Takeover Market?*, 61 J. FIN. 725 (2006) (finding that overpriced firms are more likely to try to acquire other firms that are less overpriced); Rhodes-Kropf, Robinson, and Viswanathan, *Valuation Waves and Merger Activity: The Empirical Evidence*, 77 J. FIN. ECON. 561 (2005). Cf. Andrei Shleifer and Robert W. Vishny, *Stock Market Driven Acquisitions*, 70 J. FIN. ECON. 295 (2003) (proposing that overvalued firms engage in stock-financed acquisitions so that the overvalued firms' shareholders can benefit from obtaining hard assets at a discount); Matthew Rhodes-Kropf and S. Viswanathan, *Market Valuation and Merger Waves*, 59 J. FIN. 2685 (2004) (similar); Itzhak Ben-David, *Are Stock-Acquirers Overvalued? Evidence from Short-Selling Activity* (working paper, March 2010) (determining that short-selling activity is consistent with acquirers using overvalued stock to buy other companies).

<sup>67</sup> See Pavel G. Savor & Qi Lu, *Do Stock Mergers Create Value for Acquirers?* 64 J. FIN. 1061, \_\_\_ (2009). (finding that the shares of a sample of stock-financed acquirers that complete their acquisition outperform a control sample of stock-finance acquirers that fail to complete their acquisition by 25-30% over a three-year horizon). See also Tim Loughran and Anand Vijh, *Do Long-Term Shareholders Benefit From Corporate Acquisitions?* 52 J. FIN. 1765, 1775 (1997) (finding that managers of acquiring firms use stock to pay for the acquisitions when their stock is likely to be overvalued and cash when their stock is likely to be undervalued).

<sup>68</sup> To the extent insiders can cash out their equity immediately, they will have an incentive to do so when they realize the stock is overpriced. See Daniel Bradley, Brandon Cline, and Qin Lian, *Do Insiders Practice What they Preach? Informed Option Exercises Around Acquisitions* (working paper, 2009) (finding that around the announcement of stock-financed acquisitions

Recall from Part II that there is evidence that executives manipulate the stock price down around repurchases to increase their profits from bargain-price repurchases. Similarly, executives manipulate the stock price up around equity offerings in order to increase the amount transferred from new investors. One study found that seasoned equity issuers are more likely to manipulate earnings than non-issuers and that such manipulations boost the price around the equity offering.<sup>69</sup> Such earnings manipulations also occur when the stock is being used to acquire another company.<sup>70</sup>

### *C. The Possibility of Costly Expansion*

As we have seen, executives holding equity are rewarded for conducting inflated-price issuances, and there is considerable evidence that such issuances are common. This Section shows that equity issuances can reduce social by diverting money into firm investments that yield lower returns than investments outside the firm.

#### *1. Why Expansion Can Reduce Social Value*

---

insiders of the acquiring firm exercise stock options and sell the underlying shares, which is consistent with the acquirer stock being over-priced).

<sup>69</sup> See S. Teoh, Ivo Welch, and T.J Wong, *Earnings Management and the Underperformance of Seasoned Equity Offerings*, 50 J. FIN. ECON. 1935 (1998) (reporting that secondary equity issuers raise reported earnings by altering discretionary accruals and that this manipulation lowers post-offering returns). See also Daniel A. Cohen and Paul Zarowin, *Accrual-Based and Real Earnings Management Activities Around Seasoned Equity Offerings* (working paper, 2008) (finding use of both accrual-based and real earnings management in a sample of 1500 seasoned equity offerings between 1987-2006).

<sup>70</sup> See, e.g., Merle Erickson & Shiing-Wu Wang, *Earnings Management by Acquiring Firms in Stock for Stock Mergers*, 27 J. ACCT. & ECON. 149 (1999) (finding, in a sample of stock-financed mergers between 1985-1990, that acquirers managed earnings upward before announcing the merger); Henock Louis, *Earnings Management and the Market Performance of Acquiring Firms*, 74 J. FIN. ECON. 121 (2004) (similar).

Just as a share repurchase can reduce shareholder value by distributing cash that should be invested in the firm's own projects, an equity issuance can reduce shareholder value by enabling the firm to engage in projects that yield a lower return than projects outside the firm. Suppose, for example, that the \$100 raised by an equity issuance would generate a return of 10% outside the firm. Suppose further that, if invested in the firm, the \$100 would generate returns of 5%. The \$100 equity issuance will thus destroy \$5 of shareholder value.

Substantial evidence demonstrates that expansions facilitated by equity issuances often reduce shareholder value. For example, acquisitions – many of which are financed by the acquirer issuing stock – frequently reduce the aggregate wealth of acquirer and target shareholders. One study found that during the period 1998-2001 the combined value of acquirer and target stock fell over \$100 billion following acquisition announcements.<sup>71</sup>

It is well known that much of this value destruction occurs when acquirers have overpriced stock.<sup>72</sup> A well-known example of an overpriced equity offering that destroyed social value is America Online's (AOL) stock-financed acquisition of Time Warner in 2000. AOL, with a market capitalization of over \$200 billion, used \$164 billion of its own stock to acquire Time Warner. There turned out to be no synergies from merging the two companies; indeed, they were worth more separated. Nine years later, AOL and Time parted ways. When AOL was spun off, it was worth \$3.5 billion.<sup>73</sup>

---

<sup>71</sup> See Sara B. Moeller, Frederik P. Schlingemann, and Rene M. Stulz, *Wealth Destruction on a Massive Scale? A Study of Acquiring-firm Returns in the Recent Merger Wave*, 60 J. FIN. 757 (2005). To the extent some of the decrease in the acquirer stock price following acquisition announcements is due to the fact that the offer signals that the acquirer is overpriced, not all of this loss in value may represent a destruction in social value.

<sup>72</sup> See Michael Jensen, *Agency Costs of Overvalued Equity*, 34 FIN. MAN. 1, 10 (2005).

<sup>73</sup> See Savor and Lu, *supra* note x, at \_\_\_\_\_. Combining AOL and Time Warner proved so unsuccessful that Time Warner eventually spin off AOL at a valuation of about \$3.5 billion. See Reuters, *AOL Spin-Off is Set for Dec.*

Although the merger was a bust, AOL's original shareholders did very well. Had AOL not acquired Time Warner, these shareholders would have seen the value of their AOL shares decline from over \$200 billion to several billion dollars. Instead, AOL shareholders ended up owning a large fraction of Time Warner, which has a current market capitalization of over \$30 billion. Thus acquisitions using high-priced stock can boost the long-term stock price of the acquiring firm even if the acquisitions destroy social value.

2. *Why not Sell Overpriced Shares and Distribute the Cash to Shareholders?*

A firm that sells inflated-price equity could, in principle, simply distribute the sale proceeds to its shareholders rather than invest it in unproductive activities. Indeed, the firm's current shareholders and its executives would be much better off if the cash raised by an inflated-price offering could be used to generate high returns outside the firms than low returns inside the firm.

Why then would executives ever use the cash raised from an inflated price offering to make unproductive investments in the firm? The reason is simple. A firm selling equity must inform its old and new investors the purpose of the financing. If it announces that it will take all the funds raised and hold it in cash or distribute it to shareholders, investors will immediately recognize that the firm is issuing stock merely to take advantage of the high price. Investors will thus refuse to purchase shares, preventing the firm from selling overpriced equity.

Because firms selling equity cannot distribute the cash to investors, they generally use most of the funds for some other

---

9, (November 16, 2009), available at <http://www.nytimes.com/2009/11/17/technology/companies/17aol.html>. AOL's peak market cap was over \$220 billion. See Meet the Market's Biggest Losers, CNN Money, available at [http://money.cnn.com/galleries/2010/fortune/1002/gallery.biggest\\_losers.fortune/8.html](http://money.cnn.com/galleries/2010/fortune/1002/gallery.biggest_losers.fortune/8.html).

purpose, such as increasing investment.<sup>74</sup> Executives do not have the option of taking the cash raised inflated-price equity offerings and giving it to shareholders.

#### *D. Rewards for Costly Expansion*

Having seen that equity issuances can reduce social value, we will now see that executives holding equity can be rewarded by engaging in inflated-price equity issuances that reduce social value. I will then explain that other components of executives' pay packages do not mitigate this distortion.

##### *1. Equity Pay and Costly Expansion*

Executives holding equity are rewarded for engaging in inflated-price equity issuances, even if they reduce social value. Return again to ABC Corporation. As before, it has two shares outstanding, one held by CEO and one held by public shareholders, and is liquidated at Liquidation Date.<sup>75</sup> One share is held by its CEO ("CEO"). The other share is held by public shareholders. Consider two scenarios:

*No-Transaction Scenario:* Suppose that if ABC does not sell any of its equity prior to Liquidation Date, it will distribute \$20 to the holders of its two shares at Liquidation Date. The no-transaction value of each of ABC's two shares at Liquidation Date is thus \$10.

---

<sup>74</sup> See Woojin Kim and Michael S. Weisbach, *Motivations for public equity offers: An international perspective*, 87 J. FIN. ECON. 281, — (2008) (finding that over 99% of funds raised in equity offerings are used for R&D and capital expenditures over the next four years); Ming Dong, David Hirshleifer, and Siew Hong Teoh, *Stock Market Misvaluation and Corporate Investment* (working paper, 2007) (finding that cash raised by overpriced firms issuing equity is used to increase investment).

<sup>75</sup> I assume that ABC does not issue any dividends (or repurchase any equity) before Liquidation Date.

*Equity Issuance Scenario.* Now suppose that ABC can conduct an equity issuance before Liquidation Date when the stock trades at \$14 (\$4 more than its actual value of \$10), selling a third share at that price. Assume that the \$14 received by ABC increases ABC's Liquidation-Date value from \$20 to \$33 because \$1 of social value is destroyed by the transaction. At Liquidation Date, the value of each of ABC's three shares (including that held by CEO) is thus \$11.

It should be easy to see that the inflated price issuance boosts CEO's payout while reducing social value. In the No-Transaction Scenario, ABC's social value is \$20. In the Equity Issuance Scenario, it is \$19: \$33 distributed to shareholders at Liquidation Date less the \$14 raised from investors).<sup>76</sup> But CEO's payout in the Equity Issuance Scenario is \$1 higher (\$11 rather than \$10). The net effect of the inflated-price equity sale on social value and CEO's payoff can be summarized in Table 2 below:

**Table 4. Rewards for Costly Expansion**

	Social Value	CEO Payoff
No Equity Issuance	\$20	\$10
Equity Issuance	\$19	\$11

As one can see, the inflated-price equity issuance rewards the CEO even though social value is reduced. Thus, the equity given to CEO can induce the CEO to direct the firm to sell shares even when the transaction destroys social value.

The problem is that standard equity-based pay arrangements align executives' interest with non-trading

---

<sup>76</sup> In the No-Transaction Scenario, all \$20 flows to shareholders at Liquidation Date. In the Equity Issuance Scenario, \$13 flows from shareholders during the equity issuance and \$33 flows back to shareholders at the Liquidation Date (for a net amount of \$20). Obviously, I am ignoring the time value of money (or alternatively, assuming it is zero). This assumption, made purely for convenience, does not affect the analysis.

shareholders but not with investing shareholders who buy additional stock from the firm. Thus, the executive has an incentive to take steps that transfer value from investing shareholders to non-trading shareholders even when such steps would destroy social value.

*b. Do Other Pay Components Mitigate?*

As we have seen, an executive holding equity can be rewarded for engaging in value-wasting equity issuances when the stock is overpriced. However, equity comprises only part of an executive's compensation. The executive likely also receives a cash salary and bonus. In addition, the executive may hold stock that she is unloading currently. Do these other forms of compensation mitigate the adverse incentives created by equity?

Unfortunately, none of these other components of the executive's pay package dilutes executives' incentive to engage in costly expansion when the stock is overpriced. Indeed, given the well-known correlation between market capitalization and executive pay, salary and other forms of compensation may well be increased if executives expand the firm.<sup>77</sup> To the extent that the executive owns stock that can be sold in the short-term, when the stock price is high, the sale of additional equity by the firm will not prevent her from unloading her stock at a high price. In fact, there is evidence that executives whose firms are selling overpriced stock simultaneously unload their own shares.<sup>78</sup> In short, the

---

<sup>77</sup> See Lucian A. Bebchuk and Yaniv Grinstein, *Firm Expansion and CEO Pay* (working paper, 2005), available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=838245](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=838245) (finding that firm expansion, including by equity-financed acquisitions, boosts CEO compensation).

<sup>78</sup> See Daniel Bradley, Brandon Cline, and Qin Lian, *Do Insiders Practice What they Preach? Informed Option Exercises Around Acquisitions* (working paper, 2009) (finding that, around the announcement of stock-financed acquisitions, insiders of the acquiring firm exercise stock options

incentive to engage in costly expansion is not weakened by other components of executives' pay packages.

---

and sell the underlying shares, which is consistent with the acquirer stock being over-priced).

## IV. THE CONSTANT-SHARE APPROACH

Parts II and III demonstrated that executives holding stock are rewarded for engaging in stock repurchases and equity issuances that reduce social value. This problem arises because equity ties executives' payoffs not to aggregate shareholder value – the amount of cash flowing to all the firm's shareholders over time -- but rather only to the value flowing to one subset of shareholders: "non-trading shareholders" who neither sell any of their stock to the firm, nor buy any additional stock from the firm, before the executives sell their stock.

In this Part, I explain how equity pay could be structured to reward executives for repurchases and equity issuances if and only if these transactions increase social value. Section A puts forward and provides an overview of a "constant-share" approach to equity-based pay which would tie executives' payoffs to aggregate shareholder value – the value flowing to non-trading, redeeming, and investing shareholders -- and thereby eliminate executives' incentives to engage in value-reducing repurchases and equity issuances merely to boost the future stock price. Section B describes in more detail how the constant-share approach operates in the context of a repurchase. Section C describes how the approach operates in connection with an equity issuance.

Because my goal is to explain conceptually how the constant-share approach would work, I make some simplifying assumptions. In particular, the executive owns vested stock subject to a holding requirement (and no other equity in the firm) and is risk neutral. I also ignore tax considerations and the time value of money. A mathematical model of the constant-share approach can be found in the Appendix.

### *A. Description of the Approach*

Under the constant-share approach executives would be required to adjust their equity positions whenever the firm repurchases or issues shares so that executives' fractional

ownership in the firm would remain constant through the transaction.<sup>79</sup> Thus, when the firm repurchases shares, the executive would be required to sell some of her shares to the firm.<sup>80</sup> And when the firm issues shares, the executive would be required to buy additional shares. In either case, the executive would transact with the firm on the same terms as the firm transacts with other investors. Thus, when the firm repurchases shares, the executive must sell shares to the firm at the repurchase price. Similarly, the executive must buy shares at the issue price when the firm sells shares.<sup>81</sup>

For example, suppose that an executive (“CEO”) holds a certain fraction of the firm’s equity at a particular point in time (say 2%). If the firm repurchases 10% of its shares, CEO would be required to sell to the firm, at the same price the firm was paying for the repurchased shares, 10% of his 2% block, or 0.2% of the firm’s shares. Similarly, if the firm increases its outstanding shares by 10% in a secondary offering, CEO would be required to buy, at the same price the firm was receiving for the newly issued stock, an amount equal to 10% of his 2% block, or 0.2% of the firm’s outstanding shares. The effect of CEO’s transactions would be to leave CEO with the same fraction of the firm’s outstanding shares after the repurchase or share issuance as before: in this case, 2%.

As I explain in more detail below, requiring the executive to participate in repurchases as a redeeming shareholder and in equity issuances as an investing shareholder in the same proportion as she owns stock in the

---

<sup>79</sup> I discuss the issues raised in calculating executives’ equity ownership in Section B.

<sup>80</sup> As Section B explains, the constant-share approach could be implemented through financial contracts that do not involve the purchase or sale of actual shares. However, for ease of exposition, I will describe the mechanism as one in which actual shares are purchased or sold by the executive.

<sup>81</sup> The proceeds of any sale of shares back to the firm could be held in an escrow account until the executive’s equity is cashed out, and used to buy shares when the firm issues equity. Similarly, any equity purchased by the executive should be held, ideally for the long-term.

company ensures that the executive's equity payoff is tied to the value flowing to all the firm's shareholders, not just non-trading shareholders. Essentially, the constant-share approach would make the CEO both a non-trading and redeeming shareholder in the case of repurchases, and both a non-trading and investing shareholder in the case of equity issuances. Thus, the executive no longer financially benefits from repurchases and stock issuances that merely transfer wealth from one set of shareholders to another without generating any social value. Instead, the executive has an incentive to engage in repurchases and equity issuances only if they increase aggregate shareholder value.

The constant-share approach provides another benefit besides eliminating the incentive for costly contractions and costly expansions. As Parts II and III explained, executives frequently manipulate the stock price around repurchases and equity issuances. They engage in such manipulation because it boosts the value of their equity. Once executives have decided to conduct a repurchase, driving down the stock price before the firm starts buying back stock increases the value of executives' equity, because the executives are indirect buyers. Similarly, assuming an equity issuance will occur, driving up the stock price makes executives holding stock better off, because they are indirect sellers. The constant-share approach would eliminate executives' equity-driven incentive to engage in such manipulation by ensuring that they are neither indirect buyers nor indirect sellers in these transactions.

#### *B. Constant-Share Approach in a Repurchasing Firm*

When a firm repurchases shares, the constant-share approach ties an executive's equity payoff to the total amount of value flowing to both non-trading and redeeming shareholders. This mechanism eliminates the executive's equity-driven incentive to engage in a repurchase merely because it transfers value from redeeming shareholders. Instead, the executive is rewarded for engaging in any repurchase if and only if it increases shareholder value.

To see why this is the case, suppose that an executive (CEO), at the time of a possible repurchase, owns 10% of the firm's stock. Suppose that the firm is considering purchasing 20% of the outstanding shares at the current trading price.

Absent the constant-share mechanism, CEO would own 12.5% of the firm's shares after the repurchase.<sup>82</sup> Thus, CEO would receive 12.5% of the value flowing to non-trading shareholders, the shareholders who do not redeem their shares in the repurchase, and 0% of the value flowing to redeeming shareholders. CEO's equity payoffs would thus reflect only the value flowing to non-trading shareholders rather than all the firm's shareholders. As we saw in Part II, CEO would be rewarded for engaging in bargain-price repurchases even if they reduce social value.

Under the constant-share approach, CEO would be required to participate in the 20% repurchase in an amount proportionate to her pre-transaction ownership interest of the firm (10%). Thus, shares sold by CEO to the firm would constitute 10% of the 20% block acquired by the firm (or 2% of the firm's outstanding stock). Another way to put it: because the firm is repurchasing 20% of all its shares, CEO is required to sell to the firm 20% of her 10% interest during the repurchase.

After the repurchase, CEO would continue to own 10% of the firm's equity. Thus, CEO would receive 10% of the value flowing to non-trading shareholders. But, because CEO also held 10% of the equity repurchased by the firm, CEO would receive 10% of the value flowing to redeeming shareholders. As a result, CEO's payoffs would equal 10% of the value flowing to all the firm's shareholders. Thus, CEO has an incentive to conduct repurchases if and only if they increase aggregate shareholder value.

### *C. Constant-Share Approach in a Share-Issuing Firm*

---

<sup>82</sup> Because the firm is repurchasing 20% of its stock, the proportional interest of each remaining shareholder, including CEO, will increase by 25%.

I now turn to consider how the constant-share approach operates when a firm issues equity. As I will show, the constant-share approach ties an executive's payoff to the total amount of value flowing to both non-trading and investing shareholders. This mechanism eliminates the executive's incentive to engage in an equity issuance merely because it transfers value from investing shareholders. Instead, the executive will be rewarded for engaging in any equity issuance that actually increases shareholder value.

To see why this is the case, suppose that an executive (CEO), at the time of a possible equity issuance, owns 10% of the firm's stock. Suppose that the firm is considering issuing an amount of stock equal to 25% of the outstanding shares at the current trading price.

Absent a constant-share mechanism, CEO would own 8% of the firm's stock after the transaction.<sup>83</sup> Thus, CEO would receive 8% of the value flowing to non-trading shareholders, the shareholders who do not invest in the equity issuance, and 0% of the value flowing to investing shareholders. CEO's equity payoffs would thus reflect the value flowing to non-trading shareholders rather than all the firm's shareholders. As seen in Part III, CEO would be rewarded for engaging in inflated-price issuances even if they reduce shareholder value.

Under the constant-share approach, CEO would be required to buy 10% of the shares sold by the firm. Because the firm is selling an amount of shares equal to 25% of its pre-sale outstanding equity, CEO would be required to buy 2.5% of the pre-sale equity. That is, CEO would be required to increase her 10% stock ownership by 25%, the proportion by which the equity offering increases the firm's shares.

After the equity issuance, CEO would continue to own 10% of the firm's equity. Thus, CEO would receive 10% of the value flowing to non-trading shareholders. But, because CEO also buys 10% of the equity issued by the firm, CEO receives 10% of the value flowing to investing shareholders. As a result,

---

<sup>83</sup> Because the firm is issuing an amount of equity equal to 25% of its pre-transaction outstanding shares, the proportional interest of each remaining shareholder, including the executive, will drop by 20%.

CEO's payoff equals 10% of the value flowing to all the firm's shareholders. Thus, CEO has an incentive to conduct the equity issuance if and only if the issuance increases aggregate shareholder value.

## V. Conclusion

Tying executive pay to the stock price, and in particular the long-term stock price, has long been seen as way to incentivize executives to serve shareholders. This paper has shown that executives holding stock identified a substantial flaw with standard equity-based pay arrangements, even if they require the executive to hold stock for the long-term: they distort executives' incentives when the firm buys and sells its own shares. In particular, standard compensation arrangements reward executives for engaging in share repurchases and equity issuances that reduce aggregate shareholder value, the amount of cash flowing to a firm's shareholders over time.

The core problem with standard equity-based pay arrangements is that they tie executives' payoffs only to the value flowing to what I call "non-trading shareholders" - shareholders who neither buy stock from nor sell stock to the firm before the executive cashes out her equity. Current arrangements fail to tie the executives' payoffs to the value flowing to redeeming shareholders, those who sell stock to the firm, or to the value flowing to investing shareholders, those who buy stock from the firm. Thus, these arrangements reward executives for transferring value from redeeming and investing shareholders to non-trading shareholders, even if the social value of the firm -- total amount of cash flowing to shareholders over time -- is diminished.

The paper has also put forward a new "constant-share" approach to equity-based compensation that completely eliminates the identified distortions by tying executives' equity payoffs to aggregate shareholder value - the value flowing to all the firm's shareholders over time. Under this approach, executives would be required to sell some of these shares (or buy additional shares) whenever the firm repurchases its own stock (or issues new equity) so that the executives' proportional ownership in the firm remains constant as the firm transacts in its own stock.

I hope that the analysis I have offered will sharpen understanding the potentially deleterious effects of tying

executive pay to the stock price, even the long-term stock price, and assist regulators, directors, and shareholders in improving executive compensation and corporate governance in public companies.

## APPENDIX

The Appendix introduces an analytical framework for examining the effect of equity on executives' incentives to engage in repurchases and equity issuances and the operation of the constant-share approach.

### *Analytical Framework*

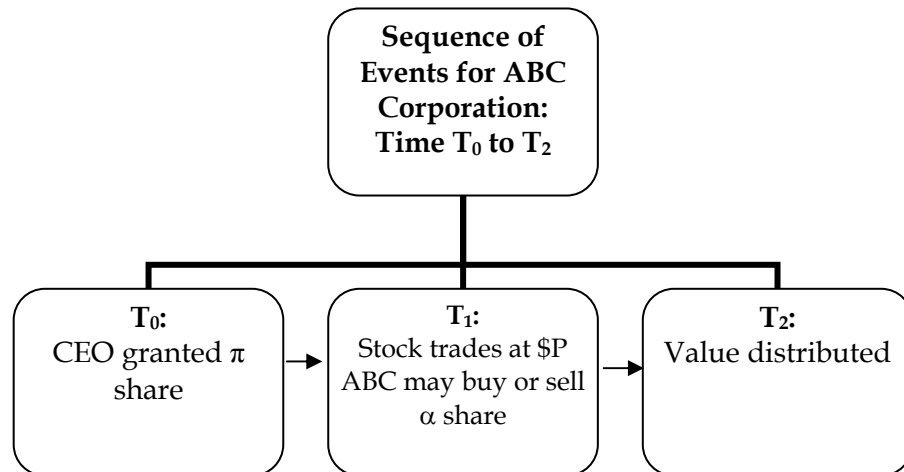
Consider a Corporation ("ABC") that initially has a single share outstanding and exists in three sequential periods: Time  $T=0$ ; Time  $T=1$ , and Time  $T=2$ .

- At  $T=0$ , ABC has a single risk-neutral manager ("CEO") who is granted a fraction  $\pi$  of ABC's equity, which she must hold until  $T=2$ . In analyzing CEO's incentives, I assume CEO seeks solely to maximize the dollar payoff from her compensation arrangement.
- At  $T=1$ , ABC's share (or a fraction of it) can be traded for a price  $P_1$  per share. At  $T=1$ , ABC may or may not repurchase or issue an additional amount of equity equal to a fraction  $\alpha$  of its single share.
- At  $T=2$ , ABC is liquidated and its value is distributed pro rata to its shareholders.

ABC's  $T=2$  value will depend on whether there has been a transaction in ABC's stock at  $T=1$ . In the absence of any transactions in the firm's stock (such as a repurchase or sale of equity), ABC's  $T=2$  value is  $V$ .

If there is a repurchase (or sale) of equity, ABC's  $T=2$  value will be reduced (increased) by the amount paid (received) for any stock repurchased (sold) at  $T=1$  plus an amount  $X$  representing the efficiency effects of the transaction on ABC's value. From an economic perspective, ABC should repurchase equity or issue equity if and only if (iff)  $X > 0$ .

**Figure 1. Sequence of Events for ABC Corporation**



***Social Value and Final-Period Stock Price.*** Social value (SV) is the net amount of value flowing from ABC to its shareholders between  $T=0$  and  $T=2$ . The final-period stock price is ABC's  $T=2$  value, divided by the number of shares outstanding at  $T=2$ .

***No-Transaction Scenario.*** Denote  $SV_n$  as ABC's social value when ABC neither repurchases nor issues equity at  $T=1$ . It should be easy to see that:

$$(1a) SV_n = V.$$

Denote  $P_{2n}$  as the final-period stock price if there is no repurchase or equity issuance. It should also be easy to see that:

$$(2a) P_{2n} = V.$$

**Repurchase Scenario.** Denote  $SV_r$  as ABC's social value when ABC repurchases  $\alpha$  share at  $T=1$  for a price  $P_1$ , and the repurchase changes ABC's value by  $X$ . It follows that:

$$(1b) SV_r = \alpha P_1 + (V - \alpha P_1 + X) = (V + X).$$

Denote  $P_{2R}$  as the final-period stock price if there is a repurchase.

$$(2b) P_{2r} = (V - \alpha P_1 + X) / (1 - \alpha).$$

**Equity-Issuance Scenario.** Denote  $SV_i$  as ABC's social value when ABC issues  $\alpha$  share at  $T=1$  for a price  $P_1$  that changes ABC's value by  $X$ .

$$(1c) SV_i = (V + \alpha P_1 + X) - \alpha P_1 = (V + X).$$

Denote  $P_{2I}$  as the final period stock price if there is an equity issuance.

$$(2c) P_{2i} = (V + \alpha P_1 + X) / (1 + \alpha).$$

SV and the final-period stock price for each scenario are summarized in the table below.

**Table 5. Social Value and Stock Price**

	Social Value	Stock Price
No transaction	V	V
Repurchase	V+X	$(V-\alpha P_1+X)/(1-\alpha)$
Equity issuance	V+X	$(V+\alpha P_1+X)/(1+\alpha)$

*CEO's Incentive to Engage in Costly Repurchases*

Consider CEO's incentive to repurchase at T=1 when, as assumed previously, her payoff is tied to the T=2 stock price. Given CEO's incentive to maximize the T=2 stock price, it follows from (2a) and (2b) that CEO will repurchase at T=1 iff

$$(3) (V-\alpha P_1+X)/(1-\alpha) > V.$$

Simplifying (3) yields

$$(4) V-P_1 > -X/\alpha.$$

It follows from (4) that CEO has an incentive to engage in a costly (value-reducing) repurchase when

$$(5) 0 > X > \alpha(P_1-V).$$

Remark. It should be easy to see from (5) that if  $P_1 \geq V$  (the stock is properly or overpriced at T=1), CEO does not have an incentive to conduct a costly repurchase. However, if  $P_1 < V$  (the stock is underpriced at T=1), CEO may have an interest in conducting a costly repurchase.

### *CEO's Incentive to Engage in Costly Expansion*

Now consider CEO's incentive to issue equity at T=1 when, as assumed previously, her payoff is tied to the T=2 stock price. Given CEO's incentive to maximize the T=2 stock price, it follows from (2a) and (2c) that CEO will issue equity at T=1 iff

$$(6) (V + \alpha P_1 + X) / (1 + \alpha) > V.$$

Simplifying (6) yields

$$(7) P_1 - V > -X / \alpha.$$

It follows from (7) that CEO has an incentive to engage in a costly (value-wasting) equity issuance when

$$(8) 0 > X > \alpha(V - P_1).$$

Remark. It should be easy to see from (8) that if  $P_1 \leq V$  (the stock is properly or underpriced in the short-term), CEO does not have an incentive to engage in costly expansion. However, if  $P_1 > V$  (the stock is overpriced in the short-term), CEO may benefit from engaging in costly expansion.

***Constant-Share Approach.*** Under the constant-share approach, CEO must participate in a repurchase (issuance) by selling (buying) a fraction of the shares purchased (sold) by the company equal to his pre-transaction percentage interest in ABC,  $\pi$ . This approach incentivizes CEO to conduct a repurchase or equity issuance if and only if it increases social value.

*Aligning CEO's Payoff with Social Value.* Denote the CEO's payoff if there is no repurchase as  $W_n$ , if there is a repurchase as  $W_r$ , and if there is a stock issuance as  $W_i$ .

If there is no repurchase or equity issuance, it should be easy to see from (2a) that

$$(9a) W_n = \pi V.$$

If there is a repurchase of  $\alpha$  share at  $T=1$  for price  $P_1$ , CEO will be required to sell  $\pi\alpha$  share at price  $P_1$  to ABC. CEO will receive  $\pi\alpha P_1$  at  $T=1$  and be left with  $\pi(1-\alpha)$  shares at  $T=2$ . It follows from this and (2a) that

$$(9b) W_r = \pi\alpha P_1 + \pi(1-\alpha)(V-\alpha P_1+X)/(1-\alpha) = \pi(V+X).$$

If there is an issuance of equity at  $T=1$ , CEO will pay  $\pi\alpha P_1$  and be left with  $\pi(1+\alpha)$  shares at  $T=2$ . It follows from this and (2c) that

$$(9c) W_i = -\pi\alpha P_1 + \pi(1+\alpha)(V+\alpha P_1+X)/(1+\alpha) = \pi(V+X).$$

The CEO's payoff under each scenario can be summarized in the following table.

**Table 6: Social Value and CEO Payoff under Constant-Share Approach**

	Shareholder Value	CEO Payoff
No transaction	$V$	$\pi V$
Repurchase	$V+X$	$\pi(V+X)$
Equity issuance	$V+X$	$\pi(V+X)$

Thus, CEO has an incentive to undertake a repurchase or equity issuance iff  $X > 0$ . That is, CEO should undertake the transaction if and only if it increases social value.

### *Ex Post Implementation*

Above, it was assumed that the CEO would participate pro rata in any equity transaction at  $T=1$ . Thus, because CEO owns  $\pi$  of ABC's equity, she would sell or buy  $\alpha\pi$  shares when ABC buys or sells  $\alpha$  of its equity. Under this constant-share approach, CEO's payoff is tied to social value.

However, CEO's payoff could be tied to shareholder value through the use of an ex post adjustment made to CEO's position *after* the equity transaction took place. Denote as  $\beta\pi$  the amount of shares CEO must sell (or buy) after ABC's repurchase (or equity offering) in order to tie CEO's payoff to social value. Such an adjustment would change the amount of equity outstanding and ABC's value.

Suppose ABC repurchases  $\alpha$  share at  $T=1$  for price  $P_1$ , and then CEO sells  $\beta\pi$  shares for price  $P_1$ .

ABC's  $T=2$  value will be  $V - [\alpha + \beta\pi]P_1 + X$ , and it will have  $1 - \alpha - \beta\pi$  outstanding shares.

Denote CEO's payoff in a repurchase when there is an ex post adjustment as  $W_r'$ . It follows that

$$(10) W_r' = \beta\pi P_1 + \pi(V - [\alpha + \beta\pi]P_1 + X) / (1 - \alpha - \beta\pi).$$

Aligning CEO's payoff with social value requires that  $W_r' = W_r$  which in turn implies that

$$(11) W_r' = \pi(V + X).$$

From (10) and (11), it follows that

$$(12) \beta = \alpha / (1 - \pi).$$

It can easily be shown that the post-transaction adjustment in the case of an equity issuance is the same. CEO must buy  $\beta\pi$  shares at  $P_1$ , where  $\beta = \alpha / (1-\pi)$ .